Motivation and effective knowledge transfer in the use of platforms during COVID 19

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Abstract*— Due to COVID 19 the classes use: virtual platforms, instructional designs and activities that promote collective knowledge, an instrumental study of 50 students was carried out, analyzing variables of motivational virtual learning focused on the transfer of knowledge. As analysis results motivation was evidenced as an element related to empathy and communication; personal life - work balance; Degree of adaptation in use of virtual platform; Connectivity of virtual platforms related to participatory dynamics of teachers and students; applicability of learning methods and instruments in the development of skills, abilities and capacities attributable to the transfer of knowledge. The related to problem-centered learning, 74% agree that the teacher socializes results and makes observations about the course work dynamics based on the results. The teacher scaffolding according to 70% of the students considered that the interaction between teacher and student existed and improved through the platform, and that they made use of virtual tools. It was concluded that the knowledge transfer and motivation characteristics were optimally adjusted to the learning of the students of this higher level of the University.

***Keywords*—transference, knowledge, motivation, platform virtual, adaptability.**

I. INTRODUCTION

The current educational system contemplates schemes whose object is the transfer of knowledge, which allow subjects to build and develop their cognitive abilities. This knowledge becomes their main motivation during the teaching-learning process. [1] Due to the period of the COVID 19 Pandemic, educational systems have undergone changes that respond to exogenous situations that affect the subject as a central element of the teaching-learning process, from a significant perspective conditioned to the circumstantial limitations imposed by the pandemic. [2]

The same ones that respond according to conceived objectives, which are adjusted to the open and flexible project, to become a guide for the activities of teachers and students. Incorporating the subjects through the search, to obtain a training that goes according to the demands, allowing them; participation in the economic, socio-cultural system.

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Therefore, the teacher must face challenges and problems in the face of the needs and particularities of students who are trained at different educational levels. The teaching of classes through the virtual platform MOODLE supposes to mediate and facilitate knowledge, using activities that promote the transfer of knowledge. [4]

The present research work is born from the observations developed in an educational context at a higher level in a Microbiology class in the Life Sciences area, recognizing the risks involved in establishing an active-effective learning relationship between the teacher and the student through of the use of technologies. [5] [6] The following aspects that relate motivation to the effective transfer of knowledge are detailed below:

1) The need for student motivation as an element related to the search for knowledge; 2) observation of teaching practices regarding personal life balance; 3) Degree of adaptation in the use of the virtual platform and search for positive judgments; 4) Connectivity of virtual platforms in relation to the participatory dynamics of teachers and students; 5) Applicability of learning methods and instruments in order to achieve achievements in the development of skills, abilities and capacities attributable to support in family relationships. Finally, the assessment of what has been learned is achieved in the subject through the reward in acquisition of knowledge achieved. [7]

II. BASES THEORETICAL BASES ON MOTIVATION: BEHAVIORAL, HUMANIST AND COGNITIVE

Motivation is an aspect of great relevance in the various areas of life, such as: educational and work; inasmuch as it guides the actions of the individual, becoming a central element conducive to the stated objectives. We can say that motivation is a theoretical-hypothetical construct that designates a complex process that causes behavior. [8] Having relevance during education because they facilitate the understanding of human behavior, and the application of strategies to reinforce the subject's motivation. There are three fundamental perspectives linked to motivation: the behavioral, humanistic and cognitive.

A. The behavioral pespective

The behaviorist mentions the role of rewards, giving rise to positive and negative events called external rewards, there are also central punishments that can become motivation. For this approach, all behavior modification is carried out basically through reinforcements, rewards, through the avoidance or omission of what is not pleasant for the subject.

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B. Humanist Perspective

It focuses on the ability of the subject to achieve growth, positive characteristics and freedom to make decisions based on their achievements. Based on the hierarchical ordering and adjusts to this raised perspective

C. Cognitives Perspectives

It involves the study of the cognitive process defining elements that are valued during the subject's learning. Being a priority to follow up and monitor the fulfillment of the goals.

