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ICT-BASED LEARNING ASSESSMENT:

UNDERSTANDING ITS EDUCATIONAL DIMENSION IN THE CONTEXT OF THE BACHELOR OF SCIENCE IN EDUCATION DEGREE PROGRAM OF THE UNIVERSIDAD AUTÓNOMA DEL ESTADO DE HIDALGO

LAS PRÁCTICAS DE EVALUACIÓN DE LOS APRENDIZAJES MEDIADAS POR LAS TIC. SU COMPRENSIÓN DESDE LA DIMENSIÓN FORMATIVA EN EL CONTEXTO DE LA LICENCIATURA EN CIENCIAS DE LA EDUCACIÓN DE LA UNIVERSIDAD AUTÓNOMA DEL ESTADO DE HIDALGO

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ABSTRACT

The Bachelor of Science in Education degree program at The Universidad Autónoma Del Estado De Hidalgo (UAEH) shows learning assessment results that, for their complexity and significance, challenge teachers in their interpretation as a fundamental tool for better understanding and improving the teaching-learning process. The current scenario calls for the use of Information and Communication Technologies (ICTs), as a strategy to promote a follow-up process and individualized feedback of the tasks assigned, thus fostering transparency and effectiveness of the process and, in turn, highlighting the formative dimension of assessment. This study aims to analyse, through a qualitative methodology, how teachers use technology to assess students' learning. It is backed up by the focus group technique, which generated exchange of experiences; it also produced teachers' criteria that were triangulated. The main results show that applied technologies can be instrumental in assessment practices, thus encouraging autonomy, independence, awareness and improvement of students' learning.

Keywords: Learning assessment practices, use of ICTs, formative assessment, understanding and improvement of assessment practices.

RESUMEN

Los resultados de las prácticas de evaluación del aprendizaje en la Licenciatura en Ciencias de la Educación de la UAEH, por su complejidad y trascendencia, constituyen un desafío para los docentes, como sustento de la comprensión y mejora de los procesos de enseñanza y aprendizaje. En este ámbito se incorporan escenarios mediados por las Tecnologías de la Información y la Comunicación, como estrategia que promueve un proceso de seguimiento y retroalimentación individualizada de las tareas solicitadas, lo cual favorece la transparencia y efectividad de este proceso y revitaliza la dimensión formativa de la evaluación. Este estudio pretende analizar a través de una metodología cualitativa; cómo los docentes usan las tecnologías durante los procesos de evaluación de los aprendizajes de los estudiantes; todo ello apoyado en la técnica de grupos focales, donde se generó un intercambio de experiencias y se triangularon los criterios emitidos por los docentes. Los principales resultados muestran la contribución de las tecnologías aplicadas en las prácticas de la evaluación, a favor de la autonomía, independencia, concientización y mejora de los aprendizajes de los estudiantes.

Palabras clave: Prácticas de evaluación del aprendizaje, uso de las TIC, evaluación formativa, comprensión y mejora de las prácticas de la evaluación.

INTRODUCTION

Students' learning assessment and its formative dimension is one of the most controversial issues in pedagogical literature and in contemporary teaching practice. It encompasses terms such as feedback, self-regulation, individual and collective reflection, self-evaluation and peer evaluation as cornerstone elements to be systematized in the teaching-learning process in order to build students' learning of lifelong usefulness.

Learning assessment, due to it very essence, conditions fundamental changes in both teaching and learning methods, in the design of curricula, in the methodologies that are more dominant in some learning scenarios, in the ways students incorporate knowledge and in their perceived sense of achieving learning throughout their formative trajectory. Sacristán (1998), based on Cardinet's contributions, points out that "assessment is currently recognized as one of the most privileged issues deserving study in the teaching-learning process. Addressing the problem of assessment leads unquestionably to touch upon all the fundamental problems of pedagogy". (p.334)

In this sense, the contributions made by Perrenoud (2008); and Cáceres, et al. (2018), among others, substantiate that the learning assessment is one of the most complex educational aspects of the teaching practice, for evaluating and learning are seen as two intertwined processes that give feedback to one another, by visualizing assessment as a process that compromises students' learning.

In this regard, Bordas & Cabrera (2001) emphasize that it is important to stimulate learning environments that promote and develop learning through assessment, where the role of formative assessment is redefined in terms of students becoming people capable of responsibly directing their learning processes in all aspects of life. In this area, the Academic Board of "Assessment, Planning and Curricular Development", of the Academic Field of Educational Sciences, in the Institute of Social Sciences and Humanities of the Autonomous University of the State of Hidalgo, Mexico, undertakes the challenge of substantiating the formative dimension of learning assessment within the objectives of the Line of Generation and Application of Knowledge of "diagnosis, assessment and educational planning" by considering some findings in the Bachelor of Educational Sciences of the UAEH. This study aims to identify task types that promote extensive learning, throughout the duration of the program, and to analyze how teachers use technology in their learning assessment practices, in order to better understand ICT-based assessment, by assuming a qualitative methodological approach, supported by the application of in-depth interviews and focus groups.

