

## Learning experience in a virtual environment: student perception

### Experiencia de aprendizaje en un entorno virtual: percepción del estudiante

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#### Abstract

As a result of the COVID-19 pandemic, the working dynamics in the educational area have been transformed. An important change has been the incorporation of digital tools, which have taken a leading role in the learning process. For this reason, the goal of this research is to identify the perceptions that students have regarding the use of technology and how it relates to their learning experiences online or virtual modality. To achieve the research objective, a qualitative methodology was applied; a questionnaire consisting of 9 items was applied to collect the data, of the characteristics and the assessment of the technological tools and online experience in virtual learning. The sample was taken from high school students. The results confirmed that virtual learning provided students with positive experiences. The students gave a favorable evaluation of the digital tools applied to virtual learning. The main advantages were; it took less time to finish activities. These activities were focus on learning for life. Therefore, the use of technology applied in a virtual learning environment allowed students to experience emotions such as curiosity, doubts and insecurity, all of these factors contribute to their learning process.

#### Resumen

Derivado de la pandemia de la COVID-19 la dinámica de trabajo en el ámbito educativo se ha ido transformado, un factor importante en este cambio ha sido la incorporación de las herramientas digitales las cuales se han apropiado de un papel protagónico en el proceso de aprendizaje. Es por ello que la presente investigación tiene como objetivo identificar las percepciones de los estudiantes con respecto al uso de herramientas tecnológicas durante su formación en la modalidad virtual. Para cumplir el objetivo, se empleó una metodología de corte cualitativa, para la recolección de datos se aplicó un cuestionario conformado por 9 ítems, los cuales indagaban las características y valoración de las herramientas y experiencia virtual en el aprendizaje virtual. La muestra estuvo conformada por estudiantes del Nivel Medio Superior. A partir de los resultados obtenidos se corrobora que los estudiantes vivieron más experiencias de aprendizaje positivas durante la modalidad virtual, evaluaron positivamente el empleo de herramientas digitales para el aprendizaje y enlistaron ventajas como menor inversión de tiempo, actividades mediadas por tecnología acorde al contexto y contribución a un aprendizaje para la vida. También afirman haber experimentado emociones como curiosidad, dudas e inseguridad, factores que influyen en la percepción de su experiencia de aprendizaje en un entorno virtual.

#### Virtual environment, Experience, Perceptions

#### Entorno virtual, Experiencia, Percepciones

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## Introduction

As a result of the COVID-19 pandemic, the educational process was transformed by the incorporation of technology in the new ways of teaching. Technology played a leading role in the learning process since it became the only means to establish communication and interaction to make teaching possible for each and every class subject.

Under this confinement condition, teachers and students had to play different roles than the traditional ones they were used to. Due to the implementation of digital methodologies and the use of different applications there was a need to adapt to the changes in class time and space. Also teachers had to update class activities in order to provide ideal learning spaces, willingness and openness to the new learning modality.

It is in this context, that teachers had to adapt and implement techno-pedagogical tasks in a virtual environment in order to contribute to the objectives demanded by the study programs. The need arises to evaluate and describe the experience and perceptions of students regarding the implementation of these new classroom scenarios.

The core themes that support this research are described below.

## Virtual environment

The incorporation of technology into the social context and into people's daily lives has impacted all scenarios and the educational area is no exception. Society demands innovations in regards to the aspects of information and knowledge. The transformations in society come as a result of the implementation of technological information and communication. Therefore education becomes the engine of change in society. Education must not only incorporate technological aspects it must also apply them (Pablos y Villaciervos, 2005).

This is how technology gives rise to virtual environments, which demand new teaching methods and innovative learning practices, thus transforming the teaching-learning process.

This transformation triggers the implementation of new tools for teaching-learning, the use of technology, learning management and new forms of evaluation (García, 2012).

According to Perea and Cubo (2010), technology allows interaction with a greater number of people, promotes personalized attention, displaces traditional teaching, integrates new learning contexts, adapts to the needs of the target population. Also, it promotes self-learning and time management. These elements generate a virtual learning environment that enables flexibility in ideal contexts for academic achievement (Prendes, 2011).

## Experience and perception

According to Domingo (2010), the educational process is linked to experience and thought. For Arendt (2005) there is no thought without personal experience. Subjects think about what they experience at a given moment, according to the context in which they are immersed and to what they consider their own.

