

## Digital Educational Tools for Secondary Education Students

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### Abstract:

The effects of the health crisis caused by COVID-19 have been felt in all areas of society, not only in Spain but also worldwide, at all levels. And logically this pandemic had a great impact on the educational field during the past academic year.

Regardless of the educational level, although we will focus on Compulsory Secondary Education (ESO), the main concern faced by teachers was to avoid social inequalities during the teaching-learning process following a mixed model of blended education. As stated by Ian Rosenblum, director of The Education First, "This is a huge educational equity challenge that can have life-altering consequences for the most vulnerable students".

Throughout this communication, it will be analyzed how the past academic year was faced with the novel introduction of blended online teaching through the use of different digital tools made available to the educational community.

**Keywords:** Blended learning; COVID-19; digital tools; secondary education.

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### I. INTRODUCTION

The coronavirus has changed, perhaps forever, the way education is delivered. This unprecedented situation has consequences in the daily lives of students. Regardless of educational level, the overriding concern is to prevent inequalities in learning from widening, marginalization from increasing and the most disadvantaged students from being unable to pursue their compulsory studies.

Focusing on secondary education, the object of this communication, in the past academic year, following the Spanish Health System guidelines, we opted for a mixed teaching model combining face-to-face and online classes, especially from 4<sup>th</sup> year of CSE, where it has been followed a blended teaching paradigm, alternating face-to-face classes at the center with online classes from home.

It is in this new scenario where the digital tools made available to the educational community come into play, especially platforms such as google classroom or google meet, among others. While the first, google classroom, helps us to maintain contact between teachers and students and parents by monitoring tasks daily, the second, google meet, is the platform that is commonly used for teaching online classes.

The objective of this communication is twofold. On the one hand, we will analyze how this pandemic situation has affected CSE students following a mixed model of blended learning. We will see how this model has not only affected the daily monitoring of classes but, above all, the academic results obtained. But, in addition, on the other hand, and starting from this situation of blendedness, we will study how digital educational tools have tried to mitigate the effects of this situation in order to be able to correctly monitor their academic and personal progress.

### II. METHODS

The methodology to be followed will combine the quantitative and qualitative study. The quantitative method will be used by means of an anonymous survey that was distributed to CSE

students. From the results obtained, we will extract some reflections on how these students are experiencing organizational and operational changes with blended teaching. And the qualitative method will be used to analyze the utilities and advantages that digital tools offer to these students in order to promote not only asynchronous interaction (google classroom) but also synchronous interaction (google meet).

We will focus especially on this last section where we will reflect how these digital tools not only promote asynchronous interaction (Google Classroom) with the exchange of tasks and activities but also synchronous (Google Meet) with the teaching of online classes. Implemented to a greater or lesser extent according to the Autonomous Community, blended education is at the epicenter of the educational debate. The blended model has been the solution given to the needs that have been determined by COVID-19 since the ratios have had to be reduced and the available spaces have prevented the maintenance of basic security measures and social distance.

Depending on the level of incidence in each community, different blended plans have been adopted. In the case of the Region of Murcia, the community object of the study, this has been implemented in the last two years of CSE and in Baccalaureate with a biweekly mixed system whereby students attend class three days a week and two days a week. the next one alternating consecutively as the groups are divided into two halves in order to lower the ratio in class. Thus, in each biweekly cycle, students attend class for five days in person and then another five days online. The models in which this blendedness develops also vary according to the community. In some cases, on alternate days such as in Murcia, in other cases per week, three-hour shifts, sending homework or tutorial videos, resources in virtual classrooms, etc.

Numerous studies have been published in the last year on the effects of the pandemic from very different angles and perspectives, as well as from very different organizations or institutions. And logically, the volume of studies and articles published on the effects of the pandemic on education has been enormous and highly varied, so it would be impossible to cover each and every one of them. We can start like this with an article published by García Areito in the Ibero-American Journal of Distance Education this year. In this article, the author reflects on perceptions prior to Covid-19 regarding the modality of distance education, as well as the most recent problem regarding post-confinement times.