DISCUSSION

Learning assessment constitutes the strategy with the greatest impact on students' educational process throughout its history and has been substantiated from several perspectives by different authors, by criteria that focus on academic performance, or in connection to the knowledge level acquired as a direct result of learning; the latter being a perspective that offers a restricted, examining and controlling insight for it perceives examination as the main tool used by teachers to set forth criteria based solely on the results of the exam itself. The final outcome is that assessment is merely used to certify, classify, or label students.

That is why it is required that university teachers professionalize the exercise of their practice and rigorously assume the implicit conceptions of what learning assessment means, taking into consideration the uniqueness of each group-class: their social conditions, personal situations and pressures, background experiences and knowledge, their cognitive structures, among other aspects; as inputs that influence their understanding, in relation to what it means to evaluate, a somewhat complex situation for teachers, since their practice is plagued in most cases with preconceptions built through their professional experience, which influences decision-making on assessment strategies (Cáceres, et al., 2018).

In such sense its implementation conditions that students' learning acts then at the service of knowledge, of learning and at the service of the formative interests that it should essentially serve and at the same time conditions the reflection, improvement, understanding and assessment of students' learning, as an ingredient that requires a process of feedback and differentiated attention, in correspondence with the purposes of the different subjects in the curriculum, in which assessment strategies are included. In this sense, the student's point of view should be taken into account, as well as his or her integral development in the teaching and learning process, his or her expectations, background knowledge, learning styles and learning pace, interests and personal future goals. Perrenoud (2008) argues that formative assessment is a key element of the teaching and learning process, since it is necessarily linked to a differentiated intervention according to the demands and needs of the students, and refers to the procedures used by the teacher in order to adapt his didactic process to the progress and learning problems observed in them, all mediated by the analysis of the evidence that comes into play to understand how to teach how to learn.

The fundamental purpose of this type of assessment is to regulate the process so that the educational methods respond to the characteristics of the learner and the personal decisions to be taken in order to manage knowledge according to the indicators to be evaluated, as a strategy to fight against failure and inequalities.

This same author invites us to reflect on the formative dimension of assessment, when he argues that it is necessary to establish an adequate articulation between how teachers teach and how students learn, and how they are evaluated, during the teaching-learning processes The author also emphasizes that within the framework of evaluative practices it is possible to recognize the following: the subject who learns, by bringing into play motivational elements, effort, self-esteem, cognitive processes; the subject who teaches, by considering the epistemological construction of his knowledge, the professional image and identity he has built and his educational authority, as inputs to generate effective, affective, dynamic, interactive, reflective and critical learning environments (Perronoud, 2008). This conditions the generation of teaching strategies directed towards deeply enhancing the knowledge aspects that support the degree program profile.

In the same sense, according to Wiliam (2009), formative assessment can be used to help students achieve instrumental, meaningful and profound objectives, in its prospective vision in relation to the scope of learning and emphasizes the importance of the student being able to understand the learning goals and achievement criteria, which conditions processes of collegial interaction in the construction of knowledge, which transforms them into possessors of their own learning, as a strategy that prepares them to tackle the demands and criteria of the assessment.

The fundamental purpose of this type of assessment is to regulate the teaching and learning process in order to make it possible for the educational methods to respond to the students' specific characteristics. It focuses mainly on the weaknesses of learning rather than on the results obtained from such learning, for each student has an individual learning style that has been built progressively and autonomously, so it is important in the context of the teaching-learning process, to generate strategies that stimulate the continuous regulation of learning, so that they build a personal model of action.

In this sense, according to Perronoud (2008), metacognitive self-regulation basically intends to train students in the self-regulation of their personal thought and learning processes, where personal capacities are considered in a reflexive and conscious way in order to learn. From this perspective, students' success can be predicted by considering their cognitive effort and dedication to learning. Therefore, metacognitive awareness in students constitutes a mental process that consciously controls learning.

The purpose of self-regulation of learning is to ensure that students build their own learning styles, and also that they can simultaneously improve it progressively. The three fundamental components of self-regulation of students' learning are the following: communication of objectives and verification of their representation; mastery of anticipatory operations; and action planning and appropriation of the teacher's assessment criteria, where the influence of communication between the actuators involved is revitalized, a didactic situation that should favor the interaction of teachers and students and their expression of what they are learning and how they are learning it. This is how students can overstep the borders imposed by planned objectives and progress onto the uncertain, the unforeseen and the unwritten in the curriculum.

The formative dimension of assessment can help students' learning if it generates information on the evidence regarding the appropriation of knowledge and the construction of their learning, inputs that teachers and students can use as feedback, when evaluating themselves or others and when modifying the teaching and learning activities in which they are involved, which demand a process of interaction-feedback, where self-evaluation and peer evaluation scenarios are encouraged, in which students can evaluate the progress of their learning, as a metacognitive strategy to continue learning.

This same author specifies that the existence of formative assessment, as a process used by teachers and students, which calls for a more active role of the latter to take possession of learning and gradually build it and rebuild it, as a support of the functionality and significance of knowledge, which touches upon the teaching and learning processes in the different subjects of the Bachelor of Science in Education of the UAEH as a way of responding to the need of improving students' learning throughout their educational process (Wiliam & Cols, 2009). The analysis carried out by the faculty from an academic position promotes an exercise of reflection and evaluation, which as a collegiate board considers formative assessment a basic principle for decision making, instrumental in generating feedback strategies and/or of differential attention and at the same time contribute to the improvement of the students' learning achievements throughout their educational process.

