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Assessment of learning in online academic programs from the digital transformation impelled by Covid-19

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Abstract

The objective of the study is to determine the stages of the evaluation of learning in online academic programs as a result of the digital transformation impelled by the Covid-19 pandemic in higher education. It is based on the digital transformation adopted in higher education since the Covid-19 pandemic, which accelerated the renewal of existing curricular programs and teaching-learning processes with a fragmented evaluation process. Through an explanatory research - purposeful and qualitative approach, the variables and metric indicators of pertinence, relevance and frequency of production of literature associated with the theme are studied to process the data. Likewise, a questionnaire was designed for the pilot study, selecting 25 teachers as sample units from two accredited private higher education institutions in Colombia located in Santiago de Cali and Barranquilla. The findings determined a 0.946 margin of reliability of the instrument for its application in the second phase and a matrix of indicators and the system of relations on the components and stages of the evaluation system were generated. The systematized practice of the stages is proposed as a conclusive basis for the definition of metrics that determine the incidence on the application of the evaluation of learning from academic programs mediated by digital technologies.

Keywords: Learning evaluation; online training; academic programs; higher education; digital technologies.

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Evaluación de los aprendizajes en programas académicos en línea desde la transformación digital impulsada por Covid-19

Resumen

El estudio tiene como objetivo determinar las etapas de la evaluación del aprendizaje en programas académicos en línea como resultado de la transformación digital impulsada por la pandemia del Covid-19 en la educación superior. Se basa en la transformación digital adoptada en la educación superior a partir de la pandemia de la Covid-19, que aceleró la renovación de programas curriculares y procesos de enseñanza-aprendizaje existentes con un proceso de evaluación fragmentado. A través de una investigación explicativa - enfoque propositivo y cualitativo, se estudian las variables e indicadores métricos de pertinencia, relevancia y frecuencia de producción de literatura asociada al tema para procesar los datos. Asimismo, se diseñó un cuestionario para el estudio piloto, seleccionando como unidades muestrales a 25 docentes de dos instituciones de educación superior privadas acreditadas en Colombia ubicadas en Santiago de Cali y Barranquilla. Los hallazgos determinaron un margen de confiabilidad del instrumento de 0.946 para su aplicación en la segunda fase y se generó una matriz de indicadores y el sistema de relaciones sobre los componentes y etapas del sistema de evaluación. La práctica sistematizada de las etapas se propone como base concluyente para la definición de métricas que determinen la incidencia en la aplicación de la evaluación de aprendizajes de programas académicos mediados por tecnologías digitales.

Palabras clave: Evaluación de los aprendizajes; formación en línea; programas académicos; educación superior; tecnologías digitales.

Introduction

For more than a decade, information and communication technologies have promoted renewed ways of boosting teaching-learning processes, especially in higher education. The characterization and effectiveness of the use of digital technologies determine them as one of the main content-providing infrastructures to enable teaching-learning processes under the synchronous and asynchronous modality in higher education (Paredes-Chacín, Inciarte & Walles-Peñaloza, 2020).

As a strategic resource, Information and Communication Technologies (ICT) are conceived to support and guarantee continuity in higher education; as well as renewing accessible teaching-learning processes in the global order. In this way, the necessary requirements for a renewed education capable of invigorating and promoting new forms of

appropriation of knowledge are met. This projection was accelerated as a result of the effects generated by the 21st century Covid-19 pandemic in higher education, which led to the adaptation of renewed technological platforms to overcome connection and accessibility gaps in environments mediated by intra and internet in the institutions.

Added to what has been described there exists the importance of the creation and renewal of online academic programs and the assertiveness of decision-making (governance) in Higher Education Institutions (HEI) to maximize the usefulness of ICT. The interactions between the academic programs-ICT-assessment process evolved from web 2.0, with an emphasis on social and collaborative networks, towards web 3.0 mediated by semantic networks and semantic metadata, which gave way to web 4.0 dominated by the mobile web, ubiquitous web (García-Martín &

García-Sánchez, 2017).

In this way, processes of interaction with the so-called knowledge society are strengthened, which contributes to consolidate on a global stage new ways of recovering, accessing and using knowledge in favor of the sociocultural, economic and environmental development of the regions. To achieve the availability of knowledge under standards of rigor and validity is part of the foundations that need to be strengthened from the initiatives undertaken.

