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From Kakai to Lifeline: Unpacking the Transformational Role of Sakai LMS for Seamless Academic Continuity During and Post-COVID

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ABSTRACT

When the Sakai Learning Management System (LMS) was first introduced at the University of Ghana particularly within the Distance Education (DE) programme, it was met with scepticism and resistance, earning the informal label “kakai”, a local term meaning "monster." Initially used for uploading slides and course materials, Sakai was perceived as cumbersome and overwhelming by both faculty and students. However, the COVID-19 pandemic marked a dramatic turning point. With the abrupt suspension of face-to-face teaching, Sakai emerged as an indispensable tool for academic continuity, transforming its image from a misunderstood platform to a digital lifeline. This study examines the transformation of the Sakai Learning Management System (LMS) at the University of Ghana. Using a qualitative case study design, data were collected through semi-structured interviews with 45 students and 7 faculty across three phases: pre-COVID, during COVID, and post-COVID. Participants were purposively selected from the Distance Education programme, and interviews were analysed thematically. The findings reveal a significant shift in perceptions, usage, and institutional support for Sakai over time. Pre-COVID, Sakai was minimally adopted. During COVID-19, the platform became central to academic continuity, prompting rapid digital adaptation among students and faculty. In the post-COVID period, Sakai usage normalized and became embedded in blended learning practices, with users demonstrating improved digital confidence and valuing the platform’s organisational and pedagogical benefits. The study concludes that Sakai’s evolution from a feared system to a trusted academic lifeline was

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driven by crisis-enabled and growing digital literacies among users. The findings underscore the need for sustained infrastructural investments, continuous training, culturally responsive communication, and stronger policy frameworks to support long-term digital transformation in higher education. The study contributes to limited literature on the sociocultural dimensions of LMS adoption in African universities and offers practical insights for strengthening technology-enhanced learning in resource-constrained contexts.

Keywords: *Sakai Learning Management System, Digital Learning, COVID-19, Higher Education, Ghana*

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Introduction

The COVID-19 pandemic is regarded as one of the most drastic upsets in the history of higher education, which fundamentally changes the way teaching and learning is organised and conducted across the globe (Bozkurt et al., 2020; Crawford et al., 2020). When universities were forced to shut down face-to-face learning, institutions quickly adapted to remote and technology-mediated learning settings to maintain the continuity of academics (Daniel, 2020; Hodges et al., 2020). What had initially been developed as a response to a global health crisis soon developed into a mass re-evaluation of pedagogical processes, revealing the weaknesses as well as potential responses of higher education systems. This has been especially strong in the Global South, where a large number of universities have not institutionalised digital learning infrastructures to the extent that they were before the pandemic (Adedoyin and Soykan, 2020). In African higher education environments, the shift to remote learning was complicated by long-standing issues, such as insufficient ICT infrastructure, unreliable internet access, expensive data packages, and the digital illiteracy of different stakeholders (e.g., students and faculty), among others (Dube, 2020; Mpungose, 2020; Tadesse and Muluye, 2020). Regardless of these limitations, the pandemic also brought opportunities of faster digitalization, universities investing in online learning, creating virtual learning policy, and increasing capacity-building opportunities in technology-enhanced teaching (Watermeyer et al., 2021; Crawford, 2023). In this changing environment, Learning Management Systems (LMS) became key structures of maintaining academic practice. In addition to serving a conventional purpose of storing course materials, LMS platforms turned out to be essential locations of instruction delivery, communication, assessment management, and student engagement (Bond et al., 2021; Turnbull et al., 2021). The LMS in a sense became the eponymous learning environment to many institutions which primarily acted as a point of contact where teaching and learning was done in times of disruption.

The University of Ghana offers a good example of how digital technologies may be perceived and used differently over time, with the Sakai Learning Management System, which is informally known by students as Kakai, a local word meaning something complicated or frightening. Before the pandemic, Sakai was viewed as challenging to navigate and was rarely utilized by both the faculty and students. But the advent of COVID-19 had to create a rapid change towards online learning, which placed Sakai as a key activity in ensuring academic continuity. This change, over time, led to a change in the user perceptions and institutional practices, as the platform became more and more a part of the teaching and learning processes. Such a transformation is not only a

shift in the use of technology, but it also indicates a wider restructuring of pedagogical processes, institutional support systems, and digital skills in the university. The reasons behind such transformations are especially relevant in resource-constrained settings, where the adoption of digital can be largely influenced by infrastructural, cultural, and institutional factors. It is against this background that this research investigates the transformation of Sakai LMS at the University of Ghana in three stages namely: pre-COVID, during COVID-19 and post-COVID. In particular, the paper examines how the platform facilitated academic continuity in the context of the pandemic, how the perceptions and usage patterns changed among students and faculty, and how the institutional interventions impacted the adoption and integration of the platform into teaching processes. The study offers a context-specific, experience-based analysis, which makes a contribution to the current debate on digital transformation, resilience, and sustainable adoption of learning technologies in African higher education.

Study Objectives

The study was guided by the following research objectives

1. To examine how Sakai LMS supported academic continuity during the COVID-19 pandemic at the University of Ghana.
2. To explore the transformation in perceptions and usage of Sakai LMS among lecturers and students, moving from the pre-COVID "Kakai" era.
3. To assess the institutional supports, policies, and capacity-building interventions available for the use of Sakai during and after the pandemic.
4. To analyse the extent to which Sakai LMS has shaped post-COVID teaching and learning practices at the University of Ghana
5. To identify challenges, lessons, and opportunities for strengthening LMS integration at the university of Ghana.

