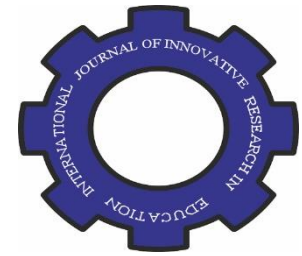




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## Evaluating constructive alignment: An analysis of learning outcomes, learning experiences, and assessment techniques at a public university

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### Abstract

This study examines the implementation of constructive alignment in academic programs at a public university in Zimbabwe, a critical approach aligning intended learning outcomes, teaching activities, and assessments to enhance student learning. Despite its proven benefits, limited research has explored its application in Zimbabwean higher education, leaving a gap in understanding its effectiveness and challenges within this context. Using an explanatory sequential mixed methods design, the study analyzed 28 module outlines selected through random sampling and conducted structured interviews with 20 purposively selected respondents. Quantitative data were analyzed using descriptive statistics, while thematic analysis was applied to qualitative data. The findings show that constructive alignment facilitated more coherent and integrated learning experiences by enabling instructors to define learning outcomes and align teaching and assessments effectively, fostering deeper student understanding. However, challenges such as insufficient institutional support, limited professional development, and the need for continuous curriculum refinement were identified. The study highlights the importance of addressing these challenges to optimize constructive alignment's benefits. Recommendations are provided for improving alignment strategies to enhance academic performance and student engagement. These findings contribute to broader discussions on improving the quality and effectiveness of higher education in Zimbabwe and similar contexts.

**Keywords:** constructive alignment, approach, teaching/learning; outcome-based; quality enhancement.

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## 1. INTRODUCTION

Constructive alignment is a pedagogical approach proposed by Biggs (1996) that emphasizes the alignment of learning outcomes, learning experiences, and assessment techniques to enhance student learning. This framework has gained traction in higher education as it promotes deeper learning by ensuring that all components of the teaching process are interconnected. In the context of a public university in Zimbabwe, evaluating constructive alignment is particularly relevant due to several factors. The increasing globalization of education calls for local institutions to adopt best practices from around the world. Evaluating constructive alignment can help local universities align with international standards while addressing local needs (Zhou & Chikoko 2022). Therefore, it is prudent to assess the constructive alignment of university programs to establish current standards and practices, to emulate global benchmarks.

Zimbabwe has undergone various educational reforms, including Education 5.0, to improve the quality of higher education. Understanding how constructive alignment is implemented can inform these reforms and help meet national educational goals (Moyo, 2018). Institutions are increasingly focusing on quality assurance mechanisms to enhance educational outcomes. Evaluating the effectiveness of constructive alignment can provide insights into how well universities are achieving their educational objectives (Chikoko, 2020). The shift towards student-centered learning necessitates the alignment of learning outcomes with learning experiences and assessments, which is critical in a Zimbabwean context where traditional teaching methods have dominated (Mambo & Nyoni, 2019). Student-centered learning approaches are catalyzed by constructive alignment. Despite the theoretical benefits of constructive alignment, challenges such as resource limitations, large class sizes, and inadequate faculty training can hinder its effective implementation in Zimbabwean universities (Ruge et al., 2019). This study aims to identify the current challenges in implementing constructive alignment in state universities and to propose a framework for effective implementation.

Constructive alignment (CA) is a fundamental principle in curriculum design that seeks to ensure coherence and effectiveness in the teaching and learning process. CA involves a design for teaching in which the intended learning outcomes and the methods by which students are expected to demonstrate their learning are clearly stated before instruction begins (Biggs and Tang, 2003; Biggs, 2014; UTAS, 2021). Constructive alignment emphasizes the need for coherence between learning outcomes, learning experiences, and assessment methods. This alignment ensures that all components of instructional design work together to support students in achieving the desired learning outcomes.

The concept of constructive alignment suggests that when these three elements are carefully aligned, a coherent and effective learning environment is created. The intended learning outcomes guide the design of learning experiences, which in turn inform the assessment methods used to evaluate student learning. By aligning these components, instructors can ensure that students engage in meaningful learning activities that directly support the attainment of the intended learning outcomes and that the assessment methods accurately measure and provide feedback on students' progress. Studies have indicated a lack of alignment between learning outcomes, learning experiences, and assessment techniques, highlighting the need to establish the degree of alignment in public university module outlines and to propose a framework for enhancing constructive alignment opportunities.

### 1.1. Conceptual background

#### 1.1.1. Constructivism

The study was guided by constructivism, a learning approach that emphasizes the active role of the learner in constructing their understanding and knowledge of the world. Rooted in the work of educational philosophers and psychologists, constructivism has become a dominant paradigm in modern andragogy. Piaget (1952)

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proposed that individuals actively construct knowledge through the processes of assimilation and accommodation as they interact with their environment. Thus, knowledge creation is a product of the interaction between the learner and their environment (Li, 2022). Vygotsky (1978) and Yang et al., (2024) emphasized the social and cultural influences on learning, arguing that knowledge is co-constructed through interactions with more knowledgeable others. This implies that knowledge is collaboratively created through engagement with more knowledgeable peers. Bruner (1961) advocated for an instructional approach that encourages learners to discover principles and relationships through active exploration and problem-solving. Consequently, Bruner supported student-centered teaching approaches as a means to promote effective learning. Von Glasersfeld (1995) developed a constructivist epistemology, which views knowledge as actively constructed by the student rather than passively absorbed. This perspective underscores that effective learning is an active process involving the student.

In the constructivist paradigm, learning is an active, contextualized process of knowledge construction, where students integrate new information with their prior experiences and understandings (Jonassen, 1991). In this approach, students build upon their existing knowledge and experiences to actively make sense of new information. Constructive learning helps to extend a student's knowledge by building on what they already know. Constructive teaching practices emphasize the student's role in meaning-making, problem-solving, and critical thinking (Fosnot, 1996). Ultimately, constructivism focuses on projecting the active role of the student in constructing their understanding and knowledge.

Therefore, constructive teaching practices empower students to make sense of learning scenarios, foster solutions to societal problems, and enhance critical thinking competencies. By aligning learning outcomes, learning activities, and assessment methods, educators can create constructively aligned curricula that promote active, meaningful, and deep learning (Biggs, 1996, 1999). Thus, through the construction of a constructively aligned curriculum, effective and meaningful learning can be assured for students in Zimbabwean state universities.

