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Didactic strategies with an interdisciplinary character to ensure equal opportunities regarding access to education

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Abstract. The idea of ensuring equal opportunities for all means creating the necessary context so that both students capable of performing, as well as those belonging to disadvantaged groups, will gradually benefit from the same starting line in the competition between individuals. Didactic strategies with an interdisciplinary character can contribute to the success of the educational process. With regard to access to education in the school environment, teachers need to be aware of the importance of combating discriminatory attitudes, as it is well known that the school must be tolerant and provide equal opportunities for education for all students. Belonging to the Roma ethnic group, along with poverty and residency in rural areas, is often correlated with low educational performance, poor participation in education, and all this leads to the phenomenon of school dropout, which, unfortunately, we also face at the county level.

Keywords: didactic strategies, equal opportunities, access to education

Motto: "We believe and declare that every child has the fundamental right to education. Every child must be given the chance to reach a certain level and to be able to maintain an acceptable level of learning. ... educational systems should be designed and educational programs implemented in such a way as to take into account the great diversity of children." (Declaration of Salamanca, Spain, 1994).

The above motto is part of the 1994 Salamanca Declaration, where "education for all" was defined as "access to education and its quality for all children", the basic idea being to ensure the possibilities of participation in education of to all the children.

So, schools must include in the educational process all children, whether they are disabled or gifted, Roma children or children from other disadvantaged areas or groups. With regard to access to education in the school environment, teachers need to be aware of the importance of



combating discriminatory attitudes, as it is well known that the school must be tolerant and provide equal opportunities for education for all students.

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The idea of ensuring equal opportunities for all means creating the necessary context so that both students capable of performing, as well as those belonging to disadvantaged groups, will gradually benefit from the same starting line in the competition between individuals. Didactic strategies with an interdisciplinary character can contribute to the success of the educational process.

„School didactics represents that branch of education sciences that studies and scientifically bases the analysis, design, implementation and evaluation of teaching and learning as a process of training/self-training” (Bocoş, M., Jucan, D., 2017b, pp. 16-18)

Among the concerns of modern didactics are new themes, which require interdisciplinary approaches. The authors emphasize the role of action in acquiring new acquisitions through one's own efforts.

Bocoş M. states that in modern didactics, the vision has changed "teaching is no longer conceived as an activity of communication, of transmitting knowledge, but as a problem of organization and management of learning processes and skills training". (Bocoş, M., Jucan, D., 2017b, p. 35). Thus, we can conclude that teaching involves systematic actions and operations undertaken in order to organize, conduct and optimally guide the act of learning carried out by students. Practically, teaching "makes sense only to the extent that it determines a corresponding learning effort on the part of the students, i.e. triggers and maintains the students' learning activity". (Bocoş, Jucan, p. 36)

Learning styles describe the way of approaching study tasks, these being reported according to certain criteria: the context in which learning occurs, the sensory ways of approaching the tasks, the preferred way of processing stimuli. (Frumos, F., 2015) The learning style is highlighted in any activity that involves the learning strategy. The author classifies learning styles according to the dimension of information processing (deductive, rigorous, artificial, convergent, formally critical, synthetic, inductive, expansive, natural, divergent, informal) and the dimension of information representation (verbal, visual, auditory, kinesthetic representation).

David Kolb presents a processual evolution, in four stages, of learning: concrete experience (learning from experience), abstract conceptualization (analytical thinking necessary for understanding), active experimentation (trials/errors) and reflective observation (considering multiple potential alternatives, before proceeding).

The simplest and most widespread way to identify different learning styles is based on the senses. Currently called the VAK model (visual, auditory, kinesthetic learning styles), this framework describes the styles of those who learn as visual, auditory or kinesthetic. Those with a visual learning style process information in visual form most efficiently; those with an auditory learning style understand best by listening and those with a kinesthetic/tactile learning style learn best through touch and movement. A study by Specific Diagnostic Studies showed that 29% of all primary and secondary school students have a visual learning style, 34% have an auditory learning style and 37% have a kinesthetic/tactile learning style (Miller, P., 2001).



Another method to distinguish individual learning styles is the one that takes into account the cerebral hemispheres. In general, those with a global style "perceive things as a whole, make broad distinctions between concepts, are people-oriented, and learn in a social context" (p. 3). Those with an analytical learning style, on the other hand, perceive things by their parts rather than as a whole and impose a certain structure or restrictions on information and concepts. (Miller, M., 2001, p. 3).

The curriculum involves a holistic view of the student's experiences, an analysis of how they interact with the world, a process of researching the self and the world, as well as the opinions resulting from such an activity.

The concept of curriculum has today become one of the most frequently used in educational theory and practice, especially in English language literature.

