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The use of e-Learning Systems for pedagogy: What Zimbabwean Educators say

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***Abstract*— This paper examines the Zimbabwean educators' perceptions about e-learning systems in pedagogy. We use the term "educators" to refer to the teaching staff at a university context. The paper sought to present the views of the educators about e-learning. It is our assumption that these views could assist in explaining the existent second order digital divide currently persisting in higher education institutions in African developing nations such as Zimbabwe. The digital divide has resulted in a mismatch between the wide spread investment and the actual use of Information and communication technologies (ICT) like the e-learning systems. The anticipated contributions of such systems to education are yet to materialize since their pedagogical use in teaching and learning is still at its infancy. Higher education institutions are being robbed of the returns from the costly technological investments while digital natives are deprived of the ICT affordances, which their first world counterparts are enjoying. Using Giddens; Structuration Theory, the paper attempted to establish the meanings the educators attach to e-learning system platforms as tools for elevating university pedagogy. Both quantitative and qualitative data were collected from educators at one of the sixteen universities in Zimbabwe, a developing nation in Southern Africa. The findings as discussed in the paper reveal that despite being aware of the existence and the value of e-learning system tools, educators' integration of these tools in teaching is insignificant. This could be attributed to their concerns directed to the learning institution that require immediate redress if the widespread usage of e-learning tools is to be realized.**

***Keywords*— Pedagogy, e-learning, Learning Management Systems, perspectives, educators, Higher education institutions, Zimbabwe**

I. Introduction

Information and Communication Technologies (ICT) are a combination of electronic devices and technological systems such as the e-learning systems and highly demanded to ease pressure from increased students' enrolments [4]. An e-learning strategy has pedagogical benefits [17] that include equipping learners with skills to compete in the dynamic and information-rich global and digital environment [1]. In this paper, e-learning is the use of electronic media to create, store, transmit and deliver educational information synchronously or asynchronously [4]). It is time and space independent learning, less costly, encouraging collaboration, interaction, flexible and environmentally friendly [8].

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E-learning is facilitated by Learning Management Systems (LMS) [14], a computer software that can be acquired commercially or as an open source and handle content in different formats in real-time over the internet [14]. When blended, these tools complement the face-to-face (f2f) teaching method to offer pedagogic richness. When used alone, e-learning reduces the need for classrooms [7] without compromising the process of knowledge production, transmission, acquisition and reproduction [15].

Despite the affordances and widespread adoption of e-learning systems in education, their pedagogical use in HEIS in developing African countries is still limited. In [5] the use of e-learning systems is still at its infancy in developing countries regardless of their wide access resulting in second order digital divide, a gap between the access and use of ICTs, a problem of concern discussed in the subsequent section.

II. Problem Statement

There is a paradox of the second digital divide in HEIs particularly in Zimbabwe. This is evident in the low uptake of e-learning systems by educators regardless of the systems' role to achieve the desired pedagogical goals [13] and being good sources of pedagogically meaningful information. It is on this premise that we sought to establish educators' view about e-learning system tools as there is limited literature explaining such a domain [16]. This paper sought to answer these key questions relating to how ZZimbabwean educators perceive the e-learning systems in education, their teaching preferences and concerns? Such answers are relevant as there is limited research examining the educators' view on the synergistic relationship between pedagogies and e-learning platforms [22]; [25]. Furthermore, sstudies indicate that e-learning platforms are rather used as information transmission tools where learners are passive consumers than active participants and co-producers of learning content. Educators separate pedagogy from technology and hardly use the e-learning platform features to create interactive learning activities [25]. The findings inform both the researchers and HEIs management such that their decisions are not influenced by the "techno positivist ideology" [19] a common situation revealed in literature as depicted in the following section.

III. Related Work

The resource constrained developing nations in Africa fail to cope with the increased student enrolments in higher education. The traditional teaching strategies are no longer appropriate for the technically savvy generation of students. E-learning is an ICT component fuelling the paradigm sshift from iinstructor to student-centric learning [3], [11]

Nevertheless, aaffordances from the e-learning strategy yet to be realized in Zimbabwean and other similar contexts [20]. For example [5] studied the adoption of e-learning in developing countries and found that use of such widespread systems was still at its infancy. Despite many attempts to explain this paradox, there is still limited discussion on the educators' perception about e-learning systems in pedagogy. As [16] observes "there is scanty empirical evidence regarding the preferences of e-learning systems by lecturers". However, more literature is on mmarketing than regarding potential users' e-learning system tools' preferences and concerns [19].