Regarding validity, we start from previous stages in which the evaluation of learning intervenes; a complex process and various investigations with few conclusive aspects. However, from the scenario of HEI, information and communication technologies (ICT), they are established as strategic resources to promote a process of monitoring and individualized feedback of the assigned tasks, thus promoting the transparency and effectiveness of the process, as well as autonomy, independence, awareness and the improvement of student learning (Cáceres & Suárez, 2021).

The use of ICT from the context of HEI is diverse, however, for the purposes of this study, it is associated with the evaluation of the teaching and learning process linked to online academic programs, which have managed to consolidate as part of the educational portfolio of HEI since the covid-19 pandemic. According to Hincapié & Clemenza (2022), the evaluation of learning by competencies should be seen as a process of valuing teaching, which allows the teacher and the student to continuously review the program content, through contextualized strategies, where there is coherence between what is taught and what is learned.

What has been described constitutes an approach that deserves to be considered to respond to the need to strengthen inclusive educational models, achieve greater accessibility and dissemination of knowledge, for which it is necessary to develop technological skills, both for teachers (Organización de las Naciones Unidas

para la Educación, la Ciencia y la Cultura [UNESCO], 2016) and for the students of which, it is required to measure how much they have learned throughout higher education programs (Organización para la Cooperación y el Desarrollo Económicos [OCDE], 2013).

Likewise, the relevance of the learning evaluation processes is highlighted, which constitute the fundamental strategy of the teaching-learning process, which, in turn, need to be based on the qualification criteria to measure the capacity of appropriation of learning, the knowledge and the ability to use it, putting it into practice and the assertive transfer of these, in the contexts of intervention and interaction of the teacher-student.

Evaluation, whether in the face-to-face and/or online context, becomes a learning process when it provides inputs that teachers and students can use to make decisions and improve; thus it becomes a true formative evaluation. In this way, you can respond to the learning needs of students and contribute to improving quality (UNESCO, 2016).

The complexity and diversity of processes that make it possible to achieve precision in the evaluation of learning, such as the lack of empirical evidence that systematizes the stages of evaluation in online programs; as well as advances in relationship studies or theoretical-practical comparison of the process, leads to the development of the objective of determining the stages of the evaluation of learning in online academic programs as a result of the digital transformation promoted since the Covid-19 pandemic in higher education in two Colombian cities.

In this regard, what was stated by Arribas (2017) is considered, evaluation in the educational field is, perhaps, one of the most controversial issues - perhaps because it highlights the idiosyncrasy and personal and institutional effectiveness - and one of the most prolific of educational literature for decades. For its development, it is based on an exploration from the meta-analysis of the variables: Evaluation of learning and online academic programs, to generate contributions

to the literature on ways to energize the management of evaluation in teaching-learning processes in the face of the educational reality mediated by technologies promoted in a glocal order.

This is how, the first results of an investigation in progress, manage to be based on the design of a theoretical construct that is validated through the literature review and the expertise of the researchers, which strengthens the methodological structure, as well as the design of the instrument to be applied in the second phase of the investigation. In this first phase, its validation was achieved through a pilot test to give way to the analysis of results and the development of the conclusive aspects that contribute to directing the development of the II phase of the investigation.

1. Theoretical foundation

The development of the variables that are studied constitutes the basis for the design of the conceptual construct and contrast of hypotheses defined from the qualitative paradigm as part of the first advance of a research in progress. The priorities of generating contributions to the literature in the area through this study, foresees strengthening the processes of technological mediation that are consolidated in the academic programs in higher education. On the relevance of evaluation processes, added to the follow-up and interactions that guarantee the achievement of learning results, various theoretical references are exposed through which they base effective practices for the evaluation of learning.

1.1. Assessment of learning

The evaluation of learning is for HEI one of the challenges linked to the commitments and quality results expected from the substantive functions they perform. This responds to a systematic process, through which information about the student's learning

is recognized, allowing it to be improved; secondly, it provides the teacher with elements to make a judgment about the degree reached or the quality of learning achieved and what the student is capable of doing with it (Pérez, 1997; Fuster & Romani, 2018; Sánchez, 2022).