D. Process and cognitive elements linked to the motivational process

One of the proposals that raises the complexity of the academic-motivational processes is the one that presents relevant elements for motivation in educational environments: the first is related to a component of expectations, which includes the students' beliefs about their ability to execute A homework; the second refers to the component of affective-emotional consequences derived from the explanation or causal attributions, the third is associated with a value component, related to their goals and their perceptions about the importance and interest of the task and finally the fourth element that refers to the action plans as well as the results of academic success or failure. [9]

III. RELATIONSHIP BETWEEN MOTIVATION AND KNOWLEDGE TRANSFER IN VIRTUAL EDUCATION

Due to the above it is deduced that it is necessary to take into account the result of the assimilation of knowledge, supported by methodologies, active didactic strategies and flexible learning environments that allow the subject to appropriate the knowledge. [10] It has been previously described how subjects can have different types of goals that respond to different motivational patterns and, therefore, to different behaviors and actions during their academic training.

These patterns have been organized by intrinsic-extrinsic motivation. In this case, to understand several concepts, we can refer to the intrinsic as situations where the subject performs activities for satisfaction, regardless of recognition, such as self-determination, curiosity, challenge and effort. [11] While the extrinsic is due to situations where the subject participates in activities with instrumental ends or for external reasons, which could obtain a reward. Considering which is highly related to the perception of educational competence. In this way, the subjects who evaluate their academic competence in a positive way generally report being intrinsically motivated, while negative perceptions are associated with extrinsic motivation.

The subject has an orientation with learning goals (intrinsic orientation) and performance goals (extrinsic orientation). however, those with a performance goal orientation seek positive judgments or a certain external evaluation of their competence.

The identified patterns are:

- Search for knowledge ·
- The search for positive judgments of competition
- The fear of failure.
- The last two pertaining to the execution goals, See figure.

Subjects oriented towards learning goals set objectives related to the search for knowledge, these in order to acquire or improve certain abilities. See figure No. 1.

Figure 1. Motivational patter
Source: Owner Authors

Considering that the learner is not a passive system, but a self-determining agent that actively selects the information received; builds new knowledge of what you know. And his experience allows him to face errors of learning. Where it is built from within; through selected and interpreted data based on the subject's motives, as well as existing conceptual structures

This learning is based on a specific knowledge base that varies from one task to another in terms of content and procedure. [12]

On the way from information to knowledge and from this to education, innovation and transfer processes are put into practice. Transfer is inherent in education, not just transmission and dissemination. But as a channel for that knowledge. [13] Through participation in different public or private sectors. Giving specific place to education in events, events or events that are subject to changes in the processes from beginning to end. Defined as the transition from a state of generation of actions in the search for knowledge.

Among the key transfer concepts we have: open innovation which; it is part of the intervention of public institutions, and collaborative innovation; where the participation of private institutions (company-industry) of the socio-productive sector is evidenced. As can be seen in figure No.2 Knowledge transfer gear. [14]

Figure 2 Knowledge transfer gear
Source: Owner Authors

These activities are relevant to the learning processes used from the classroom or learning environment, with the participation of teachers and students. [15] The same ones that are considered effective when the student appropriates the knowledge in practice for the search for solution of problems typical of his profession. Today with the global problem of pandemic, teachers and students have adopted virtual platforms as learning environments. These being spaces for the transfer of knowledge. [16]

UNESCO in its 2030 agenda of sustainable development goals establishes the Transmission of knowledge and skills on responsible consumption and production models and fostering responsible global citizens through the Global Education for Sustainable Development agenda. Therefore, each goal of the 2030 Agenda requires education to equip all people with the necessary knowledge, skills and values that will allow them to live with dignity, build their own lives and contribute to the societies in which they live. [17]

On the other hand, virtual education is included in the transfer of knowledge since it is part of a culture of convergence and sharing; the teacher through the subject; where you must use various free access training resources found in the digital environment, from a scientific article to complete courses found online. To later be discussed, debated and enriched in the class between the modeling teacher and his students to obtain knowledge. [18]

The IES (Institutions in Higher Education) according to the levels use free training resources including: courses and workshops, which, with ideally applied by the teacher, because each subject has specialized spaces for it. Within virtual education, the teacher's role includes planning and monitoring the student's learning process to ensure that the objectives of the subject are met.