### **1.1.2. Learning outcomes**

Learning outcomes are statements that describe what students should know, comprehend, and be able to do by the end of a learning module (Biggs, 2003; Hattie & Timperley, 2007). Articulated learning outcomes help align module content, instructional activities, and assessment methods, creating a coherent learning experience for students (Biggs, 1996; Wiggins, 2005). These outcomes provide clear direction for instruction and serve as a guide for designing learning experiences and assessments. Learning outcomes offer transparency for students regarding what they are expected to learn and achieve, helping to hold both students and instructors accountable for the learning process (Morselli, 2018; Suskie, 2018; Huba & Freed, 2000). They should explicitly outline what students should engage with, and the expected achievements, and create a framework for accountability for both instructors and students. Additionally, learning outcomes should align with educational standards, program goals, and the needs of the students. According to Biggs (2003), effective learning outcomes should be student-centered, observable, and measurable. Expected learning outcomes define the totality of information, knowledge, understanding, attitudes, values, skills, and competencies that a student should master upon completing the module. Therefore, learning outcomes describe what students will do, not what the facilitator will teach. They serve as the foundation for instructional planning and assessment.

### **1.1.3. Learning experiences**

Learning experiences refer to the activities, tasks, and resources that students engage in to achieve the learning outcomes (Freeman et al., 2014; Kolb, 2014). These experiences should be designed to facilitate active learning, engagement, and the development of relevant skills and knowledge. They can include lectures, discussions, group work, projects, hands-on activities, simulations, and more. Active learning approaches, such as problem-based

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learning, team-based learning, hands-on experiences, and flipped classrooms, have been shown to enhance student engagement and improve learning outcomes compared to traditional lecture-based instruction (Kuh, 2008; Prince, 2004).

Hands-on experiences, such as internships, co-op programs, and undergraduate research, provide students with opportunities to apply their knowledge and develop practical skills. These experiences are linked to improved academic performance, career preparation, and personal development. Learning experiences that are meaningful, relevant, and tailored to individual interests can foster motivation and engagement, leading to more effective learning outcomes (Deci & Ryan, 2000; Zhang et al., 2022). When designing learning experiences, it is important to consider the diverse needs and learning styles of students, as well as the content and skills to be learned. These experiences should facilitate the attainment of the desired learning outcomes and be connected to real-world problems and applications that are meaningful and engaging for learners.

#### **1.1.4. Assessment**

Assessment involves gathering evidence to determine the extent to which students have achieved the learning outcomes (Banta & Palomba, 2014; Kuh et al., 2015; Suskie, 2018). Various assessment methods are employed to evaluate students' learning and determine how well they have met the desired outcomes. Universities typically utilize a variety of assessment forms to evaluate student learning and achievement, including tests, quizzes, projects, presentations, portfolios, observations, and self-assessments. Assessments provide faculty with valuable information about student learning, enabling them to identify areas where students are succeeding or struggling (Suskie, 2018). These methods evaluate students' attainment of the learning outcomes and offer feedback on their progress.

Assessments should be aligned with the learning outcomes and provide valid and reliable measures of student learning (Ramadan Elbaioumi Shaddad & Jembe 2024). They should assess the desired knowledge, skills, and understandings while providing actionable feedback to support further learning (Latif & Wasim 2024). Constructive alignment advocates for assessments that are closely aligned with intended learning outcomes and that offer meaningful feedback to students. According to Black and William (1998) and Sadler (2009), formative assessment practices such as providing feedback, self-assessment, and peer assessment have a significant positive impact on student achievement.

Assessment data can inform important decisions regarding curriculum development, program revisions, better alignment with industry and societal needs, and resource allocation (Banta & Palomba, 2014; Suskie, 2018). This underscores the significant role assessments play in curriculum planning, informing industry and societal expectations, and appropriately allocating material resources and human capital. The process of designing and implementing assessments encourages faculty to critically examine their teaching practices and alignment with learning objectives (Biggs & Tang, 2003). Thus, assessment can ultimately enhance learning and teaching.

Moreover, assessments can motivate students to engage more actively with course material, as they recognize the importance of demonstrating their learning and mastery of the subject matter (Falchikov, 2013). Well-designed assessments can enhance student motivation and encourage deeper learning (Boud & Falchikov, 2007). Effective assessment in universities promotes student learning, supports teaching excellence, and maintains academic rigor and quality.

#### **1.1.5. Triangle of Effective learning**

Figure 1 below shows the components of the Triangle of the Effective learning model.

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**Figure 1**

*The triangle of effective learning*



Source: Benson (2021)

The "Triangle of Effective Learning" (Figure 1) highlights three key components essential for effective learning: Learning Outcomes, Learning Activities, and Assessment. The diagram positions these elements as the core focus of the learning process. When these three components, Learning Outcomes, Learning Activities, and Assessment are present and well-balanced, they create a synergistic effect that supports and enhances the overall learning experience for students. This model emphasizes the importance of fostering a learning environment that provides excellent instruction while also engaging and motivating students to take an active role in their learning. By addressing all three elements, educators can maximize the effectiveness of the learning process and help students achieve their educational goals. The triangular arrangement suggests that these components are interconnected and interdependent. Effective learning requires a balanced and aligned approach among these elements. The arrows indicate the iterative and cyclical nature of the relationship, where the assessment of learning outcomes can inform adjustments to teaching methods and learning activities. Overall, this diagram underscores the importance of aligning learning outcomes, teaching techniques, and learner engagement to achieve effective and impactful learning outcomes.

#### **1.1.6. Challenges of constructive alignment**

While constructive alignment offers several advantages, there are also significant challenges associated with its implementation, one of which is the complexity of the design. Designing a curriculum that aligns all three components, learning outcomes, activities, and assessments can be complex and time-consuming (Biggs, 2003). The process of developing a curriculum that integrates these three components is demanding and requires a considerable timeframe. Additionally, teachers may unintentionally create misalignments, where assessments do not appropriately measure the intended learning outcomes (Wiggins, 2005; Remneland Wikhamn, 2017). Teachers may unknowingly foster these misalignments by crafting assessments that fail to accurately gauge the specified learning outcomes. It is also important to note that implementing constructive alignment often requires additional resources time, training, and materials—which may not be readily available (Abejuela et al., 2022; de

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Bie & Brown; 2017; Tobiason, 2024). Effective implementation of constructive alignment necessitates a significant investment in both human capital and material resources.