Educational practices seek to generate experience, that is, to promote thinking based on what has been experienced and to provide educational actors with meaning (Flores-González, 2022).

Therefore, this research aims to identify the student's perceptions, from their personal experiences triggered by the implementation of virtual learning environments in the post-pandemic stage.

Under this line of research, teachers have a need to identify the students' perceptions, their experience and assessment of the teaching and learning processes. The student is the main resource of information. The student's perceptions are essential to gather elements to analyze and implement a virtual environment, with the purpose of identifying the strengths, weaknesses and opportunities for improvement in the educational process. (Barberá y Fuentes, 2012).

It should be noted that a virtual environment transforms the role of the teacher and the student, the former adopts the role of manager and facilitator of knowledge, while the latter takes a positive, active role and takes ownership of long-term learning. On the other hand, the contents become flexible and varied. The interaction is based on student-student and student-teacher, regardless of space and time (Barroso y Llorente, 2006). In this sense, the main objective is to describe the learning experience that the high school students encounter in a virtual environment.

**Methodology to be developed**

For this research, a qualitative methodology was used with the purpose of identifying the student's perceptions regarding the use of technological tools in the virtual modality.

To meet this objective, the questionnaire designed by Ardiní et al., (2020) was used as an appropriate instrument, to the context without altering its purpose.

This questionnaire was made up of 9 items, with the purpose to investigate the perceptions of the attribute characteristics and assessment of the tools and the experiences encounter in virtual learning (Table 1).

The sample was made up of 40 students of biology class in the sophomore year of high school whose ages range between 16 and 17 years.

Category	Attribute
Virtual learning experience.	1. Virtual experience 2. Time spent 3. Emotions experienced
Characteristics and assessment of the tools	1. Use of digital tools 2. Difficulties, advantages and disadvantages

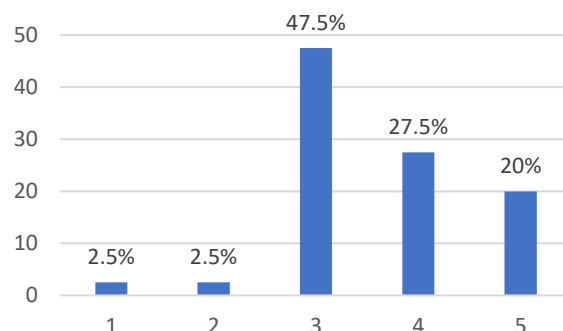
**Table 1** Instrument categories and attributes  
*Own elaboration*

**Results**

*Virtual learning experience*

On a rating scale of 1 to 5, 19 students, corresponding to 47.5% of the total population, rate their virtual experience during the semester with 3 points, followed by 27.5% with 4 points, 20% with 5 points and only 2.5 % with 1 and 2 points (Graphic 1).

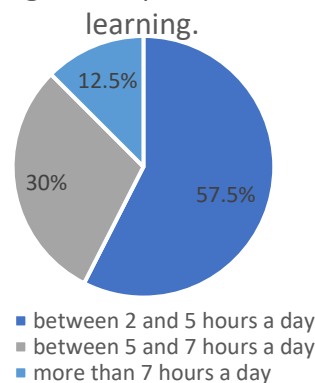
Virtual experience during the semester taken.



**Graphic 1** Virtual experience during the semester taken  
*Source: Own elaboration*

The results show that at least 2 students of the total population faced difficulties during the virtual learning process, which triggered dissatisfaction. On the contrary, more than 50% express having had a satisfactory experience, since they are within the average (3 points) and even exceed the score. This agrees with the studies of Fernández-Pascual et. al, (2013), He states that a large number of students feel satisfied with the use of methodologies in virtual environments.

Average time spent on virtual learning.

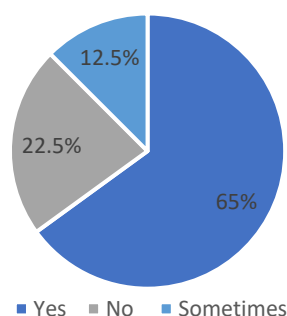


**Graphic 2** Average time spent on virtual learning  
*Source: Own elaboration*

57.5% of the population claims to study between 2 and 5 hours per day, followed by 30% who spent between 5 and 7 hours per day and only 12.5% more than 7 hours per day.

