# Higher education teachers: problematization of postpandemic course design

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*Abstract*— This work contributes to the understanding of the problematization process of teaching practices in higher education, based on the experience of emergency remote teaching during the pandemic. It is an action-research, with a cartographic analysis approach. Based on the problematizations identified, both topics to be debated and lines of work are raised. The development of tools for reflection on the teaching experience is proposed, integrating digital technologies and the development of support tools for course design.

Keywords — course design, teaching in a pandemic, teacher training

#### I. INTRODUCTION

This work contributes to the understanding of the problematization process of teaching practices in higher education, based on the experience of emergency remote teaching during the pandemic (ERT). It aims to systematize some dimensions of the ERT between March 2020 and December 2021. It should contribute to the conceptual debate on changes in teaching, as well as to the practices of creating educational proposals that integrate digital technologies.

The case being analyzed belongs to the University of the Republic, the largest public university in Uruguay, with 143,811 active students in 2020 [1]. This autonomous and cogoverned university offers face-to-face classes almost exclusively, except for specific innovation experiences financed by teaching improvement projects or hybrid teaching proposals aiming at dispersed students in the interior of the country [2].

In March 2021, after having already completed an ERT cycle and having deployed various support devices for teachers at the central and regional level [3] [4], UDELAR offers, a training program for teachers, in the context of the *Digital University project*. Within this framework, the course *Redesigning the Digital University (RDU)* proposed a teacher training experience to redesign the courses, or review the design already implemented during the previous year. This

course offered an environment on the Moodle platform and synchronous meetings via Web videoconference.

As the debate about ERT is taking place in a variety of academic settings today, some published studies on teaching and learning practices during the pandemic are already available. A review of the literature on e-learning during the ERT period, concludes that the risk of teachers' lack of qualification to deal with this teaching modality has been identified and recommends professional development programs to gather the necessary qualifications as teachers with "future mindset". It highlights the need to develop university plans to be prepared by creating resilient, sustainable, and robust systems [5]. The University of Oslo investigates the digital learning process that they call the "dual digitization process", which they define as facilitated by the alignment that combines bottom-up processes (linked to the actors) and top-down (from logistics and technological structures) allowing the redefinition of roles and ways of learning [6] The Marketing Institute of the University of Budapest, studies students' perceptions and concludes that they find that online platforms are functional and efficient and must therefore be considered and assumed, with the physical space being a center for social interaction [7]. This set of perspectives has in common the need to know the way in which the students and teachers are situated in this new scenario, the way they appropriate digital environments and tools and how they define their priorities. In Adell's words, "... it is about overcoming a technocentric or instrumentalist vision of the impact of technology on education" [8] [9]. Therefore, it is not a discussion purely focused on the technology as instrumental knowledge, but on the ways in which digital technologies are integrated with the actors. It conceives technology for teaching and learning, facilitating spaces for social interaction, with educational purpose, pedagogical and didactic meaning.

#### II. METHODOLOGY

An educational action-research design [10] was carried out, involving teacher training. It generated data that have been subject to systematic, critical and reflective practice and analysis of participants and researchers.

This process took place within the course Redesigning the Digital University (RDU). The course proposed the construction of an academic professional learning community (APLC) [11], where synchronous and asynchronous exchange instances would constitute a space for teachers to share their doubts, problems, solutions, and concerns regarding the subject of redesigning their courses to teach them online. The objective of the course was to return to the challenge of the ERT, but with more time and guidelines to critically analyze, reflect, identify, and systematize teaching practices. This debate integrated both the conceptual tools that the course offered - theoretical contributions on teaching methodologies - as well as procedural knowledge to carry out the development of course proposals in digital environments. The specific needs and interests of each participating teacher were considered.

The training proposal consisted of a first module on various teaching models in face-to-face and virtual environments, principles, methods, and technologies for faceto-face and online teaching (duration 2 weeks). The second module worked on the experience already accumulated by teachers, promoting analysis considering quality criteria, achievements, and personal reflections on their teaching circumstances (2 weeks). The third module proposed a 5-step methodology for course redesign. This process was tutored over 6 weeks by teacher trainers. In short, the cycle of the course proposed to integrate new pedagogical-didactic knowledge, then ask questions for reflection on the experience of the previous year of ERT and identify areas for improvement. Finally, teachers would redesign their courses and receive feedback from teacher trainers, starting a new improvement cycle.

Regarding the group of teachers participating in this training experience, 13 attended it partially and 21 met all the requirements. Figure 1 shows the academic areas to which the 34 teachers belong. The fact that the call was open, and enrollment was optional implied that those who took the course were those who had the most interest, concern, and intrinsic motivation to take it. Therefore, considering the criteria for constructing the sample, it is a *significant* sample [12], not a representative one.



