

## Instructional Design in Teaching and Learning

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Received: May 15, 2026

Accepted: July 28, 2026

Online Published: August 6, 2026

doi:10.11114/jets.v14i4.8832

URL: <https://doi.org/10.11114/jets.v14i4.8832>

### Abstract

Higher education is experiencing digital changes, one of which involves the integration of online learning with instructional design and critical pedagogy. This study investigated the influence of instructional design frameworks – ADDIE and SAM – coupled with Freirean critical pedagogy on the online learning environment at the University of Botswana (UB). Methodologically, A qualitative comparative case study design was employed. Data was collected through open-ended questions, focus groups, and document reviews and analyzed thematically using the principles of inclusion, dialogue, and empowerment. The study found that while structured frameworks promoted clarity and alignment, they lacked sufficient responsiveness to the contextual realities of the University of Botswana. Consequently, the study developed the Contextualized and Responsive Instructional Design (CRID) Framework, a novel contextualized adaptation of critical pedagogy-based instructional design that places relevance, learner agency, and digital equity at the centre of Botswana's online learning environment.

**Keywords:** instructional design, higher education, digital equity, critical pedagogy, online learning

### 1. Introduction

#### Context and Background

Incorporating principles of instructional design in higher education's digital transformation has made it imperative to reshape teaching and learning to address evolving design needs. Moving learning into digital environments presents both challenges and opportunities for ensuring pedagogically sound online learning (Dwamena, 2026; Mukherjee, 2026). Instructional design has an even bigger impact on the structuring of learning experiences. The learning experience mainly involves the integration of technology and learner-centered teaching, along with evidence-based teaching methodologies (Jackson et al., 2026; Olvido et al., 2026). However, at the University of Botswana, as well as in most higher education institutions, the potential of instructional design has either been ignored or the design is inconsistent in its application (Akinbile et al., 2026; Moloi et al., 2026). This continues to negatively affect student engagement course quality and learning outcomes in digital learning environments. Also, in addition to the structured format, critical pedagogy, as proposed by Freire (2020), transforms learning by promoting dialogue, inclusion, and learner empowerment as mechanisms for advancing social justice. The inclusion of Critical Pedagogy aims to create learning environments that promote dialogue, active participation and critical reflection among learners from diverse social contexts. Integrating structured instructional design with Critical Pedagogy creates the dual-lens conceptual foundation adopted in this study to evaluate how online learning at the University of Botswana reflects these interconnected principles.

A major component of instructional design is the systematic creation of educational materials and learning experiences that enhance learning and achieve instructional goals (Gawlik-Kobylińska, 2026; Ruyadi et al., 2026). Many lecturers are unable to design learning materials that are both engaging and creative. This is often due to an absence of training, knowledge, and institutional assistance, as well as designing instructional materials that ignore design principles (Cheah & Kim, 2026). This gap limits the ability of online learning to diverse learner needs and ultimately affects student academic achievements. Online learning is particularly importance in Botswana because it expands educational access, helps bridge the digital divide, and contributes to national socio-economic development (Magetse & Khoza, 2026; Sameta et al., 2026). Even with the importance of instructional design, particularly of creating online learning that is inclusive and usable, significant implementation gaps remain.

Many studies have shown that instructional design processes have been embraced globally to enhance online learning. Studies consistently show that structured learning design helps to increase engagement and positive learning outcomes due

to the ease of retention of information (Aluko et al., 2026; Négyesi et al., 2026). Additionally, critical pedagogy focuses on empowering students, promoting social justice, and facilitating transformative learning. Critical pedagogy has made its way into instructional design models to provide empowering and participatory learning experiences (Goto, 2026; Halabi, 2026). Nonetheless, despite these advancements, research on the perception and implementation of instructional design in higher education institutions in Botswana is minimal. Most research focuses on developed countries, leaving limited evidence on how instructional design should be contextualized within Botswana and similar developing country contexts. This research is designed to fill the gaps by investigating instructional design theories and their impact on online education at the Institution of Botswana, with particular attention to the perspective of lecturers and students.

### Significance of the Study

For stakeholders in higher education, including planners and instructional designers, this study provides an understanding of how to incorporate instructional design into online teaching in a more equitable and effective manner. This is invaluable to the ongoing practice of instructional design. This research, by advocating for a fair and effective digital learning environment, will help Botswana and other countries that are attempting to improve their educational systems by using technology to transform and innovate practices.