Literature Review/Gaps Identified

The COVID-19 pandemic has caused a sudden shift to the remote and technology-mediated form of learning, which has created a body of scholarship on the importance of Learning Management Systems (LMS) in ensuring academic continuity. The research in the global context is consistent in pointing out that LMS platforms were the most relied on infrastructures facilitating the teaching process, communication, assessment, and student engagement during the time when traditional face-to-face teaching was not possible anymore (Bozkurt and Sharma, 2020; Hodges et al., 2020; Bond et al., 2021). Instead of being used as storage of instructional resources, LMSs were developed as full-scale learning platforms that allowed institutions to continue with their academic activities during a crisis context (Adedoyin and Soykan, 2020; Turnbull et al., 2021).

Before the pandemic, LMS penetration in most of the Global South, specifically in African higher education, was typified by the low adoption rates and unequal incorporation into teaching. Researchers attribute this to a set of factors such as low digital competence among users, resistance to change, infrastructural, and institutional support (Lwoga, 2014; Mpungose, 2020; Tadesse and Muluye, 2020; Afolabi and Ajani, 2023). Most often, the LMS systems were minimally utilized, i.e. to post the lecture notes or administrative messages, and were not deeply embedded in the pedagogical activities. These tendencies were frequently supported by the cultural tendency to prefer face-to-face teaching and the view of LMS platforms as complicated or tiresome (Govender,

2010; Strang and Vajjhala, 2017). The COVID-19 pandemic served as a turning point in this direction. As the physical classroom is put on hold, LMS services quickly become both more peripheral and more vital to the academic continuity. The process of this transformation has been widely reported, both in the global and African settings, in which institutions have been forced to digitize in large volumes and large scale (Daniel, 2020; Crawford et al., 2020; Agormedah et al., 2020; Owusu-Fordjour et al., 2020). According to scholars, this is the era of emergency remote teaching, which is marked by quick adaptation, improvisation, and fast digital education (Hodges et al., 2020). Notably, this transition accelerated the usage of LMS, but it also helped to develop digital skills in a student and faculty, since learners had to operate in online learning settings to a greater extent (Bond et al., 2021).

One of the themes that can be identified based on the literature is the institutional support and the role it can have in determining the effectiveness of LMS adoption. Access to ICT infrastructure, training programmes, technical support, and clear policy frameworks have been found to be the key to successful integration (Garcia-Morales et al., 2021; Watermeyer et al., 2021). The availability of a digital approach to operations in the institutions meant that institutions that had already developed a digital strategy were more capable of scaling the usage of LMS in the pandemic compared to those without such systems. This underscores organisational preparedness and capacity-building in facilitating sustainable digital transformation. Although there have been more users applying LMS platforms during the pandemic, research claims that users have had mixed experiences. On the one hand, online learning settings have been pointed out as flexible, convenient, and accessible to students (Bond et al., 2021; Agormedah et al., 2020). Conversely, issues of low connectivity, digital burnout, lack of interactivity, and access inequity have remained to impair the results of learning (Dube, 2020; Mhlongo et al., 2023). Likewise, professors have been forced to overcome the challenges of course redesign, learning to use new technologies, and keeping students active in online environments (Rapanta et al., 2020; Watermeyer et al., 2021). Such experiences highlight the dynamic and highly skewed character of LMS integration in higher education.

New studies indicate that LMS platforms have maintained a focal position in teaching and learning especially in blended and hybrid learning frameworks (Bond et al., 2021; Turnbull et al., 2021) in the post-COVID era. It is common knowledge that the pandemic catalyzed the already ongoing processes of digital transformation, forcing the institutions to reconsider the principles of pedagogy and invest in more adaptable and robust learning environments (Garcia-Morales et al., 2021). In Africa, researchers believe that this change is a chance to reinforce access, enhance pedagogical innovation, and institutional resilience, as long as the issues with the infrastructure and capacity are resolved (Puplampu, 2023; Moyo, 2023).

Despite this accumulating body of literature, some significant gaps still exist. To begin with, a considerable amount of the available research is dedicated to the general trends of LMS adoption or the overall experience of online learning, and little effort is made to determine how the specific LMS platforms develop in the context of a specific institution over time. Second, although institutional support plays a role, there is a lack of empirical research on the presentations of training, policy reforms, and ICT investments- shape the adoption and use of LMS in practice especially at the African universities. Third, sustainability of LMS integration is not well studied in the long-term and understanding of the integration in the context of the emergency stage of the

pandemic is studied, instead of the lasting change in pedagogy. In addition, there is a dearth of literature concerning the sociocultural aspects of LMS adoption, in which the local meaning, perceptions and narratives affect the user in technology use. The ideas like informal terming of Sakai as Kakai manifest implicit cultural discourses of digital system that could influence adoption behaviours in a manner that is not exhaustively defined in traditional models of technology adoption. The research fills these gaps by giving a context-specific, longitudinal analysis of transformation of Sakai LMS at University of Ghana through three particular stages, which are pre-COVID, during COVID, and post-COVID. The study will provide detailed insights into the nature of digital learning systems development in resource-constrained settings and add to more grounded knowledge of the digital transformation in African higher learning through its user-centered approach and prioritization of lived experiences and institutional processes.

Research Design

The present study employed a qualitative research methodology with the case study design to determine the transformational role of Sakai Learning Management System (LMS) in ensuring continuity of academic activities at the University of Ghana before, after and during the COVID-19 pandemic. The qualitative case study methodology was deemed suitable as it provided the opportunity to look in depth into the lived experiences, perceptions, and interactions of the participants with Sakai and its real-life institutional environment. This method is consistent with interpretive research traditions that aim to comprehend complicated social and technological phenomena in their development. Semi-structured interviews were used to collect data and offered the flexibility of participants to share their experiences and ensured that the data were aligned with the objectives of the study (Creswell and Poth, 2018). The research was designed in three stages, namely, pre-COVID, during COVID, and post-COVID, to reflect the changes in LMS use, perceptions, and institutional support over time.

