Mentoring College Students via Computer-Supported Tools in a Public University in Mexico

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Abstract. One of the most acute problems in the higher education in Mexico is the high rate of dropouts in college education. Particularly during the last decade we have witnessed troubling signs in the first stages of the career of our students, where the incentives for abandoning their studies seem to be appearing every day with a bigger intensity. To ease their adaptation in the demands that professional education asks of them several institutional programs have been in place, with varying degrees of success. However, we are convinced that in order for those programs to be successful they have to rely more in information technologies so that help can be available for the students in every possible way. Our main objective is to curb the increasing rates of students that dropout from their careers by providing a support network based on computer-supported tools.

Keywords: Mentoring · Social networks · Computer supported collaborative work

1 Introduction

Mentoring is a fundamental piece in the educational process in every single stage, and this becomes particularly fundamental during early college years. Transitioning from High School to College brings challenges to every student such as a new living spaces and social groups, lax parental supervision and support, and a demanding curriculum. In this setting, students require additional support which can be provided by person-to-person and computer-supported mentoring designed to address every possible circumstance that might prevent them from succeeding in their college experience.

Our university, Universidad Michoacana de San Nicolás de Hidalgo (UMSNH), founded in 1917, is one of the biggest public higher education institutions in Mexico. With more than 50,000 students (Table 1) and 3000 professors it provides high school, undergraduate and graduate accredited programs (95% of them in 2018) in the state of Michoacán and its surrounding areas. It has 48 undergraduate programs, and 75 graduate programs (including Master, PhD and specializations).

However, amongst the many challenges that the institution has, one of the most urgent to attend is the high dropout rate in most of its programs one of the most important ones. Currently, the university has a dropout rate of over 50% of its first year

in its undergraduate programs and in order to curb this trend we have implemented a mentoring strategy based on computer-supported tools that have shown promise in helping students to better cope with this demanding time in their lives.

Mentorship was established in the mid 90s as a federal funded program with a focus in person-to-person interaction, but has since then become obsolete to a certain extent. Ever since its inception as a whole has not had any major updates, and the use of technology has been completely ignored.

Computer-supported tools, which include several well-established social networks, provide several advantages (beginning with a familiarity of use to the students and mentors alike) over traditional mentoring methods used in our institution and do offer a greater rate of success in keeping track of the overall well-being of our students.

1.1   Higher Education in Mexico

We deem important in this paper to illustrate the state of our higher education system. In Mexico in 2016–2017, the country had a total of 3, 762, 679 students in any of the undergraduate and graduate programs, as described in Table 1.

Table 1. Scope of higher education in Mexico in 2016–2017 (Secretary of Education/DGPPyE, 2018)

Type	Students		
	Total	Women	Men
Higher education	3,762,679	1,864,102	1,898,577
Normal school	94,241	69,532	24,709
Undergraduate	3,429,566	1,669,009	1,760,557
Graduate	238,872	125,561	113,311
Public	2,655,711	1,263,018	1,392,693
Private	1,106,968	601,084	505,884

In the state of Michoacán, according to the State Secretary of Education, the number of students enrolled in a Higher education program are shown in Table 2.

Table 2. Scope of higher education in Michoacan, Mexico in 2016–2017 (Secretary of Education/DGPPyE, 2018)

Type	Students		
	Total	Women	Men
Higher education	106,055	52,337	53,718
Normal school	5,726	3,536	2,190
Undergraduate	95,706	46,486	49,420
Graduate	4,263	2,315	2,308
Public	84,218	39,931	44,287
Private	21,837	12,406	9,431

The UMSNH has a share of 51% of the total of students in a higher education program in the State as of this year.

1.2   Characteristics of Our Student Population

In the first half of 2018 a survey was conducted to explore the characteristics of the students in our university. We have a approximately the same number of male and female students, and they are mostly in the 19–24 age range (62%), 20% are in the 15–18 age range (belonging to our high-school sub-system). Those two groups belong to our undergraduate and high-school programs and form the core population of our study. The vast majority were born in Michoacán state (where our University is located).

Our survey indicates that over 96% [2] of them have a Smartphone, mostly running on some version of Android (82%), with the rest using iOS. Practically all the students use a social network on their devices being the most popular WhatsApp, Facebook and YouTube. The preferred way of using their smartphones is in a prepaid manner (60%), and the rest with a monthly plan. 85% of the students own a computer, and have internet access at home (91%).

All this data is consistent with the most recent country wide surveys conducted by the federal government.

2   Mentoring Program in the UMSNH

As in many higher education institutions in our country, our university has a high dropout rate, especially in the first months of their careers. In recent years the rate of dropouts has increased significantly, and the motivations for this vary from economic problems, weak academic abilities, relocation issues, adverse social dynamics, etc. In this context, the support needed by the students is vital for their survival in the university. Our students have access to institutional programs that are designed to bring additional support for their careers, from an integral point of view.

