

The student profile in virtual environments

El perfil del estudiante en ambientes virtuales

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Abstract

The use of technology in the virtual modality intensified from the confinement stage and is still in force in the post-pandemic period because higher-level institutions chose subjects from their curriculum and programs to be taught under such a modality as it is the context of the present investigation. Nonetheless, for teachers and students, it is challenging to teach and learn in technology-enabled environments. In this situation, the objective is to describe the student's profile in virtual environments to contribute to their learning process. Considering the methodology, a questionnaire was applied to characterize the students' profile in quantitative data, finding the following results. Four categories describe how a student could work in digital spaces: the approach to knowledge in a critical, creative way and with analytical-systemic thinking, autonomy, skills (responsibility, empathy, commitment, and participation), and competencies (technical, pedagogical, communicative and collaborative) which together will allow us to achieve the knowledge representation. The contributions of the research lie in the attributes of the appropriate profile to enhance virtual learning that responds to different learning preferences.

Student profile, Virtual environments, Teaching-learning process

Resumen

El uso de la tecnología en la modalidad virtual se intensificó a partir de la etapa de confinamiento y aún está vigente en la etapa de pospandemia debido a que instituciones de nivel superior optaron por dejar materias de sus planes y programas en esa modalidad, como es el caso del contexto de la presente investigación. No obstante, para docentes y alumnos es un reto enseñar y aprender en ambientes mediados por tecnología. Derivado de esta situación, el objetivo es describir el perfil del estudiante en entornos virtuales con la finalidad de coadyuvar a su proceso de aprendizaje. Considerando la metodología, se aplicó un cuestionario para caracterizar el perfil de los estudiantes de manera cuantitativa, encontrando los siguientes resultados. Hay cuatro categorías que describen a un estudiante para trabajar en espacios digitales: la aproximación al conocimiento de manera crítica, creativa y con pensamiento analítico-sistémico, la autonomía, los valores (responsabilidad, empatía, compromiso y participación) y competencias (técnicas, pedagógicas, comunicativas y colaborativas) las cuales en conjunto permitirán la representación del conocimiento. Las contribuciones de la investigación residen en el reconocimiento de atributos del perfil adecuado para potencializar el aprendizaje virtual que responda a las diferentes preferencias de aprendizaje.

Perfil del estudiante, Ambientes virtuales, Proceso de enseñanza aprendizaje

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Introduction

Currently, there are various educational modalities that enable access to study and promote inclusion, so that students can find options to continue their studies. In addition, since the contingency phase and now in the post-pandemic phase, several higher education institutions have chosen to include virtual subjects in their curricula and programmes. These new educational situations represent challenges for teachers and students, as they imply a different conception from the face-to-face school where their roles, materials, teaching methodologies and learning styles, spaces and times for educational processes are mediated by technology.

For the particular case of the context of study, the Faculty of Languages of the Benemérita Universidad Autónoma de Puebla, challenges have been identified in the implementation of virtual environments in the subjects that are taught in this modality, such as concentration due to external distractions, interaction and communication between the main actors of the curriculum, lack of active methodologies that promote problem solving and focus on the student as the centre of the learning process, use of technology with a pedagogical approach, sense of belonging to a virtual community, among others.

Taking into account this panorama, it is essential to describe the student's profile in order to work successfully in virtual environments and thus help teachers to design techno-pedagogical courses, create or curate materials, design activities, choose teaching and learning methodologies and strategies and the teaching role based on these characteristics.

The following section will address the main concepts to understand the phenomenon under study.

Theoretical framework

With the introduction of technology in education, not only as a tool, but also as a central environment in the didactic process, radical changes were generated both in the curricular structure and in the profiles of the main actors, especially the student, who becomes the main actor in any training process (Santillán-Castillo et al., 2021).

For such training processes to be carried out in an effective and meaningful way, it is necessary to identify and delimit the attributes that characterise a virtual student, in order to understand how the construction of knowledge should be carried out, presented in new and varied formats known as learning objects (LOs). In order to approach and understand this phenomenon, it is necessary to start from a theoretical contextualisation of issues related to the virtual modality, its difficulties and the strategies used to face the learning process.

Education in virtual learning environments

A virtual learning environment (VLE) is a digital space that allows for a technology-mediated teaching-learning process. In addition, it constitutes an audiovisual and communication support between teacher and student, whose main function is to provide new meaningful learning experiences and to accompany and evaluate the learning progress of students.