Teachers' productions reflect their main interests according to the challenges of their disciplines, in contexts that may have diverse working conditions in terms of number of students, infrastructure, number of teachers assigned to the course, etc.

A cartographic methodology was adopted to address the process experienced by teachers. Concentrated and open cartographic attention [13] is one in which the researcher tries to move along with the teacher, identifying their challenges and discoveries. The teacher problematizes both his/her own actions and the concepts from which he/she develops his/her teaching proposals: the course, the classroom, class time, the logic of the didactic sequences and other aspects. In cartographic terms, one speaks of "tracing" to refer to the open attention of the researcher, who tries to "tune in" with the way in which the problem is defined by its protagonists.

The course synchronous meetings by web videoconference were transcribed. Together with the productions shared by the teachers in their redesign proposals, their feedback on the course and their reflections written in forums and collaborative texts, these transcriptions constituted the data that the training intervention produced. This evidence was systematized and analyzed, providing the results that are presented below.

#### III. RESULTS

Teachers narrate the experience of adapting their courses as an effort, a way out of the comfort zone, a permanent challenge, with successive adaptations and unexpected events, even at the level of academic regulations. What stands out, is the experience of a process full of uncertainties, where the very condition of exceptionality gave rise to doubt, risk taking and innovation.

Based on teachers' narratives and exchanges, the process of creating the courses is revealed as recursive, reflecting the teacher's learning curve and the successive integration of digital tools. The task of redesigning in 2021 what had already been implemented as an emergency in 2020, places them in a position to review, identify successes and discoveries, as well as define challenges that they feel have not been solved. Among these challenges there are problematizations or "critical points." These experiences promoted the questioning of familiar practices, either to analyze their effectiveness or to redefine their relevance, from the integration of new theoretical concepts or new practical possibilities. We identified 6 critical points that are developed below.

### A. Establishing a pedagogical framework and a methodological approach

When problematizing teaching methodologies, teachers recognize deficiencies in pedagogical-didactic theoretical concepts behind their proposals. They define their teaching options as "an art that you learn over the years." This does not mean lacking a pedagogical framework or a methodological approach. Each academic, specialist in their discipline, has a clear notion of what they aim at with their teaching and what they want their students to learn. He/She also has his/her own notion of how people learn their discipline. As a teacher, one has lived and experienced it enough times to have an idea of "what works." But it does not necessarily imply having the appropriate theoretical categories to put those notions and options into technical terms. Neither does it mean being able to challenge and question their most common practices in informed theoretical concepts. That has been one of the needs that the RDU course has tried to meet.

## B. Integration digital technologies to teaching practices and course proposals

Regarding the use of technologies, teachers narrate a gradual appropriation process of digital environments, from a diversity of initial starting points. Although UDELAR already had the Moodle platform installed -Virtual Learning Environment, VLE – it was mainly complementing the face-to-face classroom. The predominant delivery method before the pandemic had been face-to-face teaching

#### C. Time and space management

These two categories: time and space, have been strongly associated with the way in which the courses have been thought of and structured. In online courses, counting number of classroom hours is insufficient to think about the times that teaching, and learning can or should take, or even understanding how time works for diverse students. This dependence of course structures on the notions of time and space has already been made explicit in the literature and stands out as "drastically confronted" [14]. Teaching experiences with digital technologies allow greater flexibility since they facilitate new spaces and new working rhythms, adaptable to personal profiles. At the same time, this problematization makes the process of assigning value to the courses more complex, in terms of recognized credits. The "credit" is strongly associated with face-to-face classroom hours.

#### D. Generation of Educational Resources

Teachers recognize their enormous dedication to generating audiovisual, graphic, textual material, with specific teaching objectives. They discover themselves as curators of already existing resources and as authors. This has several consequences. In the first place, they wonder to what extent this task will be recognized, in a context where the academic career highlights publications that comes from research but does not have the same recognition for the development of training materials. Second, along with the issue of authorship comes that of licensing and the corresponding concern about how the material should be shared, how it will circulate, and whether it can be published.

#### E. Evaluation

The RDU course provided theoretical elements that allowed a more precise exchange on evaluation: by distinguishing between evaluation, grade assignment and certification and by integrating categories such as formative, summative, and diagnostic evaluation. These concepts, already familiar to a minority of participating teachers, enriched the debate and the ability to analyze what happened. The topic emerges in many ways: as a concern, but also as an excuse for discoveries. The first interest brought up by evaluation procedures was related to how to avoid cheating, leading teachers to design surveillance systems using the videoconference to guarantee that what was being done on the platform was indeed the work of the student who claimed it. Then, changes in the type of evaluation are reported, looking for proposals where cheating would not be viable. This kind of evaluation would require original, creative work, problem solving and preparation. On the other hand, other teachers refer to a combination of various assessment formats: quizzes, assignments, presentations, and even a wide range of creative activities.