Therefore, through the study of learning assessment practices, it is possible to understand the reality experienced

by students during their schooling process and how all the subjects are interconnected, in terms of the interactions demanded by the construction of these in each class; therefore, from this perspective, it is important that teachers assume in their practice different strategies and methodologies oriented towards the systematization and understanding of knowledge, where assessment is at the service of the expected learning, which requires ever greater efforts to know the planning processes, development and results, in terms of academic decision- making that allow tackling the challenges involved in the improvement of these practices.

In this area, when analyzing the contributions made by Cáceres, et al. (2020), on the role of the teacher in the learning assessment processes, its formative intention is rescued and at the same time the role of feedback is highlighted, as an effective scaffolding in favor of learning, since it allows teachers to know about the level of achievement and what the students have learned, to give effective feedback, which demands that assessment practices assume their formative dimension, becoming a tool in the self-regulation of learning.

Based on these references, the contributions of Anijovich & Capilleti (2017) are considered, when they emphasize that these inferences of the teacher on the results of the assessment of students' learning must be supported in relation to the mastery and understanding of the relevant information they must master, for the solution of problems related to the object of the profession, as support for the understanding and transfer of knowledge to different situations.

The didactic problematizing practices, which are faced in the field of assessment processes, from which emerge the diagnostic, formative and summative dimension, which gives a process character to the didactic planning, where it is necessary to consider what learning should be achieved by students and from there, design various activities, tasks and assessment tools, all in function of promoting cognitive challenges as part of the learning environments that each group-class demands, which implies an authentic and encouraging way, so that students grasp deep and meaningful knowledge.

In this sense, it is important that teachers approach learning assessment as an obligatory reflection, to estimate how much and how their students have learned, and what new strategies should be incorporated in the improvement of their teaching practice, in correspondence with the students' demands, from which adjustments can be made. This is a source of systematic action, through which various steps and levels of assistance are revitalized, favoring the formative dimension of assessment and higher levels of autonomy, by placing it at the service of self-regulation and awareness of the learners, as a driving force for them.

It is necessary to point out that feedback constitutes an action in which the teacher provides the student with information focused on the improvement of his learning, in correspondence with the evidence shown on the process he has carried out in the accomplishment of a task, which requires a manifest emphasis to recognize individual and collective advances, in correspondence with the background knowledge on the subject, so that he gradually becomes independent of the levels of help in the construction of his knowledge, a perspective that favors the promotion of more advantageous assessment processes mediated by the reflection and improvement of educational practices. In this regard, Hattie & Timperly (2007) point out that in this area, students should be guided on how to relate one learning activity to another, so that they can make appropriate adjustments to the actions to be performed in order to achieve what is requested in each task.

In this regard, Hattie & Timperly (2007) emphasize that any feedback process must be associated to the learning tasks, with emphasis on the answer to three questions: where I am going; what depends on the objectives established in the subject or session; and how I am going to reach the objectives, which requires analyzing the student's learning performance, where the application of knowledge comes into play; and what comes next, which refers to how tasks will be addressed based on the knowledge that has been integrated, and what types of tasks will follow to connect the knowledge built. In the same line of thought, Gallardo, et al. (2019), refer that these questions work at four levels:

- At the task level, which focuses on how well was understood the assignment in question and how well was achieved the expected outcome.

- At the process level, which focuses completely on performance.

- At the level of self-regulation, it has to do with self-monitoring, self-direction, and self-regulation of actions.

- At the level of the self—of the emotions. This is when individual assessment takes place and the students are motivated with written expressions of encouragement.

This type of assessment according to Ramírez & Valdés (2019) "goes beyond examining or identifying errors; it requires knowing the information, analyzing it, detecting successes and failures, and thus establishing among the participating parties some principles to improve, correct, advance and continue evaluating" (p 76-77), thus

revitalizing the understanding of the formative dimension by generating these processes that allow to delve deeply in each subject and relating knowledge as support for the personalization of the expected learning in each subject program, from where a culture of formative assessment is generated, oriented to systematize the dialogued interactions, of individualized accompaniment and follow-up based on the work or performance of students, as a scaffolding that helps them understand and internalize what they should delve into and/or improve, which conditions the decision making related to self-preparation about their future tasks and learning performances that are demanded, a strategy that needs to be sustained over time, with the intention that they value their influence in the integration and updating of their knowledge, to face problematic, challenging tasks, leading to the significance of learning.

In this context, it is important to consider that due to the advance of Information and Communication Technologies (ICTs) in different areas of life, their presence in university teaching and learning processes is increasingly demanded due to the diversity of tools used to enrich knowledge, for to a great extent it favors the immersion of students in the natural ecosystem of learning, which they have been building throughout their lives. Some relevant contributions on this subject, according to Coll (2003, 2004); Coll, et al. (2008), expound the characteristics and potentialities of ICTs and their influence on the improvement of learning, on the organization of educational environments, where joint interactions between students and teachers are generated as a strategy oriented to promote the improvement and progression of learning, in accordance with the principles of individualization, within the framework of a new ecology in which teaching how to learn is highlighted.

