

# The 21st century students' educational ICT preferences

## Abstract

Information and communication technologies (ICT) play an important role in education, hence the increase in initiatives towards their adoption and use. Despite the increased access existing literature has evidence of limited use leading to a digital divide, an indication that something is not right. It was on this background that this study sought to investigate ICTs the 21st century students favoured. Lack of this knowledge has resulted in a gap called the second order digital divide, a mismatch between ICT access and use. This paper fills the gap in literature by documenting the ICT preferences of the 21st century students for the benefit of both the digital divide researchers and the education institutions in a dire need of realizing the returns from the technological investments. Quantitative data were collected from the final year undergraduate students from one of the state universities in Zimbabwe, a developing nation in Southern Africa. The ICTs popularly accessible ICTs in this context include the electronic learning systems facilitated by the learning management systems. The students' underutilization of these technologies is a cause of concern that requires scholarly attention. The findings show that students prefer emerging technologies such as Google classroom instead of the LMS, YouTube video supported lectures and any other electronic content compatible and accessible from their ubiquitous mobile devices to enable content access independent of space and time and without heavy dependence on the internet.

**Keywords:** ICT preferences, 21st century students, developing countries, teaching and learning; higher education, second order digital divide

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## Introduction

For many centuries, the education sector has been providing skills for individual survival and economic development. Although the structures the brick and mortar structures have endured and are still visible scenery, the generation of students currently enrolled in higher education institutions has changed with the current times. For example, these digital native students no longer appreciate the yester years' teaching and learning methods once so popular and effective. The current students are frustrated by the teaching and learning strategies that are without Information and Communication Technologies (ICT). They find such strategies boring and unexciting. These students have been affectionately termed the digital natives,<sup>1,2</sup> a generation that has been born and bred in an environment proliferated with ICTs. The ICTs facilitate their collaboration, multi-tasking as well lifelong learning. It is in response to these students' ICT demands that the governments have increased the budget towards ICT innovations in the education sector. Furthermore, the learning institutions have been adopting and implementing the ICT resource based teaching and learning strategies. Such strategies include the electronic learning, blended learning, and mobile learning as well as cloud learning paradigms. Nevertheless, the general observation in the learning institutions particularly in the least developed countries demonstrates that these ICTs are underutilized in the teaching and

learning. It is on this premise that this paper sought to find answers to the underlying question:

## Research question

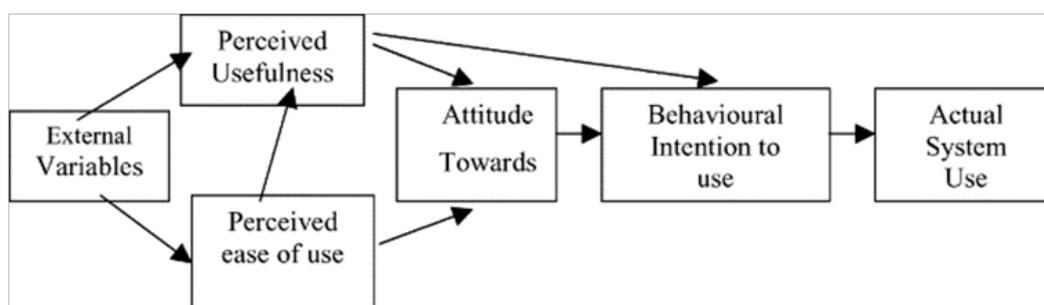
Despite the increase in the access to ICTs in education attributed to the reduced cost of the ICT resources, their ubiquity and affordability, the trend in teaching and learning is still based on the brick and mortar classroom set up. Even the use of the implemented ICTs is still at its infancy, hence the need to find the answers to the subsequent question:

What ICT enabled strategies to do with the 21<sup>st</sup> century students are found useful for learning purposes?

The answers to the preceding questions are relevant to both the researchers and the decision makers in the universities. With regards researchers, there have been concerns about the emergence of the second order digital divide evident in the low uptake of the implemented ICTs in teaching and learning. These concerns are demonstrated in Table 1. These studies concur with<sup>11</sup> that the use of ICTs is still at its infancy teaching and learning, hence this paper's objective to establish the students' technological preferences, an area with a limited attention in Literature as indicated in<sup>9</sup> that there is limited literature on students' ICT perspectives. This study sought to fill this gap and inform educationists on future ICT considerations.