Where educators' perceptions have been considered, such research relate to developed nations and not developing Africa. One example is a study by [3] who investigated Jordanian lecturers' attitudes towards the adoption of e-learning, which were found positive. A similar study by [2] focussed on the perceptions of Turkey academics about e-learning. [18] had surveyed the perceptions of the faculty at the Manchester Metropolitan University in the United Kingdom and findings conform to existing literature that educators have a positive attitude towards e-learning systems [3], [2] compared to inflexible traditional teaching and learning paradigms [20], The few studies relating to Africa include [20] who observed that institutions in this environment lag in the use of ICT in education. This has been attributed to such factors as lack of institutional support, resources, information, knowledge and expertise to embrace e-learning technologies [18]. Nevertheless, these are not generalizable [9] to the HEIs in Zimbabwe, a country with unique circumstances and social context [5] hence the need to establish these educators' perceptions through the lens of Giddens' Structuration Theory, discussed in the nest section.

IV. Methodology

Data were collected from a single university, which was incepted in 1992 and currently with nine-thousand undergraduate and postgraduate students enrolment on either part time or full time basis. The HEI had a Sakai LMS implemented in 2012 aimed at alleviating challenges of teaching a group of students through traditional means. A mixture of questionnaires and interviews were used to collect data from thirty randomly selected educators and twenty-seven voluntarily participating thus achieving a 90% response rate. Follow-up interviews in a range of 15-20 minutes were conducted with volunteers from the department of Computer Science, with a higher representation of users of the institutional LMS. Interviews were for validating and verifying questionnaire data on the perceptions about the Sakai LMS in pedagogy. Both questionnaire and interview questions were guided by Giddens' structuration model, an organizational theory in nature [10], Use of the model was motivated by the limited studies that employ it as lens for establishing educators' views about LMS in HEIs. Common is an analysis based on the deterministic frameworks like the socio-cultural Activity theory, [6] and behavioural theories like Technology Acceptance Model [12], which disregard the influential role of the institutional context in explaining user perceptions. There was need to use a theory ccognizant of the structural elements as they govern the basic institutional alignments in a society educators operate in. Structuration model, three dimensions of structure, signification, domination and legitimation interlinked with the corresponding dimensions of interaction, communication, power and sanction via the modalities of interpretive scheme, facility and norm. These modalities represent the central dimensions of the duality of structure capable of interpreting educators' perspectives and the meanings they attach to e-learning as defined by their interactions and the structural properties of the HEI case.

V. Results

Analysed data depicted in Table 1 conform to existing findings in literature indicating that the educators have a positive attitude towards integrating the ICTs into teaching and learning. Table 1 shows that 88.9% respondents perceive Sakai LMS tools so be an added value to teaching and learning

Table 1 Educators' perceptions about e-learning

Educators' attitude towards the Sakai e-learning system					
		Frequency	*Percept*	*Valid Percept*	*Cumulative Percept*
Valid	Added value	24	88.9	88.9	88.9
	9	3	11.1	11.1	100.0
	Total	27	100.0	100.0	

This is contradicts the tendency to view educators as having a negative attitude towards ICTs in general. Survey results were validated by the interviewees demonstrating their preferences in blending traditional face-to-face with ICT teaching tools demonstrating their being cognizant of the value ICTs in attaining pedagogy. For instance, an interviewee said:

"when physically present in the classroom during a lecture, I can observe each and every student to identify the signs of confusion or misunderstanding and further elaborate to such ones so that they move at the same pace with the rest of the class".

In agreement, another interview asserted that

" credibility is lost if students have to operate on their own without the presence of the educator particularly when taking assessments because you will not be sure if you are assessing the actual student or a colleague did it on their behalf".

We found no relationship between the use of LMS tools and computer skills literacy as the educators professed high self-efficacy denoted in the above average computer skills. In addition, most educators were aware of the existence of the institutional LMS as depicted in Figure 1 an indication that communication about the system has taken place. Their perception about the e-learning in general is influenced by factors other than mere awareness, computer skills and basic availability of ICT infrastructure because 25.9% of the

educators frequently integrate the e-learning system tools into education despite their awareness of the system's benefits on education [23]

Figure 1 Awareness of the institutional e-learning system

Our findings as shown in Figure 2 indicate that 95% of the respondents are ICT literate, an indication that ICT skills is not a cause of the gap between ICT access and use.

