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Factors that affect the teaching-learning of mathematics in Economic Sciences university students

Factores que inciden en la enseñanza-aprendizaje de las matemáticas en universitarios de Ciencias Económicas

Fatores que afetam o ensino-aprendizagem da matemática em estudantes universitários de Ciências Econômicas

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ABSTRACT
The article addresses an experience that centered on the university student and its relationship with the teaching-learning process. The objective was aimed at socializing the main results of a research about the teaching-learning process, failure and evaluation of university students of the Bachelor's degree in Economics. The research carried out responded to a mixed, quantitative-qualitative design, with a predominance of the quantitative approach. To collect the data, questionnaires and interviews were applied, in addition to descriptive statistics, for the collection and subsequent analysis of the information. The main findings were identified as causes of failure: difficulty in understanding the subject of Mathematics I, difficulties in understanding and clarity of the topics covered, with absences from classes being the cause of the greatest number of failures; Other factors were the lack of study habits and not having adequate academic foundations at the level of education, inadequate social conditions, low personal self-esteem, high anxiety rates, as well as limitations in arithmetic and algebraic skills. The conclusions allowed us to reflect on three essential factors: the learning activities, the characteristics of what to learn and the nature of the materials.

Keywords: teaching; learning; reprobation; assessment.

RESUMEN
El artículo aborda una experiencia que tuvo como centro al estudiante universitario y su relación con el proceso de enseñanza-aprendizaje. El objetivo estuvo dirigido a socializar los principales resultados de una investigación acerca del proceso de enseñanza-aprendizaje, la reprobación y la evaluación de los estudiantes universitarios de la carrera de Licenciatura en Economía. La investigación realizada respondió a un diseño mixto, cuantitativo-cualitativo, con predominancia del enfoque cuantitativo. Para la recolección de los datos, se aplicaron cuestionarios y entrevistas, además de la estadística descriptiva, para la recogida y posterior análisis de la información. Como hallazgos principales se identificaron como causas de la reprobación: la dificultad para entender la asignatura de Matemáticas I, dificultades en la comprensión y claridad de los temas tratados, siendo las ausencias a clases la causa del mayor número de reprobados; otros factores fueron la falta de hábitos de estudio y el no poseer bases académicas adecuadas al nivel de estudios, condiciones sociales inadecuadas, una baja autoestima personal, elevados índices de ansiedad, así como limitaciones en las habilidades aritméticas y algebraicas. Las conclusiones permitieron reflexionar sobre tres factores esenciales: las actividades del aprendizaje, las características del qué aprender y la naturaleza de los materiales.

Palabras clave: enseñanza; aprendizaje; reprobación; evaluación.

RESUMO
O artigo aborda uma experiência centrada no estudante universitário e sua relação com o processo de ensino-aprendizagem. O objetivo objetivou socializar os principais resultados de uma pesquisa sobre o processo de ensino-aprendizagem, reprovação e avaliação de estudantes universitários do curso de Bacharelado em Economia. A pesquisa realizada respondeu a um desenho misto, quanti-qualitativo, com predomínio da abordagem quantitativa. Para a coleta dos dados foram aplicados questionários e entrevistas, além de estatística descritiva, para coleta e posterior análise das informações. As principais constatações foram identificadas como causas de reprovação: dificuldade de compreensão da disciplina de Matemática I, dificuldades de compreensão e clareza dos temas abordados, sendo as faltas às aulas a causa do maior número de reprovações; Outros factores foram a falta de hábitos de estudo e não possuir bases académicas adequadas ao nível da escolaridade, condições sociais inadequadas, baixa auto-estima pessoal, elevados índices de ansiedade, bem como limitações nas competências aritméticas e algébricas. As conclusões permitiram-nos refletir sobre três fatores essenciais: as atividades de aprendizagem, as características do que aprender e a natureza dos materiais.

Palavras-chave: ensino; aprendizado; reprovação; avaliação.

INTRODUCTION

The cooperation between economics and mathematics is as old as the need to count. Economics, technically, is located within the social sciences; However, students who dedicate themselves to this field must receive extensive information supported by mathematics.

