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On site, online, on point?
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Authors

Name: Carlos Delgado Kloos¹

Position: Vice President for Strategy and Digital Education

Organisation: Universidad Carlos III de Madrid

Country: Spain

E-mail address: cdk@it.uc3m.es

Short bio (150 words max):

Carlos Delgado Kloos holds a Ph.D. degree in Computer Science from Technische Universität München (Germany) and in Telecommunications Engineering from Universidad Politécnica de Madrid (Spain). He is Full Professor at the Department of Telematics Engineering of Universidad Carlos III de Madrid, where he was the founding Director. He is presently the Vice President for Strategy and Digital Education, Director of the UNESCO Chair on “Scalable Digital Education for All”, and Director of the GAST research group. He is also the coordinator of the eMadrid research network on Educational Technology in the Region of Madrid and Senior Member of IEEE. He has carried out research stays at universities such as Harvard, MIT, Munich, and Passau. His main research interest lies in Educational Technology. He has been involved in many research projects and has published around 500 articles in conferences and journals. He has coordinated and taught in several MOOCs.

Name: Isabel Gutiérrez

Position: Vice President for Academic Affairs

Organisation: Universidad Carlos III de Madrid

Country: Spain

E-mail address: isagut@eco.uc3m.es

Short bio (150 words max):

Isabel Gutiérrez is a Full Professor of Management at the Department of Business Administration at Universidad Carlos III de Madrid since 1993. She holds a PhD in Business Economics from the University of Seville, where she graduated in Economics. Her teaching and research focus on general management, organizational theory and design. Her research interest is centered on temporal and spatial competitive dynamics and their effects on the performance of organizations facing radical internal innovations, institutional changes and technological discontinuities. Her work has been published in leading management journals. Isabel has collaborated in several academic journals and associations and has served as Vice-President of the European Academy of Management and of the Iberoamerican Academy of Management. She was Director of the Department of Business Economics and currently serves as Vice-Rector for Academic Affairs at Universidad Carlos III de Madrid.

¹ *Responsible for presenting the paper at the Forum.*

Proposal

Title: On Site, Online, On Point: A Contextual Approach

Abstract (maximum of 150 words):

In this paper, we analyze the case of Universidad Carlos III de Madrid (UC3M) and the consequences of the decisions taken during the covid-19 pandemic. First, we explore the effects of the teaching mode on undergraduate student satisfaction, comparing fully online teaching in the second term of the 2019-20 academic year with bimodal teaching in 2020-21. Secondly, as a result of this analysis, we explain the decisions taken on the teaching mode applicable in the academic year 2021-22, where some restrictions imposed by the health situation are still in force. The measures implemented in this academic year will serve as input to find a teaching model that will include positive practices learned during these unique periods. We finalize with some reflections on teaching modes and the importance on the right conceptualization for decision taking and communication.

Key words (up to five):

Online teaching, on site teaching, blended education, active learning, covid-19 pandemic.

Has this paper previously been published/presented elsewhere? If yes, give details.

The paper is new.

Text of paper (maximum of 3000 words, excluding references):

Introduction

Universidad Carlos III de Madrid (UC3M) is a Spanish public university with about 20,000 students, of which just under 15,000 are undergraduates. These students are enrolled in any the following schools: Social Sciences and Law (SOC), Humanities, Communication and Library (HUM), and Engineering (ENG).

In the undergraduate studies, the teaching structure is uniform and combines lecture sessions (between 80 and 120 students) with reduced sessions (up to 40 students). In each subject, students receive half of the weekly teaching in lecture sessions (oriented towards theoretical teaching) and the other half in reduced sessions (with applied or practical orientation). In addition, some programs require lab experimental sessions (less than 20 students) that are excluded for this study.

The covid-19 pandemic forced traditionally face-to-face universities to move to emergency online teaching in a record time. In a similar way as in other countries, in March 2020 the Spanish Government decreed a state of national alarm that locked down the entire population until the end of June and included the suspension of face-to-face teaching at all educational levels. Therefore, at UC3M from March 2020 until the end of the academic year all teaching was online for both lecture and standard sessions.