In this sense, the contributions of Gómez (2015) in the study titled ***Eval-Aula*** shed light on this matter. It is developed in the educational context of Valencia, where students are placed as active participants in the field of continuous and authentic assessment. The role of virtual scenarios is considered as a strategy that favors the development of learning activities based on the use of ICTs, through which qualitative assessment is carried out, as part of the effective feedback processes that are recorded with the various technological tools, which are resources that support the improvement of learning.

Therefore, ICTs have been installed as a powerful tool in favor of assessment practices in university contexts and regulate complex psychological processes, which to a great extent involve the teaching and learning methods, and at the same time condition the development of effective feedback in function of a better academic performance of learning tasks (Coll, 2003). In this regard, Lafuente (2010) rightly argues that ICT-based assessment practices are useful when they are considered as "psychopedagogical tools that are applied to promote both the acquisition of progressive control and autonomy in the assessment tasks and in the management of learning by the student" (p. 39), all mediated by the diversity of interactions that are generated in order to promote learning improvement. These interactions influence the feedback and follow-up processes to be more dynamic and transparent, provided that effective use is made of the different electronic devices and technological tools, in diverse asynchronous contexts, since it is a process that operates through the teacher's communication, the use of various technological tools and pedagogical assistance strategies, which together contribute to the internalization and systematization of learning.

In this area, it is important to specify that through the use of ICTs, the teacher is required to analyze reflectively the possibilities that this generates in the process of monitoring and personalized interactivity with students, which makes transparent and visible the practices of learning assessment, in the field of its formative significance in correspondence with the specific needs of each student (Coll, 2003); which, due to their interactive and dialogic nature, favor academic decision making, aligned to the service of self-regulation of learning and activation of metacognitive processes, through which it is possible to gradually promote awareness and autonomous and independent management of learning by students, which helps to develop learning processes aligned to the needs of each particular student. In this sense, when formative assessment practices involve self-regulation processes of learning by students, we can speak of its formative dimension from which awareness emerges.

All this supports the potential of promoting ICT-based learning assessment practices in the context of teaching and learning processes, due to their possibilities and influence on the construction of a system of meanings, experiences and mental schemes, related to the content of the oriented task, in which the following are included

The possibilities of adjusting the levels of help and feedback strategies are increasingly personalized in the areas of group heterogeneity, since virtual environments favor dynamic feedback on the mental processes to be activated in the students, which allows the issuing of indicative messages in which action verbs are considered in which their scope is clearly reflected in relation to the expected learning and in the topics to be expanded and/or deepened.

It should be pointed out that, considering the growing and dynamic nature in which the use of ICTs is incorporated in the teaching and learning processes, it is necessary for teachers to design learning tasks and at the same time establish the criteria and indicators to be evaluated in each case, all of this supported by an adequate guiding basis for the activities to be developed and the cognitive processes to be activated in the construction of learning (Coll, 2004). These aspects constitute references to be taken into account in the planning of assessment practices, through which each student is guided on the way to the management and construction of knowledge, so it is important to take into account the type of evidence to be presented, whether individually and/or in collaborative work teams, which must be coherent with the requirements of the subject program. It is also important to highlight that the learning activities, based on the use of ICTs, must be planned by the teachers according to the learning to be promoted, in accordance with the objectives or goals outlined in the curriculum, so it is required to generate strategies in each group-class, which require an effective use of technological resources that support the construction of learning, where interactive support environments are generated as strategies of differentiated mediation between peers in the development of the different assessment tasks planned. These assertions are supported by Lafuente (2010), who emphasizes that assessment practices that technology enable students to build systems of meanings that increasingly intermesh with those of the teacher.

The issue in question supports the need for teachers to assume the use of ICTs during the assessment process of students' learning, in coherence with the curricular requirements, and from this, generate substantive changes in teaching and learning methods, in order to promote autonomy and cognitive independence in the construction, comprehension and transfer of knowledge. This generates a rupture between spatial and temporal barriers and favors interactive communication, which in certain situations occurs in real time between people who are geographically distant or who interact asynchronously (Coll, 2004).

From these perspectives, the learning that emerges is highly significant, since it is generated in an ICT-based environment that favors the exchange of information and the collaborative construction of knowledge. All this requires the teacher to deploy various strategies and tasks that require students to use technologies as a tool that allows them to systematize, delve into and advance progressively and gradually in the integration of knowledge, within the scope of the implications generated in the teaching-learning process in the different modalities of the curriculum and their own learning styles.

Therefore, technology constitutes a tool of great pedagogical value, for it favors the use of a diversity of strategies that support learning assessment practices, that strengthen the feedback process, thus enabling students to progressively advance in the development of higher mental processes, in the development of tasks with a higher level of autonomy and independence, which enables the student to personalize significant knowledge.

In this sense, it is appropriate to consider a group of principles that, according to Lafuente (2010), constitute a reference for the teacher's reflection, in terms of decision-making in the design of activities in relation to the influence of ICT-mediated environments in the learning assessment processes, among which he refers to the following: (a) The integration of assessment activities with other elements of the teaching and learning process; (b) The use of activities during and at the end of the instructional process with a regulatory and accrediting purpose (use of formative and summative assessment); (c) The use of different sources of assessment: self-assessment and peer assessment. d) The precise and clear communication of instructions and assessment criteria and their use. e) Systematic and meaningful feedback.