The teaching-learning process of mathematics, in Higher Education Institutions (HEIs), constitutes a current topic that has generated the implementation of a series of investigations, focused on the recurrent and complex difficulties faced by students, especially the low rates of academic achievement, in the case of economic careers, which have a singular importance since such a subject is essential in the training of said professionals. Authors such as Ramos and Bello (2021) affirm that "most of the theories on which the teaching of economics is based are based on mathematical elements" (p. 84).

Students of economic sciences need to "master" several important mathematical tools, essentially differential and integral calculus, that allow them to carry out economic analysis, in such a way that they facilitate the search for patterns of data adjustments, study qualitatively and quantitatively models that arise from theory, for the solution of optimization problems, that are competent to efficiently distribute and allocate scarce resources and, above all, to plan economic activities; All this must be considered in the teaching-learning process. For Rojas *et al.* (2017), in relation to economics, the subject "plays an important role since a large percentage of the topics are expressed in mathematical terms" (p. 528).

Such a criterion is correct if one takes into account that, for university students, this means that they can benefit from interdisciplinary training that combines knowledge in economics and mathematics, while allowing them to have a deeper understanding of economic problems and be able to of applying mathematical tools to solve them. A considerable part of students, once enrolled in a degree, decide not to continue their studies, for various reasons, dropping out not only from a subject but even from the university system (Pascua, 2016). Other authors, such as Salas (2018), place emphasis on technology as a way to "improve the teaching-learning process and facilitate the development of skills from technological, disciplinary and pedagogical knowledge" (p. 26).

Currently, at the national level, there is a significant increase in the quality of educational training in the different educational processes, coinciding with the criteria of authors such as Yong Chang *et al.* (2018), who consider that "the human quality, professionalism, vocation and responsibility with which teachers align students in the production of knowledge and skills for the benefit of the community is greatly enhanced" (p. 15).

In this regard, the authors reaffirm the importance of the necessary advice to teachers and students towards a better teaching-learning process of mathematics, reaffirming the need for "educational institutions (public and private) to have information on a permanent basis, with the in order to update its academic offering and, particularly, the contents of the study plans" (p. 529).

The Higher School of Economic Sciences is not immune to such academic policies, in such a way that the educational plans and programs of the institution try to provide young people of quality education and promoting human development, committed to their context, with a global perspective.

Since the end of the 20th century, transformations have been undertaken in Mexico in the academic, administrative and government structures in public and

private universities. These transformations constitute a response to the new international and national scenarios characterized by the process of economic globalization, global interdependence and the formation of regional blocks, and it is in this environment in which HEIs operate with all their challenges.

In general, indicators are observed such as: absorption, school dropout, coverage, school life expectancy, average level of schooling, illiteracy; Regarding the absorption rate, only 50.1% enter Higher Level Institutions in the State, this represents 25 percentage points below the absorption at the national level.

It must be emphasized that the systems of social positions that determine spaces are imposed on agents by certain codes or laws internalized by custom or beliefs (religious, cultural, etc.). Such a perspective leads to understanding the possible repercussions on certain agents (students, teachers, administrators and workers) and their subsequent position in the social field; It is an adequate instrument to recognize learning patterns, failure in mathematics by students, in such a way that the objects in play represent some type of specific capital. Capital is what each individual possesses or longs to possess: a certain social position (social capital), material goods (economic capital), knowledge (cultural capital) or a certain valuation of the world (symbolic capital) (Bourdieu, 2008).

The types of capital are interrelated; Thus, for example, whoever is the most organized, applied, dedicated, accomplished, responsible student is the one who obtains the best grades in cultural capital, will also be the one in social capital, occupying a dominant position in both the cultural and social fields, for example. the recognition it acquires.

Symbolic capital is, apparently, the most difficult to acquire; it is apprehended after a training process, such as obtaining a degree, in this case economics. Cultural capital is also obtained during training, informal or academic, since it is the knowledge that an individual possesses, whether about an art, a science or a trade.

This, like every academic field (economics, administration, accounting, sociology, anthropology, etc.) and science, is part of cultural production; That is to say, the object at stake is cultural. The study of the field of economics becomes particularly interesting because its genesis and structure distance it from other fields; because economic categories must be social categories, that is, categories that represent relationships between human beings. On the other hand, the low academic performance of students and the consequence of this entails, in the person who suffers it, motivational impairments and delays in meeting personal and family goals (Medina et al., 2018) .