The awareness of the importance of the educational partnership of the school with the different community institutions is reflected in the pedagogical literature by circulating the concept of informal curriculum, which aims at the learning opportunities offered by the mass media, theater, museums, church, etc. (Manolescu, M., Potolea, D., 2006, p. 9).

N. Manolescu and D. Potolea (2006) consider the curriculum as "the structured set of teaching and learning experiences (objectives, contents, didactic material, teaching-learning-evaluation activities) planned, offered under the guidance of an educational institution (inside and outside it) in order to achieve the predetermined objectives" (ibidem). From the perspective of D. Potolea and M. Manolescu (2006), "the school curriculum can be analyzed and interpreted from three perspectives:

- the procedural perspective on the curriculum,
- the structural perspective and
- the perspective of curricular products / documents.

The procedural perspective of school curriculum analysis aims:

- ❖ *curriculum design;*
- ❖ *curriculum implementation;*
- ❖ *the assessment of the way in which the school curriculum was implemented.*

The school curriculum exists through the three processes that represent a unitary whole. Neither can be suspended. They must be integrated into a comprehensive concept of the curriculum" (Potolea, D., Manolescu, M., 2006, p. 29).

From this perspective, we will focus on the analysis of school curriculum design models, established by educational practice:

♣ **The monodisciplinary model:** a curriculum based on subjects designed separately at the level of the curriculum respects the logic of the traditional organization of instruction on academically recognized fields of scientific knowledge, a logic of monodisciplinary that no longer satisfies, in principle, neither the demands of the psychology of learning nor the realities of epistemology modern and postmodern;

♣ **The interdisciplinary, multidisciplinary and transdisciplinary model:** curriculum based on educational units designed in an interdisciplinary, multidisciplinary and transdisciplinary sense - meets the requirements formulated by the psychology of learning and modern and postmodern epistemology, valuing the fields of knowledge (language and literature, natural sciences, social sciences, economic), big current topics (man, nature, democracy, technology), advanced pedagogical innovations in the development of training contents (curricular areas,



integrated programs, alternative textbooks). In order to prepare children to successfully face the challenges of the contemporary world, the school must focus on training them in transversal and transferable skills, attitudes.

The interdisciplinary approach involves the development of the ability to transfer quickly and efficiently, to synthesize and apply knowledge, skills, competences accumulated by studying various disciplines in order to solve some problem situations. In this sense, L. Ciolan states: "Interdisciplinarity is a form of cooperation between different scientific disciplines. The basic idea of interdisciplinarity consists in the fact that, on the one hand, the conceptual and methodological devices of several disciplines are used in interconnection, to examine a theme or a problem but, above all, to develop integrated, transversal, key skills and interdisciplinary".

A method that can be successfully applied in any type of lesson is the one known in international specialized literature under the name "Graffiti model" (Wilson 2002). The method can be compared to the active-participative methods from Romanian didactic works, such as "Gallery tour" (when all groups prepare posters on the same theme), "Carousel" (when each group has a different theme for poster development). (Steele, Meredith, Temple 1998, p. 45; Păcurari 2003, p. 47).

The research:

1. Research objectives:

- 1.1. Assessing the level of development of geometry problem-solving skills of 7th grade students from a socially and educationally vulnerable community before participating in a 6-month remedial learning program
- 1.2. Analysis of the differences between the level of development of geometry problem-solving skills of 7th grade students from a socially and educationally vulnerable community, after participating in a remedial learning program for the duration of 6 months

2. Research hypothesis

It is assumed, hypothesized differences in the level of development of geometry problem-solving skills of 7th grade students from a socially and educationally disadvantaged community following a 6-month remedial learning program.

3. Research methods - The psycho-pedagogical experiment

In order to carry out a diagnosis of the level of achievement of the specific skills in the school curriculum, an initial evaluation test for the remedial program was developed, with evaluation tasks to verify the specific skills previously acquired, especially in the plane geometry area; thus, each work task targeted at most one specific competency. Through the initial assessment, the level of structuring of previously acquired skills is verified and the types of remedial activities that must be planned are determined.

After completing the 6-month remedial program, another test of the acquired skills was carried out in order to verify the research hypothesis and analyze the differences between the level of skill development in the field of plane geometry.



4. The experimental batch

It was represented by 10 students from the 7th grade, from Secondary School No. 1, Fundeni, Călărași county, Romania, from a socially and educationally vulnerable community, also having specific learning disorders.