The relevance and assertiveness of the evaluation is determined by the need to respond to the expected learning outcomes that impact society (Areiza et al., 2018). Likewise, the importance of the process is based on different theories that support the practices associated with the types of evaluation, integration of learning taxonomies, instrumentation and feedback (Ramos-Monobe, Gallardo-Córdova & Camacho-Gutiérrez, 2020). At the same time, the international standards dictated by the Joint Committee on Standards for Educational Evaluation (JCSEE) are highlighted, especially those related to utility, feasibility and ethics, necessary to be considered in decision-making with the purpose of forming and sensitize teachers about the relevance of the aforementioned process.

As a fundamental part of the evaluation of learning, they expose the types of evaluation considered from the approach of this study: 1) Diagnostic evaluation, allows to identify the reality of the students who will participate in the educational event, comparing it with the reality intended in the objectives and the requirements or conditions that its achievement demands; 2) formative evaluation, it is carried out concomitantly with the teaching-learning process, so it should be considered, more than the others, as a regulatory and consubstantial part of the process; 3) summative evaluation; responds to the one carried out at the end of an instructional process or any educational cycle. Also called final evaluation (Díaz & Hernández, 2002; Rosales, 2014; Sánchez, 2022). From which, the first hypothesis is defined:

H1: The types of learning assessment are positively defined in the design of online academic programs to measure the achievement of learning outcomes.

The analysis on the application of the types of learning evaluation requires

interactions, such as cooperative work between the actors that participate in the ICT-mediated teaching-learning process. In this sense, understanding the scope of these is determined by different elements, which are considered fundamental for the evaluation and are characterized: First, collection of information -measurement-; second, assessment, interpretation of that information and third, decision making based on the first two (Arribas, 2017). At the same time, it is reaffirmed how the types of evaluation and effective application favor the understanding of learning and activates, metacognitive processes and skills that exceed the awareness of knowledge, where the clarity of the evaluation criteria and indicators are immersed (García et al., 2019; Ramos-Monobe et al., 2020; Cáceres & Suárez, 2021).

Undoubtedly, the evaluation process responds to a process that guides the student on the evolution of learning. With regard to the contribution of ICT, it focuses on the mediation of the quality of learning and the development of skills that strengthen capacities, contributes to increasing student motivation and involvement and correcting mistakes. Therefore, it becomes a flexible learning experience as such, develops responsibility, autonomy and communication, improves his capacity for self-criticism and academic performance (Brookhart, 2007; Turner & Croucher, 2014; Romero-Martín et al., 2017).

Given the contributions of technological mediation that deserve to be adapted according to the types of evaluation, one of the trends on the evaluation of teaching-learning processes based on play is highlighted. Torres-Toukoumidis, Ramírez-Montoya & Romero-Rodríguez (2019), refer to evaluation and assessment of learning based on games (GBL), whose evaluation process becomes another component that needs to be analyzed. Given the dynamism of ICT-based education, its application from online academic programs is still considered feasible.

1.2. Online academic programs

The capacity of response promoted by HEI to mitigate the effects on the normal development of higher education in the face of the effects of Covid-19, the creation, design and strengthening of online academic programs were considered, among other options, work that demanded commitment and a high sense of social responsibility to achieve the expected capacity of response and positive interactions from the strengthening of virtual education or also called “online education”.

This refers to the development of training programs that have the cyberspace as a teaching and learning scenario. Virtual education is a modality of distance education; It implies a new vision of the demands of the economic, social and political environment, as well as of pedagogical relations and ICT. It is not simply a singular way of getting information to distant places, but rather it is a whole pedagogical perspective (Ministerio de Educación Nacional de Colombia [Mineducación], 2017).

The viability of this educational modality is based on the use of technological platforms conceived and known as Learning Management System (LMS), whose main function is to manage ICT-mediated learning environments, managing resources that facilitate interaction between the student and the teacher (Pearson Latam, 2021). The advantages of its use were considered to achieve part of the transformation demanded by academic development in the face of the scenario generated by the COVID-19 pandemic since 2020, in terms of higher education.