#### F. Study conditions

A particularly noteworthy issue was the multiplicity of academic situations that were identified, based on the following variables: a) institutional support: from nonexistent, beyond general guidelines, to specific ones in terms of training or technical support, infrastructure, and knowledge about teaching with technologies. b) the varied number of students: they referred to courses from 10 to 1500 students. There is a particular concern about the large number and the expectation that digital technologies can assist large groups. c) the number of teachers: the composition of the teaching team is a fundamental variable that enables or hinders the course creation and management by determining a ratio of students per teacher. d) The teachers' level of digital competences and the attitude towards the inclusion of technologies. A diversity of levels of appropriation and existing digital competences are recognized. Teachers participating in RDU view themselves as enthusiasts of technology inclusion, even before ERT [15]. They assume the role of proponents, promoters, and multipliers of knowledge, within their immediate academic community. However, they express the effort involved in persuading other colleagues to integrate new technology-related practices and in helping them appropriate those technologies.

Specifying these study conditions -institutional support, number of students, number of teachers, teachers' level of digital competencies- were described as variables to be noted at a preliminary stage in course design. This stage would be essential for conceiving the course structure and course dynamics in a realistic and achievable way.

#### IV. DISCUSSION

Based on the problematizations identified, both debatable issues and lines of work have been proposed.

Regarding the emerging debates, it is noteworthy how the pandemic situation poses a challenge which seems to focus

on digital technology use at first; however, deeper, and more conceptual aspects related to teaching and learning are problematized. It is not a simple transfer to new environments, but rather a rediscovery of practices and it promotes a new way of thinking about processes. Such is the case of evaluation. In a context where summative evaluation had been the most common, the benefit of formative evaluation is appreciated, integrating a repertoire of new tools combined throughout the course. Also, a diversity of student learning styles and their impact on performance are discovered by observing students' practices, preferences and interaction with the resources and activities proposed.

The recurring conclusion regarding the experience has been that it was a journey through uncertainty towards a new perspective. The notion that "there are things that are here to stay" and that "the pandemic gave us a little push... we did not dare to innovate" as a teacher stated, raises the view of the pandemic as a window of opportunity. In Kastrup's terms, it could be defined as a process of "invention" [16] in which not only the practices but also the fundamentals of the phenomenon of teaching so that others learn are redefined. It is a cognitive practice that implies reconfiguring the subject and its processes from reconfiguring the world. It means changing profoundly when teaching extends to new environments and integrates new mediations.

Regarding future lines of work, based on this RDU experience, it is essential that tools for assistance and reflection on the teaching experience be developed. Particularly, the development of digital teacher support tools for course design is proposed.

The complexity and variety of dimensions that the teaching experience reflects has been appreciated. Not only does it require problem solving, but it also compromises the cognitive, affective, and relational dimensions. It even involves a professional redefinition as an academic who researches and teaches, with emphasis on this second function, regularly relegated to a lesser place [17]. The richness of the findings motivates the development of tools that guide the reflective process and allow systematizations. It is pertinent to propose analysis tools, such as rubrics, standardized evaluation questionnaires and other methodologies that could organize collaborative work. This would facilitate extending the debate to the educational community at large.

On the other hand, the university professor can benefit from having an assistance and support service for his process of conceiving and designing courses, considering the combination of the tools already known from the face-to-face classroom and the environments and possibilities of the digital world. The identified needs include a) a possibility of systematizing the creative process. It requires suggesting phases or moments in which to conceive different dimensions of the course: from its contextual constraints, to the course evaluation according to standards b)enrichment with pedagogical-didactic theoretical concepts that allow naming processes and conceptualizations the (pedagogical, methodological) about how one learns and teaches; c) facilitating access to a larger repertoire of tools available on the web for teaching, such as educational resource repositories, teacher support sites and digital tools for teachers; d) a space for recording the course creation process and tracking the decisions made, like a log; e) a possibility of having the institutional regulations to be considered, at hand; f) a space to integrate data resulting from the course teaching: number of students who took the course, dropouts, results of learning evaluations, learning analytics, evaluation of the teacher by the student, changes and adaptations in the initial design or in the contents, etc.

All these functionalities and specifications should take place without altering or constraining the creative autonomy of the teacher and without automating decisions that require considerations about situated practices. Ideally, it should allow sharing of generated documents and collaborative work since teachers generally work as a team. The role of exchange, negotiation, and agreements within the academic group in charge of the course has been manifested in all cases as a fundamental dimension of the process, without which it is impossible to achieve changes which everyone would accept and hold accountable for. In short, the complexity of the process of creating courses, based on the accumulation of experiences and lessons learned, can be enriched, ordered, and made more effective, based on a working methodology assisted by appropriate technological supports.

In the words of Nóvoa: "Return to normality? No. This is the time to invent, this is, to collectively build another education" [18] The great challenge is how to support the processes during this time of new constructions.

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