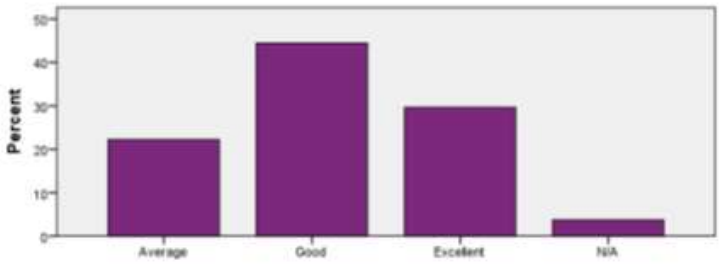

Figure 2 ICT skills levels

Existing literature has also attributed the low uptake of ICTs to the level of education. This research is contradicts the notion that the higher the level of education, the more the frequency of ICT usage since all the respondents have an undergraduate degree certificate, but still the LMS tools are used sparingly

Table 2 Educational level and use of ICTs

		Sakai Use		Total
		Yes	No	
First Degree	Count	2	0	2
	% within Sakai Use	13.3%	0.0%	7.7%
Masters	Count	10	10	20
	% within Sakai Use	66.7%	90.9%	76.9%
PHD	Count	3	1	4
	% within Sakai Use	20.0%	9.1%	15.4%
Total	Count	15	11	26
	% within Sakai Use	100.0%	100.0%	100.0%

In Table 2 50% of the educators have a Master's degree and a third have a PhD and are not using the LMS tools in the teaching practice. It can be concluded that there is no correlation between the level of education and ICT use. The results from our study show that no relationship exist between age and the extent of ICT use as depicted in Table 3. Contrary to the general observation that the digital natives engage more with ICTs than the so called digital immigrants [21], our findings demonstrate that there are more educators in the digital immigrant's category who engage ICTs in teaching than the professed digital natives. For instance, 71.4% and 100% of the educators in the age categories 46-55 years and 56-65 years respectively actively engage the e-learning tools into the teaching practice while 55.6% and 44.4% in the 26-35

Table 3 Age-ICT use relationship

Age versus the use of the e-learning system in teaching				
		Sakai Use		Total
		Yes	*No*	
Age	26-35 Count	5	4	9
	26-35 % within Sakai Use	33.3%	36.4%	34.6%
	36-45 Count	4	5	9
	36-45 % within Sakai Use	26.7%	45.5%	34.6%
	46-55 Count	5	2	7
	46-55 % within Sakai Use	33.3%	18.2%	26.9%
	56-65 Count	1	0	1
	56-65 % within Sakai Use	6.7%	0.0%	3.8%
Total	Count	15	11	26
	% within Sakai Use	100.0%	100.0%	100.0%

The analysis of the collected quantitative data demonstrates that the educators neither fear nor despise the effectiveness of the e-learning system tools in education. Nevertheless they still do not fully integrate the e-learning system tools in the teaching practice. On further probing the interviewees, we found that issues of system usability, accessibility and availability of up to date infrastructure were at stake. All these had implications on the institution.

A. *Usability*

We found concurrence between survey and interview data regarding the usability of the institutional e-learning system platform. From the survey data about 90% of the participants indicated that they both have a working computer system allocated to them by the institution as depicted in Table 4 and were also aware of how to access the e-learning system platform.

Table 4 Institutional working computers

		Percent	*Valid Percent*	*Cumulative Percent*
Valid	Yes	88.6	88.6	88.6
	No	11.4	11.4	100.0
	Total	100.0	100.0	

Table 5 shows how widespread the access to working computers is a demonstration that educators take value in ICT enabled teaching. Complementing the results are the sentiments from one of the educators who had this to say: 'I highly recommend the use of ICTs in teaching and learning"

However, they found it difficult to navigate the system due to lack of adequate training. Table 6 shows that only 24.5% of the respondents indicated that they received initial training on how to use the e-learning system tools as organised by the institution. In agreement, several interviewees indicated that they never attended any training and were not aware of such an arrangement. One of the interviewees claimed having to download tutorials from the internet on how to use the e-learning system tools in teaching. Other two interviewees appreciated the help they got from colleagues on how to do integrate basic functions of the e-learning system in teaching. Both the survey and interview data indicate that the institution is failing the educators in their endeavour to teach with ICTs.