## 2. Literature review

Many theories of instructional design come from the visions of the ADDIE (analysis, design, development, implementation, evaluation) model Branson et al. (1975) and the SAM (successive approximation) model of Allen (2024) because they play important roles in technology application in online learning. Both models and similar instructional design frameworks advocate cyclic processes for designing, developing and delivering educational resources that engage learners. Both models are cited widely to assist teachers in the development of effective learning environments. The models are focused primarily on learning design in an educational or workplace context. When considering the models' application in the higher education sector, designing online courses, many studies emphasize the need for instructional design models (Ahoovie et al., 2026; Rokhmah et al., 2026). Some of the research being conducted in Botswana shows that even though a large number of institutions in the region are currently in the process of adopting online learning, few of the institutions adopt formal instructional design frameworks (Magetse & Khoza, 2026; Sameta et al., 2026). It is vital to understand the frameworks that shape online education to assess the shortcomings and obstacles that impair the effectiveness of online learning in the region. The growing number of studies also looks at the opinions of instructors and students about the use of instructional design in online learning. The studies conducted by Al-Jarf (2026) and du Preez and Jacobs (2026) show that the instructors and the instructional designers need to work closely to develop learning platforms for online learning that are pedagogically sound and address the learning needs of the students.

In Botswana, a lack of training and support for faculty in instructional design resulted in various teaching styles, creating a range of online learning environments for students (Mabalane, 2025; Nyamutswa et al., 2026). A disconnect exists in instructional design potential and the level of application in university online learning environments. The need exists to analyze these perceptions in order to provide better online education for the stakeholders at the University of Botswana. Two authors, Wariyo et al. (2026) and Mundia (2026) mention that most of the research on education and training design, ADDIE and others, exists outside of Africa, and most of the literature supports the implementation of such theories. However, most of the remaining literature lacks consideration of localized critical pedagogy. In this paper, we attempt to fill the gap concerning the integration of structured pedagogy and socio-cultural responsiveness in Botswana's online education. There is a large research gap for the design of instructional frameworks that are contextual to different digital learning environments.

The move to online education in Botswana, and in sub-Saharan Africa, accentuates the need for regionally contextualized frameworks and the consideration of region-specific issues, such as the lack of infrastructure, poor access to technology, and varied student learning preferences (Cruz García et al., 2026; Manu et al., 2026). According to Novitasari (2026), the building of a framework for instructional design should be an iterative process and should involve both teachers and learners as they provide updates to enhance the focus and practicality of the framework. Developing such a framework for the University of Botswana will involve the faculty and specialists to balance pedagogical aims and the level of technology involved. This will strengthen instructional design and improve digital learning environments. While the importance of instructional design for online learning has gained widespread recognition, research suggests that there is limited implementation of instructional design practices in Botswana.

Although frameworks such as ADDIE and SAM have been used in other parts of the world, their use in the African context requires adaptive research that accounts for the specific socio-economic and technological challenges that African institutions experience (Matambo et al., 2026; Njie-Carr et al., 2026). From the literature, there has been a call for more research that explores the adaptive use and improvement of these frameworks to address the needs of online learners. The study framed the principles of critical pedagogy within the applied frameworks of ADDIE and SAM to design online

courses and learning resources at the University of Botswana. From this, a Contextualized and Responsive Instructional Design (CRID) Framework was developed that emphasizes and upholds the rights of students to speak and be heard, and equity in society. The framework is adaptable for different contexts in the Sub-Saharan region. The research calls for a focus on developing instructional design frameworks that are flexible, scalable, and most importantly, contextually and culturally appropriate to the educational setting of students and the instructional practices of teachers in Botswana (Bali, 2026; Milleer, 2026). Within this context, these priorities should guide the continued development of digital learning at the University of Botswana and across region.

### **Framework**

This study examines the contextualized instructional design framework of the University of Botswana's learning environments. The framework integrates critical pedagogy with the intention to support student voice and social justice (Freire, 2020; Shih, 2018). Critical Constructivism posits a learning theory that promotes meaningful participation through social interaction (Taylor, 1998). Given the challenges of low bandwidth and device limitations, the framework incorporates technological adaptability to ensure that online learning remains accessible and responsive to contextual realities. This means course materials are designed for multiple devices and low-bandwidth situations, eliminating barriers for students' learning access. The integration of critical pedagogy into the instructional design framework of the University of Botswana means the proper context of Paulo Freire's educational theory is enacted. This theory moves away from passive educational engagement to one that supports an environment of deep thought through critical reasoning, and social as well as participatory dialogue (Freire, 2020).

Dialogical learning was achieved in our design through the stimulation of free dialogue in focus groups to help students and lecturers critically reflect on course content. The design focuses on the techniques that give the learner the freedom to explore, critically assess and engage in discourse that promotes the level of understanding (Palson, 2026; Wu et al., 2026). Students integrated theory with practice by applying the local environmental issues in Botswana to a sustainable development lesson. Attributes that sought to improve critical consciousness (i.e., reflective essays) were used to help students situate themselves in the world and consider their social location vis-a-vis the social structures that inhabit the society, to elevate their social awareness and ultimately social transformation, praxis; to what it should be in society.