The main characteristics of this type of environment are the following:

- Personalised learning. The techno-pedagogical model and the activities are designed taking into account the learning styles of the students in order to co-construct their knowledge (connectivism) (Guité, 2007).
- Flexibility. This is a characteristic that encourages the autonomy of students to work at their own pace and to consult as many times as necessary the material, the classes or whatever they deem necessary for their meaningful learning, given that everything is housed in the EVA.
- Online assessments. Assessments, self-assessments and co-assessments are in virtual format, allowing instant feedback through the use of interactive material.
- Ubiquitous learning (u-learning). This is a form of learning that encourages the appropriation of knowledge from different sources, situations, moments and media, with learning in virtual environments being an ad hoc example.

- **Mobility.** This term refers to mobility and ubiquity in the educational process and is reflected in access to information without barriers of time and space (Pisani and Piotet, 2009).

Thus, the new educational challenge today focuses on the development of digital competences in order to be able to cope with the new training scenarios, characterised by the use of technological tools, which are present in any type of activity, whether educational, occupational or recreational, as Morán-Borja et al. (2021), in their study, mention how mobile digital tools are a basic need in the lives of young people.

In these new training scenarios, the term virtual learning environments (VLE) is used. In this regard, the works of Márquez-Cundú and Márquez-Pelays (2018) and Navarro et al. (2022) define VLEs as spaces created in the interface with the aim of promoting the exchange of information between users without time and distance borders, making use of specific software for the design and management of educational activities, such as, for example, recreational applications or games, educational management programs (LMS), multimedia contents, simulators, etc. All of them aim to enhance the understanding and retention of information in an interactive and meaningful learning environment.

On the other hand, in the study by Zurita et al. (2020), they mention that these environments or learning management systems handle three teaching modalities: e-learning or electronic learning, which is totally online instruction; b-learning or blended learning in which there is hybrid instruction, i.e. remote and face-to-face instruction; and m-learning or mobile learning, in which there is self-learning with the use of mobile devices.

In this regard, Aguilar and Otuyemi (2020), in their work, mention the main characteristics of these educational environments, which are mentioned below:

Collaborative learning environments.

Collaborative learning in itself is a didactic strategy that is very appropriate for the development of significant learning, as it takes place in a social activity of interaction to enrich the knowledge that the members of an educational community have. In VLE, this type of learning helps significantly in the development of cognitive and technological skills, since, when carrying out the tasks of sharing, transmitting knowledge or even working on common learning objectives, the participation of the members is generated for the creation of learning experiences that strengthen the skills and performance of the participants, (Solórzano-Cahuana, 2021).

- **Interactivity.** From the vision of Mercado et al. (2019), in their work on the analysis and evaluation of interactivity processes in EVA, they consider it as a communicative process between users and educational software. It is the user's ability to share, assimilate and transform the information handled in the VLE. This is also a key element of collaborative learning managed in the virtual modality where there is an interaction mediated by information and communication technologies (ICT).
- **Flexibility.** In a virtual learning environment there is didactic flexibility in the planning and development of learning activities, in assessment and in the selection of didactic resources, methods and strategies.
- **Standardisation.** This particularity of handling textual, graphic and audiovisual contents with standardised formats allows the import and export of them to different educational platforms, promoting accessibility, effectiveness and improvement of learning contents (Vargas-Murillo, 2021).
- **Scalability.** This is the software's capacity for work growth without losing its quality in terms of its operation (Aguilar and Otuyemi, 2020).

Difficulties on the part of students when working in virtual environments.

Despite the fact that effective and innovative software has been developed in the educational area, there are still certain drawbacks, especially in the learning process.

Students, even if they are native speakers technological tools and applications, they have difficulties in the effective use of tools and applications in the academic field. According to the study by Llanga-Vargas et al. (2021), these difficulties are linked to issues such as time management due to the excessive load of synchronous and asynchronous work, the use of methodologies that are not very relevant for this type of environment, poor attention and retention capacity on the part of students due to the existence of distractions, and the lack of adequate academic support in the virtual training process (Aguilar-Moncayo et al., 2022).

On the other hand, Cedeño and Murillo (2019) mention that the didactic structure in the EVA is very particular, since an instructional design is handled, in which there are indications of what and how the designed activities should be carried out, in a very detailed manner. Even these are supported by tools that are managed within the EVA, such as forums, chat, the task board, the blog notes or tutorials, among others. But despite this, the lack of guidance from the teacher in person and in situ, as well as the lack of autonomy, leads to doubts.