The population of the study included students and faculty that had firsthand experience with Sakai through the three phases and were enrolled in the Distance Education (DE) programme at the University of Ghana. The selection of participants was based on purposive sampling, which was determined by their relevancy to the research questions and their experience with the LMS. Qualitative research does not use statistical representativeness to determine its sample size, but it is determined by the richness and relevance of data (Patton, 2015). Thus, the participants were identified with consideration to their capacity to give detailed insight into the phenomenon under study. The total number of students and faculty members involved in the three stages was 45 and 7 respectively. The sample used was student participants who were Level 300 cohorts of Information Studies because they were significantly exposed to Sakai in the Distance Education programme. Faculty participants were chosen according to their ongoing participation in teaching in the programme at more than one stage, which allowed viewing LMS usage longitudinally. The data collection process was undertaken until the desired level of depth and redundancy in the responses was reached, which meant that the thematic saturation was reached.

Before commencing the process of data collection, potential participants were approached and given relevant information about the study, its purpose, scope, and ethical considerations. There was voluntary participation and all the participants were informed before the administration of interviews. The study conformed strictly to ethics, such as confidentiality, anonymity, and the right to withdraw. The interviews were done either on a face-to-face or telephone basis according to the availability of the participants and the nature of the situation. There were about twenty-minute interviews. Interviews were recorded (audio-taped) with the agreement of the participants; in

situations in which no agreement on the recording was given, intensive notes were made. All interviews were then transcribed verbatim, to guarantee accuracy and completeness of data.

The thematic analysis was used to analyse the data, in an iterative and inductive manner. Repeated reading of transcripts was done by the researchers to get familiarised with the data after which initial codes were created. These codes were subsequently organized into larger categories and themes which illustrated common themes in the responses of the participants. The coding was done in a group involving the authors and hence could be discussed, interpretations analysed, and themes refined to maximize the level of analytical consistency. The trustworthiness of the analysis was to be guaranteed through a number of strategies. These were peer debriefing within the research team, repetitive code and theme comparison and close alignment of the findings with the narratives of the participants. The element of reflexivity was also upheld in the analysis process whereby the researchers engaged in critical reflection of their interpretations in order to reduce bias. Although the research offers valuable information on the transformation of Sakai LMS, it should be mentioned that the study uses self-reported data and is local to the University of Ghana. In that way, the research always focuses on the richness of insight, rather than on generalisability. The limitation of using interview data without any other sources including system analytics or institutional documents is recognized as a weakness and is addressed later in the limitations section.

Table 1: Study Population/Sample across three phases

Phase	**Academic Year**	**Total Population**		**Sample Size**	
		Students	Faculty/facilitators	Students 2%	faculty10%
Pre-COVID	2019/2020	540	69	11	7
During COVID	2020/2021	786	69	16	7
Post-COVID	2023/2024	956	69	18	4
Total		2282	69	45	18

Source: Field Data 2019-2024

Findings/Results

Response rate

The response rate for students was 100% at all three phases, as all sampled participants completed the interviews. At the faculty level, the response rate was 100% for both Phase 1 (pre-COVID) and Phase 2 (during COVID). For Phase 3 (post-COVID), 4 out of the 7 faculty members, representing a 57.1% response rate, took part in the interviews.

Respondents' Characteristics

To maintain confidentiality, anonymity, and ethical integrity, all respondents in the study were represented using self-generated pseudonyms. For faculty participants, the same pseudonyms were maintained across all three phases of the study because the same individuals were involved in both the pre-COVID and during-COVID interviews, with only a reduced number participating in the post-COVID phase. In contrast, different student cohorts were interviewed at each phase, and therefore, new pseudonyms were assigned to student participants for each period since the respondents were not the same. In total, the study engaged 45 students across the three phases and 7 faculty members during both the pre-COVID and during-COVID stages. During the post-COVID phase, only 4 of the original 7 faculty members were available and participated. This distribution is summarised in Table 2. As presented in Table 2, across the three phases, a total of 45 students participated in the study, with 11 respondents in the pre-COVID phase (5 females and 6 males), 16 during COVID (8 females and 8 males), and 18 in the post-COVID phase (7 females and 11 males), drawn from centres including Accra, Kumasi, Tamale, Bolga, Tema, Sunyani, and Tsito. Faculty participation consisted of all 7 facilitators during the pre- and a 57.1% response rate. This distribution reflects broad regional representation and consistent engagement across the study period.

Table 2: Respondents Characteristics

Students									**Faculty**			
Pre-covid (n=11)			During-Covid (n=16)			Post-Covid (n=18)			Pre & during		Post covid	
Pseudonyms	gender	center	*Pseudonyms*	gender	center	*Pseudonyms*	gender	Center	*Pseudonyms*	Gender	Pseudonyms	Center
Adwoa	Female	Accra	Charity	Female	Accra	Yaa	Female	Kumasi	Daniel	Male	Michael	Accra
Esi	Female	Kumasi	Kelvin	male		Owusu	male	Tema	Michael	Male	Samuel	Accra
Kojo	male	Accra	Kwaku	male	Takoradi	Isaac	male	Accra	Samuel	Male	Mary	Accra
Adams	male	Tamale	Kwabena	male	Bolga	Joseph	male	Accra	Sarah	Female	Daniel	Accra
Abu	male	Bolga	Larbi	male	Accra	Justice	male	Suyani	Fati	Female		Kumasi
Ato	male	Accra	Razak	male	Kumasi	Collins	male	Accra	Mary	Female		Tamale
Kay	male	Accra	Jonas	male	Accra	Emma	male	Accra	Issah	male		Bolga
Kuku	male	Accra	Frank	male	Accra	Stephen	male	Tema				
Akos	Female	Tisto	Bada	male	Accra	Abigail	Female	Accra				
Abena	Female	Accra	Kwame	male	Accra	Gifty	Female					
Kwesi	male	Accra	Rebecca	Female	Accra	Eben	male	Tema				
			Lydia	Female	Sunyani	Kofi	male	Accra				
			Princess	Female	Accra	Janet	Female	Tamale				
			Aba	Female	Accra	Yaw	male	Accra				
			Emelia	Female	Accra	Afua	Female	Accra				
			Patience	Female	Accra	Esther	Female	Accra				
						Efua	Female	Tsito				
						Issahu	Female	Accra				

