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PSYCHOLOGICAL MECHANISMS OF INTERDISCIPLINARY KNOWLEDGE

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Abstract. The psychological mechanisms of interdisciplinarity are cognitive, affective and behavioral processes that allow people to operate in contexts that require the integration of knowledge and perspectives from multiple fields. These mechanisms involve not only highly complex cognitive processes, such as flexibility and creative thinking, but also affective and ethical dimensions, such as empathy and tolerance of ambiguity, all essential to create innovative syntheses and overcome epistemological barriers between disciplines. Beyond the simple fusion of fields of knowledge, interdisciplinarity involves mental adaptability, continuous learning, and managing complexity, which requires advanced cognitive and socio-emotional skills.

Keywords: psychological mechanisms, cognitive skills, empathy, creative thinking, affective and behavioral processes.

MECANISME PSIHOLOGICE ALE CUNOAȘTERII INTERDISCIPLINARE

Rezumat. Mecanismele psihologice ale interdisciplinarității sunt procese cognitive, afective și comportamentale care permit oamenilor să opereze în contexte care necesită integrarea cunoștințelor și perspectivelor din multiple domenii. Aceste mecanisme implică nu numai procese cognitive extrem de complexe, precum flexibilitatea și gândirea creativă, ci și dimensiuni afective și etice, precum empatia și toleranța la ambiguitate, toate esențiale pentru a crea sinteze inovatoare și a depăși barierele epistemologice dintre discipline. Dincolo de simpla fuziune a unor domenii de cunoaștere, interdisciplinaritatea presupune adaptabilitate mentală, învățare continuă și gestionarea complexității, care necesită abilități cognitive și socio-emoționale avansate.

Cuvinte-cheie: mecanisme psihologice, abilități cognitive, empatie, gândire creativă, procese afective și comportamentale.

I. Introduction

The psychological mechanisms of interdisciplinarity are cognitive, affective and behavioral processes that allow individuals to operate in contexts that require the integration of knowledge and perspectives from multiple fields. These mechanisms involve not only highly complex cognitive processes, such as flexibility and creative thinking, but also affective and ethical dimensions, such as empathy and tolerance of ambiguity, all essential to create innovative syntheses and overcome epistemological barriers between disciplines.

The organization of education based on concrete and generally valid principles remains one of the main areas of interest for specialists, because the identification and

optimization of learning conditions represent important moments in cognitive acquisitions at the school level. For maximum efficiency, the teaching staff must know "where the student starts and where he is going, but also what are the prerequisites, specific to the training, as well as what the student will be able to learn next" [8, 9]. This comes to support continuous, efficient, motivated and scientifically directed study, creating new, attractive situations in which students can collaborate consciously, combining the internal and external factors of the entire educational process.

Gagne' made a statement in 1975, which can be taken over and modeled in this period as well: "stimulating the student's interest in what he does, for the capabilities he thus acquires, here is a task that requires a lot of skill and persuasion from the person who undertakes it; and this is usually the "teacher", who represents the world of experience and wisdom of adults" [8, 9]. Judging in this way, the teacher must have extensive knowledge about the laws of growth and intellectual development of the student, about the particularities of age, so that he can find the optimal period in which he has increased potential, but also how the functional states of the body influence the whole process educational.

So, for years, pedagogues analyze the possibilities and understanding capacities of the studied material according to the development stage of the anatomical systems involved in the learning process.

II. Theoretical foundations of interdisciplinarity

130 years ago, K. D. Uşinski argued, in the book "Man as an object of education", that pedagogical theories must always be combined with the physiological part, because the latter determines the anatomical degree of development of the intellect, so that the two can work perfectly for a maximum performance of the student. He considered that, in the child's mind, interdisciplinary links constitute chains of associations linked together by common links. These ideas about the associationist nature of psychological bonds have formed the basis of many studies of interdisciplinarity in psychology.

This is how the idea arose that the unity of the human body and specific intellectual peculiarities lead to integrated cooperation between homologous disciplines, for which we can say that the problem of interdisciplinary education has a long history, appearing with the introduction of autonomous disciplines. Numerous pedagogues of value, such as J. Locke, J.H. Pestalozzi, C. Uşinski, J. A Comenius, etc. sought arguments in favor of interdisciplinarity, explaining that a link between disciplines leads to a better sedimentation of knowledge than a differentiated theoretical learning. J. A. Comenius highlights the interaction of disciplines as an important condition for the formation of representations about those studied: "Everything that is in dependence, must be taught in the same dependence" [apud 5, p.172].