Marked uncertainties arose during this pandemic which, in addition to accelerating the design of online academic programs, required academic renewal processes that were complemented by the diversity of modalities associated with online education, both for undergraduate and postgraduate degrees. In this regard, Marín (2020) mentions the importance of resignifying educational praxis in times of uncertainty, which becomes a challenge that

impacts social organizations, highlighting the way in which HEI defined actions to respond to the emergency of the Covid-19 pandemic. However, the issue of learning assessment continues to be part of a developing process that requires a dynamic evolution, just like that experienced in academic programs.

Although it has been a relevant and pertinent process given the effects of a global society that plans to respond to the internationalization of HEI, it also responds to a student profile with diverse training interests. However, the uncertainties and risks that arise from processes associated with the design and use of technological platforms (LMS), as well as the permanent renewal of academic programs that need to be adapted to a new professional profile, are not unknown in HEI, the above, added to the adaptation of pedagogical and didactic practices that deserve to be determined by assertive and rigorous evaluation processes that respond to the achievement of learning results consistent with the defined competencies, for which it is defined as a second hypothesis:

H2: The learning management systems (LMS) that support the design of online academic programs allow the comprehensive evaluation process of learning.

Undoubtedly, overcoming trial and error practices in the design and consolidation of online academic programs becomes the new challenges of higher education after the Covid-19 pandemic, such as minimizing dropout rates, overcoming indicators on the mastery and use of ICT by teachers and students, in addition to strengthening the technological and informational literacy of students, - such as guaranteeing the assertive evaluation process of the teaching-learning process -, become, from digital education environments, one of the fundamental components for the consolidation of learning communities.

Among the factors that distinguish the interaction of the aforementioned communities are: the capacity for interaction and collaborative work, which requires connectivity, mediated by digital technologies.

These are characterized by two basic types of Digital Technologies (DT): An LMS for asynchronous communication and videoconferencing platforms for synchronous communication. Digital technologies, which support virtual learning environments (VLE) that have enhanced educational spaces, empowering students to master their educational process online, ubiquitously and timelessly (Rincón & Vila, 2021).

The relevance of virtual learning environments is constantly evolving to respond to the demands of teaching-learning and achieve the results of student learning in the face of an emerging and dynamic higher education of training processes. Among its contributions it is mentioned: a) Ability to generate empowerment in the student, b) schedule flexibility, c) commitment to autonomous and independent work. From this perspective, the relevance and clarity of the evaluation cannot be postponed and starts from the characterization of the design of programs and the infrastructure-technological platforms used for the development of online education. Among the main ones stand out: Moodle, Canvas, Dokeos conceived as a space to design ICT-mediated learning environments.

In the development of the platforms, the electronic learning, blended learning and autonomy learning modalities are contemplated. The platform or LMS considers its own tools to display content, collaboration and interaction actions, product generation, job submissions and evaluation. Therefore, it is of interest to define the hypothesis that allows determining:

H3: Through the LMS-technological platforms, options that allow feedback for the comprehensive assessment of learning are available.

In this regard, digital educational programs require from their design to consider the application of evaluation processes. The effectiveness of this is determined by the interactions between teacher-student-content and the ability to maximize the utility of the technological platform used based on the achievement of specific learning outcomes.

Berra & Ramírez (2021); and, Covarrubias (2021), showed how to face the health contingency due to Covid-19, it was important to have answers to continue with education in virtual mode in all educational grades, for which the variables related to implementation were analyzed and the success of virtual learning environments and the response of undergraduate students of an HEI when using technological platforms for the learning management system (LMS) to continue distance education, whose results reveal the challenges for digital transformation and educational innovation.

In this sense, the achievement of learning results is made possible in consequent stages that are governed by pedagogical and didactic processes that are decisive in the evaluation. Likewise, the promotion of collaborative work is highlighted, through which strategic actions must be directed so that students interact with their peers. Interactions spontaneously or following the instructions provided by a tutor are mentioned among the practices. In turn, it is important to define activities from the formulation of questions, orientation in a discussion forum, motivation to participate, promotion of a coherent discourse and group cohesion, among others (Delgado et al., 2020).