**Table I** Level of usage in higher education institutions

Source	Observation
3	Academic institutions lag businesses in the use of ICTs to enhance effective teaching and learning
4	High access to ICT resources seldom led to widespread use with most educators found to be occasional or nonusers.
5	A ten-year retrospective on ICT in learning (1995-2005) found that use of ICT in teaching and learning was slow in 1995 and still appeared sporadic.
6	Despite the ICT infrastructure in HEIs the deployment of social media in the curriculum is not yet extensive across all aspects of teaching and learning.
7	Students use ICTs to learn but are limited by educators who do not use new technologies for teaching and are apprehensive about working with new technologies.
8	ICTs are not being used to their full capacity in HEI where fully online schoolwork is still relatively rare and access to online resources is limited.
9	Despite this wide spread adoption of e-learning in university education, research on e-learning adoption suggests that it has not reached its full potential
10	ICTs are used minimally and as supplementary tools to face-to-face method in HEIs



**Figure 1** The Technology Acceptance Model, version 1 adapted from.<sup>12</sup>

### Theoretical basis

The data collection was guided by Davis, Technology acceptance model depicted in Figure 1. In Figure 1 shows that the students' ICT preferences are influenced by external variables and factors like perceived usefulness, perceived ease of use, attitude towards technology and the intention to use it.

### Methods

Quantitative data were collected through online questionnaires administered to a cohort of 100 students studying Computer Science at a Science and Technology university in Zimbabwe, a developing country in Southern Africa. A 100% response rate was achieved since the students could complete the questionnaires during their free time and there was no risk of losing the questionnaire stored on the students' mail server. A combination of open and closed ended questions guided by the Technology Acceptance Model questions relating the perceived usefulness, ease of use, students' attitudes and their intention to use the implemented ICT based system.

### Results

Responding to the question on awareness of the ICTs implemented

in the institution, the students indicated their awareness of the Sakai Learning management system, which they however criticised of failing to meet their learning expectations. The students demonstrated frustration on the system that they criticised of non-flexibility, complexity and lack of value drawn from it. They indicated the difficulty in using the system due to its heavy dependence on the internet connectivity as well as localised nature such that access to the system was limited to campus environment. More so, students were not benefitting from the types of the system features such as tests that are mainly based on summative rather than formative type, hence hindering them from being innovative and creative. The system also cannot handle multiple users at the same time leading to inconvenience when it crashes.

Responding to the question regarding their preferences, the students indicated that they prefer using ICT resources that are compatible with their ubiquitous computing devices. They also prefer enrolling in a Google classroom, a platform with high flexibility conducive for a lifelong learning independent of time and place. The popular feature of this platform is the collaboration, enabling students to work on an assignment or project without a physical contact. Below is an extract of some of the open-ended questions depicting the value students draw from the Google classroom.

- a. Being connected to other students and lecturers.
- b. Real time notifications, tests, etc.
- c. Ease of use
- d. Hassle free,
- e. Location independent,
- f. Access to course material and tutorials

From the above extract, the students benefit from the emerging technologies more than the one legacy LMS facilitated e-learning systems popular in higher education institutions in Africa. Their priorities are further shown in the extract below, a response to their ICT priorities.

- a. It would be better if our lecturers could stream their lectures
- b. Timed assignments/tests should be available
- c. Time limits need to be added for tests
- d. Integration with SMS services for notifications

Access to electronic resources such as online databases and journals is another issue of high priority to the students. They indicated that such resources could improve their research capabilities, enhance learning and improve their learning activities. Popular among the cohort were the integration of YouTube audio and video lessons, a feature not activated in the institutional LMS, hence the students' negative attitude and lack of intention to use the system.

## Discussion

The survey results show that the 21<sup>st</sup> generation of students prefer teaching and learning strategies that enable them to actively participate in both problem solving and knowledge creation. The students despise not only the passive but also strategies that convert them into passive consumers of knowledge as characterised by the institutional LMS. This generation of students is well versed with technology, can multi task and learn better when appropriate ICTs such as the Google classrooms are integrated into their learning practice. Gone are the days when institutions could boast of such ICTs as the LMS for emerging technologies such as Google classrooms, YouTube and electronic resources. The ICT based systems considered to be value free, complex to use and not adding any learning value are resisted by students, hence the need for education institutions to cater for the students' preferences and needs if the returns on technological value could be gained.

## Conclusion

The study established the 21<sup>st</sup> century students' technological preferences and found that the digital natives' priorities include the Google classrooms, YouTube services and the general study aids provided on line. Contrary to the LMS still common in the developing countries' education institutions, the students find their preferred systems to be useful. Usable and adding value to their learning activities in accordance with the technology acceptance model concepts. The adoption and implementation of such ICT resources is widening the gap between ICT access and usage as they fail to serve the needs of the digital native students<sup>13</sup> currently operating in digital

society with labour market requirements demanding the integration of ICTs. The current generation of students yearn for appropriate skills relevant for survival in the information rich society. Nevertheless, existing literature shows that the least developed countries lag in the use of emerging technologies favoured by the generation of students in the teaching and learning. The institutions should take advantage of the proliferation of ICT devices that are compatible with the ICT resources available for free on the global network. More so the choice of ICTs for implementation in education should be guided and influenced by the intended users in this case the 21<sup>st</sup> century students if the prevailing digital divide is to be reduced.

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## Conflict of interest

No conflict of interest.

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