Web 2.0 tools in UEM: opportunities for the improvement of the teaching and learning process

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Abstract

In the last years Mozambique has been experiencing notable progresses in what concerns with the telecommunications infrastructures. Benefiting from the referred improvements the Eduardo Mondlane University (UEM), through its Informatics Centre (CIUEM), has been undertaking several actions in the academic context to promote digital literacy and the ICT use and dissemination. In this context a complementary research was defined aiming to develop strategies targeted at providing and disseminating Web 2.0 tools and services to support teaching, learning and (academic) management activities.

This project, structured as an action-research project, concluded the implementation of the 1st research cycle that made available to the academic community the use of Web 2.0 tools and services. The results from this 1st cycle with an emphasis in the impact of the tools in the practices of teachers and students from the Education Faculty are presented.

The paper also reflects on the difficulties faced during this implementation process, derived from the actual context and difficulties of UEM. Finally, the analysis and replications derived from this 1st cycle results is presented with an emphasis on the impacts to the redefinition of the 2nd cycle of the research project.

Keywords: Web 2.0, teacher education, strategies, university, information and communication technologies.

Introduction

Mozambique has been experiencing important progresses in the telecommunications infrastructures (the extension of fibre optic networks), in mobile communications (coverage and quality) and in the related services (like mobile Internet access). This context has allowed the dissemination of Internet access with relevant improvements in the quality of service and reduced access costs.

The impact of Information and Communication Technologies (ICT) in the society has contributed for the development of initiatives aiming to integrate this technologies in educational scenarios (Coutinho 2009). This carries a new challenge for the academic staff to keep up with the technological evolutions and to find the best way to integrate it in their practices.

The ICT and the new digital technologies are influencing the society as a whole (Bottentuit Junior 2008). When considering the specific case of virtual technologies there are now doubts that they have the ability to reduce the gap and distance between the actors of the learning process, teachers, students and resources (Siemens and Tittenberger 2009).

The recent progresses of technology are providing conditions for getting education to a whole new set of individuals in the world requiring a higher specialization and adaptation of methodologies and pedagogies (The Economist Intelligence Unit 2008).

The Eduardo Mondlane University (UEM), pioneer in the introduction of Internet in Mozambique, has also been improving the technological infrastructure (especially in the Maputo Campus) along with enhancements in Internet access conditions (with a latest change deriving from a new submarine optical cable that allowed an upgrade of the total bandwidth for the UEM from 20 to 155 Mbps).

In this context and motivated by the need to increase the use of Internet based communication tools and services, the UEM, through its Informatics Centre (CIUEM), has been undertaking several actions in the academic context aiming to:

- Promote the use of FOSS (Free and Open-Source Software);
- Promote digital literacy through training courses (from basic digital skills to e-learning tools, among others);
- Promote and develop policies related with ICT dissemination (in several academic contexts);
- Evaluate the adaptability of ICT to teaching and learning processes in UEM;
- Promote and disseminate scientific data access and sharing practices.

In parallel, the researchers have been following the evolution of Internet based communication services and tools, namely Web 2.0, and its potential uses in higher

education. In this perspective, this research was defined aiming to develop strategies targeted at providing and disseminating Web 2.0 tools and services in the academic contexts. It is expected that this initiatives will allow teachers to share and reuse information and collaborate (with other teachers or students), allowing the development of a participative and collaborative culture among UEM teachers, students and staff.
This paper presents some of the preliminary conclusions and results derived from the involvement of teachers (and students) from the Faculty of Education in this initiative, considering that they have a decisive role as an example for other UEM teachers.

Goals

The main goal of this research is to conceptualize, design and (partially) implement a strategic plan towards public dissemination and introduction of Web 2.0 tools for supporting teaching and administrative purposes in UEM.
Considering some experiences carried in developed countries, where the technology was introduced for decades, two approaches may be identified (Zhang and Martinovic 2008):

a) One with an emphasis in the cognitive importance of technology as an argument for providing technical knowledge to teachers;
b) Another with an emphasis in understanding the pedagogical integration of technology considering that technology cannot be considered apart from content and content production for its integration in the learning process.