Based on these principles, the role of planning assessment activities and/or tasks from their formative dimension in virtual environments is based on the demand for immediacy and meaningfulness, which implies the generation of effective feedback processes that stimulate the consolidation of knowledge and proactive self-regulation, through which higher cognitive processes are promoted to continue learning. At the same time, the role played by self- and co-assessment in the field of learning assessment practices is highlighted, which according to Alvarez (2009), favor the processes of self-regulation and awareness of knowledge in students, and also emphasizes the need to establish and communicate clearly the criteria, instructions and requirements of each assessment activity, as references that favor reflective dialogue among participants and deep and meaningful learning.

In the same line, the Educational Model of the Autonomous University of the State of Hidalgo (2015), refers that assessment: "Its purpose is to determine to what extent previously established objectives have been achieved, which implies a value judgment on the established planning, so its main application in teaching practice is related to the performance of students, learning experiences, grading scales and permanent assessments during the teaching and learning processes. He also affirms that this should

be "integral and formative", so that it is not limited to the assessment of cognitive aspects, but contemplates elements of the affective and psychomotor spheres, which together allow determining if the competencies were significantly assumed by the students and to meet their needs" (p.67). (p.67)

In this sense, through the diversity of technological tools used in the field of learning assessment practices, the transparency of this process is resized, all this from the indicators and evidences that reveal the type and degree of learning that students are developing, the steps involved in the resolution of the assessment task, The ICT-mediated learning environments are an ideal scenario that favors a systematic teacher-student interaction, which allows reviewing and analyzing, when required, the feedback issued in each task or evidence of learning, as a support for the cognitive activities to be deployed to continue learning.

Cuevas (2010), in the study developed on the curricular reform of the UAEH, states that "learning is a process that the student builds individually, gradually, dynamically and differently from that of his peers" (p.271). It is based on the fact that the learning assessment is conceived, due to its complexity, as a systematic, planned, dynamic and flexible process, which allows timely assessment, continuous monitoring of the learning process and the progress achieved by students comparing the expected situation and the actual situation achieved and, thus, making timely academic decisions with the purpose of achieving the expected learning, all mediated by the formative dimension of assessment.

The changes that concern learning assessment processes show that its primary function implies continuous improvement through the optimization of teaching and learning processes, and therefore, of their results; however, it is one of the educational components in which the greatest resistance to change is shown. That is why assessment should be focused on assessing whether and how students are learning.

All of the above conditions that, through the practices of learning assessment in the Bachelor of Science in Education degree program, it is assumed that it is necessary to develop a process of learning assessment in a diagnostic, procedural, formative way, that promotes a culture of ICT-based assessment, as a support for the immediacy and transparency effect of feedback that stems from it.

METHODOLOGY

This study FOLLOWS the qualitative paradigm with a phenomenological approach and is supported by the in-depth interview and focus groups technique, which were carried out with 13 teacher trainees of third, fifth and sixth semester of the Bachelor of Science in Education of the UAEH, with the intention of understanding in depth the main characteristics that emerge from the ICT-based assessment from a formative dimension.

Meetings were held in the form of open and structured group interviews throughout the research process. The sample group of teachers analyzed and discussed, from their personal experience, how ICT-based learning assessment practices are conducted. Five working sessions were developed with a duration ranging between 60 and 100 minutes, in which a hospitable working environment prevailed, and enriched by valuable criteria and experiences about the object of study.

For the analysis of the results, ***ATLAS.ti, 8*** was used, which is a set of support tools for the treatment of textual bodies, through which an open data coding process was favored, all supported by a meticulous examination of graphics, videos, audio recordings, which were generated in each work session, which allowed an in-depth analysis of the thoughts, ideas and meanings embedded in each category of analysis; it made it possible to organize and regroup the main results. In order to protect the anonymity of the participants, each teacher was labeled with a code number from 1 to 13, and the session date was specified. From this perspective, the following categories of analysis emerged.

DISCUSSION

The different interventions highlight its role in the generation of students' motives and interests, namely the elaboration of conceptual maps, mind maps, infographics, analytical cards, projects, program design, interview design, video elaboration, audio recordings with explanations of personal concepts about a topic addressed, etc. In this sense, these tasks or oriented activities are based on the cognitive processes involved in the learning process, which are methodologically significant for the analysis of learning assessment and to understand their influence on it.

In this regard, through the in-depth interview, the following contributions were made, since they reflect the role of the teacher in the planning of the assessment process; it is emphasized why they select the different activities or tasks, as a support of the assessment process. These contributions are as follows.

In the context of the planning process of learning activities, I organize an analytical matrix of specifications, from which I identify the expected learning of competencies, in each of the specific competencies established, and I rely on the taxonomic level established by Marzano and Kendall, to delimit the type of tasks that allow me to assess whether students are learning; among them I frequently use concept maps, synoptic tables, comparative tables, *Ven* diagrams, among others (Teacher 1, 4/11/2019).