J. Locke issues the idea of generalized knowledge as a "method of finding the truth" associating it with the need to determine the concrete contents, within which a discipline must be completed with facts and elements from the other disciplines [apud 15, p. 83].

J. H. Pestalozzi developed the idea of reciprocity of disciplinary ties, within the entire educational process. He states that the purpose of instruction is, on the one hand, to differentiate the disciplines of study, and on the other, to "bring together in our consciousness common and related aspects, shedding light on our representations, and then raising them to clear notions" [ibid].

We can also state that the psychological foundations of interdisciplinary connections were established by the doctrine of the academician I.P. Pavlov, who implemented the idea that the physiological mechanism of learning knowledge is formed in the cerebral cortex, based on temporary connections between all forms of reflection of objective reality based on sensations and perceptions. All knowledge is deposited at the level of the temporal cortex, which proves once again that the central nervous system reacts to a stimulus not only depending on its nature, but also on the degree of its preparation by the actions of previous stimuli, but also on their intensity. So, the knowledge previously acquired and stored in the brain acts correlated with the future activities of the students for the analysis of a phenomenon or a newly encountered situation. The success of the formation of skills and abilities for society and life will also depend on the activities in which students participate, on the interconnected events in which they take part, on the need for practical use of the acquired notions, but above all on personal experience and its application at the time of active participation in action. In the formation of this skill, inter-subject relationships have a very important role. As a result of the objective reflection of reality, permanent and some temporary connections are formed in the human brain, which will ensure the unity of human behavior, its dynamism, but also the systematic nature of knowledge about the world, which is shaped according to new influences (fact which determines the need for continuous learning) and which gives relative stability to the functioning of man as a social and biological being. This systematic principle in the whole activity of the brain is found in the property of the formation of conditioned reflexes based on the interaction of external stimuli, specific or general, and is used when we explain human reactions to new stimuli, based on previously acquired notions, or on a reflex basis, to stimuli that have common activity or that have been previously developed [6, 16, 17, 27].

In this context, the formation of interdisciplinary knowledge is based on the information already existing in consciousness, but which is processed, receiving a degree of generality and practical applicability, based on previous experiences, but also on current requirements. Thus, the need for interdisciplinary communication lies in the nature of

thinking, controlled by the objective laws of higher nervous activity (physiological laws), but also by psychological laws [6, 16, 17, 27].

III. Psychological mechanisms and educational implications

L. S. Vâgotsky said that "only education that anticipates development and follows it is beneficial in the child's life", which denotes that schoolchildren will retain only what they understand, and is very clear to them, or what is directly related to their experience. Also, the big mistakes that are made are related to the attempt of "physiological modeling" of children, so that a standardization of the way they learn, of their physical and intellectual development is desired, although they all have different temperaments, the dominant hemispheres are different (and this leads to a bias towards the real or human side), requirements are not correlated with the ability to understand, etc. [22, 30].

The author of the theory Z.P.P. (zone of proximal development), which he defines: "the distance between the level of action development, as determined by independent problem solving, and the level of potential development, as determined by problem solving under the guidance of adults or more capable peers" [31] emphasizes the fact that learning takes place through models and social integration.

He also refers to the current thinking - which allows solving problems independently, and the potential one - which allows solving work tasks only with support, so through collaboration. Within an interdisciplinary learning, the two types of cognitive development are combined so that the concept of "social constructivism" [31] can be the basis for expanding the child's sphere of knowledge. Rational learning comes to support the intuitive one, so that what the child remembers is valid on all levels, something always supported by interdisciplinary teaching.

Unlike I.P. Pavlov and I.Watson, L.S. Vâgotsky supports the idea that mental activity always involves an interaction with the environment, through all the functions of the body, but also based on the genetic inheritance and the behaviors of the ancestors, so that we have a progress related to knowledge and subsequent performances. These were the basis of behaviorist theories and speculations about learning based on the development of human personality [31].