### **Purpose of the Study**

The main purpose of this study is to explore the influence of instructional design models specifically ADDIE and SAM, on online learning at the University of Botswana. To achieve this general objective, the following specific objectives are pursued: to establish how lecturers perceive or think about the design and development of digital learning; to establish whether students observe any difference in how a course is designed, developed and delivered after completion of instructional design process; to determine lecturers' views regarding their role as designers and developers, and that of students as co-developers. Additionally, this study includes students' viewpoints on e-learning reflecting on some elements that learners have control over such which media tools to use for reading artefacts, when or which tasks should be undertaken quickly. The study adopts critical pedagogical principles underpinning student voice, social justice and transformative learning more inclusively and equitably with instructional design model at the University of Botswana.

### **Research Questions**

1. How do instructional design frameworks guide online learning at the University of Botswana?
2. What are the views of lecturers and students on instructional design in online education?
3. How can an instructional design framework be developed to improve digital learning contexts?

### **Thesis Statement**

This paper contends that the application of new instructional design models synthesized with critical pedagogy would foster quality online learning at the University of Botswana. When design models are strongly aligned with student-centred pedagogical principles, distinctive elements of online learning can be made more inclusive, interactive and responsive to the needs of a diverse range of students. Nonetheless, for instructional design to realize this potential for digital education in Botswana, institutional challenges to its implementation such as inadequate training and support for faculty, and lack of readiness for change need to be overcome.

## **3. Methodology**

### **Research Paradigm**

This research is framed within an interpretivist paradigm, which highlights the need to understand online learning from the perspective of those involved (Alharahsheh & Pius, 2020; Mezirow, 1996). Based on critical pedagogic principles, such as inclusivity, empowerment and social justice, this approach provides a rich exploration of how instructional design occurs in online learning at University of Botswana.

### **Research Design: Comparative Case Study**

This study takes a qualitative comparative case study approach to examine instructional design in two mutually exclusive uncharacteristic online classrooms at the University of Botswana. This approach provides an insight on how instructional design frameworks work out within disciplines and course levels especially with the contextual issues regarding digital divide that cause barriers to technology access and digital literacy of people (Dahal & Kreps, 2026; Khan et al., 2026). By comparing instructional strategies, student engagement and accessibility, this study intends to inform practitioners about effective instructional designs for improved online learning experiences (Isaeva et al., 2025). The use of case study is most appropriate as it allows for detailed context-specific analysis related to the operational environment. Based on the collection of qualitative data through open ended questionnaires and focus group interview with faculty members and students, document reviews in terms of course materials, and sentiment analysis of student feedback information related to faculty practise, students perceptions on institutional supporting structures were used to outline a situational instructional design model suitable for specific context influenced by contextual challenges fuelled by the problem in Botswana's digital education system.

### **Sampling and Participants**

From the perspective of Instructional Design for Online Learning, a purposive sampling method was used to recruit participants with adequate knowledge and experience related to the study. The sample consisted of 15 students selected from two online classrooms, representing diverse learning experience and academic backgrounds and five lecturers with online teaching experience from different academic disciplines including STEM and Humanities. The lecturers were purposefully selected to provide diversity in teaching, learning, and instructional design experiences within online learning environment. The sample size was considered appropriate for generating rich and meaningful qualitative data while remaining manageable for in-depth analysis

### **Data Collection Methods**

The study involved the qualitative methods of open-ended questionnaires, focus group discussions, and document analyses. Open-ended questionnaires were presented to University of Botswana lecturers. Five of these lecturers answered questions on the challenges of instructional design, student engagement, and the integration of critical pedagogy within the framework of learning management. In addition, four focus groups, each consisting of five students, were conducted based on a stratified sample. This approach aimed at obtaining detailed information related to course design, accessibility, and interactivity. Subsequent analysis of course materials on the Moodle Learning Management System included instructional design, course outlines, multimedia resources, and the application of critical pedagogy. These methods helped describe the practices of instructional design in the design of online courses at the University of Botswana. This study employed qualitative methods, which included open-ended questionnaires, focus groups, and document analysis. Open-ended questionnaires were distributed to University of Botswana lecturers. Five respondents provided answers about challenges related to instructional design, engaging learners, and the importance of critical pedagogy. Four focus groups discussions were conducted, each comprising five students. Their perspectives on course design, accessibility, and interactivity were prioritized. Further, document analysis of course materials selected from Moodle-Learning Management System was done. These materials included multimedia resources and course outlines, which were used to assess alignment with instructional design frameworks such as the ADDIE model and critical pedagogy. These methods aimed to provide an in-depth understanding of instructional design practices and their impact on online learning at the University of Botswana.