The learning activities to be developed in class, should have, among its purposes, the generation of students' evidence, through which teachers can assess to what extent they are learning and from there, be able to consider new alternatives in each case. It is a process that has been worked through collegially from the academic perspective of the curriculum disciplines, but it needs to be strengthened at the semester level, for the idea is that the different subjects transversally guide learning activities that transcend to the generation of networks of thought level of deep mastery of knowledge, as support for a deep and meaningful learning; so I rely on mind maps, concept maps, Ishikawa diagrams, argued synthesis, comparative tables, and problem solving (Teacher 4, 4/11/2019).

The types of tasks considered in the two subjects I teach are in line with the purposes of learning competencies, since students are required to present evidence of knowledge, product and performance, which is why I ask them to individually make a concept map, a mind map, an analytical record of a text, comparative tables, synoptic, Venn diagrams, problem solving simulations, among others. I combine these activities so that they work in teams, in order to generate a debate on individual contributions and integrate a team proposal (Teacher 7, 4/11/2019).

As part of our training, I always recover the role of the didactic components in the planning process of each class, where it is important to consider what are the learning goals set out by the subject program, and from there organize the activities or assessment tasks, which I consider that students recover theoretical knowledge for its application in practice, that is why I use a diversity of tasks in which the students recover information based on previous knowledge, where they solve problems and through them are able to analyze and apply knowledge, where they integrate and combine knowledge in the different areas of application that the task demands, so I try to make the students analyz, reflect, apply and transfer knowledge when tackling with the different tasks oriented (Teacher 11, 4/11/2019).

I am the type of teacher that likes to design activities or tasks that go beyond making a concept map, a synoptic or comparative table, an Ishikawa diagram, and add to these activities that they make a personal presentation on what they have understood of the subject treated and recorded. This way students are able to listen to themselves and analyze metacognitively what content they should continue to delve deeply into (Teacher 13, 4/11/2019).

Through the experiences narrated by the teachers participating in the interview, the role of the integration of learning activities or tasks in the scope of the didactic planning process of each class or learning session is recovered, which requires that each student internalizes what he/she must learn and the teacher has established the different levels of help to be provided in correspondence with the educational purposes.

Lafuente (2010), highlights the importance of the alignment of assessment activities or tasks as transcendental of assessment practices in Higher Education, since it favors processes of understanding, analysis, application, problem solving, metacognition and awareness in students, from which individual strategies are deployed to meet the diversity of student learning. Therefore, considering the influence of assessment results on learning revitalizes its formative dimension and conditions personalized intervention.

In general, the 13 teachers who were interviewed in depth agreed on the following criteria: the diversity of learning tasks, when considered through the use of ICTs, promote motivations and interests in students; they constitute a natural learning environment, as they coexist with different technological tools at different times of their daily lives; and it is appropriate to trigger assessment mechanisms, from which higher cognitive levels are generated.

It is also important that in all cases they agreed to use Google Drive as a support tool for the construction of the digital evidence portfolio, which favored a dynamic and effective feedback process, since students immediately received through an email the recommendations give for each activity, thus optimizing students' learning. This feedback process demands to communicate in a clear and precise way to each student the requirements and aspects in which they should focus, all in correspondence with the purposes of each activity, so it is important that they indicate if they should associate their ideas with the reviewed authors, relate one concept with another, explain an example with their own words, point out incongruities or important aspects that they have identified in a text, etc. This way students are helped to integrate arguments, guidelines, clues and examples, through which they improve the evidence presented and enhance their learning.

In regards to the formative dimension of assessment, it is vital to consider the contributions of Anijovich & Cappelletti (2017), when they emphasize the opportunities that formative assessment generates for students to use their knowledge, make their achievements visible, learn to recognize their weaknesses and strengths and improve their learning, as references that condition further learning. In this sense, the need to generate varied evidence that allows understanding and undertaking learning processes of students emerges. In this regard, the contributions of Sims (2003) are revisited, when he points out that feedback must be informative and significant, in which the efforts made by the student in the achievement of each task are valued, which stimulates them to continue learning.

Therefore, learning assessment from its formative dimension promotes a higher level of commitment and involvement of students with the deepening and broadening of their knowledge, favors the understanding of complex learning and activates metacognitive processes and skills that surpass to the awareness of knowledge, where the clarity of the assessment criteria and indicators are immersed. All this in an environment of dialogue and reflection between students and teachers, with a view to improving teaching and learning processes.

In this area it is appropriate to consider that according to Shepar (2006), feedback favors students' learning, so it should be focused on learning objectives, which requires the teacher to analyze the work of students and identify patterns of errors and gaps that require support; it should occur throughout the learning process and not at the end of a particular stage.

2. Influence of ICT-based tasks on learning assessment

After five work sessions with the focus groups, academic consensus on how to use ICTs was reached: students develop autonomy in knowledge management, generally emphasizing that the evidence of learning presented by the students shows that they have analyzed different references they had to look up on the web, which they have used to elaborate mind maps, concept maps, Ishikawa diagrams, ***Ven*** diagrams, synoptic tables, comparisons, problem solving activities, argumented syntheses, essays, etc. Some of the criteria gathered was as follows:

I use for partial assessment, among other activities, one in which the students elaborate concept maps on a topic and at the same time make an audio recording, with an attached explanation derived of their personal interpretation. For this, they must browse the digital library of the University, Google Scholar, Dialnet, Redalyc, etc; three references on the topic, which must be uploaded in the folder of their digital portfolio of evidence. Through this activity, students use various technological tools, which favor the way they manage their knowledge on the network, which they gradually incorporate into their knowledge (Teacher 1, 6/11/2019).

