TOWARDS A CONCEPTION AND INTEGRATION OF AN EDUCATIONAL SOCIAL NETWORK INTO AN INSTITUTIONAL LEARNING PLATFORM

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ABSTRACT

In this article, we take a look at digital social networks in education. The observation made on the campus of Norbert ZONGO University is that the digital device set up on the campus to support the learning and teaching process has not had the support of users who prefer social networks adapted to their smartphone. Most students use digital social networks for exchanges with their peers or teachers, especially with WhatsApp, Facebook about their courses. Yet these technologies are not designed for educational purposes. After a survey of 318 students to take into account the needs of students and teachers, we propose to design an educational social network. This social network will be integrated into a distance learning platform under development as part of a project. We end by presenting the software architecture of our future educational social network.

Keywords

Educational social networks, CEHL, West Africa, University

1.   INTRODUCTION

A Computing Environment for Human Learning (CEHL) is a computer environment whose purpose is to lead learners to develop one or more activities favorable to the achievement of educational objectives [1]. They are used to support or encourage learners in learning. The collaborative learning environment is an example of CEHL, designed to promote certain types of interactions including argumentation, explanations, conflict resolution etc. Many more examples of CEHL exist in the scientific literature.

New research work on CEHL has emerged with the new capabilities offered by Internet and new communication and information technologies [2]. The use of social networks in education is a part of this new work. The educational platforms used to support teaching and learning are neglected in the profile of social networks including Facebook, WhatsApp etc. Yet these technologies are not designed for educational purposes.

Social networks with an existing educational component often require a monthly or annual subscription and are often not designed in an institutional framework. Students feel the need to use digital platforms in their learning process, which pushes them towards these technologies that are less suited to their context.

In view of this observation, we propose to design an educational social network (ESN) better suited to the West African context. This ESN could be integrated into the new system [3] proposed by a group of researchers with a profile of West African universities.

In the rest of our work, we will present the context of our study then we will present the analysis of the needs carried out for the implementation of a new device and will end with the architecture of our future device.

2.   CONTEXT AND STATE OF THE ART

In this section, we present the context of this research project. We also present a small preview on Facebook technology. We end this part by connecting social networks and computing environments for human learning.

2.1   Context

Computing Environments for Human Learning (CEHL) are used to stimulate and support learning among learners. Despite the multitude of learning / teaching platforms that exist, universities in African countries, particularly Norbert ZONGO University (previously University of Koudougou), have difficulty setting up a resource sharing platform better suited to their context. Some environments such as Moodle which is an online learning platform are being implemented in some universities in West Africa to support learning / teaching. This powerful platform is badly used or even abandoned by the first users. Teachers and students are sometimes tempted to use other technology such as WhatsApp [4]–[6] for learning / teaching purposes. To take into account their needs, researchers [3] propose to set up a system better suited to the West African context while keeping services existing.

Students see themselves using other means to share, interact with their peers and teacher. Its means are among others through social

media such as: WhatsApp, Facebook, etc. Social media are used by students as the preferred tools for sharing, communicating, photographing parts of the course / TD. Its tools, easily accessible through their smartphones, are practically used on a daily basis. Although these media have a real advantage, accessibility and flexibility of use [7], it should be noted that they are not suitable for learning / teaching. These technologies are used to create groups without the knowledge of the pedagogy managers which makes it difficult to follow up, see its contribution in improving the learning / teaching of students.

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To have an CEHL adapted to the West African context, a project [3] is already underway to set up a digital device. Our problem comes in addition to this project but we are focusing more on social networks aspect.

2.2 Curent situation

2.2.1 Social networks

First introduced by Australian anthropologist John A. Barnes [8], a social network is defined as a set of social interactions that unite a group of individuals. These social interactions can be: friendships, family ties, professional ties or specific ties. With the advent of Internet, the notion of social network took a new turn and gave birth to the notion of digital social network. Boyd and Ellison define digital social networks as "a web service allowing individuals to build a profile or not created by a combination of content and, on the other hand, to articulate this public profile with others" [9]. The most famous social networks these days are: Facebook, Twitter, LinkedIn, MySpace etc. these digital networks have drawn the attention of researchers [4], [7], [8] to its possible use in learning / teaching.

2.2.2 Educational social networks

An educational social network is first and foremost a social network. But unlike this one, the individuals in relationships are the learners and the teachers. It is a network that enables teacher-student and student-student, one-to-one, one-to-many and many-to-many interactions. Social networks occupy an important place nowadays in society and its more and more used by young people. This trend has prompted teachers to use these networks in the classroom [4], [6], [9] including Facebook, WhatsApp, etc.

Some educational social networks have been developed to support and stimulate learning among pupils or students. We can cite:

Learndia[1] is an educational social network and interactive learning space dedicated to students. It provides students with course content and a space to simulate assessments. In February 2017, the founders announced the release of the desktop version which does not require an Internet connection.

Freasyway[2] is an international educational social network for students, institutions, independent teachers. Beyond the fact that it offers interactive teaching, this platform offers students the possibility of obtaining information on the types of procedures to be carried out with institutions.

Madabooky [10] is an educational social network targeting terminal and third grade students. Created by three young Madagascans, Tsira Louis Venceslas, Dada Manacé Sylvano and

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[1] https://learndia.com/

[2] https://freasyway.com/public/

Haritiana Rabemanantsoa, after one of them failed the Baccalauréat exams many times.

These social networks all have in common the objective of stimulating learning among pupils or students. However, these networks raise two major problems:

- Cost: Access to these platforms is conditioned by a subscription to the platform for a flat fee. The cost of these platforms is a barrier for students. In addition to this, the cost of the internet connection is an issue. The questionnaire found that 87% of students use the Internet connection of mobile operators (Orange, Telecel and Moov Africa).