The Higher School of Economic Sciences, as the environment in which agents move, manifests itself under the context of the physical and social space and the positions they occupy in both, which are necessarily in interaction; as an example, the physical position of a student, a certain place where his image admits a symbolic and spontaneous classification.

In the social field, position is the decisive force to obtain new placements of space and have power to act in

This (Bourdieu, 2008), the observation of the social field, geographical space, cultural, economic and political, is one of the forms of reflection to recognize the structure of the fields and define, roughly speaking, the *field* of action of the agents, who are designated as students. Associated with the above, it is interesting with the criterion of Rojas *et al.* (2017) who understand that liking is one of the factors that most contributes to the attitude towards mathematics, contrary to motivation, which was shown to be not a key element of the attitude towards this discipline (p. 527).

In the symbolic dimension, agents assign symbols to certain goods that they express, through what they are or want to be, where they have been, where they have bought, what they dream of, what makes them more conceived than others, what they like to do in his free time. A way of being a student, associated with a particular part of the population, provides more elements to understand the ways of life of that segment and of this segment compared to others.

From the point of view of youth, the cultural and political perspective has been approached from the so-called cultural studies, collecting communicative, aesthetic and historical mediations. The teaching staff, for their part, (...) must make methodological modifications that allow motivation, encourage participation, make innovations in the lessons and greater use of technological resources, go deeper into the explanations, include other evaluation items, carry out a formative evaluation " (Castillo *et al.* , 2020, p. 241).

If we take into account that in every class society there is a system of structured pedagogical actions (school system), designed to reproduce the *habitus* that correspond to the interests of the dominant classes, school pedagogical work will have differential productivity, according to to the social class of origin of the individuals.

Although school learning is based on previously acquired *habitus* and, for this reason, all competence developed by an individual cannot be attributed solely to the action of the school, it can be stated that the school, in the case of the Higher School of Sciences Economic, it must or can fulfill a remedial function.

Education is all the more necessary as a strategy for acquiring cultural capital to the extent that it has not been possible to obtain it through family inheritance. For those individuals who belong to the sectors most dispossessed of economic and cultural capital, the resource of the school is the only way to appropriate cultural goods.

The work investigates and reflects on learning and failure in mathematics as a social phenomenon, that is, the social role of school learning and failure is described from the constructivist structural position, with the purpose of being able to understand the dynamics and try to offer a perspective that favors a change in attitude in teachers' practice.

The problem of the research was that the university students of the Bachelor's degree in Economics at the Higher School of Economic Sciences present difficulties in teacher-student communication, limited knowledge of the immediately previous level, lack of motivation towards the degree, which which, together with unfavorable economic conditions, causes failure and has an impact on the evaluation of the Mathematics subject.

That is why the objective was aimed at socializing the main results of a research about the teaching-learning process, failure and evaluation of university students of the Bachelor's degree in Economics.

MATERIALS AND METHODS

The survey was carried out on 108 students, it shows the way in which the student population of the 2021-2022 generation of the Higher School of Economic Sciences is constituted, where it is observed that women slightly predominate in the student population with 52%, while men are 48%. This information allows us to ensure that both genders have the same opportunities and conditions to study.

The response percentage was calculated from the number of 220 students enrolled in mathematics courses, of which, at the time of application, 108 were surveyed (48.6% of the expected population); This being the population with which the

analysis was carried out. The research was descriptive and cross-sectional.

The sample consisted of university students of both genders, between 18 and 25 years of age, who are pursuing a Bachelor's degree in Economics. A questionnaire of 49 questions, page 151, printed and self-administered, was used . The sections analyzed were: data and general considerations; school performance; causes of failure: personal and academic (see table 1).

Table 1- Sections analyzed in the questionnaire

General data	General considerations	School performance	Causes of disapproval
Origin	Family financial support	ESCE academic level	Personal
Sex	Use of free time	The ESCE environment	Academics
Age	Economic dependence	Numbers of students per ESCE group	
Civil status	Study financing	Consulting at ESCE	
Conveyance.	Free time activities	Study habits	

The questionnaire was applied during the months of May and June 2021. In the process, the students were informed about the objectives of the study, the voluntariness of the participation and confidential management of information. A sampling error of 5% was selected to be acceptable and was used for sample size calculation. Participation in the study was voluntary.