Source: Field Data 2019-2024

Response coding and Analysis

The findings of the study are presented in three phases pre-COVID, during COVID, and post-COVID reflecting the evolving experiences of students and faculty with the Sakai LMS over time. Across the three phases, the analysis revealed significant shifts in perceptions, usage patterns, and institutional support mechanisms that shaped Sakai's transformation from a platform viewed with apprehension ("Kakai") to a critical academic lifeline that sustained teaching and learning during the pandemic and influenced post-COVID pedagogical practices. The themes that emerged provide insight into the pragmatic, technological, pedagogical, and institutional dimensions that underpinned Sakai usage across the study period.

Pre-COVID (2019/2020)

The pre-COVID phase revealed that awareness and utilization of Sakai among Distance Education students and faculty were present but limited by perceptions of complexity, inadequate training,

and infrastructural constraints. Three major themes emerged: namely limited LMS adoption and minimal integration into teaching, perceived difficulty and negative attitudes (the "kakai" narrative), and insufficient institutional and technical support, as shown in Table 3

Table 3: Summary of Pre-COVID Themes and Categories

Theme	Categories
limited LMS adoption and minimal integration	• occasional use of Sakai for uploading slides • minimal lecturer engagement • weak LMS–curriculum alignment
perceived difficulty and negative attitudes	• "kakai" perceptions • navigation difficulties • limited digital literacy
insufficient institutional and technical support	• lack of training • poor internet and device constraints • no structured guidance

A significant observation from the findings that emerged from the pre covid phase interviews was that Sakai had not yet been mainstreamed into pedagogical practice. For many participants, the LMS was used only when absolutely required, often for accessing lecture slides or submitting isolated assignments. Students reported that lecturers seldom uploaded comprehensive content on the LMS, resulting in limited motivation to engage meaningfully with the system. This was compounded by the perception that Sakai was difficult to use. The informal nickname "Kakai" symbolized a broader sense of fear, frustration, and unfamiliarity associated with the platform. Students felt that the system was not user-friendly, while faculty expressed concerns over inadequate training and the additional workload required to prepare materials for online delivery.

Some of the students for instance said

> *"I only go on Sakai when the lecturer said they have posted slides; apart from that, i hardly used it for anything else." (Kojo {Student; Male, Accra Center})*

> *"Most of my courses never appeared on Sakai. So, for me, it doesn't really feel like part of our learning." (Adwoa {Student; Female, Accra Center})*

> *"Sakai is too difficult to understand. The first time I logged in, I got confused and left it. That's why we called it 'Kakai.'" (Esi {Student; Female, Kumasi Center})*

> *"Sometimes when you try to open notes, it will freeze or take too long. For me I just felt the system is not friendly at all." (Adams {Student; Male, Tamale Center})*

Some of the responses from the lectures were;

> *"Sakai to me is optional. Most of us, especially me still prefer face-to-face teaching because that is what I am used to, and its less complex." (Samuel {Faculty; Male, Accra Center})*

> *"I uploaded notes occasionally, but not consistently. There is no strong push from the university to use the system fully, and I feel it's a bit complicated." (Daniel {Faculty; Male, Accra Center})*

> *"Honestly, Sakai seemed a bit complex. Without proper training, it felt easier to continue with our normal mode of teaching." (Michael {Faculty; Male, Accra Center})*

The findings also showed that infrastructure issues further compounded these challenges. Limited access to stable internet, especially for students in remote regions, significantly hindered their use of Sakai. Faculty members also cited intermittent connectivity at the learning Centres and lack of systematic orientation as barriers to adoption. These were captured by some of the students as follows:

> *"Network issues are too much. At home I couldn't access it, and even at the centre, the internet is also not reliable." (Abu {Student; Male, Bolga Center})*

> *"Nobody really taught us how to use Sakai. We just tried on our own or asked friends." (Ato {Student; Male, Accra Center})*

Some faculty members also indicated:

> *"Internet connectivity at the centres are not strong, so even when I wanted to use Sakai, it becomes a bit frustrating." (Sarah {Faculty; Female, Accra Center})*

> *"We never had formal training sessions. If there have been then I was not aware of it. The only training I should say if it was one was when we were introduced to how we can share assignment. Verything was somewhat done by the office not us. We had to figure things out ourselves, which made many of us avoid the platform, including me." (Mary {Faculty; Female, Tamale Center})*

5.3.2. During COVID-19 (2020/2021)

As presented in table 4, four main themes emerged from the analysis of the findings from the interviews with both students and faculty. These included Sakai as an emergency academic lifeline, increased engagement and rapid digital adaptation: significant challenges in connectivity and system stability, and strengthened institutional support and structured training. Students and lecturers overwhelmingly described Sakai as the only platform that made teaching and learning possible during lockdowns. The system according to the responses became a central hub for lectures, assessments, announcements, and discussion forums.