### **Data Analysis Techniques**

The questionnaires and focus group transcripts were subjected to thematic analysis (with particular emphasis on Freire's concepts of empowerment and dialogue) to examine the relationship between Freirean critical pedagogy and the availability of digital resources (Freire, 2020). The framework of critical pedagogy guided the analysis of the course materials to identify and assess motivators of interactive learning and tools for formative assessment. The presence of interactive activities among course materials was analysed to determine the potential of the course materials to encourage critical thinking and empowerment.

Additionally, the analysis focused on the presence of social justice issues, the presence of positive language, and the presence of diverse case studies, in the course materials, as well as the ability of the course materials to encourage and promote the act of reflection and social engagement, by means of community service or reflective journals, as the case may be. The analysis focused on the presence of collaborative learning. The analysis aimed to determine the potential of the course materials to align the principles of pedagogy with the creation of a learning environment that is empowering and transformative for the learners. To ensure accuracy and reliability, the results from the open-ended questionnaires, focus group discussions, and document analysis were compared and validated. The six-stage thematic analysis developed by Braun and Clarke (2025), was used to analyse the data. Codes were developed from the data and Freirean empowerment, dialogue, and action were used as the conceptual framework. Inter-coder reliability was verified through

double coding 20% of the transcripts, which produced a Cohen's Kappa of 0.84, signifying strong agreement. Ethics clearance was completed with the University of Botswana Research Ethics Committee (Ref. No. UB/ETH/2025/04). Recordings of the lectures were part of the study's triangulated methodologies. To improve credibility, member checking lectures, Document analysis, and focus group participation were also included.

#### 4. Results

There are several emerging perspectives based on the adoption and challenges of instructional design in the University of Botswana's online learning environment. Particularly illuminating is the perspective of the lecturer (Lecture 1). Draws, as noted, both commend and critique in ADDIE and ASSURE, and highlight the value of surrounding factors. Also emphasized by Student 1 is the learner. The absence of the experiential learning component demonstrates, in most cases, the tendency of instructional models to adopt a so-called "universal" design. This section details the findings of the study concerning the application of instructional design frameworks for the online learning systems of the University of Botswana. It also evaluates the University's current digital learning systems. The findings lay the groundwork for the further integration of instructional design within the current online learning systems, while also considering the challenges of motivation and learner engagement. The findings respond to the three primary research questions.

##### 1. Influence of Instructional Design Frameworks (RQ1)

Theme 1.1: Foundational Structure and Guidance: Frameworks such as ADDIE and ASSURE provide a basis for online course creation.

Excerpt (Lecturer 2): *"While ADDIE assists in the course creation and the structuring and delivery of the course content, ASSURE uses multimedia and technology in the process of enhancing the learning."*

Theme 1.2: Emphasis on Multimedia Integration: Frameworks promote the use of multimedia to augment attraction and to address the variance in learning preferences.

Excerpt (Lecturer 3): *"ASSURE uses multimedia and technology in the process of enhancing learning."*

Theme 1.3: Alignment of Objectives and Assessments: Instructional design frameworks ensure that learning objectives and assessments are aligned, allowing for the effective measurement of student progress and the attainment of learning outcomes.2. Perceptions of Lecturers and Students (RQ2)

Excerpt (Student 2): *"The frameworks support the alignment of learning outcomes and assessments, if the students are to realize the goals of the course."*

Theme 2.1: Need for Contextualization and Adaptation: Lecturers and students alike criticize existing frameworks as inadequate due to their generalized nature.

Excerpt (Lecturer 4): *"They are just generalized and do not consider the needs of online learners. They may not apply to the context of our environment. Therefore, there are calls for frameworks that are contextualized and flexible."*

Theme 2.2: Desire for Enhanced Engagement and Interactivity: More innovative and interactive content that engages users beyond a standard lecture format is needed.

Theme 2.2: Delivery: Students want to see more integrated online learning tools that focus on interaction and collaboration. Examples of interactive tools include online discussion forums, group work, and peer review.

Excerpt (Student 3): *Delivery: "Frameworks focused on learner engagement enable online learning to feature interactive and collaborative elements like discussion forums, group projects, and peer evaluations."*

Theme 2.3: Technical Challenges as Barriers: Students view issues such as poor internet as a barrier to online learning.

Excerpt (Student 4): *"Technical issues like poor Internet."*

Theme 2.4: Support for Different Learning Styles: Some students are of the opinion that online courses provide inadequate support for learners of different learning styles, especially for those who are kinesthetic learners.

Excerpt (Student 5): *"Online learning in University of Botswana is formally based on the lectures method of teaching which disadvantages other types of learners"*

Theme 2.5: Positives on Flexibility and Accessibility: some respondents noted that online learning allows access to vast sources of information at anytime

Excerpt (Student 6): *"Yes online comes with a lot of vast information across globe in different forms e.g. pictures, videos, podcast and documents."*3. Recommendations for Improving Digital Learning Environments (RQ3)

Theme 3.1: Learner-Centered Design: Emphasize learner-centered approaches that involve students in the design process and cater to their individual needs.