The authors consider this second approach as the most suitable one for this study and its concepts are reflected in key decisions like the selection of tools to use and promote. In fact, Web 2.0 tools and services got their importance and popularity not only from their technical approach but mainly for their support for collaborative creation of content. Wikis and blogs, some of the services adopted by this study, are examples of this.

Research methodology and stages

The study is based in an Action-Research methodology. Based on this, some research cycles were defined in an iterative approach. Each research cycle generates results and provides information for the redesign of the following cycles, as seen in Figure 1.

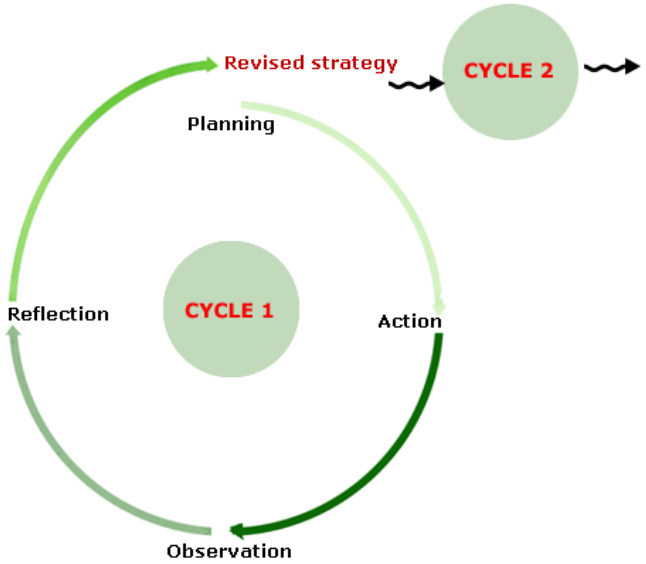

Figure 1 – The phases comprised in each cycle of an Action-Research approach.

Taking in consideration the specific case of the Faculty of Education of the Eduardo Mondlane University (FACED), the first steps of the study included a set of introductory lectures and workshops about the use of Wikis and Blogs. The newly available local servers for the blog and wiki services were also presented. Some of the potential educational applications from the use of social networks like Facebook were also discussed.

Tools used

During the initial stages of state of the art review and preparing for the first action-research cycle, a set of Web 2.0 tools were selected. They were chosen considering its wide adoption in universities worldwide, its easiness of use, especially when considering users with low technical skills, its compatibility with low bandwidth conditions and maintenance possibilities. Another criteria was based on the fact that most of the tools are open source, allowing local installation (in the CIUEM servers) and corresponding accessibility increases.

The option for locally available servers is also sustained by the fact that UEM is the host of Mozambique Internet Exchange (MOZIX) that routes the Internet traffic in Mozambique from the most important Internet Service Providers (ISP) in the country. This allows for an optimization of the service, reducing the international traffic and warranting a faster access to the servers for Mozambique users.

In the following sections a more detailed description of the adopted tools along with the specific reasons for its use is presented.

Wordpress blog - installed and configured (Portuguese version) supports a blog service for the UEM users. For easier access and memorization a (sub)domain was

defined - http://blogs.uem.mz. The local installation allows easier upgrades and adjustments in the service, and facilitates the customization in order to provide institutional identity to the blog service.

(Media)Wiki – A wiki service, provided by a Mediawiki[1]platform was also made available in its Portuguese version. This tool allows a web based collaborative content creation. It was installed in the same web server as the blog service. Like the blogs service, a specific sub-domain was created – http://www.wikis.uem.mz. Figure 2 presents the home page of the wiki service available at the UEM servers. Some links to UEM courses that are using the wiki service are also available.

Figure 2 – The UEM wiki main page.

Other Web 2.0 tools – along with the blog and wiki tools, other web 2.0 were identified. In this context, Facebook, Twitter and Youtube accounts for UEM were prepared. Its purposes of use changed according with the nature of the tool or the needs of the UEM service. But a common interest on improving the UEM communication channels was always in mind.