In addition, Valero-Cedeño et al. (2020) highlight that the greatest difficulty of virtual education is the lack of training in the use of a new didactic methodology. Students undoubtedly know the technical use of the different digital tools, but they lack pedagogical knowledge, as they must develop self-managing, autonomous and self-regulating skills for their own learning process, given that they are faced with educational scenarios in which the interactions they can have with others are asynchronous and expressed in hypertextual formats where there is no immediate feedback or contribution.

Another difficulty in this modality is in relation to the development of critical and reflective thinking, which occurs through a close relationship with our environment and with others.

The recognition of our emotions in social experiences allows us to strengthen our self-awareness, which makes it possible to make value judgements and develop a critical mind, but by becoming just another browser in cyberspace, these social experiences do not occur effectively and there is a risk of losing our identity (Aguilar, 2020).

Learning strategies for working in virtual environments

Faced with all these situations of adaptability and difficulties presented in the new virtual modality, it has been necessary to develop didactic strategies that allow the educational process to be carried out in a relevant, effective and meaningful way. It is therefore necessary to develop strategies, mainly for learning, since the main actor and constructor of knowledge is the student.

As is well known, and in the words of Camizán et al. (2021), learning strategies are a set of skills and methods that allow students to mobilise their knowledge, both empirical and theoretical, to perform a task or solve a problem. There is a wide variety of strategies available to students to carry out their learning process effectively and they can choose them according to their academic needs and their own learning style. The work of Moreno et al. (2021), on pedagogical strategies in virtual environments, classifies three dimensions:

- Pedagogical-didactic. These include all those strategies that help the student to process information and manage content.
- Significant learning strategies. These include strategies for activating prior knowledge, collaborative work, self-regulation strategies, motivational strategies and metacognitive strategies.
- Techno-operational, technological mediation strategies are handled, such as the management and administration of teaching resources, the mode of participation and collaboration in virtual environments, and knowledge of the use of various learning objects.

Student profile for working in the virtual modality

In this new era of connectivity, the use of technologies is almost impossible not to be present in every human activity. In education, it is already an indispensable skill to carry out all kinds of academic interactions. In this sense, training needs are taken into account in order to establish the attributes or characteristics of the ideal profile of the virtual student.

For some authors, this profile would be conditioned by the particularities of the didactic process that takes place in virtual environments, where the main character is the student. Consequently, the type of methodologies and strategies that are developed should be oriented towards the concept of self-learning, self-management and self-discipline, but also consider the principles of critical and reflective thinking, as well as collaborative learning, handled in the learning theories of socio-constructivism (Cedeño and Murillo, 2019).

In this regard, Rizo (2020), shares this same notion of virtual learning and classifies the role of the virtual student in four main areas:

- Their intervention in the strengthening of self-discipline. The main task of the student in terms of managing self-discipline is manifested in how they are able to manage their time by scheduling their activities, allowing themselves flexibility and freedom to make the most of their learning.
- Their orientation to improve their self-learning. In virtual scenarios, the regulation of self-learning is of utmost importance, as this capacity of the student to learn in an autonomous and proactive way allows him/her to acquire knowledge in a meaningful way and with a critical and reflective thinking of his/her own learning process.
- Its role in strengthening critical and reflective analysis. In the construction of their knowledge, students must be capable of judging all this individual and collective knowledge in order to build their cognitive structure through tasks such as analysis, reasoning and argumentation.

- Its interference in the improvement of collaborative work. One of its qualities is to enhance personal growth through the meaningful exchange of knowledge. Therefore, when belonging to a knowledge community, the student has the great task of engaging in open and respectful communication as well as active listening or reading in order to manage the meanings that are being produced in oral or written interaction in the technological media (Bravo and Pando, 2018) used for this activity, such as forums, chats, videoconferences, e-mails, among others.

All these elements allow the student to carry out academic tasks in virtual education scenarios, enhancing their knowledge and skills, as well as showing positive attitudes towards their performance and that of others, for the generation of new knowledge.

Methodology

In order to analyse this study phenomenon, a quantitative methodology was used due to its advantages of measuring and describing a variable in large samples, generalising the results (Hernández et al., 2010).

This research has a descriptive design as it aims to identify the characteristics or attributes of the student profile in virtual environments and is cross-sectional as it measures the characteristics at a single point in time, spring 2023.

In terms of the instrument, a Likert-type questionnaire was used to describe the underlying attributes of students working in virtual environments.