*Excerpt (Lecturer 5): "Involving learners in designing online courses and learning materials, doing needs analysis to cater for different learning needs of students and using instructional design strategies that are more effective for online learning."*

Theme 3.2: Integration of Interactive and Multimedia Elements: Incorporate a variety of interactive elements, such as quizzes, simulations, and videos, to enhance engagement and cater to different learning styles.

*Excerpt (Lecturer 6): "Use of adaptive software to provide personalized learning, personalized learning environments such as forum discussions in Moodle, an extensive range of digital resources, educational videos, interactive digital resources, and simulations and presentations, and digital communication tools (make them interactive)."*

Theme 3.3: Active Learning Strategies: Implementing active learning strategies like discussion forums, group work, and peer reviews, along with a range of digital educational resources, promotes a more dynamic learning environment.

*Excerpt (Student 7): "Promote active learning strategies that require students to collaborate."*

Theme 3.4: Technology and Support: There is an urgent need to provide both students and lecturers with the required skills to use digital tools to improve the experience of online learning, as a considerable number of workshop participants have pointed out that the lack of initial and ongoing training, as well as technical support, is a barrier to the effective use of educational technology. Digital competency combined with readily available technical support is essential for the effective and improved practice of online learning.

*Excerpt (Lecturer 7): "Students require extensive training on effective use of digital platforms."*

There are people who cannot use some basic or essential functions on tools like Moodle or video conferencing, and that impacts the delivery and participation in online learning."

*Excerpt (Student 8): "Sometimes, we are asked to do assignments or participate in online discussions, but we are never taught how to navigate the online platform. Online lectures would be more productive and less tedious if we had some guidance."*

Theme 3.5: Needs Assessment: There is strong support for the execution of frequent and purposeful needs assessments, for both the development and refinement of online learning techniques on offer. The focus was on the contribution of students to the design and

organization of online learning courses to support the range of learning styles, challenges, and preferences.

*Excerpt (Lecturer 9): "First we have to understand the unique needs of our students. The needs analysis allows us to develop better learning materials and select more suitable tools that match their learning styles and contexts." Excerpt (Student 9): "Sometimes what is given does not fit our learning style or situation. If we are asked before online courses are created maybe they can be better designed for us."*

## 5. Discussion

The finding that ADDIE and ASSURE remain largely generic aligns with Braun and Clarke (2025), who caution that structured models may exhibit rigidity when applied across diverse educational contexts. However, the present study contrasts with the findings of Shahbodin et al. (2026) who reported improved learner engagement through instructional design models in the Malaysian context. The present study highlights how infrastructural inequities and linguistic diversity limit their effective implementation in Botswana. The CRID study, applying Freire (2020) dialogic approach posits co-construction of design over delivery of content as response to reoccurring critique regarding procedural structure versus empowerment and relevance here. A dynamic interplay between instructional designs, herein referred to as instructional scaffolding and the lived realities of online learning programs at the University emerged through the data. The data discussion was organized within a framework drawn from critical pedagogy which argues for inclusive, participatory educational practices. Li et al. (2026) indicated that while there can be contrasts between ideal principles underpinning instructional designs and practical world viewed through lived experiences, there also still exist extraordinary affordances often overlooked by educators even those engaging regularly with industrial design.

The research subjects accepted that the structural value of frameworks such as ADDIE and ASSURE in online learning and engagement aligns with view that systematic instructional design improves clarity and coherence (Kasim et al., 2026; Quandour & Dabaj, 2026). Nevertheless, lecturers and students equally related their concerns about the general application of these models, indicating a gap between theoretical frameworks and contextual realisms. As noted, these are models that often fail to interrogate the complex socio-cultural and technological situations of Botswana learners. This critique resonates with critical pedagogy's emphasis on context-based education that reflects learners' realities (Jay et al., 2026; Yilmaz, 2026).

Feedback reveals the failure of rigid instructional systems that ignore engagement to meet the needs of diverse learning

styles. Kinesthetics learners highlighted the challenges posed by contemporary systems that do not adequately support diverse modes of learning (Fitrianto, 2025; Sortwell et al., 2026). In critical pedagogy, this situation has been characterized as the education systems neglect the students' ways of knowing and being (Bacon et al., 2026; Karwadi et al., 2025). Simultaneously, students learn to fit in the instructional systems that value passive role taking. The demand for highly interactive and rich multimedia content shows a shift towards learner-centered practices. Such content demands are in agreement with the critical pedagogy principles for participatory and dialogic learning systems. In such systems, learners engage in content creation and knowledge generation (Qadir & Senturk, 2026; Sanches & D'Amico, 2026). Preference for discussion forums, group work, and collaborative systems is in support of the constructionist and socio-critical pedagogies that value knowledge generation as a socially shared phenomenon (Vygotsky & Cole, 1978).