Table 4: Summary of Themes During COVID-19

Theme	Categories
Sakai as an Emergency Academic Lifeline	• Main instructional tool • Submission and assessment hub • Communication centre
Increased Engagement and Digital Adaptation	• Higher LMS usage • Faculty learning-by-doing • Student reliance on Sakai
Persistent Connectivity and Technical Challenges	• Internet/data costs • Slow system response • Assessment-related issues
Strengthened Institutional Support	• ICT training • Orientation programmes • Increased university communication

Source Field Data- 2019-2024

The findings from the COVID-19 phase revealed a dramatic transformation in the use and perception of Sakai LMS, as both students and faculty were compelled to rely on the platform as the primary means of sustaining academic activities during lockdowns. Participants consistently described Sakai as the only viable academic lifeline at the time. As one student noted,

> *"When school closed, Sakai became everything. If you didn't go on Sakai, you basically missed all your lectures." (Charity {Student; Female, Accra Center})*

Similarly, another student emphasized its centrality, stating,

> *"It was the only place we could get notes, submit assignments, and know what was happening. Without it, I don't think the semester would have continued." (Kwaku {Student; Male, Takoradi Center})*

This period was also marked by heightened engagement and rapid adaptation, even among those who had previously avoided the platform. Many students acknowledged that the crisis forced them to become proficient users. One explained,

> *"I started using Sakai every day because I had no choice. At first it was stressful, but later I became used to it." (Kwabena {Student; Male, Bolga Center})*

However, this increased use was not without difficulty. A student reflected on connectivity challenges, saying,

> *"Sometimes the internet would disappoint me during quizzes, and it was very frustrating. But overall, Sakai helped us continue school." (Larbi {Student; Male, Accra Center})*

Faculty members corroborated these experiences, highlighting a steep learning curve but also significant progress in digital competence. One lecturer stated,

> *"COVID forced us to learn Sakai properly. Overnight we had to move everything online, so we had no option but to master the system." ." (Issah {Faculty; Male, Bolga Center})*

Another described a major shift in teaching routines:

> *"I uploaded materials every week and used the announcement tool more than before. Sakai became my main teaching platform." (Daniel {Faculty; Male, Accra Center})*

Despite these positive adaptations, participants consistently mentioned connectivity challenges and system limitations. A faculty member reported,

> *"The online teaching was good but the internet challenges were a big problem. Sometimes I couldn't upload materials because of slow connectivity." (Michael {Faculty; Male, Accra Center})*

The findings also highlighted improved institutional involvement and technical support. Unlike the pre-COVID period, both students and faculty acknowledged structured training, frequent communication, and ICT support from the university. As one lecturer put it,

> *"The university gave several trainings, and that helped a lot. Before, we didn't have this level of support." (Sarah {Faculty; Female, Accra Center})*

This response signaled a significant shift in the university's approach to digital teaching and learning, contributing to greater user confidence and resilience during the crisis.

5.3.3. Post-COVID (2023/2024)

The post-COVID phase revealed that the experiences of the pandemic shifted user attitudes permanently. Sakai transitioned from a crisis tool to a foundational component of blended learning. As presented in Table 5, three major themes emerged namely normalization of Sakai in blended and technology-enhanced learning, improved perceptions and user confidence and the need for system enhancement and continuous support. Nevertheless, although the responses depicted an improvement in usage the respondents still highlighted some areas requiring attention.

Table 5: Summary of Post-COVID Themes

Theme	Categories
Normalization of Sakai in Teaching and Learning	• Routine LMS use • Support for blended learning • Organised content access
Improved Perceptions and User Confidence	• Increased digital literacy • Ease of navigation • Positive attitudes
Need for System Enhancement and Continued Support	• Desire for upgrades • Integration with modern tools • Continuous training needs

Source Field Data- 2019-2024

Indeed, the post-COVID findings illustrate a significant shift in how students and faculty perceived, interacted with, and valued the Sakai LMS. Unlike the pre-COVID era where Sakai was often underutilized and viewed with apprehension participants described a more positive, confident, and integrated approach to its use in the 2023/2024 academic year. Across interviews, Sakai had transitioned from an emergency substitute to a normalized and essential component of blended learning.

Students expressed that Sakai had become deeply embedded in their academic routines. One student explained,

> *"Now, every course I take has something on Sakai. It's the first place I check when the semester starts." (Yaa {Student; Female, Kumasi Center})*

Another highlighted the convenience of the platform, saying,

> *"Sakai makes learning easier because everything is organised there, notes, quizzes, announcements, it really helps us plan." (Owusu {Student; Male, Tema Center})*

These reflections contrast sharply with the pre-COVID "Kakai" narrative, demonstrating a meaningful cultural and behavioural shift.

As one student put it,

> *"When the name was first mentioned to me in level 100 I was like what is this one too,….laughs;;, but now it's part of me. So for me, I will say its not Kakai it's a learning platform that makes life easy pizzy …Laughs;;;." (Isaac {Student; Male, Accra Center})*

Faculty echoed these sentiments, noting that their experiences during the pandemic had significantly improved their digital teaching competence. A lecturer who had complained about it been difficult during the pre-covid phase now remarked,

> *"After COVID, I became very comfortable with Sakai. I now use it even when teaching face-to-face because it keeps my course structured." (Michael {Faculty; Male, Accra Center})*

Another explained how Sakai enhanced pedagogical efficiency:

> *"It helps me track submissions and communicate with students easily. I can't imagine teaching without it now." (Samuel {Faculty; Male, Accra Center})*)

Despite this positive transformation, participants pointed out areas that still required improvement. Students frequently mentioned the need for system upgrades and more reliable connectivity. One student commented,

> *"Sakai is good, but sometimes it still slows down. I wish the university would improve the speed and add more modern features." ." (Joseph {Student; Male, Accra Center})*)

Faculty similarly expressed the desire for continuous professional development. A facilitator explained,

> *"We need refresher training occasionally. Technology keeps changing, so the support shouldn't stop." (Mary {Faculty; Female, Accra Center})*)

Discussion of Findings

This study examined the transformation of the Sakai Learning Management System (LMS) at the University of Ghana across three temporal phases—pre-COVID, during COVID, and post-COVID—revealing a dynamic process shaped by shifting user perceptions, institutional interventions, and contextual pressures. The findings demonstrate that Sakai's evolution from a marginal and often resisted platform ("Kakai") to an indispensable academic tool was not linear, but rather the result of an interaction between technological exposure, institutional support, and crisis-driven necessity.