Online communities – to improve the interaction between web 2.0 users in UEM a virtual community was created in the Ning platform - http://web2-uem.ning.com/. This online community allowed for the researchers to have alternative on-line channels to interact with the users (students, teachers and staff). The participants of the workshops and courses carried by the researchers to promote Web 2.0 tools were invited to register in the platform and share their experiences and difficulties in using the tools along with suggestions for improving the service and its functionalities. The community was also used to inform on upcoming events, for the publishing of the materials used in the workshops, photos, videos and some tutorials and information on using the tools.

[1] http://www.mediawiki.org/wiki/MediaWiki/pt

This online community grew in its uses but due to a change in the Ning service (it was changed to a paid service) the researchers decided to migrate the community to a Wordpress based blog available at http://web2.uem.mz/. Being available in a local server the risk of discontinuation was eliminated.

Promotion mechanisms – in order to inform the most UEM members as possible, and in order to promote a Web 2.0 movement along with the person-to-person promotion through workshop and training courses other promotion initiatives were carried. A specific e-mail account was created - web2@uem.mz – used to send information about the initiative and to receive feedback from users. The main UEM web site was also used as a mean of promotion with the inclusion of a permanent link to the initiative blog along with links to each of the tools made available – blogs, wikis, Facebook page.

The UEM main web site has been used as a repository of wide spectrum information about the institution, contacts, courses and events. But it still lacks on not having regular updates. Considering this limitation and in an attempt to get the UEM closer to its publics, in mid-2009 this initiative created a presence in the Facebook for UEM. It was initially created to be used as an information channel of the Academic services. But due to the popularity of the initiative, soon it was used for other purposes related with the UEM activity. The success of the initiative is proved by the number of followers (it reached the Facebook limit of 5.000 which led to a change of the type of subscription to allow a higher number of followers). The activity in the page of UEM in Facebook is very intensive and it acts as an important discussion forum of the university related subjects. Along with the Facebook page a twitter account was also created for the same purposes.

In a second cycle of the research project analogue means of promotion were also used. The initiative prepared and made public in different UEM campus several posters promoting the initiative and the Web 2.0 tools available at UEM.

Initiatives with the Faculty of Education

Considering the possible uses of Web 2.0 tools for teaching and learning purposes the FACED was a natural pioneer in what concerns with experiencing the integration of these tools and evaluating the results of this integration. Together with FACED, the researcher prepared a plan of workshops and training sessions that occurred in FACED but also in the FOSS[2] lab of CIUEM. The promotion sessions were carried and a large number of teachers participated. From this, a smaller group of teachers from the FACED (4) were able to continue experiencing the tools in practical sessions. This

[2] Free Open Source

group included teachers that showed a clear wish to participate in a regular basis and a wish to involve students in the use of the referred technologies.

The teachers received private login accounts for them and group accounts to provide to the students for the Wikis and Blogs. Along the process they were supported by the staff of CIUEM in relation with:

- Providing better Internet access conditions (using the FOSS lab in CIUEM);
- Physical and virtual helpdesk concerning configuration and content uploading issues;
- Regular monitorization of the web services provided.

From the group of 4 teachers, 2 actually managed to carry the experience in their master courses.

The study was carried with students from two classes (2010 and 2011) on ICT in Curricula of the Master in Curricula and Teaching Development and from the Master in Adult Training. The goal of these matters was to present students with Web 2.0 tools and its applications in education along with an introduction to the teaching and learning theories related with ICT use (FACED 2011).

The first research cycle

The work with the first class - Master in Curricula and Teaching Development - was carried during the first cycle of this study (June and July 2010). The sessions were taken at the FOSS lab of CIUEM with a direct support from teachers and the researchers of the Web 2.0 initiative.

An introductory session to these tools was followed by some practical sessions that allowed students to get used to Web 2.0 tools. The training on blogs and wikis was aimed at assuring that there will not be many obstacles on content publishing related tasks. Students were expected to develop a collaborative research work based on the bibliographic support provided by teachers and on on-line sources and searches. They were evaluated, at the end of the course, by the teacher, accordingly with their frequency of access and use and the participation in the referred Web 2.0 tools.