In some cases, institutions may resist adopting a constructive alignment approach due to entrenched teaching practices or skepticism about its effectiveness (Kember & Wong, 2000, Ruge et al., 2019). Some institutions may choose to ignore the principles of constructive alignment, opting instead to adhere to established teaching practices with which they are familiar. While constructive alignment is a powerful approach to curriculum design, it requires careful planning, adequate resources, and a willingness to adapt. Understanding and addressing these challenges is essential for the effective implementation of constructive alignment.

#### **1.1.7. Learning and teaching space**

The learning and teaching environment at Zimbabwean universities is shaped by the implementation of Education 5.0. This emerging educational paradigm emphasizes a more holistic and integrated approach to learning, leveraging technology and focusing on human-centered education. The main thrust of the Education 5.0 curriculum is the promotion of not just academic knowledge, but also critical thinking, creativity, emotional intelligence, and social skills (Wang & Degol, 2015). Thus, the primary focus is on the holistic development of learners through the imparting of diverse competencies for self-sustenance and societal relevance.

The curriculum also advocates for integrating advanced technologies like Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) into the learning process, preparing students for a tech-driven world. The incorporation of AI, VR, and AR in education offers innovative ways to enhance learning, making it more interactive, engaging, and effective. Technology adoption also facilitates customized learning experiences that cater to individual student needs and learning paces (Grant & Basye 2014). As such, personalized learning environments can be enhanced through the adoption of appropriate technologies.

Education 5.0 emphasizes sustainable practices and global awareness, preparing students to tackle global challenges (United Nations Educational, Scientific and Cultural Organization (UNESCO, 2017). It aims to develop universally versatile learners who are internationally competitive and marketable. Education 5.0 represents a transformative shift in how education is approached, emphasizing the need for a comprehensive, technology-savvy, and socially responsible educational system. As this curriculum evolves, it holds the potential to significantly enhance student engagement and preparedness for the future.

#### **1.1.8. Problem statement**

The effective implementation of constructive alignment in higher education is critical for enhancing student learning outcomes. However, at public universities in Zimbabwe, there is a noticeable gap in the alignment between learning outcomes, learning experiences, and assessment techniques, (Abejuela et al., 2022; Keche et al; 2022; Tobiason, 2024). This misalignment can hinder the quality of education and impede the achievement of desired educational objectives. Despite the adoption of innovative educational frameworks, many institutions continue to rely on traditional teaching methods, which often fail to engage students meaningfully (Mambo & Nyoni, 2019). The lack of coherence among the three components of constructive alignment learning outcomes, learning activities, and assessments raises concerns about the overall effectiveness of the educational process (Biggs, 2003; Zhou & Chikoko, 2022).

Furthermore, the increasing globalization of education necessitates that local universities align their practices with international standards while addressing specific local needs (Kuh et al., 2015). This calls for a critical evaluation of current practices in constructive alignment to identify existing challenges and opportunities for improvement. Additionally, there is limited research examining the practical application of constructive alignment

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within the Zimbabwean context, making it difficult to develop tailored strategies that address the unique challenges faced by local institutions (Moyo, 2018).

## **1.2. Purpose of study**

Therefore, this study seeks to evaluate the degree of constructive alignment at a public university in Zimbabwe, analyzing the interrelationships among learning outcomes, learning experiences, and assessment techniques. By doing so, it aims to provide insights that can inform curriculum development and enhance the overall quality of education. The research questions are:

1. To what extent do current learning experiences reflect the intended learning outcomes of modules offered at the university?
2. To what extent do current assessment techniques reflect the intended learning outcomes of modules offered at the university?
3. What challenges do lecturers face in achieving constructive alignment in their module design and delivery?

## **2. METHOD AND MATERIALS**

The study employed a mixed-methods approach, utilizing the Explanatory Sequential Design to integrate quantitative and qualitative data collection and analysis. This design involves an initial quantitative phase, followed by a qualitative phase to elaborate on or explain the quantitative findings (Creswell & Creswell, 2017; Plano Clark, 2017).

### **2.1. Participants**

The study involved two groups of participants. First, a random sample of 28 module outlines was selected from undergraduate programs across seven schools at the university. Second, a purposive sample of 20 teachers was interviewed to explore their experiences and perspectives on the implementation of constructive alignment.

### **2.2. Data collection tools**

A documentary analysis guide was used to systematically review module outlines, module descriptors, and assessment materials. This tool facilitated the examination of alignment between intended learning outcomes, teaching activities, and assessment methods. Additionally, semi-structured interviews were conducted with the sampled teachers to gather qualitative data on challenges, successes, and strategies related to constructive alignment implementation.

### **2.3. Data analysis methods**

Quantitative data from the document analysis were analyzed thematically to identify patterns and insights regarding constructive alignment. Qualitative data from the semi-structured interviews were also analyzed thematically, allowing for an in-depth understanding of participants' experiences and contextual challenges.

## **3. RESULTS**

The Table below shows the results obtained from the module outline analysis for the constructive alignment of the Intended Learning Outcomes, Learning and Teaching activities, and the Assessment regime consistent with the Education 5.0 Curriculum. The analysis is based on the 28 module outlines submitted from the schools on request. The employed scale ranged from 1 (non-existent), 2 (inadequate); 3 (adequate), and 4 (Excellent).

### **3.1. Learning outcomes**

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Table 1 below shows the levels of articulation of the learning outcomes as depicted by the analyzed module outlines.

**Table 1**

*The levels of articulation of the learning outcomes as depicted by the analyzed module outlines*

Number	Characteristics Intended Learning Outcomes	Degree of articulation			
		1	2	3	4
1	Soft skills	17 (60.7%)	4 (14.3%)	5 (17.9%)	2 (7.1%)
2	Organizational competences	21 (75.0%)	2 (7.1%)	1 (3, 6%)	4 (14.3%)
3	Innovative competences	19 (67.9%)	5 (17, 9%)	0	4 (14.3%)
4	Entrepreneurial competences	23 (82.1%)	1 (3.6%)	2 (7.1%)	2 (7.1%)
5	Lifelong learning competences	21 (75.0%)	3 (10.7%)	0	4 (14.3%)
6	Higher Order thinking competences (Bloom's Taxonomy)	6 (21.4%)	10 (35.7%)	7 (25.0%)	5 (17.9%)
	total	107 (64.9%)	22 (13.3%)	15 (9.1%)	21 (12.7%)

Based on the information provided in Table 1 above, one can make the following deductions:

### **3.1.1 Soft skills**

The majority of the intended learning outcomes (60.7%) have a low degree of articulation (1), indicating that these outcomes are broadly defined rather than highly specific. A smaller percentage (14.3%) have a moderate degree of articulation (2), and an even smaller percentage (17.9% and 7.1%) have a high (3) or very high (4) degree of articulation. The low articulation of soft skills in the learning outcomes is a worrisome development. Soft skills complement technical skills, enhancing overall performance and success in various environments. They are essential for building effective relationships, fostering collaboration, and navigating complex work dynamics.