With the evolution of the pandemic, the Government allowed that in the 2020-21 academic year universities could combine online teaching with a limited amount of face-to-face teaching respecting some hygienic and sanitary measures and keeping a larger interpersonal distance. The application of these new rules had an immediate impact on the size of sessions, because of the reduction of classroom capacity. Some Spanish universities decided to continue with an online teaching model, others adopted a hybrid model with simultaneously students in the classroom and others remotely; finally, some other universities opted for a bimodal teaching model, where all students attended some sessions online and others on site. This last one was the teaching model adopted by Universidad Carlos III de Madrid (UC3M). Lecture sessions continued to be taught online, while standard sessions were all held on site. The complete teaching organization was reconfigured, increasing the size of the lecture sessions (up to 200 students) and reducing the size of the standard sessions (up to 30 students with on site teaching). In this way, the demands of greater distance between students were met. An advantage of implementing this bimodal model would be to allow students to attend class every week, albeit half the time, facilitating student interactions and socialization.

Empirics

To compare the effects of these changes, we have conducted a preliminary descriptive study by comparing the three teaching periods corresponding to three educational modes and to the type of session (lecture or standard). The reference periods are the second terms of the academic years 2018-19, 2019-20, and 2020-21. Table 1 shows the teaching mode implemented in each period and by type of session.

	2 nd term, 2018-19	2 nd term, 2019-20	2 nd term, 2020-21
Lecture sessions	on site	online	online
Standard sessions	on site	online	on site

Table 1: Teaching modes

To carry out this analysis, we have used the variation of the mean values of two questions of a questionnaire passed to students, one about the instructor and one about the contents of the subject.

Table 2 describes the selected questions, whose answers can range between the values 1 (disagree) and 5 (fully agree).

Question A: about the instructor	“The instructor stimulates learning appropriately”
Question B: about the subject	“Your knowledge, competencies and/or skills acquired have increased”

Table 2: Selected questions from the survey on the level of satisfaction by student

In addition, the mean values of the satisfaction surveys have been calculated grouping the values according to the school to which the students belong.

Results

We have calculated the means and standard deviations of the scores of the two chosen questions given by students. Due to the significant number of responses of both items, the averages of scores are consistent and representative. Moreover, these average scores have been calculated segmenting the school and the type of session. The results for the question on the attitude of the instructor promoting active learning are shown in Table 3.

	Standard Sessions (2 nd Term)			Lecture Sessions (2 nd Term)		
	2018-19	2019-20	2020-21	2018-19	2019-20	2020-21
SOC	3.75 (1.25)	3.86 (1.19)	3.92 (1.21)	3.55 (1.28)	3.74 (1.23)	3.77 (1.16)
HUM	3.85 (1.12)	3.90 (1.12)	3.87 (1.16)	3.80 (1.11)	3.90 (1.08)	3.69 (1.23)
ENG	3.77 (1.19)	3.81 (1.15)	3.87 (1.16)	3.59 (1.24)	3.69 (1.22)	3.72 (1.17)
Responses	32,029	45,725	37,504	18,840	26,853	24,528

Table 3: Means and standard deviations of scores.

Question A: “Instructor stimulates learning appropriately” by academic year and School

The results for means and standard deviations of the question about the incremental learning appear on Table 4.

	Standard Sessions (2 nd Term)			Lecture Sessions (2 nd Term)		
	2018-19	2019-20	2020-21	2018-19	2019-20	2020-21
SOC	3.58 (1.08)	3.68 (1.03)	3.70 (1.04)	3.57 (1.06)	3.68 (1.02)	3.71 (1.02)
HUM	3.62 (1.07)	3.66 (1.03)	3.62 (1.06)	3.70 (1.04)	3.77 (0.96)	3.65 (1.05)
ENG	3.57 (1.03)	3.63 (0.99)	3.66 (1.00)	3.56 (1.01)	3.61 (0.99)	3.63 (0.99)
Responses (*)	25,198	37,339	30,164	17,736	25,100	23,155

(*) The number of answers to any question is larger than the total number of students because each student completes a questionnaire for each of the instructors and type of session of the subject.

