University Networking in Developing Countries based on C4D-Learning

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Introduction

In recent years, the establishment of cooperation networks between universities is one of the most important trends in higher education all over the world. Well recognized local and international university networks have been implemented in most educational institutions. It is common to find associations of various prestigious universities collaborating in a high-technology research project including a very specialized teaching as well. This is the most common cooperation networks among higher education institutions in developed countries. An increasingly common type of networking between developed and developing universities is related to cooperation for development. This is the case of many universities in Africa that are needed for external help in order to improve its capabilities. Numerous memorandums of understanding regarding first world institutions that collaborate with universities in developing countries describe contributions of eventual visiting professors, teaching material and courses. But probably there exist another type of more important, but less explored association, such as networking among developing universities. The new goal, in this case, is not only the excellence but also the mutual development.

Some of the most important problems are not only related to physical resources, such as the lack of qualified professors and the difficulties to produce advanced material for new courses are major problems in a developing university. Information and Communication Technologies (ICTs) and specially e-learning available nowadays, facilitate that these organizations may look for collaborations outside their area to overcome these problems. Although highly valuable synergies are produced from these solutions, they frequently generate a counterproductive dependence on institutions from developed countries. One additional problem of this collaboration is that it is not symmetrical but tutelary and the material and staff coming from the supervisor institution could not be adapted to local needs and idiosyncrasy. Thus, new models of collaboration among developing and developed institutions in higher education are required nowadays.

Existing Limitations

Although there are many emerging universities in Africa and some of them are at a fair position in teaching and researching rankings, there are a large number of universities in this continent that are struggling in an extreme difficult situation. Most common limitations are:

- Unstable energy conditions
- Lack or precarious connectivity
- Hardware maintenance

- Software administration
- And economic problems in general among others.

Additionally many universities have problems to complete their faculty, especially there are very few technical professors specialized in ICT and other novel fields.

The cooperation group TEDECO [5] and the educational innovation group TIDE [6] from the Technical University of Madrid has been studying the necessities of a group of universities of Central Africa (Ngozi, Mwaro and Bujumbura universities at Burundi; and Bukavu University, Peace University, High Pedagogy Institute at Congo Democratic Republic; Ethiopian Catholic University at Addis Abeba). After years of experience and ground work and considering developing universities, collaboration in networks seems is highly recommended but there are some existing problems to be taken into account:

- University cooperation from developed may entail problems of discrepancy with respect to the goals and procedure of teaching in local societies. Sometimes this collaboration degenerate in a cycle of dependence that is hardly broken, preventing the capacity of developing institutions to control their own study plan and design its sustainability. The sporadic collaboration of volunteer foreign professors could be a good (and profitable in a short term) help for African higher education, but its generalization could introduce a medium term a harmful impact against hiring local staff. And this would create a serious problem of sustainability of developing universities in a long term.
- Problems for adopting traditional ICT solutions such as e-learning: Current e-learning applications are developed in developed countries and for their developed societies. That is the reason of the huge gap between technical requirements of these applications and technical limitations of the majority of the African universities.
- Some technical problems such as the connectivity, limited bandwidth, or low-performance computers among others, represent a handicap for establishing networking when non adapted tools are used.

Taking into account these differences it is quite obvious that conventional e-learning strategies cannot be applied to our target universities. An adaptation of hardware and communication conditions is needed for using e-learning applications in a different way. Contents should be adapted thinking about the specific context of the classes.

c4d-learning proposal

c&d-learning or c4d-learning (learning for cooperation and development) has been our recent proposal [1, 4] to adapt e-learning applications to the characteristics of developing educational centres. It is an approach to help the development and consolidation of these institutions. The adaptation is related to the reduction of technical requests, a simplification of the elaboration of contents and additional functionalities for asynchronous connections. In conventional e-learning the professor is working full time at the university and the students have Internet connection at their houses. They study in an asynchronous timetable using e-learning platforms. At our target universities the situation is completely the opposite. Students do not have computers at home, technical equipment remains at the university together with Internet access. As in the majority of e-learning methodologies, in c4d-learning students may study following a fix timetable at the university, but the professor would not need to be onsite or online. In this case due to part-time professors that cannot be connected at the same time that students. The sketch of c4d-learning classes is represented in Figure 1.