"Interdisciplinary research requires a daily interaction between people from different disciplines...and the exchange in an interactive way of samples, ideas and results" [27], as R. Frank said, which denotes the fact that one is constantly looking for new methods, techniques, and pedagogical ways to capitalize on interdisciplinary emphases in various fields of study. The long history of interdisciplinarity (starting with 1933, specified in the previous sub-chapter) supports the idea that: "we are taught that in order to gain interdisciplinary, we must have interdisciplinary language" [7], so pedagogues allude to

the fact that learning interdisciplinary does not refer to decontextualized knowledge, but to interconnections that leverage this knowledge in practice.

Since human perception is characterized by the diversity of choices, needs and especially specific daily needs, in the conditions of informational "explosion", the individual is put in the position to make the necessity-quality ratio constructive and necessarily necessary for the process of intellectual and educational development.

As a result, more and more emphasis are placed on integrated cognitive fields, for the valorization of the scientific part, with the aim of responding to the urgent needs of the contemporary world, which are complex and integrated.

Interdisciplinarity, likewise, tends to establish an extended conceptual framework, to favor the general perception of situations and problems, and to align various aspects of reality, orienting towards open learning, and a critical analysis of situations encountered or intentionally determined, leading to the formation of an autonomy in thought and action. Thus, all the logical reasonings that appear in the framework of sensory psychic processing: classification, generalization, ordering, problematization, analysis, etc., must take into account a chain between intuition (sensory stage) and logic (thinking), favoring the process of mentalization of Gnosticism (culture), from the perspective of an instinctive, concrete experience, combined with the level of independent use of principles and formal information acquired, leading to an evolution and propagation of the competence to generalize or assign abstract accounts.

As a whole, the thinking process dissociates the knowledge that interests us from the general context, thus extracting only the particularities that are necessary for the activity being carried out. Thus, we are not forced to analyze at the same time all the information that reaches us, because thinking is a form of indirect knowledge, which is realized by chaining social experience with theoretical data. Some psychologists (for example J. Piaget) consider that: "Formal thinking is essentially hypothetico-deductive, deduction does not refer directly to perceived relationships, but to hypothetical statements, i.e. to propositions that formulate hypotheses or establish relationships between data, independent of the character their current deduction consists in linking these assertions together, establishing their necessary consequences, even when their experimental truth does not exceed the possible" [11, p.220].

According to P. Oléron, the intellectual process is characterized by:

- Mental activity on long circuits "par detours".
- The acquisition of models (each individual subject, within an intellectual activity, needs schemes, models or people whose actions are worth following) [17].

The interdisciplinary integration associated with theoretical information means the heterogeneous combination of knowledge and psychological mechanisms for solving problems and unforeseen or emerging situations within an ongoing learning activity, using

to the same extent what we know and what is innovative or acquired. By selecting the ideas that have common points of convergence, for the valorization and sustainable development of learning, the necessity of connecting school subjects is seen, as well as the combination of science with a creative reason. Associative thinking elaborates that individual cognitive development follows general psychological problem-solving processes. It includes analysis, general characterization, selection, scheme of ideas, scheme of solutions, implementation and evaluation. When a learning situation is analyzed from distinct points of view, on the basis of an associated thinking, or on the basis of a collective thinking, in which the members of a specially organized group participate, the solution is lasting, and on several levels. Members of the interdisciplinary group maintain the competence of inclusion ("including access, transformation and use" [17]) towards external notions, "the open flow of knowledge of promotion and transfer of high efficiency, stimulation of creativity, and integration of ideas of subjects" [17].

After a long analysis, the pro-psychological arguments of interdisciplinarity can be structured on levels:

- the level of evolution of the learning process (the combination of theoretical and practical models);
- the interrelational level (which refers to all psychological processes, mechanisms and activities);
- the level of activity organization and results analysis (refers to the results obtained in fields related to psychology).
- Therefore, man as a social being cannot be analyzed in isolation, he must be seen as a whole, from the perspective of all the factors that contribute to his development.
- hereditary, genetic basis - mental and physical endowment;
- environmental factors - related to the training of the individual as a member of the society in which he lives;
- educational factors - which contribute to intellectual and personality formation.

