TEACHERS’ TRAINING TO TRIGGER THE UNIVERSITY’S DIGITAL TRANSITION

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Abstract

From 2006 to December 2016, the Distance Education Office (DED) at the Universidad Iberoamericana in Mexico City, used a commercial LMS to provide support to online courses (OC) and for the application of departmental exams. Only 4 teacher-training courses in the use of the platform and of some of its tools were offered. There was no data that demonstrated the actual use of the LMS since the DED did not have the analytics software, although in 2014 a study on the number of clicks was carried out. It showed that in 87% of the cases, there was little or no use. In 8% of the cases it was used as a repository (intermediate use). In 4% of the cases (high use) it was used as support of face-to-face courses, but with no data that evidenced the way it was used. In 1% of the cases (very high use) for offering OC’s.

In August 2015, the administration of the DED changed and with it, an initial assessment and interviews with academic department coordinators and professors were carried out. The new administration decided to change the LMS to Brightspace (by D2L) in January 2017. This change was understood as the triggering element for the start of an institutional strategy towards educational innovation and digital transformation through teacher training.

From October 2016 to April 2019, the now called Office of Technology-Mediated Teaching and Learning (DEAMeT) has designed and offered 50 different workshops with an enrollment of more than 3600 teachers as part of the techno-pedagogical training permanent program. It includes not only the use of the platform and its different tools, but also workshops to promote the development of digital competencies in teachers, the approach to trends in education (blended learning, flipped classroom, gamification) and the integration of technologies in teaching and learning processes, as well as their implications.

The data up to March 2019 are: Increase in the demand of OC design (from 3.4 per semester to 11.3 per semester); Use of the platform in 2018: taking into account the average use of the mobile application Pulse, 6430 students were actively using the platform, that is 50% of the total student population in Autumn 2018. If all online students used it (24.6%), 25.4% used it for face-to-face classes. Increase in the demand of online or blended courses: 5 graduate, 1 for the gender issues program, 1 for the Library, 4 international diploma courses, 1 specialty, teacher induction program, professional practice...

Even when we admit that there are other factors that can explain this increase (Z generation, for example), the impact that the teacher techno-pedagogical training in familiarizing them with digital technologies, knowing the advantages of using the LMS, "other ways" of teaching courses in order to benefit student learning and the awareness of the changing roles of teachers, are all signs of the actual use that students are giving to the platform and of the internal demand of online and blended courses. There is specially a lot of research to do, but we are convinced that after almost 4 years, we can allow ourselves to talk about a digital transition in our university.

Keywords: Teachers’ training, educational innovation, new teaching roles, digital transition.

1 INTRODUCTION

In 2014 the Universidad Iberoamericana, Mexico City (Ibero CdMx) started a process rethinking its mission and vision in terms of the institutional planning for 2030. As part of the institutional changes, in August 2015 there was a substitution in the administration of the Office of Distance Education (DED), whose responsibilities since 2008 had been to manage the institutional platform and support the application of a regulation that compelled all academic departments to design online courses (OC) [1] [2]. True to its Jesuit calling of being a cutting-edge institution, Ibero CdMx started in 1999 its attempts of integrating software-based education management systems like the so called "Semestre en curso" (Ongoing term) that was substituted in 2004 by the "SOFIA" system, both developed in-house and that
gave way in 2007 to a commercial Learning Management System (LMS). It is evident that since then, there was an existing concern within the Jesuit University System (SUJ) with the transformations that information and communication technologies (ICT) generated in Education in general, and in Higher Education (HE) in particular. Notwithstanding, the implemented strategy in the Ibero CdMx up to 2015 had not produced the expected results.

