TOWARDS IMPROVED QUALITY OF TEACHING AND LEARNING USING ICTs AND COMMUNITIES OF PRACTICE AT AFRICA UNIVERSITY

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Abstract

ICTs are gaining ground in University education throughout the world. Currently, a large Number of universities world-wide support ICTs in Education particularly Emerging Technologies in different forms. Despite this wide spread adoption of ICTs in university education, research on the impact of ICTs in Education suggests that the full potential is not yet realised. The focus of the paper was to understand why ICTs have not yielded the expected results despite a number of global, national and institutional initiatives by policy makers and leaders and identify opportunities to improve the quality of teaching and learning using ICTs. The methodology used was literature review and Critical Discourse Analysis (CDA) of global, national, and institutional artefacts to try and understand the global, national and institutional contexts. The key discourses helped unmask and decontextualize the global, national and institutional contexts. The key findings from the Critical Discourse Analysis were (a) Policy makers assume technology determinism and consider ICTs as determinants of development. (b) The approach of technological determinism can be attributed to the both low uptake and sub-optimal performance of ICTs in achieving the ICT4D expectations. The primary objective was to identify the teaching and learning challenge at institutional (for Africa University) level and recommend suitable intervention. The teaching and learning challenge was identified as Africa University has not achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners learn using ICTs. The recommended intervention is an approach centered on Communities of Practice (CoP) and Emerging Technologies to address the teaching and learning challenge.

Keywords: Critical Discourse Analysis (CDA), Communities of Practice (CoP), Emerging Technologies, Technological determinism

1. Introduction

The central objective of this paper is to identify the teaching and learning challenge at Africa University and recommend suitable intervention. The teaching and learning challenge facing Africa University, in brief is the institution has not achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners learn using ICTs. This section sets the broad context and background through an analysis and synthesis of relevant literature of ICTs in education.

Use of ICTs in education continue to receive attention “… there is a growing trend in English-speaking education [UK and USA] systems to assume a technology rich environment for learning, and to investigate the impact of particular pedagogical approaches or learning strategies within that context.”(Association for Learning Technology (ALT), 2010, p.5). A related study by Ng’ambi et al. (in press) on the use of emerging technologies in South African higher education, also confirmed a positive motivation and adoption rate of emerging technologies. What is not clear to many stakeholders is “What works, in what context(s), to what extend – if there is evidence – why and/or how?” (ALT, 2010,
Evidence and Intervention and the adoption of the new knowledge and in Education. It includes an assessment of ICTs influence positive outcomes. This deliberate focus resulted from the observation that the education sector was not performing maximally i.e. was not yielding both the desired and expected outcomes. To advance the knowledge and application of ICTs in Education, this research study makes use of CDA at Global, National, Institutional and Educator level to understand the Zimbabwean context to “indicate points of leverage for change using educational technology to address educational challenge” (Czerniewicz & Jaffer, 2007, p.4).

While accepting that ICTs influence positive changes in Education I will argue against the Global, National, and Institutional approach by policy makers and administrators to make ICTs determinants and drivers of 21st century pedagogy. “Unfortunately, fashion and novelty often dictate that a technology-led focus prevails, despite the fact that educational issues tend to be more long-lasting than ICT artifacts. A kind of collective amnesia seems to prevent decision-makers and practitioners from taking account of lessons learned from research into the use of educational media conducted over many decades” (Kirkwood & Adrian, 2013, p.2). I also attribute the poor or sub-optimal of ICTs in education to this approach of technological determinism and recommend an approach centered on Communities of Practice (CoP), Emerging Technologies and Educators to bridge the gap i.e. promoting and achieving successful use of ICTs in education to address the teaching and learning challenges at Africa University.

In this paper attention is on improving quality of teaching and learning. ”Although costs can probably be reduced in certain administrative transactions, the overall financial commitment is likely to increase” (Kirkwood & Adrian, 2013, p.3). The adoption of ICTs in education should never be viewed as a means of reducing institutional expenditure.