After concluding the first action-research cycle the students were asked to answer to some questions about the experience. The results and opinions gathered from 13 students were used to improve the tools being provided, namely providing adjustments to become more user friendly and for grating a better user experience. The set of features was also improved, including the ability to upload images to the wiki along with other type of multimedia files. Along with these changes, the support and helpdesk was improved granting a more complete assistance in technical issues. Some of the adjustments also resulted from the direct observation carried by the researchers. All

the data was considered as a reference for preparing the following cycle (Ferrance 2000).

The second research cycle

The results from the first research cycle provided indications for some adjustments.

After these adjustments, the FACED teachers adopted the tools to work with new students from the Master in Adult Training but also with students from the Master in Curricula and Teaching Development for a period of 2 months, in the scholar year of 2011.

For supporting the students work, the teachers, together with the researchers, created specific blogs and a wiki and populated it with some initial content.

The first session with the students was managed by the teachers and the researchers and, like in cycle 1, it consisted of an introduction to Web 2.0 tools and services and its uses in the learning process. The main focus was on wikis, blogs and social networks (Facebook). In this session the accounts (group or single) were also created and granted.

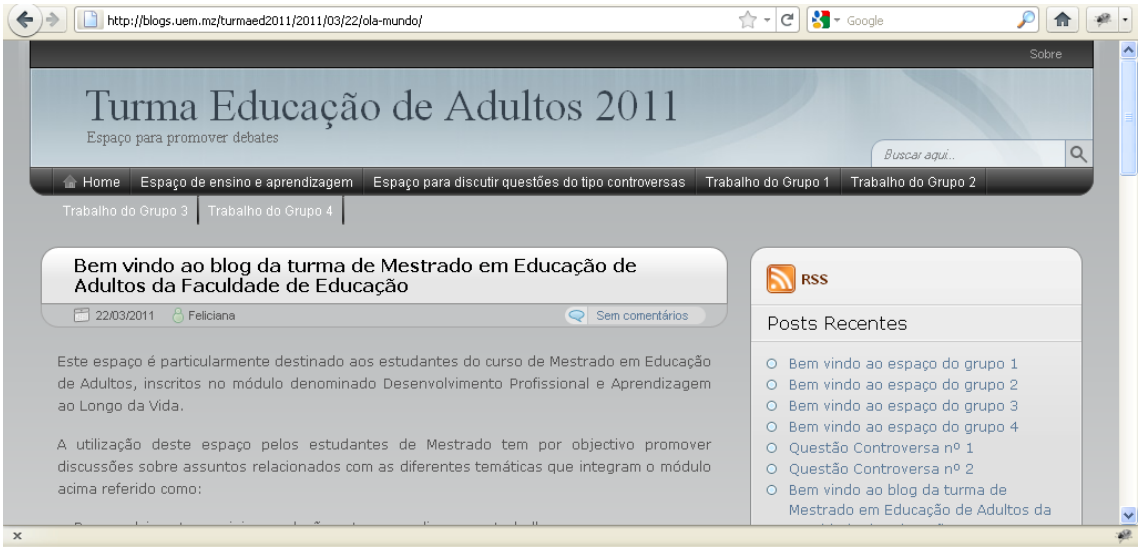

Figure 3 – A blog used by a group of students from the Master in Adult Training.

During the class period students were able to use the FOSS computer lab with Internet access and technical support from the UEM technicians. Each group developed a blog, as seen in Figure 3 and was responsible for collaborative develop a wiki, as seen in Figure 4.

Figure 4 – The wiki for the Master in Curricula and Teaching Development.

The number of students of the Master in Adult Training was low so the researchers focused their final analysis in the students of the Master in Curricula and Teaching Development, a group of 19 students. From that group 17 were able to answer questionnaires on the digital literacy of the students and their experience with the use of ICT and Web 2.0 tools in particular. 14 questionnaires were considered valid (the other 3 were incomplete). The majority of the master students are teachers from different institutions in Mozambique.

The students' opinions

Considering a possible integration of Web 2.0 tools in their academic and professional activities (with the support from CIUEM) the students of the class of 2010 enlighten the need for technical training in the use of the tools (61,5%), basic training in ICT, e.g. e-mail (30,7%) and the need for having private meetings with CIUEM to find the best combination of tools for their activities (46,1%), as seen in Figure 5.