### **3.1.2 Organizational competencies**

The majority of the intended learning outcomes (75.0%) have a low degree of articulation (1), with smaller percentages having moderate (7.1%), high (3.6%), or very high (14.3%) degrees of articulation. Organizational competencies are not being given due respect in the teaching programs. Organizational competencies are essential for enhancing learning outcomes by ensuring alignment with strategic goals, fostering engagement, and promoting a culture of continuous improvement. By investing in these competencies, organizations can create a skilled, adaptable, and innovative workforce capable of driving success.

### **3.1.3 Innovative competencies**



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The majority of the intended learning outcomes (67.9%) have a low degree of articulation (1), with a smaller percentage (17.9%) having a moderate degree of articulation (2). None have a high degree of articulation (3), but 14.3% have a very high degree of articulation (4). Innovative competencies are poorly articulated in the learning programs. Innovative competencies are crucial in learning programs as they enhance creativity, adaptability, problem-solving skills, and engagement. By fostering these competencies, organizations and educational institutions can prepare learners for the challenges of the future, ensuring they remain relevant and competitive in their fields.

#### **3.1.4 Entrepreneurial competencies**

The majority of the intended learning outcomes (82.1%) have a low degree of articulation (1), with smaller percentages having moderate (3.6%), high (7.1%), or very high (7.1%) degrees of articulation. Entrepreneurial competencies are not being due attention in the learning programs. Incorporating entrepreneurial competencies into learning programs is essential for fostering innovation, critical thinking, and resilience. These competencies not only enhance individual capabilities but also contribute to organizational success and economic development.

#### **3.1.5 Lifelong learning competencies**

Similar to the previous categories, the majority of the intended learning outcomes (75.0%) have a low degree of articulation (1), with smaller percentages having moderate (10.7%) or very high (14.3%) degrees of articulation. None have a high degree of articulation (3). Lifelong learning competencies need more attention in the learning outcomes. Incorporating lifelong competencies into learning programs is vital for fostering adaptability, career advancement, and personal fulfillment. By promoting a culture of lifelong learning, individuals can enhance their skills, remain relevant in their fields, and contribute to their communities effectively.

#### **3.1.6 Higher-order thinking competences (Bloom's Taxonomy)**

This category shows a more even distribution, with 21.4% having a low degree of articulation (1), 35.7% having a moderate degree of articulation (2), 25.0% having a high degree of articulation (3), and 17.9% having a very high degree of articulation (4). Higher-order thinking Competencies are satisfactorily catered for in the Learning outcomes. Incorporating higher-order thinking competencies into learning programs is vital for developing critical thinking, problem-solving abilities, and effective communication. By fostering these competencies, educational institutions can prepare learners for the complexities of the modern world, enhancing their adaptability and success in various endeavors.

Overall, the data suggests that the majority of the intended learning outcomes across the different categories have a low degree of articulation (1), indicating that they are broadly defined rather than highly specific. The percentage of outcomes with a high or very high degree of articulation (3 or 4) is generally lower, except in the Higher Order Thinking Competences category. Academics should prioritize the development of specific learning outcomes across all categories, not just in higher-order thinking. This can lead to a more coherent and focused curriculum that better supports student learning.

Guidelines help academics articulate clear and measurable learning outcomes, ensuring that students understand what they are expected to achieve by the end of the module. There are no clear criteria guiding educators in designing learning outcomes. This is evidenced by some of the responses provided by the educators. One of the themes emerging from the discussions with respondents is the relevance of learning experiences to societal expectations. The following sentences illustrate this standpoint:

*Long-term impact, relevance to real-world issues, and Bloom's Taxonomy levels (R1).*

*Possible career paths, relationships between my module and other modules in the program, and societal expectations (R3).*

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*Program regulations and contemporary real-life occurrences of phenomena related to the theory in question (R4).*

From these sentiments, one can deduce that academics may be guided by societal expectations in constructing module outlines. Societal expectations demand that graduates possess both knowledge and practical skills. Aligning learning outcomes with real-world issues ensures that the education provided is not only theoretical but also practical. This alignment can also be enhanced by ensuring that constructive alignment operates effectively across Bloom's Taxonomy levels. By focusing on these areas, constructive alignment guarantees that educational practices are relevant, effective, and capable of preparing students for future challenges.

The integration of technology in constructive alignment enhances the educational process by improving communication, personalizing learning, and providing innovative assessment strategies. This alignment ultimately leads to a more effective and engaging learning experience for students. Another theme emerging from the discussion was that the construction of learning outcomes was also informed by technological developments and industry needs. The following sentiments from some respondents illustrate this stance:

*The objectives of the module and, in some cases, technological developments (R2).*

*Program objectives and synopsis informed by the demands of industry needs (R7).*

*Synopsis and industry needs (R6).*

Technological developments can enhance learning outcomes by facilitating innovative teaching methods. For example, online platforms and interactive tools can support collaborative learning and provide immediate feedback. Programs informed by current industry need to ensure that graduates possess the skills and knowledge required in the workforce. Regular consultations with industry stakeholders can help keep the curriculum up to date. This alignment not only enriches the educational experience but also prepares students to meet the challenges of their future careers effectively.

From the above sentiments, it is evident that there are diverse approaches educators can utilize to craft learning outcomes. This finding is consistent with Biggs (2003), who argues that learning outcomes should be student-centered, observable, and measurable. By considering these elements, educators can create learning outcomes that are not only academically rigorous but also relevant and applicable to students' future careers and societal needs. However, there is a need for a standardized approach to crafting learning outcomes for the institution.