Table 2 Training on sing e-learning tools

		Percent	*Valid Percent*	*Cumulative Percent*
Valid	No	69.8	74.0	74.0
	Yes	24.5	26.0	100.0
	Total	94.3	100.0	

The respondents also confirmed the institution's failure to avail a user manual to assist the educators on using the e-learning system tools. Table 7 demonstrates that about 25% of the respondents have had access to the user manual otherwise the rest have not.

Table 3 Availability of the user manual

		Percent	*Valid Percent*	*Cumulative Percent*
Valid	No	35.8	79.2	79.2
	No idea	9.4	20.8	100.0
	Total	45.3	100.0	

B. *Accessibility*

From the interviews we gathered that the educators had challenges in accessing the e-learning system from both within and outside the institution's network. All the interviewees had a common complaint that every time they arranged for their students to take an online test, the system would fail to handle the numbers and crush and it would take even "days to have the problem resolved" said one interviewee. In such cases the disrupted process will have to be abandoned and the educator and students force to resort the traditional means of assessing the students. Another interviewee indicated that it has been a year now since the grade book facility of the e-learning system malfunctioned. Asked if the problem was reported to the relevant authorities, the educator indicated that they dii on numerous occasions and till to date nothing has been done. In validating the claim, we personally attempted to view the students' grades in the grade book and it generated an error. The interviewees also attributed the e-learning system inaccessibility to the constrained electricity power resources facing the institution. The situation has become worse due to failure to procure diesel for the backup generator power as a result of the shortages of financial resources the currently is currently facing. These are not common generalizable factors but are peculiar to the institution and the Zimbabwean economy

C. *Accessibility*

Linked to the problem of accessibility is availability. Despite affording the ICT infrastructure compatible with the e-learning system tools, the institution has been criticised of availing the basic infrastructural requirements, which are substandard for the chosen e-learning system tools. For example, an interviewee pointed out they willingness to record live videos and audios for their lectures for the students but have been constrained by the available hardware and software specifications which are below the required standards for such operations. They also criticised the institution for failing to acquire suitable infrastructure for enabling the projection of lectures in such formats. Adding to that is the institution's failure to implement bring your own device (BOYD) policy that could enable them to utilise own or borrowed equipment for teaching purposes. This policy could also go a long way in alleviating the shortage of high quality computing infrastructure which some students already own but cannot bring to the institution due to security issues associated with them.

From the preceding discussion, it is clear that the institutional context has a major role in influencing the way the educators perceive the e-learning systems in teaching and learning. Adding to the problems of usability, accessibility and availability is the problem of the e-learning system choice and implementation. Of the surveyed educators, 85.4% confessed to not having been consulted prior to choosing and implementation of the e-learning system currently implemented at the institution. Of the few who claimed to have been consulted, their preferences were never considered by the institution management and decision makers. One such is a technically savvy educator who attempted to advise the

management against the choice of the e-learning system known for negative impacts but was surprised to see the same platform being rolled out as an official institutional e-learning platform. The institutional management have been blamed of the top-down approach and failure to consult and consider the educators' priorities and choices of the e-learning system prior to the implementation. This could be the reason why the e-learning system is lying idle with limited use since [24] had since observed that nonusers of ICTs would be more willing to engage with new technology if their assumptions, fears, and preconceived ideas about ICTs are properly addressed.

It is on the premise of the preceding discussion that we recommend that the learning institutions recognise the educators' priorities and reward effort towards integrating e-learning systems in education. This could go a long way in motivating the frequent and effective use the e-learning system tools in the teaching practice. The survey data depicted that currently the institution is not cognisant of the few users of the e-learning system who indicated they would appreciate incentives ranging from book prize to financial awards such as travel grants to attend academic conferences.

VI. Conclusion

The findings from this research have evidence of the role played by the institutional context in enabling or constraining the use of the invested in e-learning systems and ICTs in general. Contrary to the deterministic theories, the structuration theory concepts have made it possible for this research to demonstrate the importance of communication, power and sanctions from norms and culture in creating meanings about ICTs, domination and legitimation of their use in education. The way the Zimbabwean educators currently view the e-learning system are more influenced by the context of their institution than by either individual or technological characteristics. The results are in confirmation with existing findings of a positive correlation between institutional support and ICT use long documented in [23].

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