- Institutional scope: These educational social networks have been developed outside the institutions in charge of education (universities, colleges and high schools, training centre, institute, etc.). This causes two major problems, students do not always interact with their teachers and the syllabus may be not consistent with their own courses.

Social networks such as Facebook, WhatsApp are widely used by students nowadays. These easily accessible technologies via smartphones are now used by learners and teachers to learn/teach [5], [6], [9]. These technologies, although used by students for consultation, collaboration, sharing and production activities in their learning processes, were not designed for pedagogical purposes. Moreover, access to user data for integration with existing educational platforms such as Moodle is problematic [6]. Furthermore, these platforms cannot be linked to institutional systems set up to support learning. Finally, the question of accessibility to user data arises with these applications. Yet these data are useful for monitoring learning and for educational research. In an article entitled "How WhatsApp makes Educational Data Mining difficult in West African universities"[6], the authors posed the difficulty for researchers in the field to have educational data for their research.

Educational social networks designed to support learning are inspiring solutions but they do not address the concerns observed on the campus of the Norbert ZONGO University. The design of these educational social networks is not adapted to the system set up in the universities of Burkina Faso. The cost of these applications is a major problem.

In view of this, we proposed an appropriate solution. The following section presents our proposal.

3. PROPOSED SOLUTION

This section of our paper deals with the analysis of students' needs following a survey conducted on a sample of 318 students from public and private universities in Burkina Faso. We propose a new learning device and present its architecture.

3.1 Description of the questionnaire

To understand student practices on campus, we conducted a survey with a student questionnaire. This study concerned 318 students from public and private universities in Burkina Faso.

The questionnaire consists of four parts: student identification, access to communication and information technologies (ICT), use of ICT and use of educational platforms.

The identification of the student made it possible to collect the demographic social information of the students (sex, age group, sector, university, etc.). The section, Access to ICT, allowed us to collect information on the types of electronic support available to students, on Internet access at the University and at home. The last two sections of our questionnaire concerned the use made by students of ICT and educational platforms.

3.2   Needs analysis and specifications

To better understand student practices, we conducted a survey of 318 students from public and private universities in Burkina Faso. This survey allowed us to capture the needs of the students.

<u>Users:</u> Teachers and students are the future users of our solution. Indeed, the network should connect students of the same class and their teachers. Also, students should be able to send invitations to other students (their elders for example). As for teachers, they should be able to send and receive invitations from their colleagues and students. An administrator should ensure the proper functioning of the system.

<u>Analysis of student needs:</u> The survey revealed the following student needs, namely communication, sharing, mutual support:

Communication is the major problem for students. The number of students per teacher is very high so that the students are not satisfied with explanations in class. There is not anyway to contact or ask questions of the teacher outside of the classroom. The students noted that they have class WhatsApp groups to communicate. Although they have this communication tool, their teachers are not included in these groups.

Sharing files, lessons, tutorials, exercise solutions and tutorials are also a major concern for students. The WhatsApp group serves as their tools for sharing but the storage problem is posed. The data of these groups are quickly deleted if the storage disk is full.

Mutual aid appears important when an exercise or another part of a course is misunderstood. Students use Web searches.

As a result of this analysis, our solution should be able to allow students and teachers to make the following actions grouped in this table.

Requirements specification		
Student	Teacher	Admin
▪Manage an account	▪Manage an account	▪Manage accounts
▪Send invitations	▪Send invitations	
▪Ask questions	▪Answer questions	
▪Answer questions	▪Share information	
▪Share information	▪Create discussion topic	

Tableau 1:requirements specification

3.3   Functional architecture of the new device

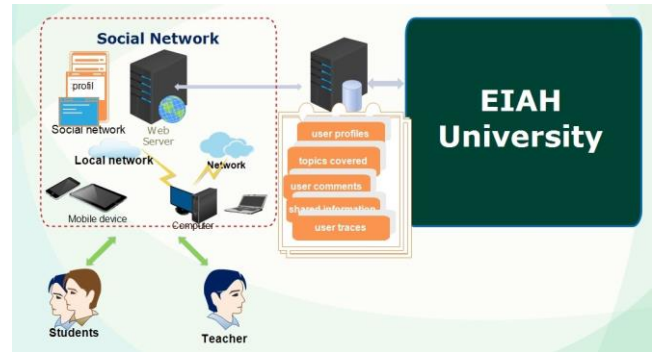Figure 1 shows the software architecture that we have chosen for the development of the future device.

Figure 1: Software architecture

The new device complements existing platforms. This figure below presents an overview of our future system. The users will have access to the social network by Internet or by a local network. To respond to the difficulties related to the accessibility of the Internet connection on campus, students will be able to access the social network through a local network. It will be accessible via smartphones, tablets, laptops and desktops.

This device will be powered by text, audio, video, image and podcast data from students and teachers.

4.   Conclusion

In this paper, we have dealt with the establishment of a social network for students from West Africa, particularly   those of Burkina Faso. We have presented the background and the objectives of this research. To better understand and take into account the needs of students, we conducted a survey with a questionnaire on 318 students. The results of this questionnaire allowed us to highlight the needs and expectations of students for a better learning environment. We proposed to design an educational social network more suited to the learning context of students in West African universities. We presented the architecture of our future device. Our goal in this research is to create a free and open source platform that will create a community of researchers around this theme.

The work already done and presented in this paper is a first step of this research. The next step will concern the design of this new device. We plan to evaluate our proposed learning system at two levels: pedagogical, technical. To do this, we will enlist experts in education science to our research team.

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