Improving quality of teaching and learning in this paper means “
• changes in the means through which university teaching happens; and
• changes in how university teachers teach and learners learn.” (Kirkwood & Adrian, 2013, p.5)

2. Methodology
The first step was understanding and setting the context of ICTs in Education using Gee’s social theory of discourse. Gee outlined his social theory of discourse as consisting of “d” (grammatical packaging of language) and “D” (ways of representing, being, believing, valuing) discourse (Rogers, ND). The following policies documents and artifacts were subject to CDA with emphasis on the “D” discourse: National ICT Policy, National e-learning programs, Institutional policy, and various national, regional and global researches and artifacts on ICTs in Education.

Key “D” discourses were identified, classified and analyzed using a conceptual framework by Czerniewcz and Jaffer (2007) which classifies discourses into five domains i.e. Global, National,
Institutional, Disciplinary, Teaching and Learning. Four factors are used to analyse each domain i.e. Socio-economic, Organizational, Pedagogical & epistemological, Technological. Figure 1 below is Matrix showing the conceptual framework by Czerniewicz and Jaffer.

Table 1: The conceptual framework narrative
Source Czerniewicz & Jaffer (2007, p.6)

<table>
<thead>
<tr>
<th>Domains</th>
<th>Factors</th>
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<tbody>
<tr>
<td></td>
<td>Socio-economic</td>
</tr>
<tr>
<td>Global</td>
<td>Organisational</td>
</tr>
<tr>
<td>National</td>
<td>Pedagogical &amp; epistemological</td>
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<tr>
<td>National</td>
<td>Technological</td>
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<tr>
<td>Institutional</td>
<td>Key issues and debates</td>
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<tr>
<td>Disciplinary</td>
<td>Key issues and debates</td>
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<tr>
<td>Teaching and</td>
<td>Possible investigations</td>
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<td>learning</td>
<td>Possible investigations</td>
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<td></td>
<td>Possible interventions</td>
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<td>Possible intervention</td>
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The CDA identified the issues and debates and was followed by an analysis and synthesis of related literature to investigate possible interventions and necessary investigations where existing literature and research did not provide relevant and conclusive evidence.

3. Critical Discourse Analysis (setting the context)

Acknowledged as theory and methodology when Fairclough published his book “Critical Discourse Analysis” in 1995. Premised on the belief that people use language to communicate ideas beliefs or emotions as part of a more complex social event that requires CDA to decontextualize and gain full comprehension. People use language to communicate ideas, beliefs or emotions, creating a more complex social event in the process. Language use, communication of beliefs, interaction in social situations, are three main dimensions of discourse analysis that help us unmask, analyse and comprehend this complex social event (Brown, 2013).

I make use of CDA in this paper to analyse Zimbabwe National ICT Policy, Papers on the state of e-learning in Zimbabwe, Africa University Institutional policy, and various national, regional and global researches and artifacts on ICT's in Education. The documents represent Global, National, Institutional, and Teaching and Learning contexts.

This analysis of “d” (grammatical packaging of language) and “D” (ways of representing, being, believing, valuing) discourses provides insights of policy makers’ educational and social identities and their position on ICTs in Education and the Information society. It also helps measure willingness to facilitate and participate in ICTs in Education opportunities at Global, National, Institutional and Educator levels.

3.1 Global context

According to Czerniewcz and Jaffer (2007), the Partnership for Higher Education in Africa’s (PHEA) commissioned a team dubbed “Think Tank” to “develop a conceptual framework to provide PHEA with strategies for support and grant making projects and proposals involving the use of educational technology to address context specific challenges that contribute to improving the quality of learning and teaching in higher education institutions” (p.1). The global context derived in the PHEA initiative is considered as relevant and sufficient and adopted as a true reflection of the global context in this paper.
Table 2. Summary of Global Domain Adopted from Czerniewcz and Jaffer (2007)