In the pre-COVID phase, the limited adoption of Sakai reflects broader patterns observed across African higher education, where LMS platforms were often underutilised and weakly integrated into pedagogical practice (Lwoga, 2014; Mpungose, 2020). The findings suggest that this low uptake was not solely a technical issue but also a sociocultural one. The characterization of Sakai as "Kakai" symbolises a deeper perception of complexity, uncertainty, and resistance, highlighting how cultural meanings attached to technology can shape user engagement. This aligns with existing scholarship indicating that perceptions of difficulty and lack of familiarity significantly influence technology adoption behaviours (Govender, 2010; Strang & Vajjhala, 2017). Thus, the pre-COVID experience underscores that technological availability alone is insufficient; user perception and contextual relevance are equally critical.

The COVID-19 phase marked a decisive turning point, as the sudden disruption of face-to-face teaching created conditions in which Sakai transitioned from an optional tool to a necessity. This finding reinforces global evidence that the pandemic functioned as a catalyst for accelerated digital adoption in higher education (Bozkurt et al., 2020; Crawford et al., 2020). However, beyond increased usage, the study reveals a deeper transformation in user behaviour and competence. Both students and faculty were compelled to engage with the LMS more intensively, leading to rapid skill acquisition and increased familiarity. This progression reflects a broader pattern in which sustained exposure to technology enhances perceived

usefulness and ease of use over time, thereby influencing acceptance and continued use. Importantly, the findings also highlight the central role of institutional support in enabling this transition. The shift from minimal pre-COVID support to structured training, improved communication, and technical assistance during the pandemic significantly enhanced user confidence and engagement. This supports existing literature emphasising that organisational readiness, capacity-building, and policy direction are critical determinants of successful LMS integration (Garcia-Morales et al., 2021; Watermeyer et al., 2021). The University's interventions during this period demonstrate how institutional responsiveness can mitigate initial resistance and facilitate more effective adoption of digital learning systems.

In the post-COVID phase, the normalization of Sakai within teaching and learning practices suggests that the changes initiated during the pandemic were not merely temporary adaptations but have contributed to longer-term pedagogical transformation. The integration of Sakai into routine academic activities, particularly within blended learning models, reflects a shift towards more flexible and technology-enhanced learning environments. This aligns with emerging research indicating that digital practices adopted during the pandemic have, in many cases, become embedded in post-pandemic educational systems (Bond et al., 2021; Turnbull et al., 2021). A key contribution of this study lies in demonstrating that transformation in LMS adoption is not only technological or institutional but also experiential and cultural. The shift from viewing Sakai as "Kakai" to recognising it as an essential academic tool reflects a reconfiguration of user attitudes, digital competencies, and pedagogical practices. This transition underscores the importance of understanding technology adoption as a socially constructed process influenced by user experience, institutional context, and external pressures. At the same time, the persistence of challenges particularly related to connectivity, system performance, and the need for continuous training highlights that digital transformation remains an ongoing process rather than a completed shift. These findings echo broader concerns within African higher education regarding infrastructural limitations and digital inequalities (Dube, 2020; Arakpogun et al., 2020; Akpan et al., 2024). Addressing these challenges is essential not only for sustaining LMS usage but also for ensuring equitable access to digital learning opportunities. The findings GENERALLY suggest that crisis-driven adoption can serve as a powerful entry point for long-term digital transformation, but its sustainability depends on continued institutional investment, user support, and system improvement. The case of Sakai at the University of Ghana illustrates how necessity, when combined with institutional action and user adaptation, can reshape both technological practices and pedagogical cultures within higher education.

Conclusion

The study demonstrates that Sakai's transformation from a platform viewed with doubt and anxiety ("Kakai") to a reliable academic lifeline was not a spontaneous occurrence but the outcome of several interrelated factors. The COVID-19 pandemic acted as a critical catalyst, compelling both students and faculty to confront and overcome earlier barriers to technology adoption. What had previously been a supplementary tool, used inconsistently and often reluctantly, became indispensable for the continuity of teaching and learning under conditions of extreme uncertainty. This crisis-driven necessity accelerated the development of digital competencies across the university community, validating the argument that technological adaptation often emerges most strongly in periods of disruption. Equally important was the role of institutional commitment, which evolved significantly across the three phases examined. While the pre-COVID period was characterised by minimal support, the university's strategic response during the pandemic through structured training, proactive communication, and strengthened ICT assistance provided the scaffolding needed for users to engage meaningfully with Sakai. This institutional shift underscores the importance of leadership, investment, and policy direction in enabling sustainable digital transformation, particularly in resource-constrained environments. Moreover, the post-COVID findings demonstrate that Sakai has become firmly integrated into the university's teaching and learning ecosystem. Its use now

extends beyond emergency circumstances to support blended learning, digital resource management, assessment, and course organisation. This sustained integration signals that the university has entered a new phase of technology-enabled education, where digital tools are not simply reactive solutions but essential components of pedagogical practice. The experiences gained during the pandemic have created a strong foundation for further innovation, including the expansion of blended learning models, integration with emerging technologies, and the strengthening of digital pedagogy. However, the study also acknowledges persistent challenges, including infrastructural constraints, system performance issues, and the need for continuous training. These limitations serve as important reminders that digital transformation is an ongoing journey requiring sustained investment, strategic planning, and responsiveness to user needs. Addressing these gaps will be vital for ensuring equitable access and maintaining the momentum gained through the pandemic-era shift.

Study Limitations and Areas for Further Research

Although this study provides important insights into the transformation of Sakai LMS at the University of Ghana before, during, and after the COVID-19 pandemic, some limitations must be acknowledged. First, the study relied on a qualitative case study design using purposive sampling, which, while appropriate for exploring lived experiences in depth, does not allow for broad generalisation to all students and faculty within the university or across other universities in Ghana. The three cohorts sampled pre-COVID, during COVID, and post-COVID were representative of Information Studies students and Distance Education faculty; however, the experiences of learners in other disciplines or in the regular stream may differ in significant ways, limiting the transferability of findings.