Thus, the teacher must be able to facilitate and favor the use of the media ecosystem in which the student operates, such as social networks and collaborative digital environments. Taking advantage of these interactive platforms and network activities with an educational purpose can be a very successful strategy for the benefit of students. [19]

It is important to refer to the evaluation system, since traditional evaluation involves isolating the student from any source of information during the duration of an exam. Being impossible in virtual education, because the student can take the exam accompanied by all the material they want and, even, contrast their answers with a group of classmates in real time. [20]

Finally; the design of evaluations that assess the development of skills that contribute to the transfer of knowledge through virtual learning, such is the case of: participation in discussion forums so that the subject periodically critically comments on a topic. It is also important to leave works that have a direct personal implication, such as applying a topic studied to its routine context or a specific topic of interest to the student during their learning. [21].

The platforms are a communication channel for the transfer of knowledge that during the time of the pandemic fulfilled the leading role by offering technological tools applied in the teaching-learning process.

The means of interaction via chat or scenarios with digital environments encourage the participation of inter-multidisciplinary groups during continuous and integrated sessions in educational platforms; allowing its attendees to follow study programs interrelating knowledge that develop their own knowledge skills. The different groups go through a process of transition from the face-to-face to the virtual modality, however, it is important to mention that not all disciplines or areas of knowledge can fully incorporate their study program to virtuality due to its experimental nature and demands of learning. practical activities in laboratories to complement the acquisition of knowledge of the profession [22]

The contribution of the virtual interaction in the teaching-learning processes is high, as a strategy and technological style of learning for the generation of knowledge. Becoming sustainable applicable tools in hybrid educational contexts. [23]

IV. METHODOLOGY

During the pandemic period in Ecuador and the world, the transfer of knowledge in physical spaces to through environments and / or virtual environments, therefore; this work is based on a comparative analysis. Considering the following points:

1. Degree of adaptation in the use of the virtual platform

2. Connectivity of virtual platforms in relation to the participatory dynamics of teachers and students.

3. Applicability of learning methods and instruments to achieve achievements in the development of skills and abilities

4. Academic performance of students.

5. Motivation based on the expected results, according to the graduation profile. [24]

To do this, surveys will be carried out to the educational community, that is, teachers and students, based on the experience and practices of the MICROBIOLOGY subject, applied in the teaching-learning process in higher education. [25]

The qualitative method will allow the deep exploration of emerging practices, understanding the complexity of the transfer of experimental knowledge, although they do not allow the study of causality or the generalization of research results, however it allows to infer rich descriptions in which the new patterns

In addition, the evaluation of reference practices is incorporated into self-directed professional development for the integration of ICT during teaching, as a means of understanding how knowledge transfer develops and functions in successful IES (Institutions in Higher Education). [26]

In this context, reference is made to the application of pedagogical innovations, effectively organizing their self-directed professional development, with which they usually influence other teachers, considering the depth of a sample of teachers involved in experimental biological sciences at the educational level. higher. See figure No. 3 [27]

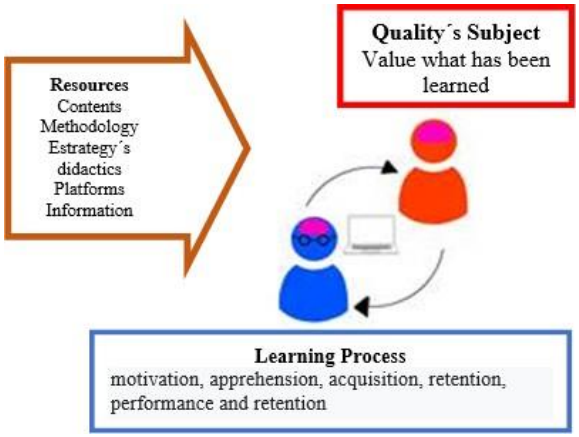

Figure 3. Effective knowledge transfer
Source: Owner Authors

V. RESULTS AND DISCUSSION

The research was applied to a sample of 50 students belonging to the Microbiology subject.

It is worth mentioning that we work with a high educational level, they addressed issues of the curricular units of the Microbiology subject related: the preparation of culture media, physical and chemical agents that affect bacteriological growth and the presence of fungi.

The survey was addressed to students through virtual means and was carried out after the execution of the activities of the subject in the middle of the first semester of 2021, the results of which reflected the following:

70% of the students considered that the interaction with the teacher improved through the platform with exposure of virtual practices carried out in homes, which make use of virtual tools. The teacher fulfilled the purposes; followed by 28% who agree in which they were able to work independently, autonomously and consciously with a critical and reflective attitude through virtual spaces See Table No. 1 and Fig 4.