The SPSS program (Statistical Package for the Social Sciences), version 18, for Windows, for database design. A statistical-descriptive analysis was carried out, absolute and relative frequencies for the categorical variables for the numerical variables. Chi-square tables were conducted to examine associations between learning and failure, social and demographic data, students' perceptions of learning in mathematics, and students' perceptions of teachers who teach mathematics. The relationships of the variables were considered statistically significant at $p<0.05$.

In addition to data collection, a semi-structured interview was carried out, applied to 10 Bachelor of Economics students. The testimonies provided in this application provided information to identify the main learning strategies. An example of this is recognizing that students pointed out difficulties for their teachers in establishing good communication with them.

The semi-structured interview allowed us to delve deeper into the visions of the most apparent reality, offering data to identify the learning strategies with which young people face the academic conflict that arises, especially in the subject of differential calculus.

RESULTS

Of the young people who enrolled in the Bachelor of Economic Sciences in the 2021-2022 school year, 23% of the cohort, in addition to speaking the Spanish language, speak Nahuatl, Mixteco, Amuzgo or Tlapaneco, among others. This shows that 23% of the population are of indigenous origin.

The indigenous population is essentially found in the Mountain area and to a lesser extent in the Costa Chica, these being the most marginalized areas of the state. The age range of the students is 18 to 25 years old, from the second to fourth semesters of the Bachelor's Degree in Economics.

Regarding age distribution, 29% of the students surveyed said they were 19 years old, 14% of young people said they were between 20 and 21 years old. At the time of the survey, students aged 18 constituted 12% of the population, while 7% corresponded to those aged 22, 5% to those aged 23 and over, 4% and 2% to

those aged 24. and 25 years, and only 8% of the students said they were older than 25 years.

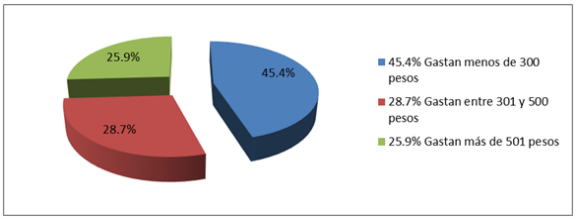
83.3% of those sampled were single and those who were not, represented 16.7%. The latter are affected in their academic performance, a situation that contributes to failure for attending to other tasks.

The majority, 93% used public transportation, the rest revealed that the means of transportation used was a car (3%) and 4% indicated that they traveled by motorcycle, bicycle or walking. The family unit follows the same behavior as the student-parent and student-sibling relationship. With a cumulative total of 108 students, it is inferred that family unity is not a cause for failure; of these, 17.6% reported that living as a couple contributes to failure.

55.6% of the young people surveyed are looking for economic means to support their studies, 38% work for more than four hours a day and 13.6% have low-paying employment. In this activity, students invest considerable time each week, which they need to study, which makes it difficult to have optimal academic development.

According to the results of this study, women dedicate more hours to paid activities, they have to work to cover expenses and this can determine from the beginning the probability of failing subjects during the course of the degree, since this implies less time to dedicate to study.

Graph 1 shows the percentages of the amount of money available to the students of the Higher School of Economic Sciences for personal expenses; As can be seen, they have little money, 64.1% of students spend less than 500 pesos per week, sufficient reason for not having acceptable academic development.



Graf. 1- Percentage of economic availability per week that students of the Bachelor of Economics have

The vast majority of women, like men, use public transportation to attend school (54% and 47% respectively), and few students have their own vehicle. Half of the students surveyed said they worked more than four hours a day (women, 21% and men, 20%), which can be a cause of failure. For this reason, half of the students have less than 300 pesos a week for their expenses.

In relation to academic performance, 40.7% of the young students surveyed from the Higher School of Economic Sciences (ESCE) indicated that the Bachelor's Degree in Economics was not the first option they chose (table 2).