The circulation of specific obstacles for digital learning, such as intermittent internet connection and lack of instructional content, demonstrated the existence of various forms of oppression and injustice in the digital learning environment. Such obstacles are in line with the digital divide and strengthen the assumed position of critical pedagogy that the presence of technology does not automatically lead to equitable pedagogy.

The 'online education' aspect focuses on the importance of infrastructure, digital literacy, and teaching structures that focus on the students' technological skills (Ahammad & Islam, 2026; Rahayu, 2026). It also shows the importance of conducting need analysis (Lecturer 9; Student 9) and the increasing awareness of the learners' agency. The greater focus of this analysis is on critical pedagogy that emphasizes the importance of learners' voice in the development of the curriculum and in the overall learning process (Essabari & Mhamed, 2025). The use of critical pedagogy principles during the online course design will lessen the one-size-fits-all design and move towards more robust and responsive education. The results of the research show the possibility of a design that integrates the structural design of critical pedagogy (Sanches & D'Amico, 2026). This design will focus on the co-creation of online courses, engagement, and the consideration of the socio-educational and cultural environment of the learners. This will also enhance the use of the ADDIE or ASSURE models in design to include dialogic, continuous feedback assessments, reflexive content creation, and adaptive designs that prioritize the learners' voices. While traditional models of instructional design offer a starting framework, their true design potential is only realized when viewed through a critical pedagogy lens (Karwadi et al., 2025; Wang & Yuan, 2025).

This study builds on existing findings to make a novel contribution to the Critical Pedagogy sphere. The Contextualized and Responsive Instructional Design (CRID) framework is proposed as a direct response to the challenges of pedagogy and technology that are encountered within the online learning environment created at the University of Botswana. It seeks to offer guidance for the creation of online teaching and learning that is technologically appropriate and efficient, as well as just, inclusive, and emancipatory.

Drawing from critical pedagogy, it focuses on the various contexts, needs, and life experiences of students. When applied to instructional design, it aims at creating active learning environments where students are participants, and not passive learners. Concerning the University of Botswana, the CRID Framework, in Figure 1, calls for the bridging of digital and situational readiness, appropriate instructional delivery and student engagement, as well as the relevance of educational content. It aims at moving away from rigid, standardized, and universal instructional design models to flexible, culturally responsive, and engaged instructional design models within the local context.

### **Contextualized and Responsive Instructional Design (CRID) Framework**

The Contextualized and Responsive Instructional Design (CRID) Framework (see Figure 1) was authenticated by a group of experts comprising three instructional designers and five lecturers from the University of Botswana. Their suggestions helped to further improve construct definitions for better conceptual clarity and greater context specificity. Unlike the ADDIE model, CRID adds a Critical Reflection Loop post each stage so there is continual dialogue between students and instructors thereby making it more responsive as well as contextually grounded. The Contextualized and Responsive Instructional Design (CRID) Framework was developed to address the instructional and technological needs that surfaced in a qualitative needs analysis conducted at the University of Botswana. While this CRID Framework is based on critical pedagogy, it is more than a model – it is a contextualized, responsive, and transformative construct to meet the socio-cultural realities of resource-poor learning environments. Each of its constituent parts was developed based on the needs and the “gaps” that were identified during the study, and hence, ensures that the postulations are grounded in both theory and practice. The sections that follow are dedicated to different themes, each of which is aligned to the CRID Framework. In this regard, this article shows that the CRID Framework provides a detailed model that can enhance instructional design, technology integration, and educational change. Thus, the CRID framework shows significance and flexibility in the context of Botswana, with the general aim of providing an inclusive, efficient, and context-sensitive online teaching and learning system at the University of Botswana.