Time management is decisive to understand the score they gave to the learning process, since virtual modality allows them to be connected anywhere, which modifies the student's daily routine, fragmenting the time spent studying and their leisure activities, and this is reflected in the fact that more than 50% of students claim to spend more time in this modality (between 2 and 5 hours per day) compared to face-to-face. Studies carried out by Marcén y Martínez-Caraballo (2012), they point out that there is a direct relationship between time management and academic achievement. The aforementioned is corroborated in the following graphic.

Virtual learning requires more time than in-person learning.



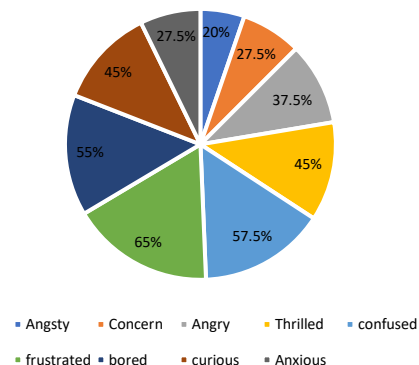
**Graphic 3** Virtual learning requires more time than in-person learning

Source: Own elaboration

For 65% of the students, the time investment in virtual modality is greater than in the face-to-face mode, for 22.5% it is less and for 12.5% it is sometimes less. These results show that virtual environment conditions the hours allocated to carry out activities; however, it is not a guarantee that these hours are continuous or independent. On the other hand, it is important to consider the distractions that the student faces, since these are factors that can directly affect academic achievement.

According to studies carried out by Monsalve y Romero (2014), points out that there is no significant relationship between time management and academic achievement in virtual environments. Subsequently, the emotions that students experienced regarding technology-mediated learning were identified.

Emotions generated by technology-mediated learning.



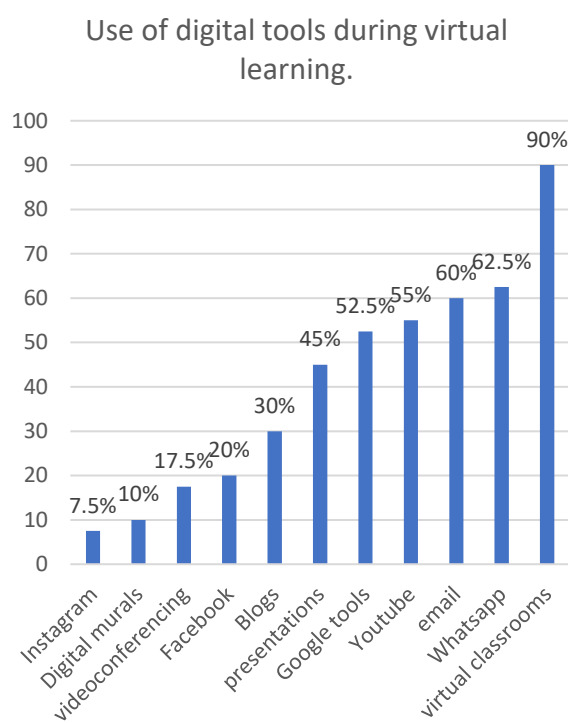
**Graphic 4** Emotions generated by technology-mediated learning

Source: Own elaboration

Escaping from the comfort zone involuntarily will always trigger a series of emotions that will often emphasize disadvantages rather than opportunities.

Even though the students of high school are characterized by being part of the technological era, it is inevitable to see in graphic 4 how frustration with 65% was the emotion that accompanied the students during their experience in a virtual environment, followed of confusion with 57.5% and boredom with 55%. Regarding the positive emotions identified, 45% indicate having felt curiosity and enthusiasm, elements that according to Sastoque et al. (2022), are determinants to guarantee meaningful learning in a technology-mediated environment.