The questionnaire is composed of 40 items and four dimensions: approach to knowledge, autonomy, values and competences.

Considering the data collection process, it was carried out at the end of the spring semester 2023. It should be noted that the participants in this study agreed to collaborate voluntarily, signed the informed consent form, and it was specified that their data would be used for research purposes and treated confidentially. Finally, the data analysis was carried out as indicated in the following table.

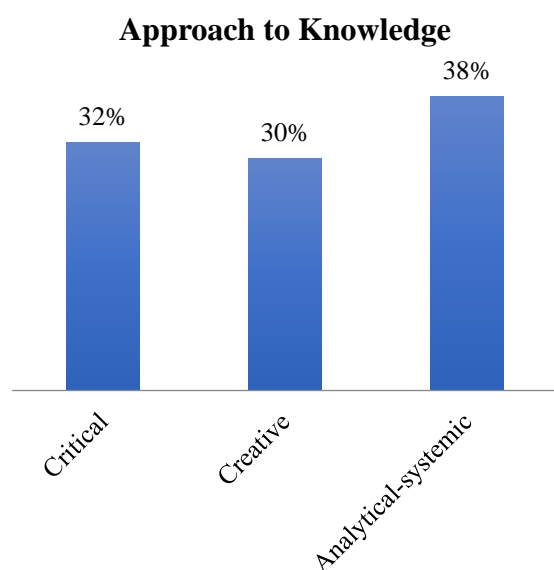
Instrument	Variable	Dimension	Purpose
Questionnaire	Student profile	Approach to knowledge	
		Autonomy	
		Values	
		Competences	

Table 1 Analysis model

Source: Own elaboration

In the following section, the results will be presented according to the table above.

Results



Graphic 1 Approach to knowledge

Source: Own elaboration

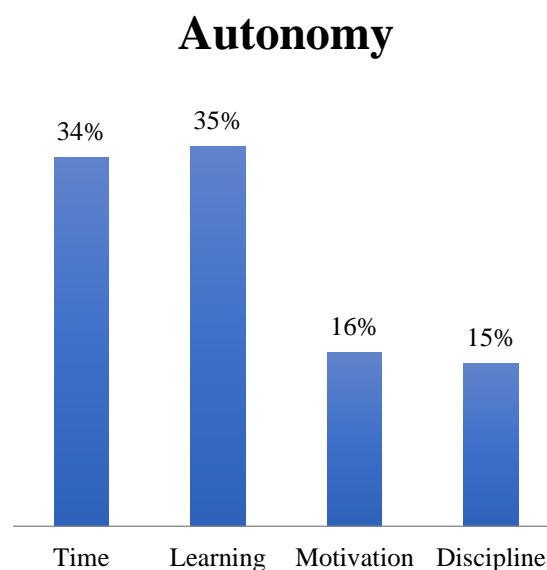
The learning process in virtual environments is mediated by technology where different strategies, techniques and learning styles emerge as well as approaches to knowledge with respect to thinking. In this sense, the students' perceptions refer to three types.

38% of the sample affirms that the approach to knowledge in virtual environments is through analytical-systemic thinking based on activities such as podcasts, readings embedded in online courses and synchronous lectures as well as the identification of ideas and their relationships with the use of infographics, mind maps and timelines, making it possible to link new and previous knowledge.

In addition, 32% consider that creative thinking also contributes to knowledge acquisition, specifically solving challenges with the help of gamification or problem-based learning represented in escape rooms.

Finally, 30% point to creative thinking as another essential attribute in their learning process, facilitated in virtual environments with crossword puzzles, glossaries of terms, cartoons with the use of pixtons and word games.

The results describe the students' approach to knowledge with a profile of analytical-systemic, critical and creative thinking, since these allow them to develop their autonomy, encouraging reflection on their own process of learning to unlearn until they reach the construction of new knowledge.



Graphic 2 Autonomy

Source: Own elaboration

Another crucial attribute of the student profile for learning in virtual environments is autonomy to manage four aspects of the instructional process.

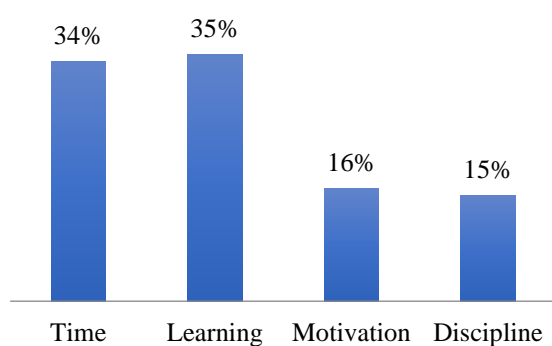
In first place is learning (35%), where autonomy contributes to carrying out activities with a positive and proactive attitude in individual and collaborative activities.