<table>
<thead>
<tr>
<th>Soci-economic factors</th>
<th>Organizational factors</th>
<th>Pedagogical &amp; epistemological factors</th>
<th>Technologic factors</th>
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<tbody>
<tr>
<td>Global Domain (Context)</td>
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<td></td>
<td></td>
<td>Issues and debates</td>
<td></td>
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<tr>
<td>Enabling environment</td>
<td>Changing institutions</td>
<td>Curriculum frameworks</td>
<td>Appropriate reg framework maintenance</td>
</tr>
<tr>
<td>Electronic pressure</td>
<td>Integration of ICTs</td>
<td>Academic planning and reviews</td>
<td>Flexible learning requirements</td>
</tr>
<tr>
<td></td>
<td>with 90% frameworks</td>
<td>Research teaching strategies</td>
<td></td>
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<tr>
<td></td>
<td>Small development strategies</td>
<td>Educational technology curriculum support</td>
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<td></td>
<td>Intellectual Property</td>
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<td></td>
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3.2 National context

CDA of the Zimbabwe national ICT policy framework reveals Globalization and ICT4D at the top of “D” discourses. The policy embodies the spirit and concept of technological determinism, which I contest and propose alternative view in this paper basing on literature review and personal experience as an ICT practitioner and educator. The policy makers unequivocally prescribe ICTs as solution and determinant of all national development issues and prescribe policy statements for: Education and Training Sector, Commerce and SMEs, Agriculture, Tourism and Environment, Health, Mining and Manufacturing, Transport, Gender, Youths, Disabled & the Aged and Human Resources Development.

Of interest in this paper are discourses in the Education and Training sector. The following “D” discourses were identified: 
- Embed ICTs literacy in the pedagogy, 
- Standardise ICTs in the education sector, 
- Promote e-learning, 
- Build ICTs capacity skills in the education sector, etc. The national context based on CDA of the Zimbabwe ICT policy framework of 2007 is summarised in Table 3 below.

Table 3. National Context – Zimbabwe

<table>
<thead>
<tr>
<th>Socio-economic factors</th>
<th>Organizational factors</th>
<th>Pedagogical &amp; epistemological factors</th>
<th>Technologic factors</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Issues and debates</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Equal access to ICTs</td>
<td>Applicable and affordable ICTs</td>
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<td></td>
<td></td>
<td>Build ICTs capacity skills</td>
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<td></td>
<td></td>
<td>Promote e-learning</td>
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<td></td>
<td></td>
<td>ICTs in the education</td>
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<td></td>
<td></td>
<td>E-learning materials</td>
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<td></td>
<td></td>
<td>Research, graduate and apply R&amp;D</td>
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<td></td>
<td></td>
<td>Educational technology curriculum support</td>
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<td></td>
<td></td>
<td>Flexible learning requirements</td>
<td></td>
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</tbody>
</table>

3.3 Institutional context

The Zimbabwe Council of Higher Education (ZIMCHE) issued a directive in 2012 that all Institutions of Higher Education were required to have quality assurance policy that will regulate on issues of teaching and learning and all aspects of the university administration. ZIMCHE is the main statutory organization in Zimbabwe, mandated to enhance teaching and learning by supporting and guiding educational developers and leaders in higher education. Africa University commissioned an internal team that worked with a team of external consultants to draft a quality assurance policy. I use CDA to analyse this institutional quality assurance policy to identify key discourses. The outcome of the CDA is summarised in Table 4 below and constitutes the Africa University institutional context.
The following statements can be construed from Table 3 as a brief summary.

- No policies for infrastructure and technical support
- No policies for developing the digital literacy of students appropriate for higher Education;
- No policies for promoting and rewarding scholarly activities relating to learning and teaching with ICT (Kirwood & Adrian, 2013).

### 3.4 Teaching and learning context


The following statements can be construed from Table 5 as a brief summary.

- Differences in educators’ attitudes to the adoption of ICTs
- Differences in students’ attitudes to the adoption of ICTs
- Differences in educators’ conceptions of and approaches to teaching
- ICTs not embedded in pedagogy

### 4. The teaching and learning challenge

ICTs in education are gaining some ground in University education throughout the world. Currently, a large number of universities worldwide ICTs in Education in different forms. Despite this wide spread adoption of ICTs in university education, research on adoption suggests that it has not reached its full potential.