### Characteristics and evaluation of the tools used

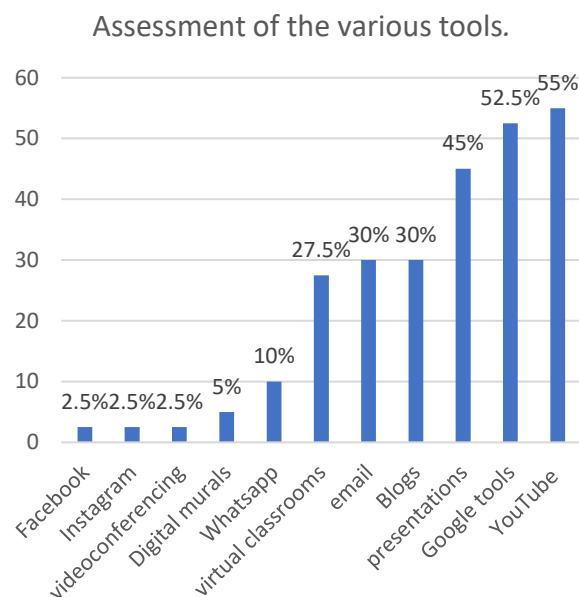


**Graphic 5** Use of digital tools during virtual learning  
Source: Own elaboration.

Graphic 5 shows the digital tools that the students used to face a new teaching dynamic, 90% used virtual classrooms, which shows that the facilitator established synchronous means of communication to interact with the student. 62.5% use WhatsApp, followed by 60% email, 55% YouTube, 52.5% Google tools, 45% presentations and 30% Blogs. Facebook, videoconferencing, Digital murals and Instagram were used to a lesser extent.

It is evident that students explored social networks at a low percentage when it comes to educational purposes. On the other hand facilitators concentrated their praxis in virtual classrooms. According to Martínez (2020), Virtual classrooms provide control and monitoring of work dynamics. These advantages allow facilitators to focus on different moments of the teaching process. It facilitates communication, interaction during sessions and the designation and reception of tasks effectively.

This graphic shows the multiple technological applications that students used to take in information that helped them in the development of knowledge. In contrast, the following graphic shows an overview of how satisfy students felt after using different applications in their learning achievement.

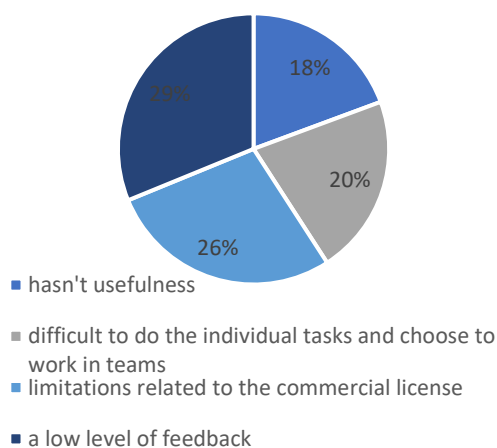


**Graphic 6** Assessment of the various tools  
Source: Own elaboration

After identifying the main applications used by students in a virtual environment, they were asked to indicate those they considered valuable and that helped them the most to achieve their academic purposes. The results show that 55% of the students found academic support on YouTube, 52.5% Google tools, 45% presentations, 30% Blogs and email, 27.5% virtual classrooms and in a lower percentage WhatsApp, digital murals, video conferences, Instagram and Facebook. These findings are important as they give teachers an indication of which applications should be considered in technology-mediated strategies. According to Ardini et al., (2020), the tools with the highest percentage (YouTube, Google tools and presentations) have characteristics that must be present in the learning process, in order to provide a better experience and guarantee the appropriation of knowledge. These characteristics are usefulness, speed, audiovisual format, interaction with classmates and teachers, constancy of content and self-management of time, space and content, as it provides students with a scenario that adds to their learning process.

In contrast to the previous question, the students were asked to express what they considered inadequate and the difficulties that triggered a negative evaluation of the applications used.

Difficulties of tools that evaluate negatively



**Graphic 7** Difficulties of tools that evaluate negatively  
Source: Own elaboration

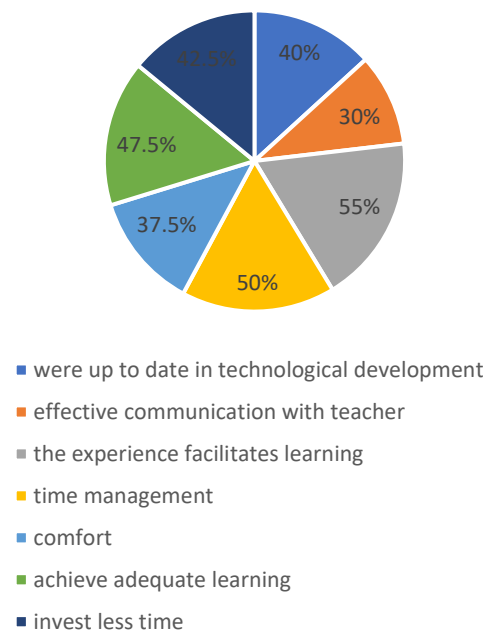
The gather results are important, as they show characteristics that must be considered when designing a strategy for virtual education.