The new administration then faced the task of making a diagnosis at different levels: academic, administrative and managerial. At the academic level, interviews were carried out with key players such as program coordinators, department directors and teachers. At the administrative and managerial levels the Office of the Registrar (SE), the Office of Academic Information and Analysis (DAIA), and the Office of Integral Training Services Office (DSFI) were interviewed. Also, all institutional documents that could be related to distance education were reviewed. Only two were used: the regulations for undergraduate and graduate OCs, officially published in 2010 and 2013. Both documents are centered on administrative aspects (equivalence of face-to-face classes with online courses in terms of hours for payment purposes, recommendations for choosing content experts and teachers). In the brief introduction, the following is mentioned: "Learning to perform in virtual settings constitutes an essential aspect of the current professional training [1] [2]. Regarding a document related with an ideology or philosophy on the integration of technologies to Education in the Ibero CdMx, only a statement in terms of OCs being useful for "familiarizing both students and teachers with new technologies in support of Education" [3] was found. In short, Education was being placed at the service of Technology and not the other way around.

As a support strategy for this regulation, the DED offered four courses for teachers on the instrumental use of the LMS, and occasionally 2 other courses related with social media in education and the use of "apps". The DED also guided the instructional design of OCs and advised teachers assigned to teach them but with no specific training for online tutoring (OT). At the same time, the DED was asked to valuate if it was necessary to change the LMS. In order to understand the use that was being made of the LMS, a specific analysis software (Analytics) was needed, but it had never been acquired and its high price made it difficult to convince all stakeholders of the importance of having the information it could provide for making decisions and solving the existing adoption problems. The only data available was the one provided by the DAIA in 2014 that only considered the "number of clicks" within the platform (Tab. 1). Furthermore, the mobile phone app of this LMS had to be paid for by students.

<table>
<thead>
<tr>
<th>% of use</th>
<th>No use</th>
<th>Low use</th>
<th>Medium use</th>
<th>High use</th>
<th>Very high use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45</td>
<td>42</td>
<td>8</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Only for consulting the study guide</td>
<td>Only for consulting the study guide</td>
<td>As a repository of resources (pdf's)</td>
<td>Face-to-face support</td>
<td>Online courses</td>
</tr>
</tbody>
</table>

Table 1. Use of LMS (By number of clicks, 2014, DAIA, IberoCdMx)

In this context and after analyzing several LMS in 2016, the institution decided to undergo a platform migration to Brightspace (by D2L). In the DED we were aware that "notwithstanding the increase of availability of technological resources in schools...the pedagogic practice of teachers in the classroom does not necessarily imply a substantial alteration of the traditional teaching model" [4]. We informed that the sole fact of changing the platform would not be a synonym of changes at the educational practice level, but that we could take advantage of this circumstance for starting an innovation process in technology-mediated education whose objective would be to support not only the implementation of Ibero's educational model (competency-based, student-centered, Ignatian pedagogy-based approach) approved in 2010 by the SUJ, but also to achieve a transition that would boost the creation of an institutional digital culture.

It was then that the DED presented its 3-year work plan, considering changes at the design, implementation and delivery levels of OCs; the revision and proposal of changes in regulation and a name change to Office of Technology-Mediated Teaching and Learning (DEAMeT, authorized in December 2017) and centered its master strategy in the permanent techno-pedagogical training program for teachers understanding that "it is a well-known fact that any educational reform is not viable if it does not take into account the faculty that has to put it in place. Regulations, authorities or even institutions (...) have never achieved the implementation of an innovative proposal without taking into account or against the faculty that will have to put it in place in the classroom" [5].
2 STRATEGY

2.1 Theoretical frameworks

Before giving details on the actions that we carried out for the master strategy, it is necessary to explain the conceptual basis that guided us. As we mentioned, our intention was to initiate "an innovation process in technology-mediated education whose objective would be to support not only the implementation of Ibero's educational model, but also to achieve a transition that would boost the creation of an institutional digital culture".