TABLE 1

RESULTS OF ASSESSMENTS ON TEACHER SCAFFOLDING IN VIRTUAL SPACES

Do you think that the interaction of the teacher through the virtual platform was improved during the classes?

VALORATION	FRECUENCY	RESULT
Strongly agree	35	70%
In agreement	14	28%
Indifferent	1	2%
In disagreement	0	0%
Total, disagreement	0	0%

Source: Surveys of students Microbiology 2021

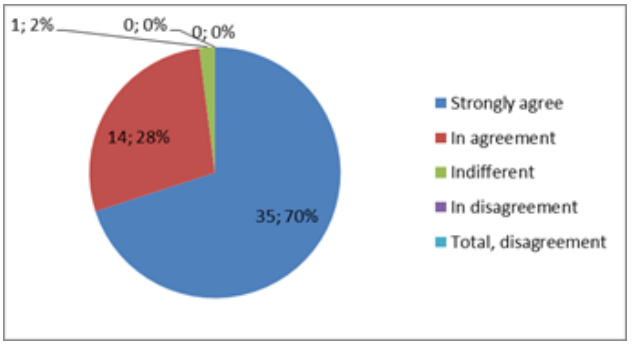

Figure 4

RESULTS OF ASSESSMENTS ON TEACHER SCAFFOLDING IN VIRTUAL SPACES

Source: Surveys of students Microbiology 2021

In the question related to problem-centered learning, 74% agree that the teacher socializes results and makes observations about the course work dynamics based on the results. The review and prior analysis of the subject to be discussed was carried out; 24% agreed that the teacher's performance was reflected as a transmitter of indications and guidelines for the development of the activity in the virtual environment See table2 and Figure 4.

TABLE 2
RESULTS OF ASSESSMENTS ON PROBLEM-CENTEREDLEARNING

Do you think that the teacher socializes, directs and reviews virtual activities?

VALORATION	FRECUENCY	RESULT
Strongly agree	37	74%
In agreement	12	24%
Indifferent	1	2%
In disagreement	0	0%
Total, disagreement	0	0%

Source: Surveys of students Microbiology 2021

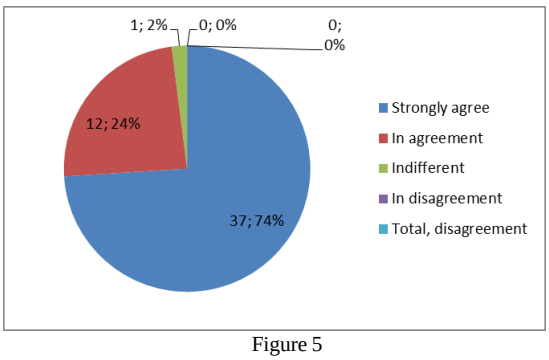

Figure 5
RESULTS OF ASSESSMENTS ON PROBLEM-CENTERED LEARNING

Source: Surveys of students Microbiology 2021

Regarding the question on self-reflection, 72% strongly agreed that the teacher used the technique of investigative questions while using the virtual platform with the integration of student participants. 22% of the students agreed that they value the knowledge acquired and that they contribute the knowledge to their daily life See table 3 and Figure 6.

TABLE 3
RESULTS OF ASSESSMENTS ON SELF-REFLECTION

Do you consider that the questioning technique contributes to class participation and increases your knowledge?

VALORATION	FRECUENCY	RESULT
Strongly agree	36	72%
In agreement	11	22%
Indifferent	3	6%
In disagreement	0	0%
Total, disagreement	0	0%

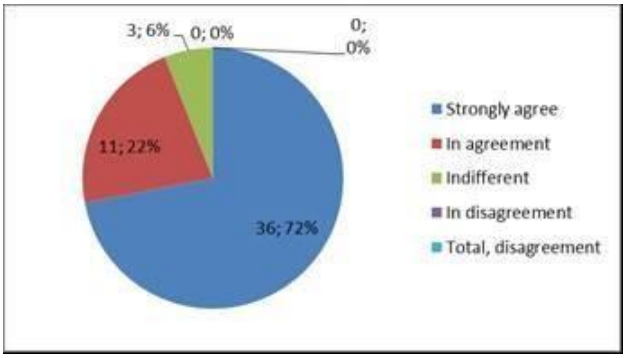

Figure 6
RESULTS OF ASSESSMENTS ON SELF REFLECTION
Source: Surveys of students Microbiology 2021

Student-centered learning was analyzed in a question whose result reflected that 78% strongly agree that the teacher achieved collaborative interaction by creating groups of students during virtual class and supervised by the teacher; 15% agreed that they also developed skills in the management of the Moodle platform, as well as in the management of virtual tools and that the The activities of experimentation in culture media and collection of samples in places within homes such as for example, wastewater from the laundry helped to represent realities of the environment relating to water quality and the growth of microorganisms. See table 4 and Figure 8.