Mentorship, as one of the services that the student body has access in our university, was established in 2005. This was a federal funded program replicated on a national level in which a group of academic workers (professors and other members of academia) were trained in a set of five courses that aimed to train them in the mentoring process. The main objective of the mentoring program is to provide students with an integral support especially in the beginning of their transition into college.

Registered mentors in the University have to take a five-part course in which professors are trained to better help students. Professors learn about different mentoring techniques, university legislation, time management, and other administrative matters. However, one issue that is not dealt in the mentoring training program is how technology can be fundamental in providing our students of a better mentoring experience.

There is a department part of the Academics Secretariat of the University in charge of managing the program, named Coordinación de Responsabilidad Social y Formación

Docente (Coordination of Social Responsibility and Teaching Training). Mentoring training is not a compulsory program for professors, but are encouraged to get a certification in order to advance in their own career in the institution.

At the beginning of each semester a mentor is assigned a group of students to mentor, either individually or in groups. At the end of the semester, the mentor has to send a detailed report to the Coordination.

However, we are convinced that the mentoring program can be greatly benefited from a greater reliance in information technologies. Ever since its inception has not had any major updates, and the use of technology has been completely ignored.

3   Our Proposal

In our professional experience since becoming registered mentors in our University, it has been evident how difficult is to keep track of the students assigned to us in the program. Especially as the semester carries on, the commitment of the students with the program begins to loosen up and many of them eventually abandon it. Time management is usually the main culprit for dropping off from the program.

As the program is set, there is a scheduled weekly meeting between the student and the mentor that lasts between half an hour to a full hour. During this appointment, the student will recount what happened during the week at the university and the mentor will coach him or her in order to improve their academic performance.

However, as the class semester advances it becomes more and more difficult to set a time where both parties can meet. Due to this observance, we decided to change our strategy in order to retain the students in the program. We designed our strategy as follows (Table 3).

Table 3. Time planning with activities

Period	Activity
First month	Half-hour face to face meetings
Second month	Twice a month face to face meetings, and remote mentoring
Rest of the semester	Once a month or video conferencing meeting, and remote mentoring

Face to face meetings were done in a traditional manner: both parties would agree in a particular time to get together in a school facility (could be in the mentor's office or a designated space for mentoring). As mentioned before, the length of the meeting would vary from half an hour to a full hour. The mentor is encouraged to take notes to keep track of the session.

For the remote mentoring, we decided to use free tools that were widely available and particularly that did not have a steep learning curve. As it will be described ahead, the current student body has a whole permanent access to the internet and at least one

device of their own (most frequently an Android-powered smartphone). We decided to use as our main Learning Management Systems (LMS) Moodle and Google Classroom. And for messaging applications Slack and WhatsApp. These tools were selected based upon their wide support for different platforms and scalability. We also decided to use Facebook to some extent, since it is extensively used in both the student and mentor communities.

3.1   Methodology

During 2018 we established four groups of internet-based set of tools: synchronous and asynchronous. These tools had to be free (at least on their most used functionalities), available in Spanish, and suitable to be used in a Smartphone.

As such, the synchronous tools were: WhatsApp, Slack, Facebook Messenger and Facebook. The asynchronous were: Google Classroom and Moodle.

We started our study with 3 groups and 1 control group. On each experimental group we implemented some internet-based strategies as we resume on Table 4.

Table 4. Group settings and tools

Groups	Messaging tools	Asynchronous tools
Group 1		Email
Group 2	WhatsApp, Facebook, Facebook Messenger	
Group 3	Slack	Google classroom
Group 4	WhatsApp, Slack	Moodle

Each group had different skills using the internet-based strategies proposed, as described in Table 5.

Table 5. Group settings and student skills

Group	Student skills
Group 1	In this group we use the traditional mentoring program. This is our control group
Group 2	Students with skills to use synchronous tools
Group 3	Students with almost null skills on Slack and Google Classroom platform
Group 4	Students with almost null skills on Slack and Moodle

- Group 1.
  In this case, we followed the traditional strategy (without synchronous internet-based tools). The group (as we expected) did not improved significantly on their academic progress, and eventually dropped out of the mentoring program.