In second place is time management (34%), which is organised and maximised in order to learn diverse content in flexible periods and in accordance with their learning styles in a ubiquitous manner.

In third place is motivation (16%), which is fostered through autonomy by means of content based on active pedagogies centred on collaborative work.

Finally, autonomy converges with discipline (15%), allowing students to perform with enthusiasm, dedication and effort to achieve the established objectives. In general terms, autonomy fosters in students the guidelines to build their own criteria and rules that will guide their learning in digital environments, which lead to decision-making and know-how in an orderly and systemic way through evaluations, co-evaluations and self-evaluations, increasing the independent student role. (Trujillo, 2014).

Autonomy



Graphic 3 Values

Source: Own elaboration

On the other hand, learning in virtual environments requires students to develop values such as responsibility, commitment, empathy and participation.

In this case, 42% of the sample considers that responsibility is a fundamental attribute in the student's profile for learning in virtual environments, as it allows them to fulfil their duties in a timely manner and encourage self-learning.

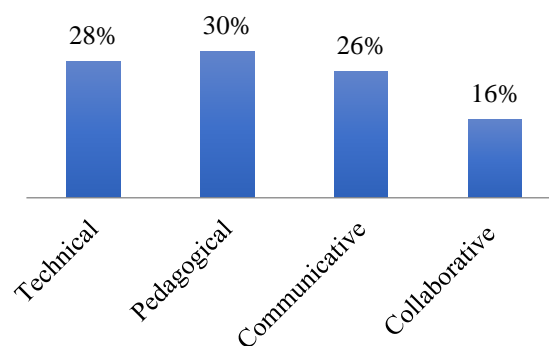
In addition, 26% point to participation as the second main value for developing adequate study habits inside and outside the virtual classroom, which contributes to visualising their understanding and construction of knowledge, as well as decision-making.

On the other hand, 24% affirm that being engaged plays a determining role for desirable student performance in technology-mediated environments, especially for autonomy, socialisation and belonging to a digital community.

Last but not least, empathy allows for understanding the real context of students, facilitating the teacher-learner relationship.

At this point, students point out that this value has an impact on different stages of the teaching-learning process of a foreign language. For example, in identifying the physical and emotional needs of the main actors in the curriculum in order to create a comfortable learning environment. It also helps cultural enrichment by providing solutions to problems and avoiding criticism. In addition, it conceives error as a process conducive to learning and per se necessary for learning English.

Competences



Graphic 4 Competences

Source: Own elaboration

The graph shows the competences needed in the student profile to work in digital spaces. It mainly highlights four categories: technical, pedagogical, communicative and collaborative competences.

With regard to technical competences (28%), it contemplates the management of educational platforms and tools or applications that enable the teaching-learning process (Flores-González, 2020) through active methodologies based on gamification. It is important to mention that at this point the implementation of information and communication technologies as technologies for learning and knowledge (TAC) is conceived, i.e. their use with a pedagogical perspective, which frames the second competence (30%). This category includes the organisation of meaningful learning situations, information management and strategies for the development of individual and collaborative work in technology-mediated spaces.

Regarding communicative competence (26%), students see it as vital for establishing contact and relationships between student and teacher, where the learning process takes place. It should be noted that these relationships are mediated by the emotional factors and individual and group needs of the students. It is therefore necessary to design a motivational strategy that invites them to active learning based on innovative practices.

Finally, collaborative competences (16%) contribute to coexistence in digital multicultural environments, to the willingness to carry out collaborative work and to their training in intercultural competences, which favour the learning of a foreign language in context, with authentic situations and meaningful language, creating learning experiences, as pointed out by Solórzano-Cahuana (2021).

Conclusions

It is concluded that the student profile for working in virtual environments is characterised by four main attributes: a critical and creative approach to knowledge with analytical and systemic thinking, autonomy, values (responsibility, empathy, commitment and participation) and competences (technical, pedagogical, communicative and collaborative). These in turn guide the representation of knowledge in innovative virtual environments by taking into account active methodologies focused on gamification, diverse learning styles and autonomous management by the student.

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