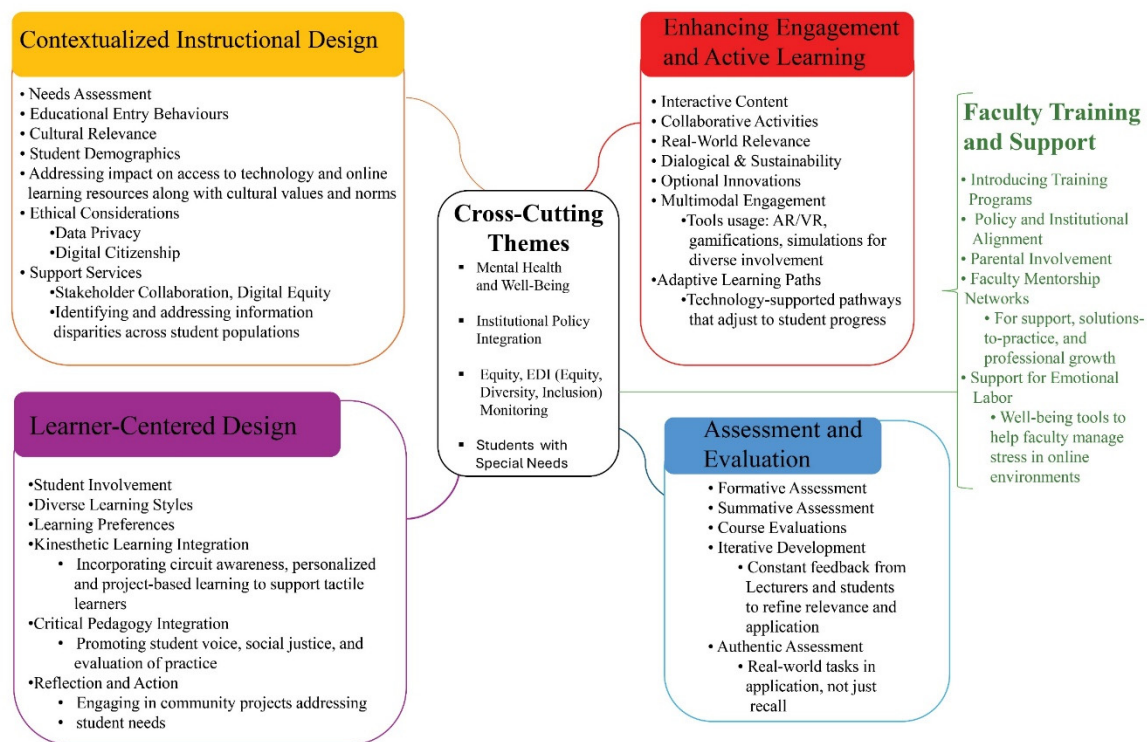


Figure 1. The Contextualized and Responsive Instructional Design (CRID) Framework

### 1. Contextualized Instructional Design

The main principle of CRID is contextualization. Traditional models offer a one-size-fits-all approach, assuming countries use the same language with a similar population. CRID requires a detailed needs assessment. This captures demographics, socio economic situations, languages, and educational histories of students. This deals with gaps (Theme 2.1 & 3.5) pointed out by participants such as Lecturer 4 and Student 9, who were critical of the lack of cultural and contextual relevance of the imported models. To address this, CRID has cultural relevance and digital equity planning. This offers guidance to lecturers in linguistic and visual content customization. It is also ensured that instruction and learning are possible, even in low bandwidth. This framework is flexible and offers solutions such as mobile-optimized resources, downloadable modules, and WhatsApp-based discussion groups. Stakeholder collaboration is also another essential component of this model as it integrates local communities and students to design the courses, further emphasizing the responsiveness of this model.

### 2. Learner-Centered Design and Diverse Learning Styles

Students who thrive on non-traditional and kinesthetic learning styles are included in CRID, through kinesthetic learning integration and learning preferences mapping. This feature actively incorporates students who enjoy physical involvement through interaction, simulation and tasks. Furthermore, this construct is a response to the concern of Student 5 (Theme 2.4 & 3.1) providing an example of epistemological diversity. Students are viewed as active, independent agents and curriculum is co-molded to the various learning styles of the individuals as opposed to passive learners.

### 3. Technical Accessibility and Digital Readiness

This framework responds to the negative elements of the digital environment. Barriers of Theme 2.3 and 3.4 such as poor internet connectivity, low digital literacy and inadequate digital support, as cited by students and lecturers, are addressed directly by this framework.

CRID employs offline alternatives, mobile-first design, and digital literacy training modules. Infrastructural limitations do not hinder these strategies. CRID's Technical Support Systems also offer scalable models of peer and institutional mentoring. These strategies respond adequately to the concerns of Student 4 and Lecturer 7.

### 4. Multimodal Engagement and Active Learning

CRID provides multimodal Engagement Tools such as gamification, AR/VR, and other Active Learning Simulations. These strategies respond to the requests for gamification and simulations (Theme 2.2, 3.2 & 3.3) within the various

activity frameworks. Adaptive learning paths promote individualized learning trajectories, while the collaborative activities of peer co-teaching, discussion board participation, and co-authored digital assignments cultivate a constructivist environment. These strategies promote a collaborative environment and a spirit of active engagement characterized by critical pedagogy.

#### 5. Student Voice and Co-Creation of Curriculum

CRID's curriculum co-creation is a direct response to the requests for the inclusion of learning, teaching, and assessment strategies, and the active engagement of the students in the learning process (Student 9 and Lecturer 9 (Theme 3.1 & 3.5). This strategy provides the students with an opportunity to become the active participants in the construction of the curriculum, rather than passive consumers of the same.