Students also suggested:

- The inclusion of an informatics class in the course;
- The increase of the dedicated time for using the tools in the classes and its adoption in other classes;
- Training on other tools found to be important like Flickr and in the use of some specific hardware;

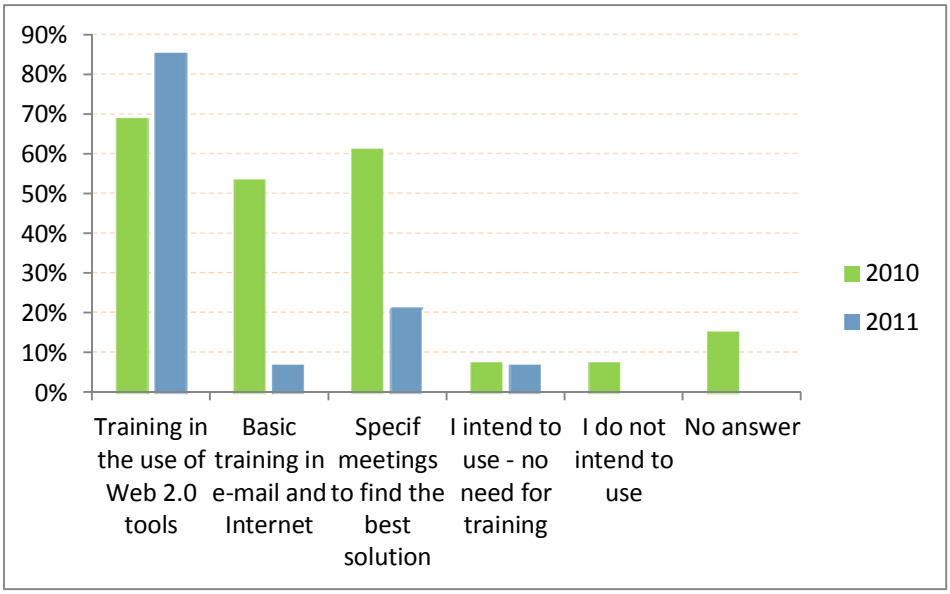

Figure 5 - Type of support expected from CIUEM for using Web 2.0 tools.

Figure 5 also shows the results for the 2011 class. From a comparative analysis between both classes there are some conclusions we may perceive. The 2011 students were surer in their opinions as no student said that it will not use and all answered. Considering the type of support expected from CIUEM, there was a clear reduction on the need for basic training and for specific meetings. It can be assumed that, probably, the adjustments made from the first to the second cycle specially the improvement in basic ICT training were more efficient. On the other hand, students may be clearer on how to integrate Web 2.0 tools in their activities as there was a lower percentage claiming for specific meetings. The need for continuous training in Web 2.0 tools kept high.

Conclusions

In UEM there is a lot to do so that a continuous and effective use of web based tools is a reality. For this, there is the need for implementing promotion sessions target in a massive way to UEM teachers to demonstrate the potential advantages of its use. Some obstacles can be found like the Internet access conditions. It is important a stable and liable service is provided to assure a positive user experience. This is a particularly relevant issue when considering the Faculties located outside Maputo, with much more constraints at this level.

Once all the basic conditions are created and some on-line communities are created, another challenge comprises the task of having regular updates of the information (where needed) in a way that new members and new initiatives find suitable spaces for their needs. Technical upgrades of the tools are also essential for bug fixes and interface upgrades.

Considering the users referred in this paper, the master students showed a preference for developing their work groups together at the FOSS lab. Although they were using a wiki and had incentives to develop their work remotely, they still preferred to continue the traditional practices of developing a group work together in a same place.

But, although there is only preliminary data, positive results were gathered in what concerned with expectations and intentions to use the Web 2.0 tools in the future. It is also important to highlight that from the first to the second cycle less students claimed for basic training. This may reveal that the improvements made on training and support were important.

In a broad analysis, Web 2.0 may contribute to bring to UEM a new type of participatory democracy through the Internet. On the other end, UEM has the chance to build a student profile that is, at least, aware of the importance of ICT in different contexts. The preliminary results reveal that students and teachers are willing to continue the use of Web 2.0 tools and that the work must be continued and reinforced.

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