We adopted the definition provided by Edwards [6] in which he explains that "educational innovation" is:

a) a process that involves persons, groups and institutions, their cultures and their subcultures,

b) that implies transformations in the practices related with the teaching and learning activities that will have to be shown (and recognizable) in certain products, either more tangible (a working material, the use of a mobile device or an interactive digital board, a teaching technique, etc.) or intangible (changes in ways of doing, habits, attitudes, the effectiveness of actions, the institutional dynamics, etc.)

c) that appears as a response to a "problem", be it understood in terms of needs that demand a solution or as the intention of having access to better levels of development fostering a growing approach to proposed objectives;

d) and as a group it constitutes a system in which its different elements integrate to create a dynamic that makes the process or generation, introduction, follow-up and evaluation of the changes and their effects operational and effective.

It seemed interesting to us to take this definition as our basis since during the interviews that we carried out we perceived a strong resistance to the implementation of OCs not only because of an institutional imposition (hierarchical top-down decision), but also (and especially) because of a deeply-rooted tradition of teacher culture centered on teaching and traditional lectures. Revising the OCs that were available, we realized that traditional methodologies had been transferred to the virtual classroom and that digital materials (PDF files) has simply substituted analog materials (textbooks).

Edwards clearly integrates in her definition the cultural, institutional and teaching aspects that have to be taken into account when planning an innovation since they can turn into the very source of their failure.

Authors like Barraza [7] agree that educational innovation is related with a change in pedagogical beliefs and assumptions of the different educational players and Rege-Colet [8] explains in detail the need for this change in concepts (our way of seeing things) and approaches (our way of doing things) so that educational transformation is profound and long-lasting. This same author explains that for an educational transformation to take place, a cultural change based on three simultaneous revolutions is needed: a) epistemic, through which we are compelled to understand that the emergence of the world wide web changed our relationship with information and with the development of knowledge since it was externalized and ceased to be centered on teachers; b) pedagogic, that is centered on the educational paradigm shift placing the student at the center and making him/her responsible for the learning process, developing autonomy and self-regulation for achieving life-long learning in formal and non-formal settings; c) professional, that deals with the change of responsibilities and roles of teachers, summarized in Alison King's famous phrase: from a sage on the stage to a guide on the side.

At the same time, we decided on the definition of "culture" set forth in the institutional Educational Philosophy, namely: "the group of formal and informal institutions, behaviours, expressions and symbols that express the particular way in which a society creates the space for human action beyond the field of the merely biological impulses".[9] And as the definition of "digital culture", we use Deuze's [10] that considers it " a series of shared values, norms, practices and expectations (and constantly renegotiated) with respect to the way in which people (should) act and interact within the contemporary net society".

Additionally, we had to make it clear that in the DEAMeT we understand the integration of ITCs in the educational process "from a critical-pedagogical standpoint where the relevant aspects are innovation and methodological improvement, taking advantage of its teaching possibilities in the proper way" [11]. That is, we consider them as mediating tools that, properly used, foster the application of the student-
center paradigm, the competency-based approach and the active learning methodologies, thus supporting Ibero’s educational model.

2.2 Permanent techno-pedagogical training program for teachers

We took advantage of the change in LMS as a trigger for initiating at the institutional level a teacher-training program.

In August 2015, the DEAMeT’s team consisted of 4 persons and it was very difficult for us to offer the initial training prior to the launching of the platform in January 2017. What we did was to ask for volunteer teachers, who received training form D2L at the same time as we did. We received help from 9 teachers in the first stage.

Today we have an area dedicated to training with a coordinator, 4 collaborating teachers and 2 full time faculty members, as well as 5 student workers from the Software and Interactive Design programs.

Our courses and workshops are offered in face-to-face, online, blended modalities. They are morning, afternoon and Saturday courses so we can offer them to the highest number of teachers. The online modality is shared with the Ibero Tijuana, the Specialized Education Unit in Tijuana, the Tecnológico Univesitario del Valle de Chalco (vocational studies) and Prepa Ibero (Highschool).