According to Ravjee (2007, quoted by Brown, 2012), “ICTs form only the thread in a complex net of issues, and their use is dependent both on the broader socio-economic and political contexts, and on local struggles and strategies around the distribution of resources and other aspects of redressing historical inequities” (p.42). Ravjee’s view is also supported by Kirkwood and Adrian (2013) “What is imperative to
the effective educational deployment of technology is an approach that is guided by inquiry and evidence rather than assuming technology as the undisputed determinant. Rigorous studies have not been undertaken to evaluate the impact of ICT for particular educational purposes? ” (p.1). This in my opinion can help explain why technological determinism or the mere diffusion, of ICTs has not yielded the expected outcome and will continue not to unless there is a paradigm shift.

Basing on literature review and personal teaching and learning experience at Africa University, my conviction is the teaching and learning challenge this institution is facing emanates from the technological determinism approach by global, national and institutional policy makers and leaders.

As a result of this disjuncture ICTs in education have not achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners learn. This is the teaching and learning challenge that I seek to address at Africa University.

Overcoming this teaching and learning challenge means that the teachers will use the computers not only to automate the traditional teaching practices but to blend pedagogy and ICT to produce enhanced learning. Making teaching and learning more interesting, seamless, and more cultivating than it is known to be in the traditional sense. Some of the key deliverables will be but not limited to the following: Increased use of ICTs in education; Increasing circumstances of carrying educational activities using ICTs; Embedding ICTs in teaching practices; Improving student learning outcomes.

5. Communities of practice and social learning

The main focus of this research report is ICTs in Education issues and their role in tackling the quality of teaching and learning challenges at Africa University in Zimbabwe. The research process included an assessment and analysis of the national, institutional, legislative and regulatory landscape in Zimbabwe in terms of how they support ICTs in Education. This was a trajectory towards determining the most appropriate intervention outlined and described in this section.

The derived intervention is centered on the theory of communities of practice (CoP) and social learning. What are CoP? Why CoP? Who will constitute the CoP? How will CoP operate? These are the questions this section seeks to clarify.

“Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better, as they interact regularly.” (Wenger, 2006, p.1). Their main objective is collaborative social learning and usually formed by a group of individuals with vested common interests. Examples of communities of practice a group of medical practitioners sharing experience and best practices on how to deal with tropical malaria; A group of pre-school teachers sharing teaching and learning experiences; etc. According to Wenger(2006) not every community qualifies as a community of practice e.g. our neighbourhood is a community but does not qualify as a CoP. A CoP must have the following three essential components:

- The domain (a defined and shared sphere of interest)
- The community (members to engage in joint activities and discussions)
- The practice (shared experiences, stories, tools, ways of addressing problems)

Communities of practice are a preferred intervention to teaching and learning challenge facing Africa University they “… offer an alternative [and useful] perspective on the relationship between technology and practice.”(Oliver, 2011, p.378). This approach of social learning through participation and collaboration, is backed by anthropological studies, carried out mostly in work environments that “links learning to identity and competent performance within a community.” (p.378). It is on the basis and strength of the works of Wenger(2006, 2010) and Oliver(2011) that communities of practice and social learning is the recommended central mode of intervention.

The core of CoP membership is Africa University’s lecturers. This resulted from the observation that Africa University was not yielding both the desired and expected outcomes through the application of ICTs in teaching and learning. To advance the knowledge and application of ICTs in a teaching and learning I recommend a CoP consisting of interested Africa University lecturers. This will help “indicate points of leverage for change using educational technology to address educational challenge”(Czerniewicz & Jaffer, 2007, p.4).
The CoP will ensure that ICTs in education help to improve the quality of teaching and learning at Africa University i.e. achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners.

- Embedding ICTs in pedagogy;
- Identifying gaps to increase technology use in education;
- Improving the circumstances/environment in which educational activities are undertaken using ICTs;
- Leveraging ICTs to improve teaching practices;
- Improving (quantitatively and/or qualitatively) student learning outcomes (Kirkwood & Adrian, 2013).