Table 2- Percentage of the activity carried out by young people from the Higher School of Economic Sciences in their free time

		The activity that ESCE young people do most frequently during their free time				Total
		Listen to music	Do sport	Be with friends	Reading	
Gender.	Male	46%	57%	33%	67%	48%
	Female	54%	43%	67%	33%	52%
Subtotal		46%	3. 4 %	17%	03%	100%

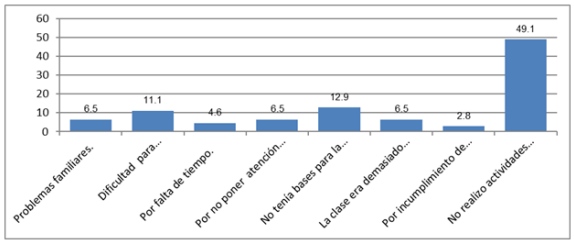
Regarding the perception of the academic level, particularly of the Bachelor's Degree in Economics and, in general, of the Higher School of Economic Sciences, they noted, the vast majority considered it regular (63%), and only a small percentage (5.5%) indicated which was excellent.

The image of their peers in the group ranges between good (50%) and average (46.3%). In general, it can be said that

there is an atmosphere of harmony in the group.

Regarding large groups and the possible impact on learning, 47.2% of those surveyed said no, 33.3% said yes, and 19.5% said sometimes.

According to graph 1, which shows the results, some of the causes of non-approval are the institution itself, others are: the conditions of society, the economic situation, the family, the poor academic preparation of young people , wrong career choice, difficult integration of the student into the institution due to the change in educational level, academic training from the previous cycle, relationship and little support from teachers, motivation towards the career, school environment, student expectations regarding the importance of education, unfavorable economic conditions for the student, among other elements, as shown in graph 2.



Graf . 2- Percentage of the causes that generate failure in young people from the Higher School of Economic Sciences

There is agreement in the students' responses regarding the factors attributed to them: the lack of knowledge they carry from the immediately previous level, especially in algebra as a basis for learning calculus.

Returning to the learning process as a construction based on previous knowledge and experiences, it can be said that students do not have a solid knowledge structure in which they can adequately incorporate new learning; There are "knowledge gaps" that do not allow continuity to the growing complexity of concepts and the relationships established between them. This situation is probably related to the apathy that students report in themselves.

Those who fail the most are male and a percentage of these students surveyed answer that they do not pass because they did not attend classes, but they also point out that the class is deficient and another percentage states that the schedule of the school where the subject is taught is not compatible with work schedule; Some more declare that they do not pass mathematics because they do not have the habit of studying as expressed in table 3.

Table 3- Causes that affect the failure of students at the Higher School of Economic Sciences.

Causes	I do not answer	approved	Did not approve
1. Difficulty understanding the subject	2 %	27%	**71%**
2. The teacher did not explain the topics clearly	3 %	30%	**67%**
3. I missed classes a lot.	1 %	41%	**58%**
4. The teacher is very demanding	0	33%	**67%**
5. Lack of time	1 %	46%	**53%**
6. Lack of teaching material	1 %	48%	**51%**
7. Teacher does not master the subject	3 %	57%	**40%**
8. I did not finish the subject and that is why I failed	5 %	52%	**43%**
9. Many students per group	2 %	59%	**39%**
10. Lack of motivation to study.	1 %	38%	**61%**
11. Lack of bases to take the subject	3 %	38%	**59%**
12. Extensive programs	2 %	55%	**43%**
13. Lack of study habits	5 %	Four. Five	**50 %**
14. I did not attend the tutorials	4 %	44%	**52%**

It can be seen in the percentages that do not pass the subjects because the schedules are not compatible with their work activities, for not studying and for personal reasons (85%) and that the reasons, as a result of the teacher, correspond to 15%, according to with the respondents.