The crafting of learning outcomes by academics is riddled with several challenges. Material resources are vital in constructing an effective learning environment where outcomes are clearly defined and supported. By ensuring that resources align with learning objectives, educators can create a more engaging, inclusive, and effective educational experience for all students. One theme emerging from the respondents is the limited availability of resource materials to support the crafting of learning outcomes. The following sentiments illustrate this point of view:

*Scarcity or inadequacy of teaching aids, including laboratory facilities, equipment, and consumables; inadequacy of relevant field and industrial visits (R4).*

*Lack of resources to fulfill the learning outcomes (R6).*

*Insufficient teaching and learning resources to support the attainment of the learning outcomes (R7).*

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The fulfillment of learning outcomes requires adequate material resources. As such, inadequate resource availability may constrain the crafting of learning outcomes. The following sentiments from some respondents illustrate this scenario:

From the above sentiments, one can deduce that limited material resources within institutions may be a serious hindrance to the creation of meaningful and relevant learning outcomes. This finding is consistent with (Abejuela et al., 2022; Tobiason, 2024), who notes that implementing constructive alignment often requires additional resources that may not be readily available. Material resources are critical ingredients for crafting relevant learning outcomes. Educators face several challenges that can significantly impact their effectiveness in this area. For instance, insufficient teaching aids, such as laboratory facilities and equipment, limit the ability to provide hands-on learning experiences. This inadequacy can lead to a disconnect between theory and practice, making it difficult for students to grasp complex concepts.

Time is a fundamental element in the successful alignment of educational components. By carefully considering and managing time, educators can create a more effective and supportive learning environment that enhances student achievement and engagement. Another theme associated with challenges in crafting learning outcomes projected by the interviewees is the limited time available to cover the module. The following sentiments illustrate this standpoint:

*Meeting course specifications in the synopsis and the time to cover all these means I should trim learning outcomes (R8).*

*Time constraints—well-thought-out outcomes take considerable time and effort (R10).*

From the above sentiments, it is plausible to deduce that the effective construction of learning outcomes is hindered by the time allocated for learning and teaching the module. This finding is consistent with (Biggs, 2003; Remneland Wikhamn, 2017), who projected that designing a curriculum that aligns all three components (learning outcomes, activities, and assessments) can be complex and time-consuming. When faced with time constraints, educators may feel compelled to simplify or reduce the number of learning outcomes, potentially resulting in a less comprehensive understanding of the subject matter and leaving out critical concepts essential for student development.

The implications of time constraints on the constructive alignment of learning outcomes highlight the need for thoughtful planning and prioritization. By focusing on essential learning outcomes and integrating assessments, educators can ensure that students receive a meaningful and aligned educational experience, despite the challenges posed by limited time.

### 3.2 Learning experiences

Table 2 below shows the distribution of the articulation levels for the learning experiences as espoused by the analyzed module outlines.

**Table 2**

*The distribution of the articulation levels for the learning experiences*

	<b>Learning and teaching activities</b>	<b>Degree of articulation</b>			
1	Diverse active learning/teaching strategies	5 (17.9%)	10 (35.7%)	9 (32.1%)	4 (14.3%)
2	Practical activities	9 (32.1%)	7 (25.0%)	8 (28.6%)	4 (14.3%)

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3	Industrial related learning	15 (53.6%)	5 (17.9%)	4 (14.3%)	4 (14.3%)
4	Technological support	12 (42.9%)	5 (17.9%)	6 (21.4%)	4(14.3%)
5	Material resources	12 (42.9%)	5 (17.9%)	6 (21.4%)	5 (17.9%)
6	Collaborating teaching	20 (71.4%)	0	6 (21.4)	2 (7.1%)
	total	73 (43.7%)	32 (19.2)	39 (23.3%)	23 (13.8%)

Based on the information provided in Table 2 above, one can make the following deductions about the learning experiences:

### **3.2.1. Diverse active learning/teaching strategies**

The majority of the learning and teaching activities (35.7%) have a moderate degree of articulation (2). A significant percentage (32.1%) have a high degree of articulation (3). Smaller percentages have a low (17.9%) or very high (14.3%) degree of articulation (1 or 4). Diverse active learning/teaching strategies are not being due attention. Incorporating more diverse active learning and teaching strategies is vital for fostering engagement, enhancing understanding, and developing critical skills in students. By embracing a variety of approaches, educators can create inclusive and dynamic learning environments that prepare students for success in a diverse and complex world (Bhuttah et al., 2024).

### **3.2.2 Practical activities**

The learning and teaching activities are more evenly distributed across the different degrees of articulation. The largest percentage (32.1%) have a low degree of articulation (1). Smaller but similar percentages have moderate (25.0%), high (28.6%), or very high (14.3%) degrees of articulation (2, 3, or 4). Practical activities are fairly distributed in the learning programs. Incorporation of practical activities into learning content is essential for enhancing understanding, developing skills, and increasing student engagement. By providing hands-on experiences, educators can create dynamic learning environments that prepare students for success in both academic and professional settings.

### **3.2.3 Industrial-related learning**

The majority of the learning and teaching activities (53.6%) have a low degree of articulation (1). The remaining percentages are evenly distributed across moderate (17.9%), high (14.3%), and very high (14.3%) degrees of articulation (2, 3, or 4). Industrial-related learning experiences are not well articulated in the learning outcomes. Incorporating more industry-related learning experiences into educational programs is essential for developing practical skills, enhancing career readiness, and fostering professional growth. By bridging the gap between education and the workforce, these experiences prepare students for successful careers in their chosen fields.

### **3.2.4 Technological support**

The largest percentage (42.9%) of learning and teaching activities have a low degree of articulation (1). The remaining activities are more evenly distributed across moderate (17.9%), high (21.4%), and very high (14.3%) degrees of articulation (2, 3, or 4). Technological support is not well articulated in the learning outcomes. Technological support in learning experiences is vital for improving access, engagement, collaboration, and flexibility. By leveraging technology effectively, educators can create dynamic and inclusive learning environments that prepare students for success in a rapidly changing world.

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### **3.2.5 Material resources**

Similar to the Technological support category, the largest percentage (42.9%) of learning and teaching activities have a low degree of articulation (1). The remaining activities are more evenly distributed across moderate (17.9%), high (21.4%), and very high (17.9%) degrees of articulation (2, 3, or 4). Learning materials are crucial in enhancing understanding, engagement, and retention in educational activities. By providing diverse, structured, and interactive resources, educators can create effective learning environments that support student success and foster a love of learning.

### **3.2.6 Collaborating teaching**

The majority of the learning and teaching activities (71.4%) have a low degree of articulation (1). A smaller percentage (21.4%) have a high degree of articulation (3). Only 7.1% have a very high degree of articulation (4). Collaborative teaching enriches learning activities by enhancing engagement, improving outcomes, and fostering essential skills. By working together, educators create a supportive and dynamic learning environment that benefits both students and teachers, ultimately leading to a more effective educational experience.