Let me remark that in my case I often use ***MindMeister*** and ***Bubble.us.*** softwares to elaborate mind maps. The main purpose is that students develop and shape their own ideas from the analysis of the topics covered in classes and also with the support of theoretical references in theses and / or articles, which should be selected from the network. I always stress the need to do it through the digital library, Dialnet, Redalyc, Google Scholar, which guarantees the reliability of the information they analyze, and at the same time allows me to analyze which authors they are reviewing to evaluate the level of understanding of the content, offer useful feedback about the topic at hand and at the same time design some activities that complement and delve deep into the topic (Teacher 2, 6/11/2019).

Because of the subject I teach, I rely a lot on web searches. I have my students elaborate analytical sheets on the subject and at the same time point out in their own words what they have understood about it. In this regard, as evidence of this activity, the students must upload the analytical cards to the Drive with an audio recording, in which they explain the content and how these authors are contributive to their projects. It is important to point out that each card requires a section for students to refer in their own words what they have learned about the topic in question (Teacher 3, 6/11/2019).

I would like to point out that each worksheet includes a section for students to refer in their own words what they have learned about the topic in question (Teacher 3, 6/11/2019).

Edraw Max is one of the technological tools I most frequently use in my lessons, because it favors the realization of concept maps, mind maps, organization charts and synoptic tables, among others, my students are familiar with its use and they were the ones who taught me to use it, which was very important for me, because it is part of the technological gap that I face every day. I want to comment that the evidence presented shows that they have integrated the main elements of the concepts and/or topics that support the learning tasks oriented and in many cases as part of the final project of the semester, they present me a video and/or an audio, with the fundamentals that support the knowledge of the expected learning (Teacher 4, 8/11/2019).

While listening to my colleagues' opinions I have been reflecting and I would like to point out that, because of my training, I have always applied ICTs in the teaching-learning process. Every semester I deal with online social networks in almost all my classes—mainly Facebook and WhatsApp. Likewise, I use templates for creating web pages and a program used to create drawings and diagrams, as well as software of the ***Office*** suite like ***Power Point*** and ***Excel***. I also guide different tasks for which they have to use ***Edraw Max*** such as the elaboration of conceptual and mental maps. Thus, I conclude that technology favors the learning assessment process; this was also analyzed in the previous academic meeting of the discipline (Teacher 5, 8/11/2019).

I can tell you that my students have many ICT skills, which is natural because of their age. It has demanded some effort on my part, but eventually I have integrated Google Drive, email and the Google Classroom Platform in my teaching. I have noticed that my students work dynamically, they upload their activities even before the requested date, which allows me to review their evidence in a timely manner and send individual feedback (Teacher 7, 8/11/2019).

The teachers' criteria, throughout the different exchange sessions on ICT-based learning assessment, clearly show that it was used as part of the daily learning environments, where students become more autonomous and independent in the management of their knowledge to solve various learning tasks, who gradually build broader meanings that enrich their knowledge (Coll, 2003). Different technological tools that favor the processes of systematic interaction mediated by the use of ICTs are also pointed out, among which Drive, Facebook and WhatsApp are highlighted. When students are inquired about which technological tools they prefer to use in support their learning assessment process, the following is stated:

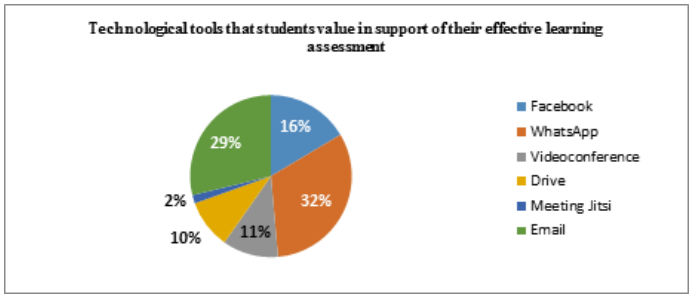

Figure 1. Technological tools that students value in support of their learning assessment.

These findings clearly show that 32% of the students have preference for ***WhatsApp***, 29% of them prefer ***email*** and 16% ***Facebook***. In second level of preference, a reduced number of students refer to ***Meet***, ***Drive*** and ***videoconferences***. This scenario enables teachers to promote interaction and feedback through the use of these tools, in order to create an environment coherent with students' interests, for these are pedagogical aid devices that are commonly involved learning assessment and the assessment of its level of transparency, through which personal and effective information about their learning process is offered to the students. In this context of analysis, the focus groups were asked about the technological tools that teachers are interested in learning in order to be used in assessment practices, to which they responded the following:

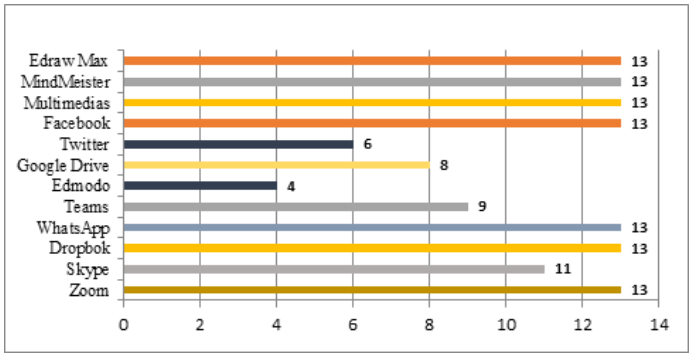

Figure 2. Technological tools that teachers are interested in learning.