Table 4: Means and standard deviation of scores. Question B: “Your knowledge, competencies and/or skills acquired have increased” by academic year and School

We have conducted a simple analysis by comparing the means obtained for each question and school in the three periods considered, considering the type of session. In addition, we have compared the scores of the standard sessions that had on site teaching before and after the pandemic. We can distinguish four types of comparisons as summarized in figure 1.

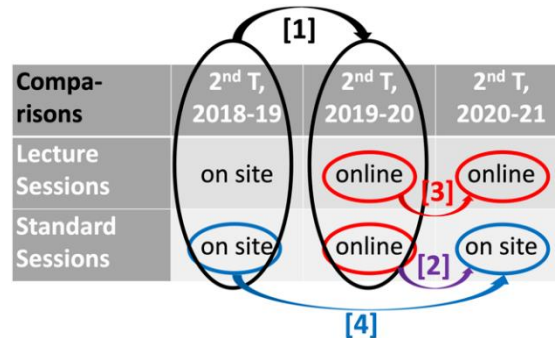


Figure 1: Summary of comparisons

[1] From on site to online teaching (2nd term 2018-19 to 2nd term 2019-20). Lecture and standard sessions.

This transition was unexpected and involuntary and was imposed by the health emergency. Classes were suspended for two weeks which were used to provide basic training in the use of the teaching platform to instructors. After these two weeks, classes were resumed in synchronous online mode at the usual schedule.

[2] From online to on site teaching (2nd term 2019-20 to 2nd term 2020-21). Standard sessions.

Following the national alert, the standard group classes that complied with the mandatory interpersonal distance, returned to face-to-face classes.

[3] Comparing two online teaching periods (2nd term 2019-20 to 2nd term 2020-21). Lecture sessions.

Classrooms that did not allow sufficient occupancy to maintain the required social distance continued with the online mode. But unlike the first period of absolute lock down, instructors were provided with in-depth training in the use of digital and active learning tools.

[4] Comparing two on site teaching periods (2nd term 2018-19 to 2nd term 2020-21). Standard sessions.

This comparison aims to know the impact of the changes produced in this period and the training of instructors in active teaching when on site teaching is recovered.

Table 5 contains the Schools with an improvement of the student satisfaction scores on the two questions considered.

	Comparison			
	[1]	[2]	[3]	[4]
	All Sessions	Standard Sessions	Lecture Sessions	Standard Sessions
Question A	All	SOC ENG	SOC ENG	All
Question B	All	SOC ENG	All	SOC ENG

Table 5: Schools with improvement in student satisfaction

Overall, students show an increase in satisfaction with teaching, both in the instructor's attitude and in the learning of the subjects during this difficult period. This evidence is common in all schools for the transition between the period of pre-covid normality and the period of severe lockdown of the second term of 2019-2020 (comparison [1]). The explanation for this result is possibly not really due to the increase in teaching quality, but rather to the gratitude of the institution and its faculty to face this supervening situation.

However, the partial return to on site teaching, including only standard sessions in the 2020-2021 academic year (comparison [2]), produces an increase in the satisfaction for School of Social Sciences and Law (SOC) and School of Engineering (ENG) students, decreasing slightly for those enrolled in the School of Humanities, Communication and Library (HUM) in the two questions of the survey. A possible explanation for this result is that the learning of the subjects in these schools (SOC and ENG) is based on the approach and resolution of quantitative exercises where the instructor's support and help in learning is highly valued. In contrast, HUM subjects rely on qualitative methodologies that depend mainly on students' work and reflection.

In relation to keeping lecture sessions online (comparison [3]), all students value positively the knowledge acquired (question B). This result may be due to the improvement of faculty training in which the university put a great effort and investment that was followed by most instructors. However, this perception changes for question A (instructor's attitude), where it worsens for HUM School. In this school, faculty did not appreciate online teaching, which was considered worse for teaching in their subjects. In addition, this faculty was less familiar with the use of digital tools for teaching.