2.2.1 General program

We have included:
- The instrumental and pedagogical use of the LMS (16 different courses and/or workshops)
- Educational trends and innovation (Blended learning, flipped classroom, gamification -3-)
- Training for online teachers-tutors (coming soon)
- Brightspace for online teachers-tutors
- The use of Microsoft ® (5) and Apple ® (3) suites (in direct collaboration with these 2 companies).
- Gender equity and equality in the classroom (in collaboration with the Gender and Inclusion Program)

https://eduonline.ibero.mx/DEDsitio/talleres.html

2.2.2 Teachers’ Digital competencies

If the ultimate aspiration of our master strategy is the creation of an institutional digital culture, we consider that in order to succeed in having our community share "behaviours, expressions and symbols" of this culture we had to start with the basics: knowing them. The artifacts (in this case ICTs) are also part of culture and are considered cultural objects that, when used in the university, mediate the teaching and learning processes and thus, socio-cultural and cognitive processes. Those same artifacts are the ones that currently present information in different formats (codes), not only in print anymore: fixed image, audio (podcasts), video, virtual reality and augmented reality, a mix of all of them (multimodality and hypertextuality). This implies that those who have access to this information under such representations, have to know how to "decode", understand, discriminate, interpret and dwell upon it and this is why the DEAMeT had "to assume a leadership role...and serve as a reference point for its members, with comprehensive training plans in digital competencies that include technical, cognitive and social skills [10], as a necessary step for the development of a digital culture. We understand digital competencies as defined by the UNESCO [12] "as a range of abilities to use digital devices, communication applications, and networks to access and manage information. They enable people to create and share digital content, communicate and collaborate, and solve problems for effective and creative self-fulfillment in life, learning, work and social activities at large".

We also consider that a way of having students develop digital competencies was through a cross-cutting strategy, "centered on the development ICT competencies from a pedagogic, teaching, thoughtful and critical dimension dealing with the role that technologies play in knowledge building and in social development" [13]. We reviewed several international standards on digital competencies and all of them have in common teacher training as a starting point (for example, ISTE [14] [15] and DigComEdu [16]).
In the DEAMeT we chose the Common Digital Competence Framework for Teachers of the National Institute of Educational Technologies and Teacher Training (INTEF), based on the European Union's DigCompEdu [16] [17]. This standard integrates the following competencies, for which we are designing courses or workshops:

- Information and Information Literacy (1) (with the Francisco Xavier Clavigero Library)
- Communication and Collaboration (2)
- Digital content design (8)
- Security (1 in design stage)
- Problem resolution (4) (e-Evaluation of learning; Building self-management together for learning; Management of emotions and motivations in the classroom with the discoveriNN methodology; Preparing next semester's class in Brightspace).

From October 2016 to April 2019, we have designed and offered 50 different courses and/or workshops, assisted 302 groups with an enrollment of 3600 teachers. Fifty-three (53%) obtained the diploma (1900), 10% failed, 30% never showed up and 7% cancelled their participation.

2.2.3 Support for the training program

As part of this strategy, we designed the DEAMeT web page. It includes, among other sections, one dedicated exclusively to teaching where tools such as video tutorials, Brightspace guides and Web 2.0 applications can be found.


Additionally, for the third consecutive year we are organizing a teacher meeting that dwells upon technology-mediated teaching and learning experiences. The participants are teacher who wish to share what they have achieved in implementing after taking part in our courses. This year, teachers from other national (such as the UNAM) and international universities (those that are part of the Latin American Association of Jesuit Universities (AUSJAL) will participate.

We hosted a reunion of the Common Space of Online Higher Education (ECESELI in Spanish) of the LATAM Universities Union (UDUAL in Spanish) in September 2017. After the earthquake of the same year, we organized a presentation about the use of virtual platforms to continue classes after contingencies, open to schools that were closed after the earthquake. In April 2018, we organized the visit of Jon Bergmann to the Ibero CdMx. He conducted a lecture on Flipped Learning 3.0 and a workshop (sponsored by D2L). In May 2019, we received a workshop on the use of the application Genial.ly, conducted by its co-founder, Luis Garcia.