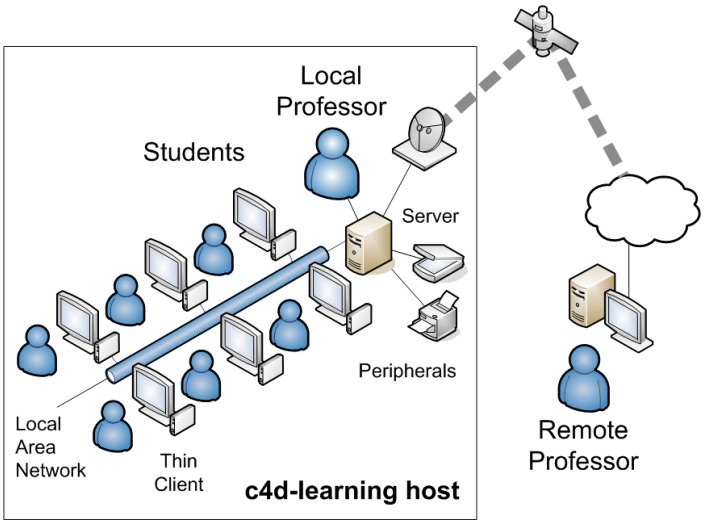

Figure 1: c4d-learning sketch.

With several open and available learning platforms, each day it is more difficult to justify the development of this software from scratch. Free solutions such as Moodle [3] are suitable for multiple operating systems and are supported by a large community—i.e. forums, documentation, updates, etc. Consequently, these solutions can be adapted to every user requirements. TEDECO and TIDE is currently continuing the adaptation of Moodle to developing countries requirements, optimizing an asynchronous education model with three new features: an automatic content synchronization avoiding the use of the Internet connection in periods with high demand of bandwidth (working hours), an enhanced off-line courses management system, and a new role, the local professor as a content facilitator to local students.

A complete strategy composed of three phases is proposed for c4d-learning [2] to deal with hardware infrastructure problems, establish an Internet connection system and developing multiple software applications. From the side of software, e-learning applications seem to have multiple advantages for these institutions. First of all, let them to receive classes supervised by external professors without making the professor to travel to their locations. Furthermore it is a way of local staff training for consolidating their background. Finally, there is an additional economic advantage due to a significant lesser cost than funding the trip of external professors for “onsite” classes.

Conclusion

Instead of a local implementation of c4d-learning, in this paper we have considered to extend the proposed approach to a network concept. A mutual collaboration in among different institutions in developing and developed countries, interchanging courses material, local faculty for remote teaching or others, provide the advantage for each institution to offer the specialization of its faculty and receive the external supervision in new topics. Therefore, each institution obtains benefits and become less dependent from the cooperation for development, assuming the control of their own growth and consolidation.

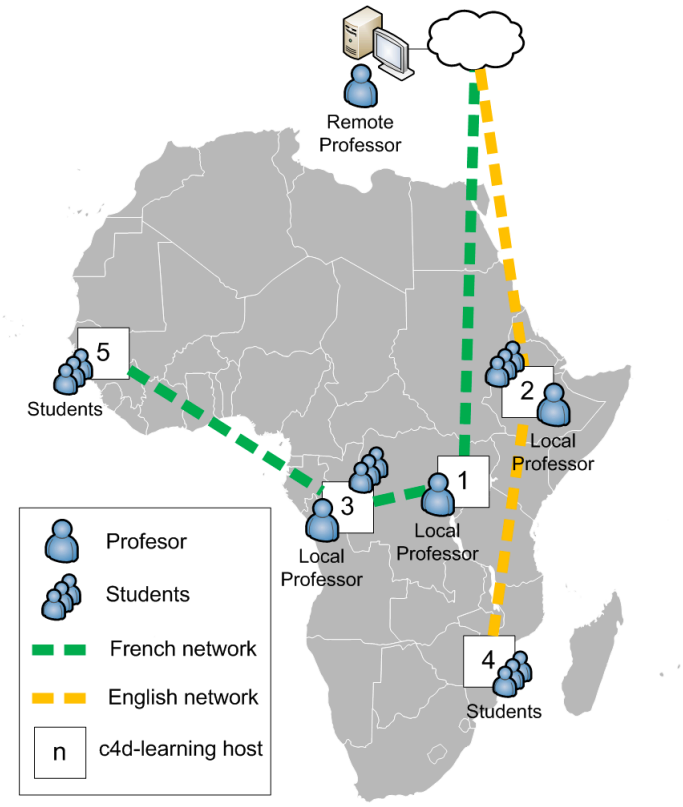

Figure 2: c4d-learning university networking.

In this work, and graphically in Figure 2, we have proposed the collaboration among different universities to share teaching resources, professors and knowledge through a c4d-learning platform.

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