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ICT Integration and Paradigm Shifts in Teaching and Learning: An Urgent Call to Action

Issue at-hand

It is undeniable that the penetration of the Internet and the ubiquity and affordability of ICT devices have brought about lifechanging and systemic changes in the social, economic and political spheres in Africa. This important contribution of ICTs and the Internet to the socioeconomic development of the continent is expected to grow and significantly transform key sectors such as health, education, agriculture, etc. However, and paradoxically, the majority of users of ICTs and the Internet have acquired their ICT skills and competencies through “learning by doing” and not through the formal education and training system. If anything, the system not only lags behind in imparting ICT and Internet skills and competencies but also in implementing the necessary paradigm shifts in teaching and learning that can significantly improve access to and the quality of learning for the 21st Century that the continent needs to compete globally.

According to a study presented at AVU’s 3rd International Conference in July 2016 by Jacinto Cipriano Banze Junior entitled “*Does the lack of knowledge in information retrieval and computer and Internet skills and competencies impede the use of Open Educational Resources [OERs] for learning?*”, the education and training system of Mozambique, for example, is not preparing learners to take full advantage of the potential of ICTs and the internet to become savvy users of computer and mobile technologies and the Worldwide Web for their own learning and in fulfillment of academic programs. Banze indicates that Mozambique does not have an aggressive ICT integration policy in education. For instance, there is a very limited number of public schools and teacher training centers where students learn to use ICT tools for educational purposes. For a population of 28 million, there are only 200 such public institutions. Among the majority of users, there are those who have learned either in a private school, a

private training center or in a family environment. Moreover, and as a source of alarm, computer literacy courses are not included in pre-university curricula, secondary education programs or in primary education. The same phenomenon is also observed in most of the courses offered at certain state universities, for example at the Pedagogical University of Mozambique (UP), where computer courses are exceptionally reserved for students who have computer science as their area of specialization.

Policy Recommendation: Integrating ICT and Internet Use in the Teaching and Learning Processes to Promote Problem-solving, Research and analytical skills and competencies

Banze's study, mentioned above, set out to answer one very simple but fundamental research question with regard to the promotion of ODeL and use of OERs in the context of Mozambique: *How does mastery of online information retrieval techniques (data search and collection) and ICT devices and tools promote learning through the use of online and open educational resources?*

The study was motivated by the observation Banze made while teaching his French-as-a-Foreign Language (FFL) students on how to retrieve information on different online databases. He noted that a large majority of the students found it difficult to search for the documents they needed to begin their assignments as they lacked the competency to do so. It should be noted that this competency is critical for his students as the course is part of a program that is supposed to be delivered in a dual mode (face-to-face and online) at the Beira Institute, one of the four institutes of the UP that offers teacher training in FFL using distance and self-directed learning modes.

The French language course at Beira is based on contents related to psycho-pedagogical training, use of authentic documents, the pedagogical and/or didactic documents that can be found at a physical resource center on campus or on the Internet where students can find online courses through a dedicated learning platform. It became evident that such a course design requires a skillset that the students did not have when they join the course. As Banze pointed out, while students can easily find the educational resources they need for their learning at the resource center, they quickly realize that there are certain limitations to what is available at the center in terms of both the number and diversity of documents. In order to make up for the dearth of documentation at the center, students are obliged to use the internet to search for additional resources. However, and unlike the search for resources available at the resource center where they can rely on the help of a librarian, research on the internet requires that they use not only archival research techniques but also ICT and Internet competencies and skills they seldom have.

To answer his research question, Banze designed a research methodology that used a survey and a literature review to investigate the extent to which students enrolled in the 1st, 2nd, 3rd, and 4th years of the FFL program (i) master a wide range of ICTs that are either essentially Internet-mediated (mobile phones, tablets) or both stand-alone and Internet mediated (computers, video and audio players); (ii) the Internet (WWW) and (iii) library and online information retrieval techniques.

In terms of findings, the survey provided the following results:

- (i) *Mastery of ICTs* among the respondents registered as 1st year students: 78% reported not having received any computer training. For 2nd, 3rd and 4th year students combined, 25% did not undergo any training in the use of ICTs; (ii)
- (ii) *Use of the Internet*: 69% of respondents registered in the 1st year and 59% respondents registered in the 2nd, 3rd and 4th years say they did not learn how to use it.
- (iii) *Mastery of library and online information retrieval techniques*: 41% and 25% respondents registered in the 1st and 2nd, 3rd and 4th year respectively declared that they did not learn to search for information both at the library and online.

Recommendations

As demonstrated by these results, the mastery of these three competencies and skills is essential for the use of educational resources both in libraries and online; and ultimately for acquiring problem-solving and research skills that have been identified as the most important learning outcomes for 21st Century labor market and lifelong learning. However, many African countries are yet to formulate and implement comprehensive ICT integration policies and reform the teaching and learning processes to entrench game-changing learning styles and contents into their education and training systems.

Banze underscores this situation by contrasting his experience in Mozambique and what is happening in most developed countries where computer science is a subject taught and learned at all levels of education from primary education. In France, for instance, at the end of the third grade, students between the ages of 11 and 15 are supposed to obtain a certificate (Certification of minimum knowledge in computer science). In Mozambique, on the other hand, there is no specific policy and curricular at the secondary and higher levels do not offer courses on ICTs. Moreover, the majority of libraries, resource or documentation centers operating in secondary and pre-university schools are not freely accessible and their bibliographic resources have not been digitized. The key recommendations are as follows:

- African governments should formulate and implement aggressive and comprehensive ICT integration in education policies. They should also take advantage of such policies to reform the teaching and learning processes so that they are more in tune with the advent of ICTs and the internet as pedagogical tools and game changers in the classroom.
- For Higher education institutions that are using ODeL, it is important to note Banze's advice on the three critical skills and competencies he identified. He recommends that tutorials and specific modules be provided to assist students in the acquisition of computer and Internet competencies, archival research techniques and use of online platforms for self-directed learning.

References

Banze Junior, Jacinto Cipriano (2016). *Le manque des connaissances en recherche d'informations et la faible maitrise d'outil informatique et Internet peuvent-ils défavoriser l'utilisation des ressources éducatives libres lors de la construction d'apprentissages ?* Paper presented at the 2016 AVU International Conference in Nairobi, Kenya.

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