2.2.4 Diploma on innovative technology-mediated teaching

During the interviews and consultations with teachers in the DEAMeT, they demanded that the University takes into account the training that they have received so it can be considered part of their academic improvement and their professional teaching development. This is why we decided that once we manage to design at least 2 courses or workshops for each digital competency, we will offer the option of obtaining a Diploma (120 - 150 hours) when they complete the 5 compulsory workshops and at least one optional workshop of each digital competency.

2.2.5 Micro-learning

Last April 29th, we opened our new audio and video recording studios. With them, we will launch a micro-learning strategy through webinars that we can transmit via streaming for teachers that "don't have the time" to receive training. In this way, we will try to mitigate the 30% no-show figure in our courses.

3 RESULTS

In the DEAMeT we started the teacher training program at the end of October 2016 in order to prepare the faculty for the launching of the new Brightspace platform at the institutional level (January 2017). The permanent techno-pedagogical training program officially started in October 2017.

The quantitative and qualitative data related with DEAMeT's master strategy are presented below.
3.1 LMS Brightspace logins & Pulse

We conducted a usage comparison during the first year of the Brightspace LMS (2017) with the previous LMS (2016). The comparison was made through the session logins in each of them apart from recording the average active use of Pulse, which is the digital application for mobile phones that can be downloaded by students on a free basis (Tab. 2).

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<tr>
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<tbody>
<tr>
<td>Total logins</td>
<td>1,269,440</td>
<td>1,407,847</td>
<td>1,559,094</td>
</tr>
<tr>
<td>Average of active use of Pulse (students)</td>
<td>X</td>
<td>4,050</td>
<td>6,430</td>
</tr>
</tbody>
</table>

In Autumn 2018, the Ibero had 12,807 students (maximum number of students that year). Online students were 3148 (24.6%). The average active use of Pulse in 2018 was 6,430, what means that 50% of the total population of students were in fact using the platform. If we hypothetically consider that all online student actively used Pulse to follow their courses, the platform was then used in equal parts by face-to-face and online students. These data depict a very different situation that the one offered by DAIA in 2014.

The total number of students having downloaded Pulse from May 2018 to May 2019 was 9,187.

3.2 Online courses

3.2.1 Design of online courses

<table>
<thead>
<tr>
<th></th>
<th>Autumn (A) 2015</th>
<th>Spring (S) 2016</th>
<th>A16</th>
<th>S17</th>
<th>A17</th>
<th>S18</th>
<th>A18</th>
<th>S19</th>
<th>Total</th>
</tr>
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<tr>
<td>Design</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>51</td>
</tr>
</tbody>
</table>

Considering that in Autumn 2015 there were 27 online courses, we can say that we have almost doubled the production in a period of 3 and a half years.

In August 2015, we only had one instructional designer, today we have 4 (1 pedagogue and 3 educational psychologists).

As a part of the AUSJAL’s EDUTIC network, in 2017 we started sharing some of our online courses with the other 29 universities, achieving the goals of networking, collaboration, internationalization, interculturality and democratization of knowledge.

3.2.2 Design of online Diplomas and courses in collaboration with the Continuing Education Office

We have started a strategic alliance with the Continuing Education Office, pointing to the adoption of the concept of Life-long Learning training.

Four online diplomas have been designed, implemented and imparted. Three of them have had an international impact (LATAM).

- Diploma on Social Responsibility, Diploma on Intercultural Theology, Diploma on Social and Solidary Economy, Diploma on Feminist Theology, Diploma on Sustainability (on design).
- Design of online courses for public and private institutions (Education and Justice Ministries for example).