They shed light on the integrative vision of the child's personality, in a framework of broad and variably weighted interactions. Although we say that everyone's personality is unique and unitary, it is the result of the integration, intensity and connection of various types of interactions that produce direct or indirect effects, positive or not, on the personality structures and on the optimizing Self [32]. In this way, the personality in all its aspects (temperament, character, skills, creativity, originality, motivation) is transformed into a continuously evolving system, becoming dynamic and leading either to a mobilization and self-determination, or to an inhibition of cognitive processes, depending on the parameters that act voluntarily or not, directly or indirectly.

The psychological theories of learning support the fact that it is achieved according to the desire, necessity, environmental conditions, related resources or even the empathy of the teaching staff involved in this process.

The theoretical-applicative value of an interdisciplinary educational process must take into account the theoretical-applicative models related to the intellectual level of each individual. The particularities of each come to support the interdisciplinary dynamics, largely focused on reconsidering the relationship between the actors of the learning process, the material and procedural resources, as well as the anticipated finality of interdisciplinarity [32]. Expressing this in other words, the individual psychic potential (aptitude, motivational, volitional, cognitive) leads to a deep analysis of the actions of interdisciplinarity on each child.

The integrative part of the interdisciplinary way of education favors explanatory and practical models of learning, throughout life, starting from the elements of perception, then the part of cognition and systematization, then contributing to the most abstract scientific themes. Memorization mechanisms can have a maximum yield if they are the result of practical actions or that can have later applicability, so that the learning dimension requires multiple resources and is realized through interrelationships, interactions, and multilateral universal interdeterminations.

The driving forces of the human personality are coordinated by an affective and emotional dynamic, which exceeds the linear boundaries of a discipline, and the motivational side highlights his desire to overcome the separatist part of some scientific fields to become complete as a social and independent being.

Man is a being capable of performance and competition, whether within a group or family plan, whether in a particular field or within a structure, so that school success generally depends on his willingness to make the most of all opportunities, to have determination, and to use their qualities.

The psychological purpose of an interdisciplinary approach at school level can:

- determine conceptual and methodological changes in some educational disciplines;
- leads to the collaboration of some scientific fields to approach a theme;
- facilitate the foray into reality by teaching some topics that have direct applicability;
- reconsider the needs of students and the folding of these usual needs in order to model them as active individuals of society;
- form transversal and transferable skills, values and attitudes useful in their future as adults involved in real life;
- leads to a collaboration of any kind with people inside and outside the school, for their own interests;
- realize a sedimented learning, and an improvement of the unitary and integrated way of analyzing a scientific situation or topic.

We can say that an educational system is interdisciplinary if:

- there is a continuous interaction of the fields of study;
- the organization of the teaching-learning-evaluation process is carried out by resorting to previous notions specific to several disciplines, or by means of connections and analogies determined by the collaboration of teaching staff;
- the way of designing school and extracurricular activities in order to overcome disciplinary barriers [32].

Over time, interdisciplinarity becomes a constitutive principle of education, from a regulative one, which emphasizes knowledge at the level of integrability. This fact is demonstrated by the impossibility of solving complex problems in a monodisciplinary way, leading to integrated treatment and the formation of interdisciplinary knowledge skills.

From an axiological point of view, Liviu Antonese, referring to the process of behavioral transformation, specifies that it is "the highest level of interdisciplinarity that can be reached in education" [2]. The creative capacity of the teaching staff, as well as a flexible thinking, facilitates the systematization of the contents in such a way that the students understand and assimilate the assimilated elements.

"Interdisciplinary teaching and learning is maximized" [2] when the specialists of the involved fields work together, for a common goal, facilitating students' constitution of new doctrines and discovering the binder that allows deep understanding contrary to monodisciplinary study.

Therefore, it is urgently necessary to train and develop interdisciplinary skills, based on the initial model of learning, but aimed at the formation of the integrated culture of the individual, that unique model of "learning for life":

- learn to learn and consolidate;
- learning to apply and develop what you already know;
- learning to collaborate and work in a team;
- to develop empathy and social fraternity.

Taking into account all this, the curriculum must be modified, in the sense of a psychocentric perspective, designing activities that develop permanent education, in all its forms: formal, informal and non-formal, but also skills directed towards the practical side.