Another article reflected the effects that the pandemic had on the loss of classes and its correlation with educational performance. In this article, published by the Center for Economic Studies in Madrid, its authors Sainz González and Sanz Labrador affirmed that the setback in the learning of students from disadvantaged backgrounds could result in an increase in their repetition rates in the coming years.

A similar study was published by Cabrera in the *Revista de Sociología de la Educación* in which he reflected on the effects of the coronavirus on teaching in the face of the increase in inequality of opportunities. According to this author, the telematic educational model increases the inequality of educational opportunities, highlighting the material deficiencies of electronic devices in the most disadvantaged homes.

A report published by Education at a glance reflected the impact of Covid-19 on education in the national territory. Those who came from privileged backgrounds were able to access alternative learning opportunities with the explicit support of their parents. But those from disadvantaged backgrounds were often left out of the system by closing classrooms.

The penultimate study that we will collect here was the one published by the organization *Plena Inclusión*, which included the right to education during Covid-19 for those students with intellectual or developmental disabilities during confinement. The Childhood Platform launched a report with one hundred protection proposals for children in Spain, which included guaranteeing access to technological tools and internet connection for families during confinement.

Finally, we will also reflect a study by the Spanish Association of Primary Care Pediatrics that reflected on the new educational and leisure normality when returning to schools. The loss of personal contact with teachers and their peers has meant a decline in their learning, development and social-emotional well-being for all children.

III. RESULTS

Implemented to a greater or lesser extent in each autonomous community, blended education is at the center of the educational debate on its effectiveness. The models in which this blended presence is developed are almost as varied as communities with their corresponding educational plans for weeks, alternate days, three-hour shifts, sending homework, video tutorials, resources in virtual classrooms, flipped classes, recorded classes, classes streaming, etc.

In the Region of Murcia, education has been blended in the last two years of CSE and in Baccalaureate. Up to 2<sup>nd</sup> year of ESO, the students went to the center every day, but from that stage up to Baccalaureate, they alternated two or three days a week consecutively.

In other words, if in week one the students went to face-to-face class at the center Monday-Wednesday-Friday, in week two they went Tuesday-Thursday, the group being divided into two halves with a similar number of students in each. Thus, in each fortnightly cycle, each subgroup went to class for five days in person and another five days from home, as can be seen in the following table.

Table 1. Biweekly distribution of students

	Group A					Group B				
	Mo	Tu	We	Thu	Fri	Mo	Tu	We	Thu	Fri
Week 1	E PR	L ON	E PR	L ON	E PR	L ON	E PR	L ON	E PR	L ON
Week 2	L ON	E PR	L ON	E PR	L ON	E PR	L ON	E PR	L ON	E PR

Note: PRE = Face-to-face. ONL = Online

From the teacher's point of view, this blended model has ended up being a challenge for them, as they have been forced to propose tasks for those who are in the classroom that day and for those who are at home, either by sending homework assignments. virtual classroom or streaming classes. For their part, the student may end up receiving a shower of different activities throughout the week.

In the school, teachers have enough computer equipment with a camera and microphone and also have access to the SED (Digital Educational System) platform from which they can establish communication with students, upload jobs or assignments and share a weekly organization calendar and monthly. As the course has progressed, the teachers have adapted to the new tasks and adapted their way of intervening with the students.

3.1 Google Classroom

One of the educational digital tools most used by teachers throughout the course has been Google Classroom to optimize task management and to improve collaboration and communication. Depending on the type of user, its functionality varies, and four different roles can be highlighted: teachers, students, parents or legal guardians, and administrators. In Google Classroom you can create as many classes as there are groups, based on the premise that it is created from the corporate domain "murciaeduca.es". Once created, the classes have an associated calendar where events can be scheduled by accessing Google Calendar, being able to choose between the weekly or monthly view to schedule what we are going to do. We can then add the event with which we are going to summon our students to their Google Meet sessions.

From class work is where we can organize our class and where we make materials, tasks or questionnaires available to our students. In this sense, it is important to have a careful presentation of the class so that students can easily access it. To do this, names can be assigned to the topics of our subject, which makes it easier for students to access the correct information.