3.2.3 Collaboration with different areas: design of online or blended courses

- Gender and Inclusion Impact Program
Francisco Xavier Clavigero Library
Graduate Studies Office
Research Office
Democracy Program
Advanced Technical Programs (TSU)
Office of Integral Training Services
Business Studies Department
Architecture Department
Alaide Fopa Law Program
Literature Department (Creation of virtual classrooms for teacher community)
Ibero Tijuana
Specialized Education Unit Tijuana
Tecnológico Universitario del Valle de Chalco
Prepa Ibero (Highschool)

We would like to mention that for the first time, two students are interested in designing online courses as part of their social service program.

3.3 Teachers’ points of view

In all our courses or workshops, we apply a final assessment and teachers record their opinions about what they have learn. We share some of them, classified by topics:

- **Change of paradigms:** I think that the most complicated aspect for me is the use of formulas different from traditional ones. I have a sort of resistance to these methods and my educational understanding has always be to put the teacher in the center of the learning-teaching process. Nevertheless, this workshop is a good starting point for me for a progressive renewal of mi class schemes.

- **Change of role:** I really think that what I learned the most is that (as a teacher) you have to be there, you have to offer options to the students, you have to offer feedback widening their horizon and address almost immediately the requirements in order to keep the students motivated.

- **Use of technology:** The topic of this course changed my point of view regarding technology applied in the classroom, which will be very helpful.

- **Openness, change:** In the end, I stay with the thought that it makes me happy to be giving a step towards the following generation, understanding their preferences and their needs in order to adapt to this whirling rhythm of social transformation and multimedia content, overflowing with hyperreality and abundance of resources...now I see a future in which I can take part.

Learning was not easy because there is a lot I didn't know, a whole universe opened for me.

- **Application:** I applied several activities of this type in my class and I was surprised by such a favorable response by the students. It is very clear to me that we have to learn to handle and make use of technology in order to improve our courses.

- **Training:** I can see that this is precisely the start of a new stage in education, thus this subject is mandatory if we strive for and education of excellence for the good future of our country, I take with me more than you can imagine.

On behalf of the teachers who impart the online courses, we have applied a poll to understand their needs and the way they perceive their work. Fifty-six online teachers were called (on duty), 43 of them answered (76.78%). Question 30 was related to their acceptance of being trained specifically for online teaching, 39 answered and 33 teachers said YES (76.74%), since 56% of them had no previous experience in online environments (neither as a student nor as an online teacher). They are willing to learn, to improve their work and to be recognized by it. This study helped us to sustain our efforts and proposal of designing a training program for online teachers (competency-based in order to
offer an internal certification), which is on the final phase of implementation and will be started in Autumn 2019.

4 CONCLUSIONS

It is evident for us that from 2017 to 2018 we experienced a substantial increase in the demand for online courses and in the consulting for special online projects on behalf of different academic areas. The work done by the Learning Design and Techno-Pedagogical Training Coordination to make contact with the academic coordinators and explain to them what we do and our will to understand their needs is worth mentioning. We have also reached our goal not only of increasing the use of the new LMS, but also of maintaining it. A new generation of young adults is entering the university and with them, their digital habits. Last year, 50% of students downloaded Pulse because they found it useful for following their online and/or face-to-face classes and because mobile phones are part of their digital behaviour. However, if students are in fact using the LMS it is because teachers are integrating it to their teaching strategies. DEAMeT has made a great effort to ensure that teachers are trained on its pedagogical use; our workshops and courses are designed to allow them to understand the virtual environments, to make the shift on their roles, to have a new look on the students and to offer them active ways of learning. We are making sure that teachers are somehow developing digital competencies, that they will make an impression on their technological mediated teaching performance, allowing students to develop them transversely.

We are aware that we have a lot of internal research to conduct, to understand how teachers are using the LMS and Web 2.0 tools for face-to-face courses, for example. We need to conduct polls in order to know faculty and students real skill levels on digital competencies to be able to conduct a better training program. Nevertheless, the data obtained in the last 4 years, clearly points out a shift on the way they perceive technology for teaching and learning, which is the trigger to start the transition towards an institutional digital culture.

ACKNOWLEDGEMENTS

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