In his article: "Interdisciplinary Approach-Advantages, Disadvantages, and the Future Benefits of Interdisciplinary Studies", Casey Jones talks about the spread of this way of teaching-learning-assessment in modern education. The benefits of this type of study extend throughout life, discovering ideas, methods and techniques applicable in their future. The improvement of communication skills, the progress of understanding the theoretical side of various subjects through their use in reality or within other disciplines, the research of some phenomena from several points of view, lead to the evolution of the cognitive side of the individual. However, there are also disadvantages, such as "the

confusion of integration and the preparation of the curriculum, which consumes time", which have decreased in recent times [13]. The focus is especially on innovation, this being "one of the potential benefits of interdisciplinary teams, groups are also often less creative than individuals" [28].

Interdisciplinary approaches can be classified from three perspectives:

- the perspective of didactic principles;
- the perspective of learning contents;
- the perspective of teaching conditions.

A complex approach to interdisciplinarity from the perspective of didactic principles was developed by A. I. Guriev (2002):

- "In a broad sense, interdisciplinarity is a fundamental principle of didactics that favors the coordination and systematization of learning contents, the training of students in general knowledge and skills as well as the skills to acquire them in various types of activities, being carried out in the context of the function system norms and general methods of knowledge of nature with the common contribution of teachers in different school subjects".
- "In the narrow sense, interdisciplinarity represents the didactic principle that performs the functions of integration and differentiation in the didactic process for a specific school discipline and presents itself as a means of reuniting disciplinary knowledge in a unitary system that widens the limits of the respective discipline without damaging its specificity" [34, p. 23-24].

Guriev specifies that the notion of interdisciplinarity implies a systemic approach, because its normative functions make up a dynamic management system for the development of students' cognitive thinking style, in the sense of an integrative worldview, based on the fundamental integration from a methodological perspective of educational disciplines and the scientific ones, which allow considering all aspects of the object of study in connection with the surrounding world. This feature of interdisciplinarity, he mentions, refers first to the secondary school level, then high school and higher [34, p. 12].

After numerous studies, pedagogues have concluded that there is a need for some well-defined principles to be the basis of interdisciplinary education:

- The principle of structuring and extension in solving problem situations - we need lessons in which the student's curiosity is stimulated [6, 16, 17, 27].
- The principle of specialization and the diversification of actions "guarantee from the inside the democratic nature of education in relation to the particularities, level of development, skills, interests and options of the personality".
- The principle of collaboration within the group or between disciple and mentor – the distribution of work tasks, as well as the norm to be solved (solved, demonstrated, clarified, clarified), to the involved members.

- The principle of self-evaluation and guided evaluation - researchers claim that lately schoolchildren are more interested in the social impact that an objective evaluation can have, but also the social value that a "product" has, or an individual discovery or group. Self-evaluation is a way of self-knowledge, based on one's own experience, through which we encourage educational performance, cultivating self-confidence, and increasing motivation; based on previously well-determined criteria (sometimes from both parties) [6, 16, 17, 27].

As a didactic doctrine, interdisciplinarity acts separately, favoring the achievement of other principles: the conscious and active acquisition of knowledge; of intuition; of the individualization and accessibility of learning; of connecting theory with practice; of the fundamental acquisition of knowledge, skills and abilities; of systematization and continuity in learning.

In the view of researchers Baleaikina V. and Maskaeva T., the principle of interdisciplinarity interrelates with other general didactic principles, as follows [33]:

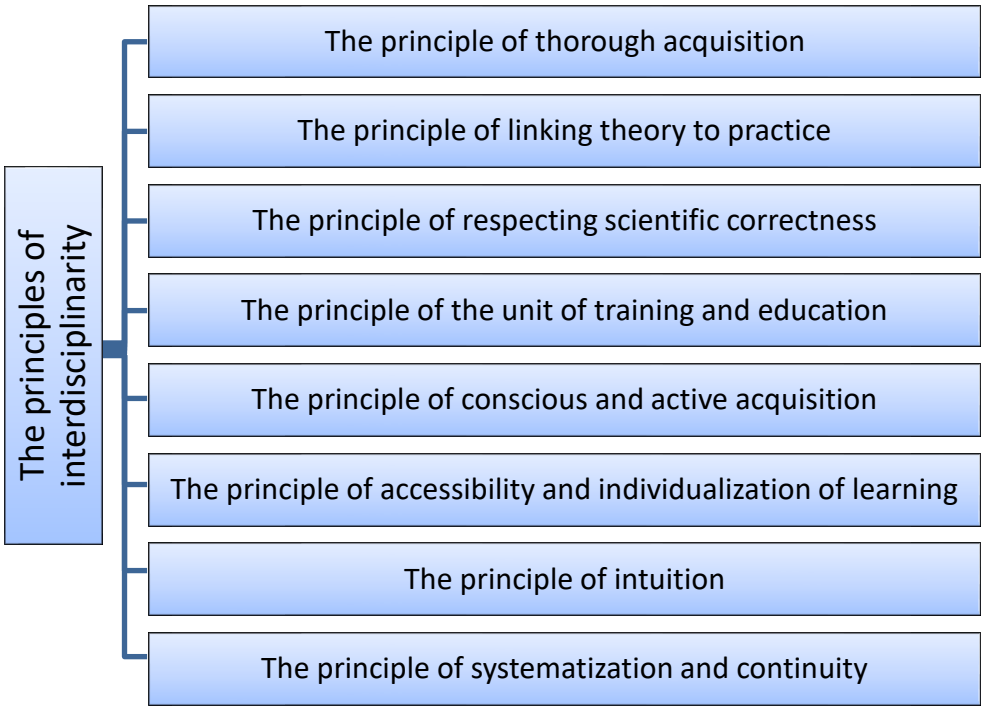

Figure 1. The interrelationship of the interdisciplinarity principle with other general didactic principles

Overall, two forms of interrelationship of interdisciplinarity with general didactic principles are highlighted:

- "Interdisciplinarity as a way of achieving each general principle – didactic".
- Interdisciplinarity as an independent principle of the construction of didactic systems of a local nature within the disciplinary training system; in this sense, having a constructive role, influencing the approaches of education programs, the structure of learning contents and textbooks, but also the selection of didactic strategies" [36].

From the perspective of teaching conditions, the interdisciplinary approaches are diverse, for example:

- "The interdisciplinary connections reflect, within a disciplinary course, with its own logical structure, notions specific to other educational disciplines".
- "The interdisciplinary connections reflect in the content of the educational disciplines the dialectical ones that function objectively in nature and are studied by contemporary sciences" [idem].
- N. M. Cerches-Zade presents these interdisciplinary relationships as a necessary condition for ensuring the systemic nature of the didactic process and the effective management of pedagogical time.
- F. P. Socolova highlights these interdisciplinary cohesions as necessary conditions for increasing the efficiency of the entire educational process.
- V. N. Fedorova and D. M. Kiriușckin treat them as didactic conditions that ensure the successive reflection in the contents of real subjects of the objective connections that work in nature [ibidem].

A complex definition of all interdisciplinary cohesions is given by L. A. Dolgova, who analyzes them from the perspective of the functions of interdisciplinarity in the educational process: "interdisciplinary links constitute a pedagogical category for designating synthesizing and integrative relationships between objects, phenomena and processes of objective reality, forms and methods the instructive-educational process, which performs the instructive, developmental and educational functions in their organic unit" [35, p.9].

In this context, L. A. Dolgova states the following functions of interdisciplinary links in the instructional-educational process:

- The instructive function achieves the formation of a unitary system of knowledge.
- The educational function refers to the fact that these connections lead to a significant increase in school performance by simply favoring the formation of an integrative vision of the world, as well as the shaping of an integral personality.
- The developmental function aims at the impact on the development of autonomy in learning, favoring the degree of independence, cognitive activism and student interests [35, p.9].

V. M. Baleaikina highlights the constructive function, which resides in "the improvement of educational contents and strategies in the context of the cooperation of teachers from different disciplines and the exploitation of complex forms of curricular and extracurricular activities" [33].

For a maximum efficiency of the entire educational act, it is important to know all the categories and types of interdisciplinary connections within a didactic process as well as a way of developing a consensus around the concept of interdisciplinarity, thus allowing

a thorough and deep exploration of thinking and practices that cross disciplines. By operating with a common definition, it allows teachers to distinguish interdisciplinary practice from others, showing how the former makes a valuable and unique contribution to the growth of the student's personality and confidence. A common definition also helps evaluators to formulate and carry out more meaningful objective evaluations of program performance (e.g. curriculum design and learning outcomes) by discovering a scale of fair measurements of progress and school performance.