Overall, the data suggests that the learning and teaching activities are more evenly distributed across the different degrees of articulation, with a larger percentage having a low or moderate degree of articulation (1 or 2) compared to a high or very high degree of articulation (3 or 4). The exceptions are the diverse active learning/teaching strategies and Practical activities categories, which show a more balanced distribution across the different degrees of articulation. The academics should focus on refining the articulation of learning activities, especially those with lower degrees of specificity. This refinement can help ensure that all activities are purposefully designed to achieve specific outcomes.

Constructive alignment of learning experiences may also be informed by technological developments, new pathways, and global trends within the subject discipline. The following sentiments from some respondents illustrate the impact of these global perspectives in shaping relevant learning experiences:

*Technological developments and new pathways in the area of study (R2).*

*The desire to relate theory to appropriate practical exposure and/or experience to enhance skills development (R4).*

*Real-world relevance of content (R6).*

From the deliberations above, one can deduce that technological advancements, new pathways, and emerging global practices are critical in informing the crafting of effective and meaningful learning experiences. Utilizing new technologies, such as online platforms, simulations, and interactive software, allows for diverse learning activities that align with desired outcomes. These tools can enhance engagement and provide students with practical experiences relevant to their field of study. As new pathways in a discipline evolve, constructive alignment ensures that learning outcomes reflect these changes. This flexibility allows programs to remain current and responsive to industry trends, preparing students for future challenges. Aligning learning outcomes with real-world applications not only increases student engagement but also prepares them for the complexities of their future careers. This relevance helps students understand the importance of their studies within a broader societal context.

Another theme informing the construction of learning experiences that emerged from the interviews was the need to focus on students' needs. Addressing students' needs is crucial for keeping them motivated, engaged, and focused on acquiring the requisite competencies. The following sentiments from some respondents illustrate this position:

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*Diverse student learner needs and expectations, large class sizes that make it difficult to profile students appropriately, and a limited range of assessment and evaluation methods due to time constraints (R9).*

*Students' levels of conceptual understanding and the availability of resources (e.g., lack of whiteboards, inadequate projectors) limit my formulation of learning outcomes. I cannot plan to cover much when I lack resources (R8).*

*Student-centeredness and the incorporation of opportunities for collaborative learning and teaching (R1).*

One can deduce that educators can create more effective and meaningful learning experiences that meet the needs of their students while also staying relevant to advancements in their field. This finding aligns with Deci and Ryan (2000), who argue that learning experiences that are meaningful, relevant, and tailored to individual interests can foster motivation and engagement, leading to more effective learning outcomes. However, in large classes, it can be challenging to identify and address each student's unique needs. Educators may struggle to create tailored learning experiences, leading to disengagement or frustration among students who feel their specific needs are not being met. Limited opportunities to profile students due to class size can hinder understanding of their learning styles and needs. Teaching strategies may lack personalization, which is crucial for effective learning, resulting in a one-size-fits-all approach that does not accommodate different learning paces. Human capital and material resources are critical ingredients for supporting and aligning learning experiences with learning outcomes. One major theme emerging from the interviewees was the limited support available to educators in the form of material resources. The following sentiments from some respondents illustrate this point:

*Some activities are constrained by resource availability, preventing their use in modules, despite their potential to enhance the learning process (R2).*

*Lack of necessary resources and the attitude that some students have toward learning; they just want to learn for exams (R3).*

From the array of responses, one can deduce that educators face diverse challenges, including time constraints, limited resources, lack of training, and insufficient support in curriculum design when implementing effective learning activities. This finding is consistent with Ruge et al (2019), who argue that implementing constructive alignment often requires additional resources (time, training, materials) that may not be readily available. For instance, limited resources can restrict the use of certain activities or methodologies that could otherwise enhance the learning experience, resulting in a less engaging and effective educational environment. Addressing these challenges thoughtfully can lead to the development of more effective learning experiences. By being adaptive and resourceful, educators can create engaging, inclusive, and meaningful educational opportunities that meet the diverse needs of their students.

### 3.3 Assessment techniques

Table 3 below depicts the levels of articulation and distribution of assessment techniques as depicted by the analyzed module outlines.

**Table 3**

*The levels of articulation and distribution of assessment techniques as depicted by the analyzed module outlines.*

Assessment	Degree of Articulation			
	3	2	19	4
assignment	(10.7%)	(7.1%)	(67.9)	(14.3%)
project	17 (60.7%)	1 (3.6%)	6 (21.4%)	4 (14.3%)
Oral presentations	11 (39.3%)	1 (3, 6%)	3 (10.7%)	4 (14.3%)
Industrial learning/Field experiments	17	4	3	4

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	(60.7%)	(14.3%)	(10.7%)	(14.3%)
Portfolio/design & make projects	24 (85.7%)	0	0	4 (14.3%)
In class tests	11 (39.3%)	1 (3.6%)	12 (42.9%)	4 (14.3%)
Practical work activities/laboratory work	14 (50.0%)	2 (7.1%)	6 (21.4%)	6 (21.4%)
Innovation product/process commercialization	23 (82.1%)	1 (3.6%)	3 (10.7%)	1 (3.6%)
Written examination	5 (17.9%)	0	19 (67.9%)	4 (14.3%)
Time management	23 (82.1%)	0	1 (3.6%)	4 (14.3%)
Assessment feedback	24 (85.7%)	0	3 (10.7%)	1 (3,6)
<b>Total</b>	<b>172</b> (57.5%)	<b>12</b> (4.0%)	<b>75</b> (25.1%)	<b>40</b> (13.4%)

Based on the information provided in Table 3 above, one can make the following deductions about the assessment techniques:

### 3.3.1 Assignment

The majority of the assessment activities (67.9%) have a high degree of articulation (3). Smaller percentages have a low (10.7%), moderate (7.1%), or very high (14.3%) degree of articulation (1, 2, or 4). Assignments are a vital component of assessment, providing a means to measure understanding, encourage active learning, and develop essential skills. By integrating assignments into the educational process, educators can enhance student engagement, provide meaningful feedback, and prepare learners for future challenges.

### 3.3.2 Project

The majority of the assessment activities (60.7%) have a low degree of articulation (1). A smaller percentage (21.4%) have a high degree of articulation (3). The remaining activities have a moderate (3.6%) or very high (14.3%) degree of articulation (2 or 4). Projects are a vital component of assessment, providing opportunities for real-world application, critical thinking, and collaboration. By increasing projects in the assessment process, educators can foster deeper learning, skill development, and engagement, ultimately preparing students for success in their academic and professional futures.