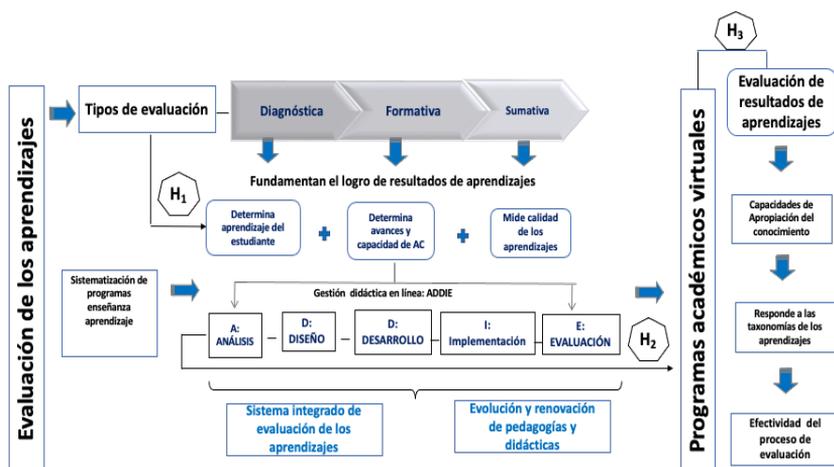
In the same way, it is highlighted as options that deserve to be prioritized for the evaluation of the learning of online academic programs, the overcoming of replicas of face-to-face programs, such as the strengthening of the design of processes that show actions on the autonomy of learning. In this sense, the usability and use of the platform needs to transcend under renewed techniques, in which pedagogy and didactics are essential for evaluation. According to Canales & Silva (2020), the use of the platform should not

focus exclusively on the creation of forums and the delivery of tasks, elements of online instructional design are required that allow the comprehensive development of content and activities that integrate active methodologies to place the student at the center of the ICT-mediated teaching-learning process.

Distance education mediated by ICT becomes the modality that provides teaching-learning processes, whose basic principles contribute to overcoming barriers that limit inclusion in the higher education system. In this order, it is highlighted that the distance modality becomes an educational strategy in which the intervention of different resources is required, as well as the availability and occupation in which the participants do not condition the teaching-learning process, in addition to evaluation systems, teaching methodologies and their impact on the training process (Martínez, 2008; García-Martín et al., 2019).

2. Methodology

This research is approached from a mixed paradigmatic position: qualitative-quantitative (Creswell et al., 2003; Pereira, 2011; Guelmes & Nieto, 2015; Romero & Umaña-Taylor, 2018), in the development of an explanatory-proposal process, it was proceeded to explore the structure of a system of indicators, which based on the review of the literature, the conceptual construct was designed (see Figure I), through which the system of relationships between the variables and indicators associated with the evaluation of the online learning and academic programs in higher education is presented.



Note: The conceptual relationship and the association of the stated hypotheses are presented.

Source: Own elaboration, 2022.

Figure 1: Conceptual construct model and relationships between variables

The conceptual relationship allowed in a structured way to deepen qualitatively on the incidence of the types of evaluation in the framework of the digital projection promoted in the academic programs promoted in higher education and promoted its projection in post-Covid-19 pandemic times. For methodological purposes, the study was developed in two phases:

a. First phase: Based on a qualitative approach and the meta-analytic technique. Its development is consolidated from the consultation and systematization of the contributions of previous research on evaluation indicators of online learning in higher education. Process that allowed designing the construct through which the theoretical units are formed, organized into variables, dimensions and indicators, which direct the actions in the design process of online academic programs, with the interactions associated with the evaluation processes of

learning. This way, explore with the sample units the indicators that characterize their evaluative practice.

In the same order, in the meta-analytical phase, the inclusion criteria of the units of analysis were established, with high-quality accredited higher education institutions, with a minimum of 8 active online programs, being defined for the second phase of development.

For the application of the pilot test, two nationally and internationally accredited higher education institutions located in the Pacific and Caribbean regions were selected, whose characteristics allowed the comparison and complementarity of the information, whose teaching population was estimated at 600 each. Among the defined selection criteria, in addition to the number of teachers, active online academic programs stand out. Regarding the selection of the sample units for the aforementioned study, teachers who actively participate in the design and teach

online academic programs were selected.

b. Second phase: Using the survey technique, the questionnaire designed in digital format and structured in four parts with a total of 18 items was selected as an instrument. For the response options, the Likert scale was considered, representing 1: never and 5: always. The first part with 5 items made it possible to characterize the units of analysis and their context. Followed by the declaration of 13 items, which allowed the investigation of the study variables.