TABLE 4
RESULTS OF ASSESSMENTS ON STUDENT-CENTEREDLEARNING

Do you think that the work group formation phase for processing increased individual interaction with mutual help between students?

VALORATION	FRECUENCY	RESULT
Strongly agree	39	78%
In agreement	12	15%
Indifferent	1	0%
In disagreement	0	0%
Total, disagreement	0	0%

Source: Surveys of students Microbiology 2021

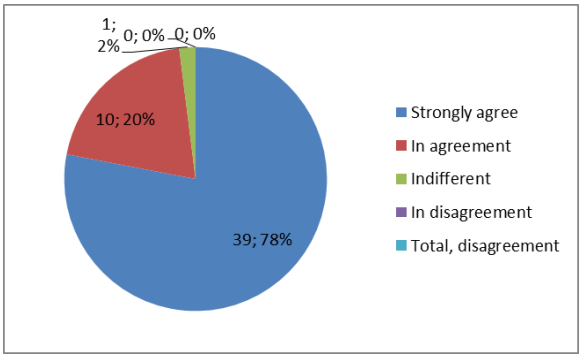

Figure 7
RESULTS OF ASSESSMENTS ON STUDENT-CENTERED LEARNING

Source: Surveys of students Microbiology 2021

Figure 8
STUDENT SHOWING HER BOX GROW
Source: Surveys of students Microbiology 2021

VI. CONCLUSIONS

The characteristics of the knowledge transfer were analyzed in the survey questions and its results reflected that:

The teacher scaffolding according to 70% of the students considered that the interaction between teacher and student existed and improved through the platform, and that they made use of virtual tools such as forums, tasks, virtual animations, elaboration of grow boxes and tasks individual. Greater participation was also evidenced through the Moodle

platform and the use of Zoom, which served as support for students who learned how to use these tools that they were unaware of before the pandemic.

Regarding self-reflection, 74% strongly agreed that the teacher used the investigative question technique during the use of the virtual platform, as well as forums with questions that related situations of daily life and that allowed the integration of student participants responding. 8% of the students agreed that they value the knowledge acquired and that they contribute the knowledge to their daily life.

In the question related to the knowledge transfer , 72% strongly agree that the teacher socialized the results of the individual evaluations and that they who made observations about the presentations of the course experiment`s, such as which of the samples showed the highest growth of microorganisms.

The review and prior analysis of the topic to be discussed was carried out, by the teacher 78% agreed that the action reflected that the teacher gave clear instructions and guidelines for the development of the activities proposed in the Microbiology class, as well as in the virtual classroom presented in Moodle.

Regarding student-centered learning, a question was analyzed, the result of which reflected that 78% of students strongly agreed that the teacher achieved collaborative interaction by creating virtual rooms for groups of students during virtual class and they were supervised in a timely manner.

The learning was also oriented to the development of skills in the management of the Moodle platform, as well as in the management of virtual tools such as forums, drawings, and experiments.

The activities of preparing grow boxes and their respective samples, allowing them to focus on the causes of the presence of microorganisms in wastewater.

Finally, it was concluded that the knowledge transfer and motivation characteristics were optimally adjusted to the learning of the students of this higher level of the University, since as the virtual classes progressed, they progressively overcome each obstacle that the new modality represented and they learned the use of new ones. technological tools which gave them autonomy during the learning process and the development of social skills.

This is how it is considered that the integration of the characteristics of the virtual active learning methodology, are aligned with the motivation through transfer knowledge, and management to propose a better conceptual scheme of the information received by the student, contributing to the resolution of problems related to the environment.

The digital media contribute to learning and create viable spaces through platforms that contribute to the teaching-learning process, allowing the development of synchronous-asynchronous activities; through virtual classes that use portals designed for conferences, adaptable to the educational field, becoming in a means of communication interface of knowledge transfer with the educational community

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