### 3.3.3 Oral presentations

The largest percentage (39.3%) of assessment activities have a low degree of articulation (1). Smaller percentages have a high (10.7%) or very high (14.3%) degree of articulation (3 or 4). Only 3.6% have a moderate degree of articulation (2). Oral presentations are a vital component of assessment, providing opportunities for students to develop communication skills, critical thinking, and confidence. By increasing presentations in the assessment process, educators can create a dynamic and engaging learning environment that prepares students for future challenges in both academic and professional settings.

### 3.3.4 Industrial learning/Field experiments

The majority of the assessment activities (60.7%) have a low degree of articulation (1). Smaller percentages have a moderate (14.3%), high (10.7%), or very high (14.3%) degree of articulation (2, 3, or 4). Industrial learning and field experiments are essential for providing practical experience, developing skills, and enhancing understanding of industry practices. By incorporating more of these elements into assessment at high levels of

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articulation, educators can create impactful learning experiences that prepare students for successful careers and lifelong learning

### **3.3.5 Portfolio/design and make projects**

The vast majority of the assessment activities (85.7%) have a low degree of articulation (1). The remaining 14.3% have a very high degree of articulation (4). Portfolios and design/make projects are essential in assessment as they provide a holistic view of student abilities, promote reflection, and foster critical thinking. By integrating these elements into the majority of the learning process, educators can create meaningful assessments that prepare students for successful futures.

### **3.3.6 In-class tests**

The assessment activities are more evenly distributed, with the largest percentage (42.9%) having a high degree of articulation (3). Smaller percentages have a low (39.3%), moderate (3.6%), or very high (14.3%) degree of articulation (1, 2, or 4). In-class tests are fairly represented in the assessment regime of the learning activities. In-class tests are integral to constructive alignment as they ensure that assessment methods are aligned with learning objectives, provide immediate feedback, and promote active learning. By integrating in-class tests into the educational process, educators can create a more effective and cohesive learning environment that supports student success.

### **3.3.7 Practical work activities/laboratory work**

Half of the assessment activities (50.0%) have a low degree of articulation (1). Smaller percentages have a moderate (7.1%), high (21.4%), or very high (21.4%) degree of articulation (2, 3, or 4). Assessment of practical work activities needs more attention to enhance its effectiveness. Practical work activities are essential for constructive alignment as they connect learning objectives with hands-on experiences, promote active engagement, and develop critical skills. By incorporating more practical activities into the curriculum, educators can create a more effective and cohesive learning environment that supports student success and prepares them for future challenges.

### **3.3.8 Innovation product/process commercialization**

The majority of the assessment activities (82.1%) have a low degree of articulation (1). Smaller percentages have a high (10.7%) or very low (3.6%) degree of articulation (3 or 4). Innovation product commercialization assessment is weak in the programs. Assessing innovation in product/process commercialization is crucial for constructive alignment as it connects learning objectives to practical applications, develops critical skills, and prepares students for future challenges. By integrating these assessments into the curriculum, educators can create a meaningful learning experience that promotes entrepreneurship and innovation.

### **3.3.9 Written examination**

The assessment activities are evenly split between a high (67.9%) and very high (14.3%) degree of articulation (3 or 4). Only 17.9% have a low degree of articulation (1). Written examinations are well catered for in the assessment regime. Written examinations are integral to constructive alignment as they ensure that assessment methods align with learning objectives, provide feedback, and promote engagement. By thoughtfully designing written exams, educators can create meaningful assessments that enhance student learning and prepare them for future academic and professional challenges.

### **3.3.10 Time management**



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The majority of the assessment activities (82.1%) have a low degree of articulation (1). The remaining 14.3% have a very high degree of articulation (4). Time management is lowly articulated in the assessment regime. Time management in assessment is essential for constructive alignment as it structures learning outcomes, enhances preparation, and reduces stress. By integrating effective time management strategies into assessment design, educators can create a cohesive and supportive learning environment that fosters student success.

### **3.3.11 Assessment feedback**

The majority of the assessment activities (85.7%) have a low degree of articulation (1). Smaller percentages have a high (10.7%) or very low (3.6%) degree of articulation (3 or 4). Assessment feedback is not being afforded due recognition in the current assessment regime in the learning programs. Assessment feedback is vital in constructive alignment as it connects learning outcomes with student performance, promotes reflective practice, and informs instructional strategies. By providing meaningful and timely feedback, educators can create a supportive learning environment that fosters student engagement, growth, and success.

Overall, the data suggests that the assessment techniques are predominantly focused on activities with a low or high degree of articulation (1 or 3), with fewer activities having a moderate or very high degree of articulation (2 or 4). The exceptions are the written examination and Time management categories, which show a more even distribution across the different degrees of articulation. By incorporating diverse assessment methods, aligning them with learning objectives, and providing meaningful feedback, educators can create a comprehensive assessment framework that promotes student engagement, growth, and success.

Constructive alignment in assessment involves ensuring that assessment methods accurately reflect the intended learning outcomes. Educators consider various factors when developing assessment methods that are consistent with these learning outcomes. One theme that emerged from the discussions was the emphasis on the learning outcomes. The following responses reflect a clear focus on the learning outcomes as perceived by the respondents:

*Consistently measure what is intended to be measured, regardless of when and how it has been delivered (R1).*

*Outcomes to be achieved, resources required, and available time (R7).*

*Fair and free from bias—clear instructions, not culturally biased (R5).*

From these discussions, it is evident that assessments must consistently measure the intended outcomes, irrespective of timing or delivery method. This finding aligns with Biggs and Tang (2011), who assert that the process of designing and implementing assessments encourages schools to critically examine their teaching practices and alignment with learning outcomes. Educators need to standardize assessment practices to ensure reliability and validity, allowing for fair comparisons of student performance across different contexts.

A critical theme influencing effective assessment for constructive alignment is class size. When teaching large classes with limited resources, it is crucial to choose assessment tools that are both effective and manageable. The following sentiments from some respondents articulate this position:

*The size of the class; for large class sizes, online quizzes have proven to be more practical than written assignments (R2).*

*The number of students (large class sizes mean I have to create simpler assessment tools for easier marking) and fewer individual written assignments (R8).*

*Class size, available time, and available learning materials (R5).*

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From these sentiments, one can deduce that large class sizes complicate the assessment process, making traditional written assignments less feasible. In larger classes, online quizzes can be more effective than written assignments, as they facilitate efficient grading and accommodate a larger number of students. However, they may limit the depth of assessment compared to written assignments. Educators must balance the need for efficiency with the desire for comprehensive evaluation. Planning assessments that are scalable and resource-efficient will support constructive alignment while maintaining educational integrity.