Similarly, each class that we have created in Google Classroom has associated a Drive folder and a Calendar. Thus, we can add content that we have previously created or create that content at the same time as the material. If we create it, we have to indicate within the drive in which folder our file

should be saved. But if we decide to add the material, it can be done either from Google Drive or from our computer. You can also make the material visible to all students in the group or only to some of them.

It also allows us to create an assignment in the class. When we add or create a material we are presented with different options. One of them is that students can see the file, but not modify it. A second is that students can edit the file since they all share and edit it. And a third is to make an individual copy for each student in which each student receives a copy of the document with their name and edits it individually. In this task we will be able to choose which class or classes we assign said task to, which students to assign a score to, a due date, choose the topic to which the task corresponds, or even add a guide for its evaluation (rubric).

Another functionality that Google Classroom allows us is to use it as a board. Both teachers and students can post on the board, depending on the configuration we give to our class. When we make a publication on the board, we can indicate that it is made in a specific course or in several, that it is visible for all students or one in particular, add content, and we can schedule it to be published at a certain time or even save it as a draft for later publication. It is important to note that both students and teachers can add comments to posts that appear on the board.

In this board, the teacher can delete any publication or comment of their own or of the students, on the contrary, the students can only delete their publications or comments. Another possibility that the board offers us is that if we want a publication to always appear at the beginning of it and not get lost among all the publications, we can use the option to move to the beginning.

### **3.2 Google Meet**

The other application we are referring to, and which has become our tool for daily use, is Google Meet, which has allowed us to give online classes for those students who were at home. Logically, the first step was to create a meeting, which can be done from the meet itself or from Google Calendar. In the first case, we can create the meeting within meet by clicking on start or join a meeting. In the second, we can schedule a meeting using an event from Google Calendar.

One of the advantages of Google Meet is that it allows us to share a screen in a meeting or class that we have with students. To do this we click on "present now" and we have three options: the entire window (in which everything that is seen on our computer screen is shared), a window (in which only one window of our computer is shared) and a Google Chrome tab (in which a tab that we select from our browser is shared).

Another aspect that we can configure is the recording of the meeting or class. We can record the meeting taking into account that the recording includes the participant who is speaking and the screens that are being shared. But to record a meeting or class we must have the permission of all participants. Once the recording is done, it will be automatically saved on the Google Drive in a folder called "meet recordings".

It also allows us to change the design, being able to choose between automatic, mosaic (in which all participants are shown up to a maximum of 16), focus (it is shown to the person speaking), and sidebar (it is shown to the person who speaks and the rest on the side). When we want to see all our students we have to mark the mosaic option and move the bar to the number of people we want to see. So, we can have all students controlled.

## **IV. CONCLUSIONS**

As we have seen, with blended education, students develop certain skills that will be very useful in their future, both academically and at work. For example, by working from home and independently, they learn to find and value what information is relevant to them and to work as a team with their colleagues through different educational digital tools. In this sense, some experts believe that, with the blended modality, what is achieved is to favor collaboration, debate or reflection and the digital competence of students.

But for the blended model to work properly, the school must have an adequate technological infrastructure and, logically, the students have the necessary equipment at home, which is not always the case. However, not all schools or families have these resources, so the students who stay at home end up having numerous problems to continue the normal functioning of the class.

Likewise, we have verified how different digital tools, mainly Google Classroom and Google Meet, have helped us throughout the course to be able to serve students both in person and online. However, this blended teaching model, despite the help provided by these tools, has also been a challenge for students.

This challenge has been reflected in the questionnaire that, anonymously, was distributed among the CSE students at the end of the course. In said questionnaire they were asked questions such as the following: have you fulfilled the purposes you set for yourself at the beginning of the course ?; Have you taken advantage of the online classes ?; Do you study regularly and do you try to keep your subjects up to date ?; in general, how is the result you expect from your qualifications ?; In your opinion, are the difficulties of this course common or individual ?; Are the digital platforms available to you useful ?; Do you consider that online teaching is conditioning your learning ?; Do you connect to online classes? ; What difficulties do you have to follow the online classes?

From the responses obtained, we can draw the following conclusions: online classes affect their study and organization, which is reflected in academic results; the difficulties of teaching online are mostly common; digital platforms are useful but they condition their learning process; and students connect to online classes but report certain technical difficulties and prefer traditional teaching

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