So, the orientation of the problems, as well as their topicality, shapes the selection of disciplines involved in interdisciplinary units, for a good multidirectional approach, with a well-defined purpose of augmentation and discovery of unique and at the same time generally valid solutions. Since a large part of the causal force behind all these changes is human behavior, the engagement of related disciplines must be done in order to remove methodological, terminological and applicational bottlenecks. As a result, it tends towards a decompartmentalization of education, by linking it to reality, by creating integrated programs and contents, based on a didactic logic that reflects the logic of science [3].

It is considered that the process of assimilation of interdisciplinary knowledge must be done in correlation with its use, in the sense that there must be a biunivocal relationship between acquisition and application, both being part of a single educational process, intended to form the educated, and which requires a good selection of the information received, by any means of transmission. Most researchers state that a student who has practical skills, and the ability to combine them with the theoretical, has a very well developed adaptation to the environment and society, can integrate easily, and can relate both to other colleagues and to teachers (which denotes the combination of intelligence with cleverness and natural instinctive skills). At this level of mental activity, inter-system (interdisciplinary) associations allow the mind to reflect on the unity and opposition of various phenomena in their versatility, generating relationships between them, continuously shaping the mind for the integrity of the individual but also for the formation of a vision of the world. All this must be built within the teacher-student partnership, therefore, within the learning of single disciplines a basis is provided for the formation of a dialectical understanding of the objects or the theories generated by them, while the inter-systemic associations are much more stable, although they have a degree of dynamism coordinated by the teacher's level of training (theoretical and pedagogical), but also by inciting the learner's curiosity. The emphasis must always be on the process of forming associations and the ability of students to reconstruct facts or theories already learned, or analyze new ones based on what they previously knew, as well as on the psychological peculiarity of the transition from one subject to another, overcoming personal limits, fictitious or real. Thus, the implementation of interdisciplinary connections contributes to a more effective development of advanced reflection, which in turn stimulates the

development of skills to draw on a set of interrelated knowledge. Objects or phenomena that are interconnected in nature are also linked in human memory. The ability of memory to retain new things on the basis of previously known ones should not be limited only to intrasubject connections, as is often the case in practice, because, together with intrasubjective interdisciplinary connections, it is possible to look at the subject from different sides and remember the entire phenomenon of the object or reality. On this basis, it can be concluded that mastering the technique of transferring knowledge of a subject introduces students to an analytical-synthetic activity more focused on solving certain tasks, increases the activity of independent work methods, ensures a better organization of mental activity and in the the latter develops a logical sequence in solving general and particular problems [6, 16, 17, 27].

Therefore, interdisciplinary communication as a mental activity can be seen and understood as a system of synthesis combined with emotional perception related to the importance of the subject for the individual, in solving cognitive tasks. Every teacher must take into account the reflexive-associative nature of thinking, which will lead to the formation of the best learning system in students based on increasing interdisciplinary interactions.

IV. Conclusions

Interdisciplinarity is an essential approach in modern education, providing the necessary tools for integrating knowledge and developing transversal skills that facilitate students' adaptation to the demands of contemporary society.

Through well-structured interdisciplinary connections, barriers between disciplines can be overcome, promoting learning centered on applicability and the real needs of students. Consequently, this enhances students' ability to apply theoretical knowledge to real-life situations, fostering practical problem-solving and the development of skills relevant to daily life and future professional careers.

The psychological mechanisms involved in this integration support the development of cognitive flexibility and socio-emotional abilities, particularly empathy and critical thinking, contributing to the formation of autonomous personalities capable of addressing the challenges of a constantly changing world.

By leveraging interdisciplinarity, a solid bridge is created between scientific research and education. This promotes dynamic learning based on the practical application of knowledge and supports innovation in the educational process.

In conclusion, the successful implementation of interdisciplinarity in the educational process depends on the collaboration among teachers, the development of an integrative curriculum, and the application of innovative teaching methods. This approach not only

improves academic performance but also prepares students for harmonious integration into society and lifelong learning.

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