- Group 2.
  In this group, we used the Moodle which was mostly used for sharing information about lessons or interesting news for the students (Fig. 1). We have few interactions with students in this group. They were without supervisor, but they tried to support each other Our students mentioned that they felt more closely monitored by us during the semester compared to the experience they had in previous mentoring sessions without using an internet-based tool.
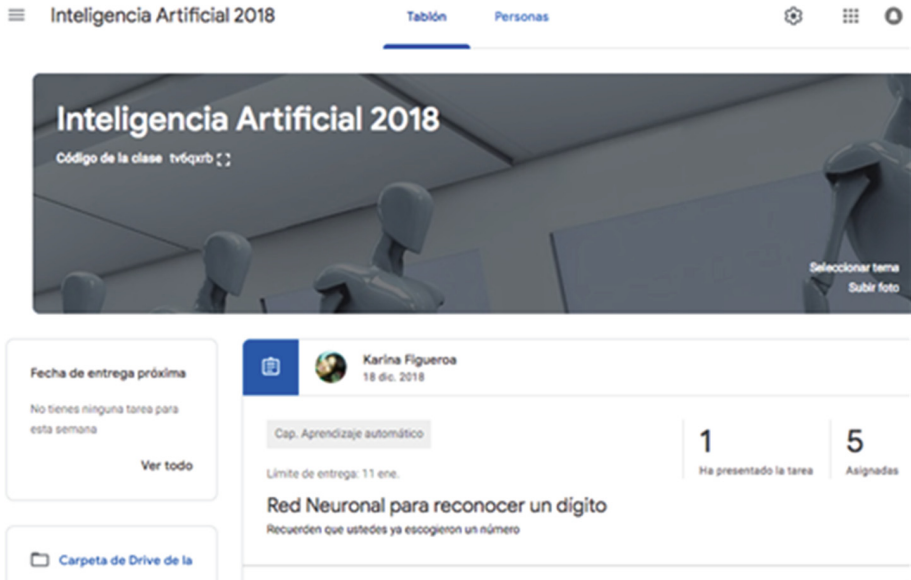

Fig. 1. Google Classroom for Group 2.

- Group 3.
  For this group, we used two synchronous internet-based tools WhatsApp and Slack. They participated actively in the apps, however students preferred Slack over

WhatsApp (their interactions were richer and they had chances to share more than only text and images). As mentors, we were more active in there too. Our students were interacting between them, we limited our participating. Usually they were sharing their achievements, tools that they found for their lessons. We also provided students with a Google Classroom group, which was mostly employed for keeping track of their performance with specific courses, more than their overall academic experience. There their interaction and openness were more limited (Fig. 2).

Fig. 2. Google Classroom for Group 3.

- Group 4.
  In this group, we used only Slack. Students learned to use Slack very fast, and they participated frequently sharing with their mentor the different challenges that they encountered during their semester, in real time. Because of the immediacy of the feedback that they got, it was very rewarding for the students. They expressed that they felt taken care of by their mentors more so than in any of the other control groups that we had (Fig. 3).
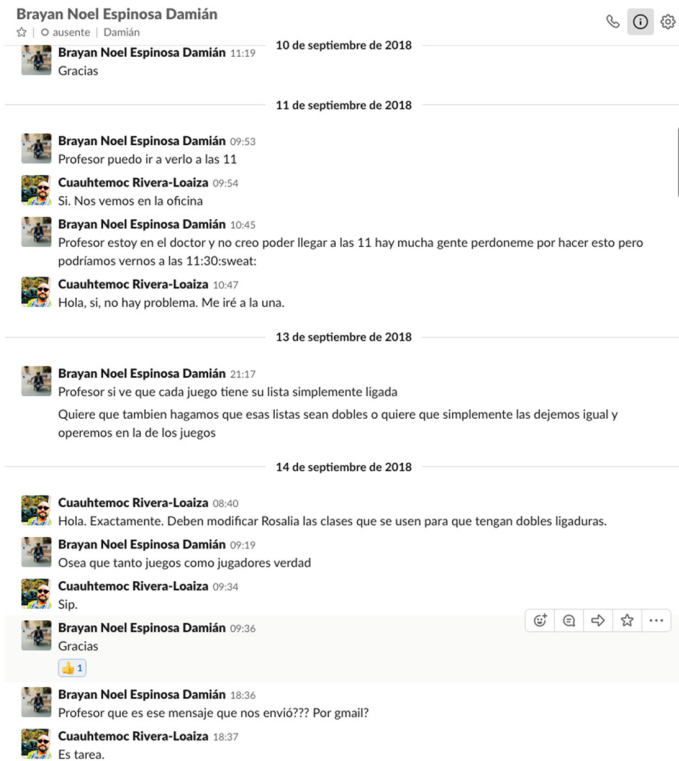
Fig. 3. Slack channel for a student that was part of Group 4.

4   Conclusions and Future Work

Although this study is in its very first stages, the first results have been promising. To begin with, we have proven how a wider support network does convey a bigger commitment from the students with their daily activities, and their own career accountability increases substantially.

Also, from the mentor's perspective, the interaction with their students is in many ways richer and better to keep track of them. The use of widely available Internet tools for collaboration have been received extremely well, despite the unfamiliarity of most of them with the chosen programs (like Slack or Moodle, for example); the fact that younger generations are mostly digital natives makes new tech adoption quite easy.

For future work, we are continuing the deployment and monitoring with more students and mentors, within our School and other departments of our University. We expect to have conclusive results by the end of the first semester of 2019.

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