#### 6. Relevant and Empowering Assessment Practices

Theme 1.3 & 3.6 cite the lack of assessments within traditional and project-based learning frameworks. CRID responds to this demand through Authentic Assessments and Learner-Led Assessments, both grounded in the real world. These forms of assessments encourage self-reflection and self-regulate the participants.

#### 7. Faculty Development and Emotional Support

The success of CRID heavily relies on the foundation of its lecturers' capabilities. That is why Faculty Mentorship Networks are being launched. It also provides Support for Emotional Labor, an overlooked aspect of online teaching. This was especially noted by Lecturer 7. It is indeed restorative and strategic to have mental health awareness, peer support sessions, and continuous professional development programs.

### Cross-Cutting Themes

Within the CRID Framework, the cross-cutting themes of mental health and well-being, equity, EDI monitoring, integration of institutional policies, and inclusion of learners with Special Needs form the connective muscle that integrates and strengthens each component of the framework. These themes form the bedrock of the framework. They are not merely added components to the framework. They provide alignment and sustainability of the Framework within the model. For example, within contextualized instructional design, the inclusion of equity, inclusion of special needs, and policy integration of the special needs inclusion policy are meant to create instructional content that is culturally responsive and accessible to the various socio-economic, linguistic, and ability-based needs of the special needs students. Within learner-centered design, the EDI principles of various distinct cognitive, physical, and kinesthetic learning needs are acknowledged and centered to provide psychological safety, belonging, and dignity. In addressing technical accessibility, the framework integrates assistive technology and screen reader-enabled platforms, and flexible technologies in addition to paired mental health support, tech literacy, and digital anxiety interventions and trainings. Like active learning and multimodal engagement, the use of adaptive tools and differentiated instructional strategies for learners with sensory and physical disabilities is evident in the framework. Curriculum co-creation and assessment practices, grounded in equity and student agency, mean that special needs learners actively participate in deciding how they are taught and assessed. Inclusive teaching practices, UDL, and support for students with flexible learning profiles are the focus of capacity building and support for staff. These themes emphasize CRID as a technical instructional model and a complete, inclusive, and justice-oriented framework for transformative digital education.

### 6. Summary and Conclusions

This qualitative comparative case study gathered detailed accounts from both students and lecturers in Botswana to assess the implementation of ADDIE and ASSURE instructional design frameworks and their limitations. Critical concerns brought forward included the underdevelopment of the global frameworks, limited digital pedagogical faculty training, ongoing challenges with technology, and the lack of consideration given to learners and their varying needs and forms of epistemologies. In light of these, the Contextualized and Responsive Instructional Design (CRID) Framework was established. This new design model, inspired by critical pedagogy, brings the design to the Global South in 'context' and 'responsive' manner. The CRID Framework surpassed earlier design models by placing the respect of culture, learners' voices, digital equity and emotional and professional support for instructors at the forefront. The Framework also emphasizes the design of the curriculum, active participation on the part of learners, multiple modes of interaction, and engagement as well as empowering and authentic assessments.

The CRID Framework has created an innovative and different approach as a result of the flexible interpretation of critical pedagogy at the Botswana school system, slow internet connection, limited access to devices, and differing languages. The CRID model dares to challenge the Global North design models, which are generally prescriptive and provide a 'crude' compromise to the local needs and situations. The CRID Framework, as a result of the original synthesis of kinesthetic learning in online contexts, stakeholder co-design, and emotional labor as a design variable, is one of the leading frameworks to address the challenge of digital pedagogy in a resource-poor and constrained vertical setting.

As the final point of the argument, the research claims that in order for online education to be effective in Botswana and other similar contexts, instructional design frameworks that promote extensively bordering digital education need to be flexible. These frameworks should integrate the voices of learners, provide timely feedback, and support faculty development. The CRID Framework is a starting point for the creation of a desirable and just system.

### **Acknowledgments**

Not applicable

### **Author contributions**

Dennis Kealeboga Mabalane was responsible for the study design, methodology, data collection, data analysis, interpretation of the findings, development of the Contextualized and Responsive Instructional Design (CRID) Framework, drafting of the manuscript, revision of the manuscript and preparation of the final version for submission. Goitseman Mmeko conceived the original research topic, contributed to the conceptualization of the study, provided overall academic supervision and intellectual guidance throughout the research process, critically reviewed the manuscript and contributed to the revision of the manuscript. Both authors read and approved the final manuscript and agree to be accountable for all aspects of the work.

### **Funding**

Not applicable

### **Competing interests**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### **Informed consent**

Obtained.

### **Ethics approval**

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

### **Provenance and peer review**

Not commissioned; externally double-blind peer reviewed.

### **Data availability statement**

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

### **Data sharing statement**

No additional data is available.

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