This will be achieved through performance of the following participation tasks or activities by the CoP members:

- **Post and share documents, videos and pictures with CoP**
- **Search and use CoP posted resources**
- **Collaboration and blogging with CoP**

Communities of practice have been applied successfully in organizations, education, associations, social sector, international development, and on the web (Wenger, 2006). Basing on their wide spread successful application and strong anthropological studies and field research in their support is not illogical to assume that they can improve the quality of teaching and learning i.e. achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners (Kirkwood & Adrian, 2013). Table 6 below describes the domain, the community and the practice of the proposed CoP.

### Table 6. Composition of the proposed CoP

<table>
<thead>
<tr>
<th>The Domain</th>
<th>The focus domain of the CoP will be:</th>
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<tbody>
<tr>
<td></td>
<td>ICTs in Education</td>
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<tr>
<td></td>
<td>Emerging Technologies</td>
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<tr>
<td></td>
<td>21st Century Pedagogy</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>The community</th>
<th>The community will consist of a membership group comprised of:</th>
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<tbody>
<tr>
<td></td>
<td>Africa University educators</td>
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<tr>
<td></td>
<td>Post Higher Education educators</td>
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<tr>
<td></td>
<td>Administrators</td>
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<tr>
<td></td>
<td>Sponsors</td>
</tr>
<tr>
<td></td>
<td>Suppliers of ICT solutions and services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The practice</th>
<th>Ensure that ICTs in education help to improve the quality of teaching and learning i.e. achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners by:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Embedding ICTs in pedagogy</td>
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<tr>
<td></td>
<td>Identifying gaps to increase technology use in education</td>
</tr>
<tr>
<td></td>
<td>Improving the circumstances/environment in which educational activities are undertaken using ICTs</td>
</tr>
<tr>
<td></td>
<td>Leveraging ICTs to improve teaching practices</td>
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<tr>
<td></td>
<td>Improving (quantitatively and/or qualitatively) student learning outcomes</td>
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</tbody>
</table>

6. Conclusions and Recommendations

ICTs are gaining some ground in University education throughout the world. Currently, a large number of universities worldwide support ICTs in Education particularly Emerging Technologies in different forms. Despite this wide spread adoption of ICTs in university education, research on the impact and adoption of ICTs in Education suggests that it has not reached its full potential. Literature review in this paper suggests that this can be attributed to the top down and technological determinism approach by leaders and policy makers.

The focus of the paper was to understand why ICTs have not yielded the expected results despite a number of global, national and institutional initiatives by policy makers and leaders and identify opportunities to improve the quality of teaching and learning using ICTs. The methodology used was Critical Discourse Analysis of global, national, and institutional artefacts to try and understand the global, national and institutional contexts. The key discourses helped unmask and decontextualize the global, national and institutional contexts.

The Critical Discourse Analysis helped unmask and decontextualize the global, national and institutional contexts. The key findings from the Critical Discourse Analysis were (a) Policy makers assume technology determinism and consider ICTs as determinants of development. (b) The approach of technological determinism can be attributed to the both low uptake and sub-optimal performance of ICTs in achieving the ICT4D expectations.

The primary focus was to identify the teaching and learning challenge at institutional level and recommend suitable intervention. The teaching and learning challenge was identified as Africa University has not achieved changes in the means through which university teaching happens; and changes in how university teachers teach and learners learn using ICTs.

From CDA and reviewed literature Africa University’s institutional context can be summarized by the following bullet points.

- No policies for infrastructure and technical support
- No policies for developing the *digital literacy* of students appropriate for higher education;
The recommended intervention for Africa University is an approach centered on Communities of Practice (CoP), Social Construction of Technology (SCOT), Emerging Technologies to address the teaching and learning challenge. The Domain, Community and Practice of the proposed CoP are detailed on Table 5.

References


- No policies for promoting and rewarding scholarly activities relating to learning and teaching with ICT. (Kirwood & Adrian, 2013).
- Differences in educators’ attitudes to the adoption of ICTs;
- Differences in students’ attitudes to the adoption of ICTs;
- Differences in educators’ conceptions of and approaches to teaching;
- ICTs not embedded in pedagogy