Finally, if we compare the two periods of on site teaching (pre-covid and post-covid in the standard sessions, comparison [4]), we can conclude that for the two questions analyzed, student satisfaction has also improved, except for the HUM students. This finding may be due to the fact that the part of the training received by instructors to better face the online classes is being used in active learning and dynamization of on site sessions. For HUM students there was a drop in satisfaction in the values of the two questions, perhaps due to the fact that half of the sessions were held online.

Discussion: Future Prospects

What can we conclude from this analysis? Is back to normal, to traditional on site teaching the right decision for the future? We have gone through an intense period of instructor training, improvement of facilities, and forced practical experience with other teaching modes. Is on site teaching superior from all points of view and for all situations? Is there something that can be taken advantage of after the investment in equipment and instructor training?

Mathiasen and Eriksen (2021) report on the advantages of online lectures over those on site. Students pose more questions and interact more online than in on site classes. The chat tool has a lower entry barrier to participate, which encourages interaction. This effect must have been experimented many many universities around the world during the pandemic, also it was already known before (Yang et al., 2018).

Some people conclude that blended education is the best compromise. But, what is understood under blended or even hybrid education? Owston (2021) identifies 7 models for the post-pandemic campus: fully synchronous, blended asynchronous-synchronous, HyFlex, BlendFlex, "traditional" blended learning, flipped classroom, face-to-face with Zoom breakout groups. This leads us to reflect further.

Already in 2003 (Bates, A.W., Poole, G., 2003) and also later (Bates, 2015 and Bates, 2019), Tony Bates speaks about the continuum of technology-based learning. See the image taken from (Bates, 2019, p. 526) in figure 2.

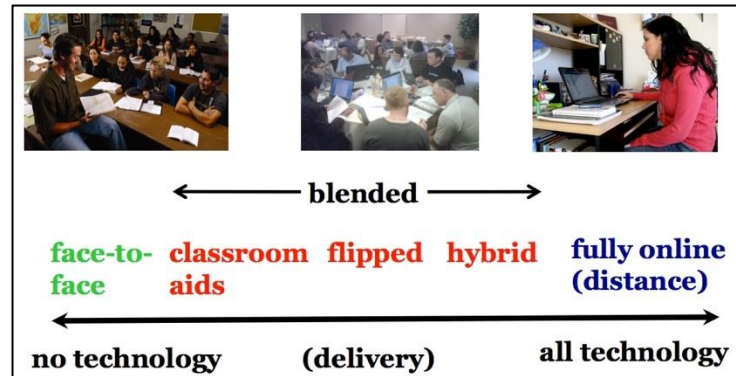


Figure 2: The continuum of teaching modes from (Bates, 2019)

Between the purely on site or face-to-face mode and the fully online mode, there is plethora of intermediate modes. The use of classroom aids as engagement apps in class might not be perceived as some kind of blending. As a matter of fact, on site and online are not opposite teaching modes. On site and remote indeed are: in on site mode, instructors are together with the students in the same room, whereas in remote mode they don't share the space and therefore communication has to be established through online means. However, online technologies can also be used in on site settings. In remote teaching settings, online technologies are mandatory in order to overcome the distance, but in on site settings they are making more and more sense. Nowadays, it can be expected that students have a smartphone with them. In some cases, notebooks can be required as well. These devices allow to set up a second communication channel on top of the direct one that takes place in the classroom. To have two channels can have many pedagogical uses.

One simple example is the use of an engagement tool like Kahoot!, Mentimeter, Socrative, or similar ones. At UC3M we have implemented Wooclap (Wooclap, 2021) as an institution-wide tool. This tool has been integrated with our Moodle LMS and faculty training has been organized. This second communication channel should certainly be kept for the future to allow for additional conversations in lectures. These conversations can be triggered by the lecturer or teaching assistant to monitor the level of understanding of students and engage them or by students themselves to ask for clarification, for instance. It is interesting to note that this tool is useful for on site settings, for purely online ones, and also for those where part of the students are in person and part online. If you consider the in classroom use, students are both on site and online simultaneously!