For the validation of the hypotheses from the qualitative perspective, a meta-analysis and interactions were carried out with 25 sample units selected for the pilot test. These were represented by 25 teachers from the selected universities; which allowed contrasting and validating the designed theoretical construct. The Cronbach's Alpha coefficient was calculated from the results of this test to measure the reliability of the internal consistency type of a scale, as well as the response pattern of the consulted population (Oviedo & Campo-Ariza, 2005).

3. Results and discussion

The results associated with the reliability test of the instrument resulted in a coefficient of 0.946, which indicates that the instrument is highly reliable (González & Aspeé, 2021).

Although the transformations of the teaching-learning process resulting from the Covid-19 pandemic were mediated by the use of ICTs, the evaluation process of teaching-learning on online programs promoted with greater emphasis its development as an academic option, during and in post-pandemic, they have been the subject of studies that rarely present conclusive results.

Based on this, Arribas (2017) states that in the academic field formative evaluation and certifying evaluation coexist, establishing deep interweaving between both from which we cannot escape, considerations that deserve to be analyzed from the results of the hypotheses.

3.1. Contrast of hypotheses

Three hypotheses were formulated from the theoretical interpretation, as assumptions that were subjected to the contrast of this first qualitative phase. Regarding the H1 associated with the types of evaluation of learning and if these are applied positively in online academic programs to measure the achievement of learning results, the findings determine that between the type of evaluation, competencies and indicators a direct relationship is required that demands to be present as the basis for the effective development of online programs see Table 1.

Table 1
Relationship between basic components for evaluation in online academic programs

Types of evaluation	Competences	Indicators
Diagnostic	Cognitive (To Know)	Identifies the previous knowledge with which he has, in relation to the subject of study that begins.
	Soft (To be)	Expresses previous knowledge with respect to the topic of study that begins, clearly and according to the guidelines provided.
	Procedural techniques (to do)	Identifies connections between the new topic and their current knowledge, at the starting point of the learning process.
Formative	Cognitive (To know)	Evidences a process in which the mastery of concepts and/or theories of a specific topic increases.
	Soft (To be)	Demonstrates flexibility and motivation to make partial progress that leads to concrete learning. Uses constructively the feedback provided by the teacher.
	Procedural techniques (to do)	Generates evidence in which applies progressively the concepts and/or theories studied in specific contexts.
Summative	Cognitive (To Know)	Masters the fundamental concepts and/or theories of the subject of study in a specific context in a pertinent way.
	Soft (To be)	Chooses positions regarding the reasoning presented by the authors, and adopts them according to the criteria that he has built during the process.
	Procedural techniques (to do)	Applies concepts and/or theories skillfully in specific contexts, achieving their transformation.

Source: Own elaboration, 2022 based on Comisión Internacional sobre la Educación para el Siglo XXI (1999); and Yáñez (2018).

Based on the types of evaluation described, the interrelationship is presented which, consequently, must contribute to assessing the achievement of learning results. From this perspective, it is necessary to associate the development of competencies in an integral way; however, it was possible to identify areas of competencies with their indicators that are favored by each of these types (Luzardo, 2017; Yáñez, 2018). In the diagnostic evaluation, whose purpose is to investigate initial conditions, anticipate possible difficulties, guide learning, contextualize, identify expectations, interests, motivations, prior knowledge, the three areas of related cognitive, soft and procedural skills