5. The research results

Initial assessment results:

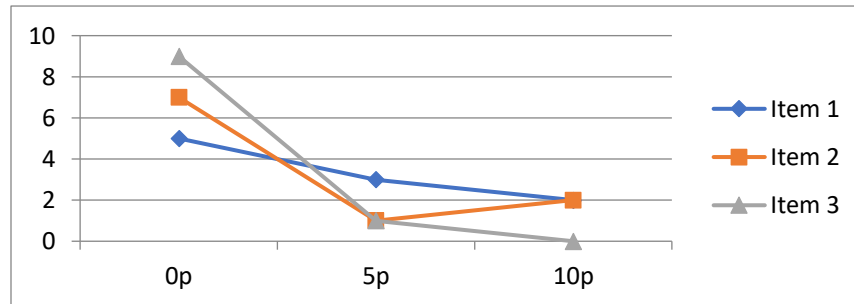


Fig. no. 1: Initial assessment results

- **Brief presentation of the experimental psycho-pedagogical program**

The study of geometry, when moving from the 6th grade to the 7th grade, is characterized by the transition from the intuitive study of the mathematical characteristics of geometric figures, to their qualitative study, based on demonstration. The training of basic skills to use simple reasoning to prove the congruence of triangles and the properties of isosceles/equilateral/right triangles can be combined with the training of skills to prove the properties of quadrilaterals.

In order to carry out an analysis of the differences between the level of development of geometry problem-solving skills of 7th grade students from a socially and educationally vulnerable community, after participating in a remedial learning program on duration of 6 months, a test was also carried out after completing the remedial program, also organized on 3 items, which target approximately the same specific skills and have approximately the same evaluation objectives, but the statements and organization of the solutions differ, so that the comparative analysis can be carried out of the students' results obtained initially and after the program.

- **The results obtained in the final assessment tests**

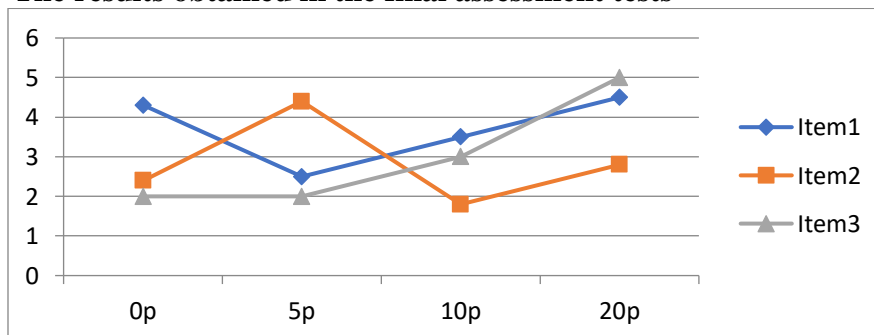


Fig. no. 2. Analysis graphs of the results obtained by the students at the final assessment, after completing the 6-month remedial program, for each item and targeted competence



Conclusions

In an attempt to synthesize the theoretical orientations, it can be appreciated that the integrated approach to the curriculum based on a transdisciplinary perspective facilitates the transition from traditional strategic models, which sometimes limit the achievement of knowledge, to knowledge within a research that gives students the opportunity to exploit in depth new fields, to discover new meanings and meanings, to participate actively in the learning process, to accumulate knowledge independently, to make connections between school and life and to develop key, high-level skills.

These refer to the ability to think critically and creatively, to solve problems, to communicate effectively, to work in a team, to have mathematical and technological literacy and to learn throughout life.

Transdisciplinarity represents the highest and most complex degree of curriculum integration, often going as far as fusion, which leads to the emergence of new fields of investigation, to integrated projects or research programs that value a new paradigm. From this point of view, compliance with the school curriculum is mandatory, but not in a cumbersome, overloaded manner or in a form not adapted to the students' level of understanding. The teacher must remember that students remember approximately 10% of what they hear, 20% of what they see, 40% of what they discuss and 90% of what they do. Also, teachers must be aware that they will face an already constructed experimental culture, which will raise obstacles in the accumulation of a genuine, scientifically grounded.

On the other hand, the teacher must be aware that the school discipline is not confused with the respective science. The didactic explanation must be reduced to a formal, coherent framework, which reveals the common points of view, the widely embraced theories, adapted to the students' level of understanding through specific procedures. Didactic transposition occurs when scholarly knowledge is transformed into school knowledge. This is done in two stages: at the level of the didactic programs and manuals and at the class level, by each individual teacher.

The transdisciplinary approach of the curriculum aims at reconfiguring the information transmitted to students and training professional skills.

In conclusion, we must always keep in mind the fact that the job of a teacher is not easy at all, but if there is desire and vocation, it can be done. The teacher must be aware of the role he has, the fact that a well-chosen didactic strategy can solve many problems; the teacher must follow the transition from broad policies to direct pedagogical measure, from concepts to action.

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