Another blended framework that we have implemented at UC3M are Telepresence Classrooms, powered by Streamplay (Streamplay, 2021). The concept has been adopted from the University of Eastern Finland (UEF), where they call them Multi-Location Classrooms (MLCs) (see figure 3).



Figure 3: Photos of the Telepresence Classrooms (or MLCs) at UC3M and UEF

The image of a Telepresence Classroom at one of our campuses is projected full size on the entire wall of a similar classroom in another campus and vice versa. This setting together with microphone arrays and speakers gives the impression of one enlarged, combined classroom that includes students from both locations. Instructor and students can speak freely and be heard and seen at the remote location, as if they were together. Is this on site or online teaching? Neither and both.

A third example that has been implemented at UC3M is the use of Engageli (Engageli, 2021) for the promotion of active learning. Even if students perceive that their learning with active methodologies is inferior (Deslauriers et al., 2019), it has been shown that active learning in general produces better high-level understanding (Oakley et al., 2021) (Prince, 2004). How can technology promote active teaching practices? Video-conferencing tools have been used during the pandemic to replace face-to-face classes, because these were the tools available. But a class is not the same as a conference. Lectures might resemble conferences, because of the orientation towards explanation rather than interaction. But in practical sessions, active participation from students should be mandatory. Video-conferencing tools have successively been introducing participation tools, such as tools for chats, Q&A, surveys, quizzes, and breakout groups. These were welcome additions. However, during the pandemic, a new generation of tools with a pedagogical orientation from ground on have been appearing. Engageli is one of them. This tool uses the metaphor of (virtual) tables where students are seated. Students can freely speak with one another at each table without disturbing the rest of the students. The instructor can visit the tables individually or teach to the whole class. Students can raise their hand to ask a question and be heard by the whole class. The difference to the breakout groups is subtle, but subtleties sometimes make the difference in usability and adoption from a practical point of view. With the help of these tables, the instructor can implement collaborative learning patterns and other best practices that are based on Vygotsky's Zone of Proximal Development (Vygotsky, 1978) and the rich body of knowledge around CSCL (Computer Supported Collaborative Learning) (Dillenbourg, 1999) (Stahl et al., 2006) (Strijbos, 2004). We are deploying Engageli during the first term of 2021-22 in two subjects that are compulsory for all students: *Spreadsheets* (digital numeracy) and *Information Skills* (digital literacy). These subjects have most classes fully online and some classes on site. There will be time to evaluate this initiative. What can be said right now is that even in some on site classes, the tool has been used as well. The reason is clear: collaboration tools make sense online and on site. What matters are the activities, not so much the teaching mode.

Concluding Remarks

This study is preliminary and is based on a simple analysis of student satisfaction data. Therefore, the paper has several limitations. First, our findings are based on the aggregation of perceptions without considering learning outcomes. Second, it cannot establish causality between teaching mode and variations in satisfaction. The changes in the levels of satisfaction with the instructor's attitude and subject learning may be mediated by other factors that have not been included in this study. Possible extensions of this paper would include analyzing the impact of different teaching modes on student

outcomes (subject grades), as well as a more sophisticated statistical analysis than the use of averages of scores.

However, this analysis shows that intense instructor training and investment in the right technologies help in improving the quality of teaching. Also, that one must distinguish among different types of teaching events (lecture vs. practice-oriented). The subject taught might play a role (analytical vs. narrative subjects).

Looking into the future, the right point will be neither purely on site nor online. A balanced combination across several parameters of tool support and personal contact might be the way to go. Tools like Wooclap, Engageli, or Google Workspace will help in providing the right environment for collaboration in class. Also, special spaces like our Telepresence Classroom will help in making distances disappear, be it between campuses within our university or across universities in international settings like our European University initiative YUFE.

But above all we need to get rid of conceptualizations from the past. The following quote has been attributed to John Maynard Keynes: “The difficulty lies, not in the new ideas, but in escaping the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds.” This may very well apply when deciding on how to teach when trying to find the point in the discussion about on site and online.

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