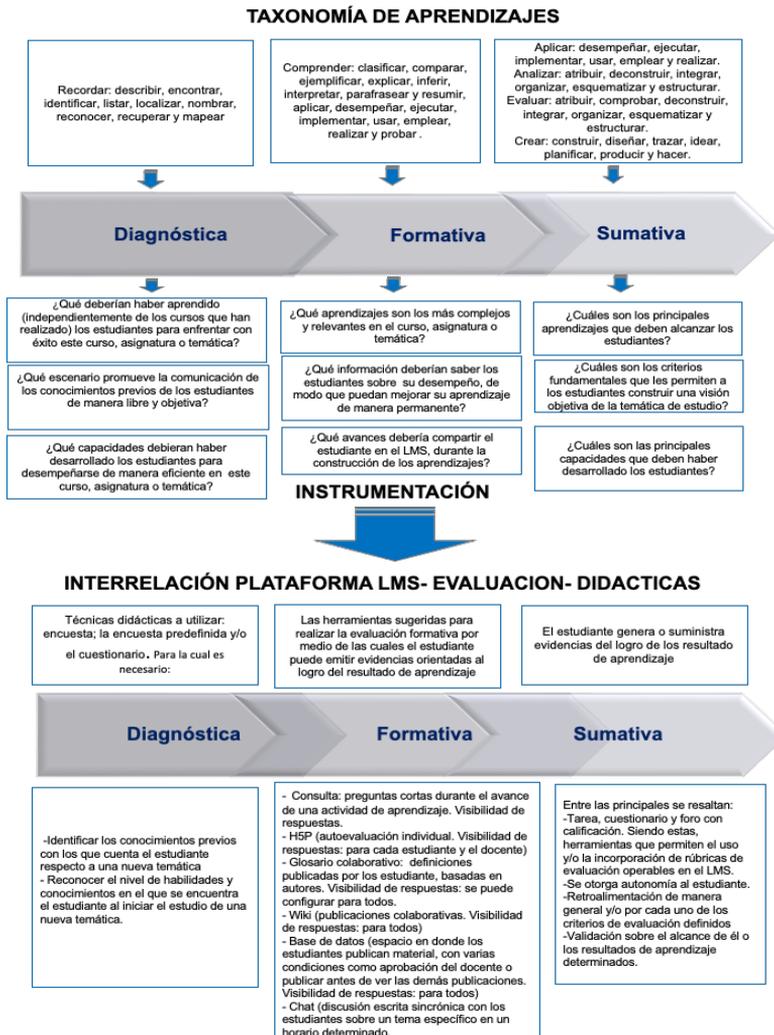
work, from the preparation of the initial state towards the connections between the new topic and their current knowledge, at the starting point of the learning process.

On the other hand, the formative evaluation foresees the process of permanent accompaniment that facilitates in the students the overcoming of errors, knowing their weaknesses and strengths, making decisions, solving problems and personal and professional improvement, it is here where the clearest form of evidence of areas of competence, in terms of mastery of concepts and/or theories, partial progress in obtaining specific learning and the application of what has been learned.

In the summative evaluation, as

a verification of the development of the competences of the different areas attended, it is oriented to the fundamental concepts and/or theories, as well as to the reasoning about what was learned and its application. Other results give way to the hiring of the H2 Learning

Management Systems (LMS) that support the design of online academic programs and allow the process of comprehensive evaluation of learning. The progress achieved makes it possible to show in Figure II the arguments that give relevance to the declared hypothesis.



Source: Own elaboration, 2022 based on Bloom et al. (1956); and Castro & Moraga (2020).
 Figure II: Argumentative relationship on the LMS-PA-EVA relationship

As shown in Figure II, the types of evaluation find their specificity according to the technological tools (LMS) selected for online academic programs. In this sense, the scope of the instrumentation described is based and organized according to the taxonomies of learning and its practice, for which it is possible to identify indicators (Castro & Moraga 2020), process that represents the central purpose of the study.

From the holistic perspective, the H3 is defined through the technological platforms-LMS, options are favorably available that allow feedback of the comprehensive evaluation of learning. The findings determine the need to transcend the potential of ICT,

to give way to the comprehensiveness of the evaluation process.

As a previous stage of the qualification, which is understood as the formation of both the mind and the body, incorporating cognition, emotionality, affectivity, social citizenship, execution and productivity (Castillo & Escalona, 2016), these components make demands on the instrumentation of each type of evaluation and for the purposes of this research progress it is categorized into three measures: high, medium and low. These can be applied from any educational context depending on the numerical scales used, see Table 2.