All the teachers who participated in the study say that they feel overwhelmed by their students' skill in relation to the use of various technological tools that support the learning process and at the same time favor assessment practices. 100% of them say that they are interested in learning ***Edraw Max*** and ***Mind Meister***, since these are applications that many of their students use to make mind maps and concept maps. They also endorse their interest in learning various multimedia resources, the various possibilities offered by ***Facebook, WhatsApp, Dropbok*** and ***Zoom***, to support the organization of activities and/or learning tasks, where these tools constitute mediators that support assessment practices, formative strategies for teachers that are validated by Onrubia (2005); and Coll, et al. (2007), by basing their influence on formal educational activities, in which learning assessment practices are implicit.

Therefore, it is necessary to go beyond the boundaries of only presenting information or presenting tasks to students, including offering them the support and support they require in which the student perceives a joint interaction with the teacher (Onrubia, 2005). According to these ideas, learning assessment practices mediated by the use of ICTs favor effective feedback processes, from which different levels of help are deployed with a differentiated

character, which favors the activation of mental processes that favor the integration and deepening of the new contents to be learned, which validates the role of the teacher in the diversification of technological tools as pedagogical devices, which in virtual, group and personalized environments, contribute to the construction of the knowledge set forth in the curriculum.

In this regard, Lin, et al. (2001), support the importance of learning assessment practices mediated by the use of ICTs, where they specify how the feedback process offered to students is based on the assessment criteria, and through these scenarios, the immediacy in the return of the contents to be deepened, exemplified, analyzed and internalized in terms of the fulfillment of the desired learning and within a framework of transparency that demands the monitoring and assessment of the products associated with the different assessment tasks.

In this sense, the function of feedback is closely related to the direction of learning, both of the student's difficulties and errors, as well as of the teaching process; it responds to the demands of a dynamic, complex system in correspondence with the characteristics of the learner, its emphasis is oriented to solve the diverse learning problems and to adapt the teaching strategies, which stimulate motivational elements, effort capacity, self-esteem and personal dynamics. The main purpose of assessment is the regulation of both teaching and learning.

It is important to point out that, in view of the testimonies referred to by the teachers participating in the in-depth interviews and focus groups, it should be emphasized that several technological tools have been applied in the practices of learning assessment, thus favoring the creation of interactive and dynamic learning environments. With this, students progressively develop tasks with a higher level of complexity based on the pedagogical aids and feedback processes that support the enhancement and systematization of their knowledge. Likewise, through the feedback processes, the awareness, autonomy and independence of the students in the management of knowledge is promoted, avoiding the historical support given to technocratic approaches.

CONCLUSIONS

These reflections aim to highlight the value of assessment as an engine that drives learning, ratifying that formative assessment is that one which is carried out during the development of the teaching-learning process. Its systematic nature is endorsed, the purpose of which is to identify deficiencies and problems and to take actions accordingly for improvement. Formative assessment is focused on the processes of construction and reconstruction of learning and at the same time has the intention of highlighting weaknesses, errors and deficiencies, so that students can correct, elucidate and solve the problems they face in the learning process, making them aware of how to learn in order to acquire knowledge they can use throughout their lives.

It is important to point out that ICTs is a tool that favors university learning assessment, for it stimulates its enhancement, personalization, management and autonomy, especially when the teacher is able to design learning tasks supported guiding principles of the activities to be developed, which are, in turn, inserted in the cognitive processes to be activated and aligned to promote meaningful learning for life and future profession.

In this sense, in the context of the Bachelor of Science in Education Degree Program of the UAEH, ICT-based assessment, should be at the service of self-regulation of learning and the formative dimension of assessment; all in terms of promoting motivation, autonomy, cognitive independence in the improvement of learning. This is an academic challenge that calls for an environment of collegial work in order to consolidate a culture of assessment mediated by the effective use of technology.

The different levels of help generated by the diversity of technological devices to perform the different learning tasks and the effective feedback processes demanded by students in their training is one of the relevant aspects in the field ICT-based assessment. Another aspect recognized in the results is that teachers agree that the process of creating meanings from the new information is progressively integrated with the previous knowledge and background that are part of the students' knowledge, which conditions the onset of assessment strategies with a differential character according to students' specific demands and needs.

These findings call for the need to work academically with the faculty involved in all semesters of the Bachelor of Science in Education Degree Program to tackle the challenges posed by formative assessment, which purpose is to help students in their learning. ICT-based assessment should become a cornerstone element of collegial faculty work as qualitatively formative process; its results will be benchmarks for decision making on the application of assessment as an instrument in the regulation and bettering of students' learning. From this perspective, collegial work should become a network of interaction and exchange for teachers, thus enriching decision making in regards to formative assessment through diversified support levels, and ultimately, stimulating students' learning.

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