Second, the study depended on self-reported experiences gathered through semi-structured interviews. Participant accounts may be influenced by recall bias, particularly for the pre-COVID period, as individuals may remember past challenges more or less intensely depending on their later experiences during and after the pandemic. Similarly, participants who were more confident or comfortable with digital technologies may have been more willing to engage in interviews, potentially skewing the data toward more articulate or digitally engaged respondents. Third, even though the study captured changes across three distinct phases, it does not account for the everyday, micro-level interactions with technology that might be revealed through observational or system-usage data. Direct analytics from Sakai such as user logs, frequency of access, or tool utilisation metrics could offer complementary insights into behavioural patterns that self-reported data alone cannot fully capture.

A notable conceptual limitation relates to the cultural meanings attached to technology, which emerged strongly in the findings but remains largely underexplored in existing literature. The nickname “Kakai” often used by students to describe Sakai symbolises perceptions of fear, difficulty, and inefficiency associated with the LMS, with “Kakai” locally connoting a “monster.” While this study highlights how such cultural framings shaped early user resistance and influenced patterns of adoption, it was not designed to systematically examine the deeper sociocultural narratives underpinning these meanings. This represents an important gap, as technology acceptance is influenced not only by perceived usefulness and ease of use but also by social, cultural, and symbolic interpretations (Venkatesh et al., 2003). Understanding how culturally embedded metaphors like “Kakai” affect digital adoption, behaviour, and pedagogical engagement remains an under-researched area that warrants further inquiry. Given these limitations, a longitudinal study examining changes in LMS usage with real-time system analytics would provide deeper insights into user behaviour beyond interview accounts. Second, comparative studies across faculties, universities, or LMS platforms could illuminate broader patterns of digital transformation in Ghanaian higher education.

Practical Recommendations

Based on the findings of the study, the following practical recommendations are proposed to strengthen the effective and sustainable use of Sakai LMS at the University of Ghana and to guide broader digital transformation efforts within higher education institutions. First, if not already in place, the University should institutionalise continuous and structured training programmes for both students and faculty. While emergency training during COVID-19 improved digital competence, the post-COVID period demonstrated an ongoing need for refresher sessions, targeted workshops, and onboarding modules for new cohorts. These training programmes should adopt a hands-on approach, with demonstrations of core Sakai tools such as assignments, assessments, forums, and gradebook to enhance digital confidence and pedagogical effectiveness.

Again, the University should prioritise the upgrade and optimisation of digital infrastructure that supports Sakai. Persistent challenges related to system speed, downtime, and storage limitations hinder user experience. Enhancing server capacity, improving system responsiveness, and ensuring stable integration would significantly improve functionality. Additionally, increasing bandwidth and improving Wi-Fi coverage across campus and regional centres would help address the connectivity challenges students and faculty frequently reported. The study further recommends the development of clear institutional policies that formalise the integration of Sakai into all courses. These policies should outline expectations for the minimum use of Sakai, such as uploading course outlines, weekly lecture materials, announcements, and continuous assessment tasks. Such guidelines will ensure consistency across courses and reduce disparities in LMS engagement that were evident in the pre-COVID period. Policy enforcement should be supported by incentives and performance benchmarks that encourage faculty adoption.

Moreover, there is a need to strengthen technical and pedagogical support systems at both the central ICT directorate and regional learning centres. Establishing a tiered support system where immediate troubleshooting is available at the faculty or departmental level, with more advanced issues escalated to ICT specialists would enhance responsiveness. Dedicated e-learning support assistants or graduate interns at regional centres could provide timely guidance to students, particularly those in the Distance Education programme. Likewise, the University should invest in user-centred design improvements and culturally responsive communication strategies. Given the historical “Kakai” perception associated with Sakai, communication materials should intentionally demystify the platform. This could include short video tutorials, FAQs, infographics, peer-support groups, and testimonials from students and faculty who now use Sakai confidently. Such initiatives would help reshape lingering negative perceptions and reinforce the view of Sakai as an accessible, supportive learning tool.

Additionally, the University should promote a blended learning pedagogy that fully leverages Sakai’s capabilities. Faculty development programmes should incorporate instructional design principles, active learning strategies, and assessment techniques suited to blended environments. Encouraging lecturers to use Sakai for quizzes, discussion forums, collaborative activities, and timely feedback will enrich the learning experience beyond basic content uploading. Another recommendation is for the University to establish mechanisms for routine monitoring and evaluation of Sakai usage across faculties and regional centres. Collecting analytics on login frequency, tool usage, submission patterns, and course activity will help the institution identify gaps, inform targeted interventions, and improve decision-making. This aligns with best practices in LMS quality assurance and supports evidence-based digital transformation. Finally, future LMS-related initiatives should incorporate sociocultural considerations into system design and implementation. As demonstrated by the “Kakai” narrative, cultural perceptions significantly influence

adoption. Engaging students and faculty in co-design, feedback sessions, pilot testing, and cultural-sensitivity reviews will ensure that Sakai remains a user-friendly, context-appropriate platform that resonates with the university community.

Conflict of Interest Statement

The authors declare no conflict of interest. The research was conducted independently, and no external funding or personal relationships influenced the design, analysis, or reporting of the study.

Declaration of Generative AI and AI-assisted technologies Use

During the preparation of this work, the authors used Grammarly and ChatGPT (version 4.0) to improve language and readability. The authors confirm that these tools were used solely for language editing and not for generating scientific content. The authors have reviewed and edited the output and take full responsibility for the content of this manuscript.