Table 4- Results of the Basic Mathematics test at the Higher School of Economic Sciences, 2021

Contents	Domain	Deficiencies			Total, in %
	Correct	Incorrect	Incomplete	Did not answer	
Operations arithmetic	5	30	7	58	95
Operations algebraic	27	29	5	39	73
Operations logical	fifteen	fifteen	10	60	85
Properties of real numbers	25	fifteen	8	52	75
set theory	eleven	19	4	66	89
Factoring polynomials _	38	27	7	28	62
Notable products	fifteen	40	5	40	75
Solution of inequalities	38	19	1	42	62
Application of algorithms	14	38	4	44	86
Solution of equations	fifteen	48	1	36	75
Numbers complex	10	30	5	55	90
Trigonometry	8	17	10	65	92
Variable identification	32	23	5	40	68
Models mathematicians	23	fifteen	7	55	77
Operations geometric	39	39	4	18	61
Average	twenty-one	27	6	46	79

Source: report from the ESCE Technical Methodological Academy (2016)

The general percentages that correspond to the Basic Mathematics test, which was applied at the beginning of the second semester to students studying the degree in Economic Sciences (table 4) are a sign that the educational activity is not achieved, but it should not leaving aside the implicit ambiguity; It is clear that social differences are not the responsibility of the university system. Likewise, they show the basic knowledge, the skills required in problem solving and the fundamental operations on which the test was built.

DISCUSSION

In agreement with Bourdieu, the level of education of the parents influences the presence of agents to pursue higher level studies. The family transmits aspirations, knowledge and culture regarding the level of study that agents must achieve, so the academic title is the symbolic capital that agents in cultural competence pursue for its lasting and legally guaranteed value. The above can be justified because it is possible for students to take advantage of the knowledge and skills that the family has to obtain professional training.

Parents who have better levels of education have resources to support their children, guide them and help them in their educational tasks. Based on the above, 14% of parents have professional studies, this can be a determining factor in achieving educational benefits. We consider that the educational achievement of parents is essential, but not necessary, for agents to achieve your school goal; that is, cultural capital and symbolic capital.

Those parents who did not attend a higher level suggest a low level of schooling in their children: parents do not have cognitive skills to support their sons and daughters in school activities. These results may not be decisive for choosing to enter higher education, because despite their cultural origin, leaving aside the social and economic family factors that may arise, when observing the data of those students who stated that their parents only had the primary level (40% fathers, 46% mothers) entered to study a bachelor's degree, a relevant indicator of this is the educational level of the students' parents. While in public universities 85% of young people come from families whose parents did not have the opportunity to access higher education, 11% of young people who study at UAGro, mainly at the Higher School of Economic Sciences, have parents who studied a degree.

It is important in the family environment to promote good relationships between family members, to obtain positive results in academic preparation. Parents must promote "democratic" behaviors so that they positively influence and awaken in young people attitudes towards studying, so family support is essential for academic performance. In the family environment, it is important to point out that resources, level of study, work habits, academic guidance and support, cultural activities, books read, expectations about the level of study, are factors that can have an important influence on the passing of

subjects and on the social development of students.

The number of family members could be a determining factor, since economic resources are not sufficient when there are large families. For this population, according to those surveyed, they answered that they have more than three siblings (70%), probably due to lack of resources determines less parental attention towards their offspring, which would decrease social capital, because young people can choose simultaneous activities giving poor academic results.

The *habitus* is learned through the body, it is something that we have and that we see in others. It is the way a person has when walking, talking, eating, dressing. This *habitus* is determined according to our environment, which in this case is the school of economics; It is this environment in which young people who study live that gives us a *habitus* , but not only that, but it also gives us the way in which we see the world. *habitus* of others. Habitus can be closely related to prejudice; it serves to explain why people behave in the same way when they share a certain social environment, but not to *explain* why they behave differently.

Thus, the *habitus makes the students of* the Higher School of Economic Sciences who share a social environment have similar lifestyles. All these young people who want to be economists must study methodological sciences (mathematics), so their daily behavior, although not the same, is similar. The concept *habitus* serves to overcome the opposition between objectivism and subjectivism.

As can be highlighted, among young university students there is a tendency to combine study with work, in addition to being a cause of failure to enter the labor market. Although, from this perspective, the practice of combining the two activities is related to obtaining economic resources and by achieving a degree in economics, they aspire to have access to better jobs. Currently, instead of being a disadvantageous situation compared to full-time students, it is a possibility to increase their employability skills, now so necessary to compete.