For the students, the difficulties they faced and found inappropriate were the applications that presented a low level of feedback, represented by 29%, in addition to the limitations of the platform itself related to the design of the interface and the difficulties of interacting in a synchronous or asynchronous way (Rosero, 2021).

For 26%, the applications have limitations related to the commercial license, since they required a membership or a login to unlock them. 20% found it difficult to do the individual tasks and choose to work in teams. Finally, 18% had doubts regarding the usefulness of the applications that were given a negative evaluation.

In the learning process it was necessary to identify what the students consider to be the main advantages in respect to the development of knowledge mediated by technology (Graphic 8).

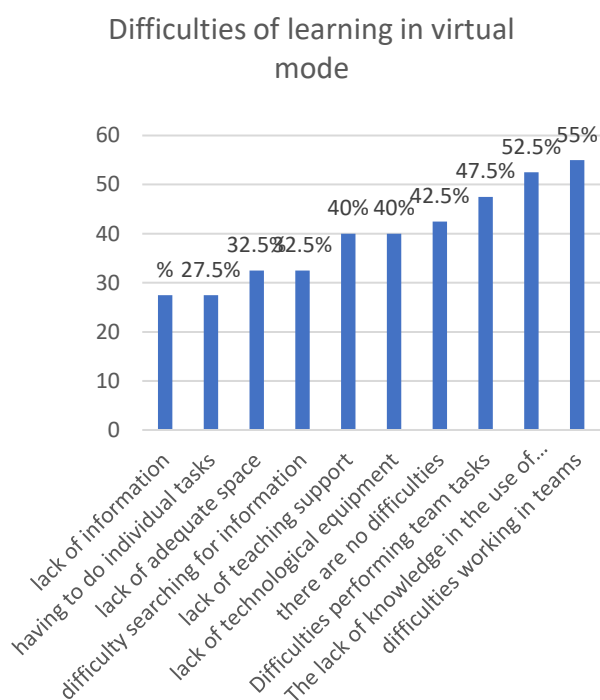
Main advantages of learning in virtual mode



**Graphic 8** Main advantages of learning in virtual mode.  
Source: Own elaboration

The findings corroborate the statements of Cobos, et al. (2018) since 55% of the students indicated that having experience facilitates learning, promoting the deconstruction of previous knowledge during the synchronous session. Another advantage is having extra time, since students do not need to travel, which allow students to have more leisure time. On the other hand, 47.5% confirm that they achieve adequate learning and 40% consider they were up to date in technological development. The following graphic shows the difficulties they experienced when learning under the virtual modality.





**Graphic 9** Difficulties of learning in virtual mode

Source: Own elaboration

For 55% of the students, one of the difficulties were having to do the individual tasks, this data goes hand in hand with the traditional dynamic based on shared tasks that is triggered in face-to-face teaching, and is corroborated by 47.5% of the population that claim to have difficulties working in teams, which shows the search for constant interaction. In this order of ideas, virtual communication and interaction are determining factors in the educational area to guarantee learning whether in a face-to-face situation or at a distance (Salmerón et al., 2010)

The lack of knowledge in the use of technology can be attributed to the sudden implementation of virtual environments; however, for 52.5% it was a limitation. A relevant fact is that 42.5% claim to have no difficulties.

## Conclusions

Students positively evaluate the teaching process through a virtual environment, as it adjusts to today's needs of time and space, in addition it allowed them to explore new applications that become technological tools that contribute to their learning process.

The sample students consider that a virtual environment gave them the possibility to manage their time. They found this advantageous, since it took less time to complete their school activities in comparison to the in-person modality.

The results show that previous activities facilitate the development of knowledge. Therefore, the facilitator has the responsibility to design activities based on didactic situations that favor the connection of a conceptual structure of the disciplinary field with the previous structure.

To guarantee meaningful learning, performance products must be based on previous experiences, allowing the student to apply them to everyday life situation in order face today's world.

The negative emotions are factors that arise from the unexpected implementation of technology; however, even when positive emotions are scarce, technological applications used as educational tools can contribute decisively to the learning process.

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