Table 2
Systematization of evaluation-feedback-qualification process

Types of evaluation	Feedback	Evaluation criteria	Qualification criteria (high, medium and low)		
Diagnostic	The diagnostic evaluation allows a reflection to identify the degree of skills and knowledge possessed at the starting point, it does not demand feedback from the teacher, rather it leads the student to carry out a self-recognition of the knowledge obtained in their particular trajectory related to the study theme. (self-control) and self-assessment (Schraw & Moshman, 1995)	<p>The student reflects on the degree of knowledge in which he is located at the beginning of the learning process.</p> <p>The student describes the degree of knowledge in which he/she is located at the beginning of the learning process</p> <p>The student identifies the level of knowledge in which he/she is located at the beginning of the learning process.</p> <p>The student explains the relationships that exist between the theories related to the subject of study.</p>	AltoAAAAA	Medium	Low
Formative	Formative feedback presents a challenge as a promoter of valuable learning for the scope and/or validation of the achievement of the determined learning results, since through it is possible to promote deep understandings (Anijovich & Cappelletti, 2020).	<p>The student is motivated to develop tests that lead him to master the theoretical components and how to apply them in processes of an area of knowledge.</p> <p>The student develops actions that lead to mastery of the theoretical components and their application in processes typical of an area of knowledge.</p>	High	Medium	Low
Sumative	The value of formative feedback is real when it contributes to improving student learning, since it has the potential to influence learning by contributing to two fundamental aspects: 1. Modification of the thought processes and actions of its receiver. 2. Reduction of the gap that exists between the point where the student is at the beginning of learning and the determined goal in the determined learning result. (Anijovich & Cappelletti, 2020)	<p>The student demonstrates the ability to analyze and interpret the concepts related to the subject of study and their association with the processes carried out in the respective area of knowledge.</p> <p>The student builds his own criteria based on the theoretical approaches of the area of knowledge for the application of these in specific processes.</p> <p>The student demonstrates mastery in the application of the theoretical components in typical processes of an area of knowledge.</p>	High	Medium	Low

Source: Own elaboration, 2022 based on Bloom et al. (1956); Schraw & Moshman (1995); Anijovich & Cappelletti (2020); and Anijovich (2020).

Each type of evaluation allows special attention to certain achievements that pretend to: encourage the active participation of the student in their learning, feedback, consider their results for reflection and progress, orientation and adaptation of the process, as well as self-review and recognition that decisively influence their learning (Stobart, 2010).

In the diagnostic evaluation, it is oriented to identify the level of skills and knowledge that are present at the starting point; it does not demand feedback from the teacher, to visualize the challenge that obtaining the learning results represents, as well as to establish a training route (Schraw & Moshman, 1995). The formative assessment promotes learning to achieve learning outcomes.

In the same way, it contributes to contextualize strategies to offer feedback in the formative evaluation and in the summative evaluation that is carried out in the development of online academic programs, taking relevance in the process. In this sense, the processes of thought, learning and its application; for its part, the summative evaluation reports the achievements and learning obtained and makes a balance and projection of the training process (Anijovich & Cappelletti, 2020).

Regarding the sense of opportunity of feedback, it is essential in the development of each learning activity within the framework of the subjects of an academic program. "A feedback of excellent quality, but at the wrong time, does not fulfill its formative function. In short, to be formative, the feedback has to be timely, constructive, encouraging, focused and linked to criteria" (Anijovich & Cappelletti, 2020, p.88).

Conclusions

The advances of research in development on the evaluation of learning in online academic programs promoted from higher education, allowed from the

qualitative results to analyze the importance of developing processes of evaluation of learning in harmony with the design and development of academic programs mediated by virtual learning environments. The emphasis is on the expansion of this practice regardless of the academic degrees of training, a process that has accelerated since the first pandemic of the 21st century.

Although, through the review of the literature, important statements about the types of evaluation of learning were evidenced, the results presented become a reference to deepen from the quantitative study - II phase of the investigation - on the effectiveness or not, of its application and the relevance associated with the learning outcomes and skills that account for the professional profile promised from the HEI.

Issue answers about how technological tools support the design of online programs and strengthen the process of comprehensive evaluation of learning, becomes the result that will allow decision-making from higher education so that its practice is adopted according to the nature of academic programs and the type of evaluation. In this way, the bases are generated for the definition of a comprehensive system of metrics to assess its relevance from higher education.

Given what has been described, it is important to continue delving into a culture in which the relationship between the types of evaluation and their nature is distinguished, in turn these are conceived as part of a stage that responds to the appropriation of knowledge, the relevance of learning outcomes and skills development, as well as generating opportunities for the continuous improvement of the educational process. In addition, to evaluate the application of artificial intelligence processes that support the evaluation of learning and project both the progress of learning results and the generation of new knowledge mediated in digital environments.

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