It turns out then that, in today's society, Higher Education and also professional work have acquired new meanings that directly link them to strategies aimed at minimizing the risks of failure, when this remains a constant threat. University students must redefine their educational level as a possibility of accessing a good job.

In the university system of the Higher School of Economic Sciences it is necessary for its students to learn how to learn; Consequently, the assessment of the merit of their learning must stop being occasional and become a systematic and continuous activity that helps improve quality and promote student performance and the educational process. According to the purpose, this is of immediate order and is directly related to the development of a process or product, in this case to improve the educational quality of the Bachelor's Degree in Economics offered by the Higher School of Economic Sciences.

It is necessary for students to learn to transform performance, it must stop being occasional and become a systematic and continuous activity that helps improve the quality of learning, favor the performance of students, their lifestyles, habitus and, *thus*, perfect the institutional project.

Bourdieu's analysis of the academic field, as well as any other social field, depends on the triad formed by the concepts "field", "capital" and " habitus" (Schirone , 2023, p. 187). Bourdieu proposes that an individual's *habitus* is composed of patterns of social perception of specific classification, which do not function outside of conscious and discursive thought. "The third concept of the triad, *habitus* , is also found in the literature. Some authors have

focused on particular aspects of habitus formation " (Chiappa and Pérez, 2019).

According to this view, the *habitus* is not only the product of the structure's integrative social actions, but it is also the main and underlying generative social action. Following this line of thought, social and cultural inequalities largely condition the results, with factors such as poverty and lack of social support being those that can represent a major indicator, closely related to failure (Vieira and Passos, 2023).

The perspective of active learning leads to the need to move from the typical expository class towards forms of teaching that promote an intervention, not only visibly participatory, but essentially, cognitively active of the person who learns, in the construction and reconstruction of his or her own knowledge. . It is not an easy task, since it demands a different conception of the teacher-student relationship, based on flexible and clear communication that strengthens understanding in at least two senses: from the teacher to the student and vice versa. Here an old teaching problem is revealed at the higher level: the lack of didactic and pedagogical preparation of many teachers who are in front of a group (Zamora and Villalobos, 2018).

The relationships within the school are complex, since they are built on the basis of their individual *habitus* in an institutional framework; These differences not only concern age, sex or education, but also to issues that are less obvious at first glance, but of equal or greater importance: the diversity of goals, interests, ideologies regarding teaching and political preferences. The teacher as an agent, through the teaching processes, guides, directs, facilitates and guides the interaction of students with culturally organized collective knowledge, so that students build their own knowledge.

Research in HEIs is extremely complex, due to the automatic apathy that students show. The teaching of mathematics is based on abstraction, which is the intellectual process through which the particular qualities of various objects are mentally separated to focus only on one or several common characteristics. It is through rigor that this mental operation called simple generalization is achieved and thus mathematics structures knowledge and encourages creativity; It becomes the cornerstone, along with microeconomics and macroeconomics, of the Bachelor's Degree in Economics, therefore, mathematics is generated as one of the essential subjects for the training of every economist.

As a conclusion, for the diagnostic instrument applied to the students of the second year of the degree in Economic Sciences in the subject of Differential and Integral Calculus and, respectively, in each of the items of the applied instrument, the results obtained in the definitive application of said instruments show their veracity and reliability in the research work.

The results obtained through the application of the questionnaires of the population established for the study allowed statistical analysis and, through the Chi-square test, it was verified if there was a correlation between the variables, or if there was a significant difference.

One of the main tasks in guiding the learning of mathematical knowledge in the Higher School of Economic Sciences must be carried out in contextualization, mainly around economic sciences. In the contexts it will be possible to identify students with major problems in order to use theorems, apply algorithms or verify properties or definitions. It is important not to forget that the interaction that occurs between the teacher and the student in educational practice, in this practice we must not forget that it is to achieve the understanding of mathematical thinking, to enable the construction processes of learning.

Finally, throughout the educational process, students manifest learning difficulties in mathematics, especially they present some delay in differential and

integral calculus, which leads to reflecting on extensive figures of factors that intervene in the teaching-learning process that limit performance: the learning activities, the characteristics of what to learn and the nature of the materials.

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