Resource availability is essential for planning and implementing effective, constructively aligned assessment techniques. The following sentiments from some interviewees illustrate this stance:

*Available time, required materials, number of students, and the venue (R3).*

*Time constraints, availability of lab equipment, and necessary materials for practical tests (R4).*

*Lack of resources and inappropriate venue for effective assessments (R3).*

Limited time may hinder the depth of understanding achievable in assessments, leading to a focus on surface learning rather than deep engagement with the material. Assessments may need to be streamlined or simplified to fit the available time, potentially compromising the richness of the assessment experience.

The educators face several challenges in planning constructively aligned assessment packages. One theme emerging from the interviews is that educators may need professional development to effectively design reliable assessment tasks. The following sentiments illustrate this position:

*Students are now using artificial intelligence in their work; from written assignments to group presentations, it becomes very difficult for me as the lecturer to ascertain that the student has learned the content as required by the module (R2).*

*Educators may need to adopt alternative assessment strategies, such as oral exams or in-class activities, to gauge student understanding more accurately (R6).*

*A limited range of assessment options due to large class sizes and limited staff competencies, is further complicated by very limited time available under modularization (R5).*

From these sentiments, it can be inferred that educators need to be capacitated in developing effective assessment regimes. Investing in the professional development of lecturers to enhance their understanding and skills in utilizing alternative assessment techniques could be beneficial. This may involve training programs, workshops, or collaborative efforts to share best practices. Balancing the use of AI with effective assessment can be daunting, but by diversifying assessment methods and leveraging technology, educators can gain a clearer picture of student understanding while accommodating the challenges posed by class size and time limitations.

Resources are a crucial component of planning for an effective, constructively aligned assessment regime. A significant theme from the interview respondents was that limited resources hinder effective and reliable assessment. The following sentiments illustrate this position:

*Lack of resources and inappropriate venue for effective assessments (R3).*

*Unavailability of equipment and related materials necessary for practical assessments (R4).*

From these sentiments, one can deduce that insufficient resources can hinder the ability to design assessments that align with intended learning outcomes. This finding is consistent with Abejuela et al., (2022), and Tobiason, (2024) who project that constructive alignment often requires additional resources which may not be readily available. This misalignment may lead to inadequate evaluation of student understanding and skills.

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Universities are centers of lifelong learning and continuous improvement. A key pillar of the university community is the commitment to capacitating its staff. This collaboration can lead to iterative improvements in course design and assessment strategies. One main theme emerging from the interviews was the idea that educators need to be trained in the constructive alignment of learning outcomes, learning activities, and assessment. The following sentiments from some interviewees illustrate this stance:

*Experts in curriculum development should continually offer solutions to lecturers so they can improve their skills in content development and assessment (R2).*

*There is a need to collaborate with other departments and share best practices in module design (R6).*

From these sentiments, one can deduce that curriculum development experts should provide continuous training and resources for educators. This enhances their skills in both content development and assessment, ensuring they can create engaging and effective learning experiences. Offering tailored professional development workshops can address specific challenges lecturers face, fostering a more nuanced understanding of curriculum design. Encouraging collaboration among lecturers and curriculum experts can create a supportive community focused on best practices in teaching and assessment.

A conducive learning space is necessary for supporting curriculum design and development. The learning environment needs to be well-supported by adequate resources. The following sentiments from some interview respondents illustrate this stance:

*The institution should take the provision of learning materials and space seriously to create a fertile ground for learning and teaching (R3).*

*Increased and improved availability of teaching and learning aids, labs, and opportunities for industrial visits (R4).*

*Industrial practical visits, intern assessments, and equipping laboratories and lecture rooms are essential for motivating both students and staff (R9).*

From these sentiments, one can deduce that learning spaces and material resources are limited within the institution. This finding aligns with Remneland Wikhamn (2017), who posits that implementing constructive alignment often requires additional resources (time, training, materials) that may not be readily available. Ensuring that learning materials and spaces are adequately provided is vital for effective constructive alignment in module design. By creating conducive learning environments, institutions can foster effective teaching and learning, ultimately improving student outcomes.

#### **4. DISCUSSION**

The document analysis revealed that the majority of the intended learning outcomes were well-aligned with the assessment methods used. However, some programs lacked clear and measurable learning outcomes, making it difficult to ensure effective alignment.

The educators' interviews indicated that, in general, educators perceived a good level of alignment between the intended learning outcomes and the learning activities provided. However, some educators reported a misalignment between what they were expected to teach and the actual teaching and learning activities.

Faculty members suggested the need for professional development opportunities focused on constructive alignment principles and curriculum design. They also highlighted the importance of interdepartmental collaboration and sharing of best practices to enhance the implementation of constructive alignment across the university.

#### **5. CONCLUSIONS**

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The learning outcomes are predominantly focused on the lower levels of articulation. This misalignment suggests that more complex cognitive skills, such as applying, analyzing, or evaluating, are not adequately prioritized.

The learning experiences are evenly distributed across the range of levels of articulation with the majority in the lower levels of articulation. While it's beneficial that learning experiences are varied, if the majority still focus on lower levels, there's a risk of not fully engaging students in higher-order thinking. The assessment regime is predominantly targeting low levels of articulation. An assessment strategy that predominantly evaluates lower levels of articulation fails to reflect the learning outcomes and experiences.

The findings of this study suggest that the public university in Zimbabwe has made progress in aligning learning outcomes, learning experiences, and assessment techniques, but there are still areas for improvement. To enhance the implementation of constructive alignment, the university should:

1. Provide comprehensive training and support for faculty in curriculum design and the principles of constructive alignment.
2. Develop clear guidelines and templates for writing learning outcomes, designing learning activities, and selecting appropriate assessment methods.
3. Foster a culture of collaboration and sharing of best practices across academic departments to facilitate the consistent implementation of constructive alignment.
4. Allocate adequate resources and time for faculty to engage in the process of curriculum design and alignment.
5. Regularly review and update the curriculum to ensure the continued relevance and effectiveness of the teaching and learning process.

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