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Appendix

APPENDIX 1- PARTICIPANT INFORMATION SHEET

Study Title:

From Kakai to Lifeline: Unpacking the Transformational Role of Sakai LMS for Seamless Academic Continuity During and After COVID-19 at the University of Ghana.

Principal Investigator

Dr. Monica Mensah Danquah, Department of Information Studies, University of Ghana.

Co-Investigators-

Kelvin Omari Mintah, Department of Public Administration, University of Ghana

Dr. Alfred Ato Yankson, Department of Physics, University of Ghana

Purpose of the Study:

This study seeks to explore how students and faculty perceived, used, and adapted to the Sakai LMS across three phases before COVID-19, during COVID-19, and in the post-COVID era. The study aims to understand how the LMS evolved and what factors shaped its adoption and effectiveness.

Type of Participation:

You are invited to take part in a semi-structured interview lasting approximately 20–30 minutes. With your permission, the interview will be audio-recorded. Yes/No

Voluntary Participation:

Your participation is voluntary. You may withdraw at any time without penalty.

Confidentiality:
All information provided will be treated confidentially. Pseudonyms will be used in place of your real name. No identifying information will appear in the published study.

Possible Risks and Benefits:

There are no known risks associated with participation. Your insights will contribute to improving digital learning systems and support services at the University.

Contact Information:

If you have any questions, please contact:

Dr. Monica Mensah Danquah

APPENDIX 2- INFORMED CONSENT FORM

I have had read to me the information provided above. I understand the purpose of the study, what participation involves, and my rights as a participant.

I voluntarily agree to take part in this study.

Tick as appropriate: (Interviewers responsibility)

☐ I agree to participate in the interview. ☐ I agree to be audio-recorded. ☐ I prefer NOT to be audio-recorded (notes will be taken instead).

Participant Name: _____

Date: _____

Researcher Signature: _____

3. Interview Introductory Script

Good morning/afternoon, and thank you for agreeing to participate in this study.

My name is xxxxxxx, and I am part of a research being conducted on how the Sakai LMS was used before, during, and after COVID-19 at the University of Ghana. The aim is to understand how the system supported teaching and learning, how perceptions have changed over time, and what lessons the University can apply for future digital transformation.

Your participation is voluntary, and you may choose not to answer any question or stop the interview at any time. Everything you share will remain confidential, and your real name will not appear anywhere in the study. I will use a pseudonym to represent your views.

With your permission, I would like to record the interview to ensure accuracy. If you prefer not to be recorded, I will take notes instead.

Do you have any questions before we begin?

Thank you once again for your time and contribution.

APPENDIX 3- INTERVIEW GUIDES:
INTERVIEW GUIDE: STUDENTS (Pre-COVID, During COVID, Post-COVID)

Section A: Demographic Information

1. Age: _____
2. Gender: _____
3. Centre/Region: _____
4. Programme: Information Studies (DE)

5. Level: 300
6. Years of experience using Sakai:
    - Less than 1 year / 1–2 years / More than 2 years

Section B: Interview Questions (Students)

1. Awareness and Experiences With Sakai (Pre-COVID focus)

1. Tell me about your first experience using Sakai LMS.
2. Before COVID-19, how often did you use Sakai, and for what purposes?
3. What challenges did you face when using Sakai before the pandemic?
4. How would you describe your attitude towards Sakai at that time (e.g., ease of use, usefulness, confidence)?

2. Sakai During COVID-19 (Crisis Adaptation)

1. How did your use of Sakai change when teaching and learning shifted fully online during COVID-19?
2. In what specific ways did Sakai support your learning during the pandemic?
3. What major challenges did you encounter (e.g., connectivity, navigation, assessments)?
4. Did you receive any support or training on how to use Sakai during this period? If yes, was it helpful?

3. Post-COVID Experiences (Sustainability and Transformation)

1. How do you use Sakai now that in-person learning has resumed?
2. How does your current experience compare to your pre-COVID and COVID experiences?
3. Do you consider Sakai an important part of your learning now? Why or why not?
4. What improvements would you recommend to make Sakai more user-friendly and effective?

4. Broader Reflections

1. What role do you think Sakai plays in supporting academic continuity at UG?
2. What lessons do you believe the university has learned from using Sakai?
3. How can the institution improve its digital learning systems in the future?

INTERVIEW GUIDE: FACULTY (Pre-COVID, During COVID, Post-COVID)

Section A: Demographic Information

1. Age: _____

2. Gender: _____
3. Centre (for DE facilitators): _____
4. Role: Lecturer / Tutor / Facilitator
5. Years teaching with Sakai:
    - Before 2015 / 2015–2019 / 2020–present

Section B: Interview Questions (Faculty)

1. Pre-COVID Use of Sakai

1. When did you begin using Sakai LMS in your teaching?
2. Before COVID-19, how did you integrate Sakai into your teaching activities?
3. What challenges or limitations affected your use of Sakai during this period?
4. How did your students respond to Sakai before the pandemic?

2. Teaching With Sakai During COVID-19

1. How did COVID-19 change your teaching practices with respect to Sakai?
2. Which Sakai tools did you rely on the most (e.g., announcements, assignments, quizzes, forums)?
3. What major challenges did you face while using Sakai during this period?
4. What type of institutional support or training did you receive, and how helpful was it?
5. How did your students engage with Sakai during the pandemic?

3. Post-COVID Use of Sakai (Blended Learning)

1. How are you currently using Sakai in your teaching now that in-person learning has resumed?
2. Do you consider Sakai essential in your teaching practices? Why or why not?
3. How does Sakai support blended or technology-enhanced learning in your courses?
4. What improvements would you suggest to enhance Sakai's effectiveness for instructors?

4. Institutional and Policy Reflections

1. What lessons do you believe emerged from the university's use of Sakai during COVID-19?
2. What additional support should the university provide to strengthen LMS integration?
3. How can UG improve long-term digital transformation and readiness in teaching and learning?