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DEVELOPMENT OF THE COMPETENCE CONCEPT: SITUATIONAL, STRUCTURAL AND ACTIONAL APPROACH

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This article is aimed at developing, conceptualizing, and deepening theoretical and methodological approaches with reference to the concept of "educational curriculum". The emphasis is on the current approach to the curriculum: concept, structure, purpose, content, process, product; conceptualizing the curriculum from a situational, action-oriented and dynamic perspective. Defining the concept of "competence" as a multidimensional construct, consisting of a set of components, which are constantly interconnected. The taxonomy of competences in this context is viewed as a methodological mechanism for designing different categories of competences in their interaction. Examples of interconnections and interrelations between different categories of competences in school subjects are given.

Keywords: *curriculum, key competences, transversal competences, specific competences, units of competences, taxonomy of competences.*

DEZVOLTAREA CONCEPTULUI DE COMPETENȚĂ: ABORDARE SITUAȚIONALĂ, STRUCTURALĂ ȘI ACȚIONALĂ

Articolul dat este orientat spre dezvoltarea, conceptualizarea, aprofundarea unor demersuri teoretice și metodologice cu referire la conceptul de „curriculum educațional". Accentul se pune pe abordarea actuală a curriculumului: concept, structură, finalitate, conținut, proces, produs; conceptualizarea curriculumului din perspectiva situațională acțională și dinamică. Definirea conceptului de „competență" ca un construct multidimensional, constituit dintr-un ansamblu de componente, care se află în permanență interconexiune. Taxonomia competențelor în acest context este privită ca un mecanism metodologic de proiectare a diferitor categorii de competențe în interacțiunea sa. Se aduc exemple de interconexiuni și interrelații între diferite categorii de competențe la disciplinele școlare.

Cuvinte-cheie: *curriculum, competențe-cheie, competențe transversale, competențe specifice, unități de competențe, taxonomia competențelor.*

Introduction

The issue of competences is currently one of the most debated and controversial. As Stanciu Mihai stated, „The logic of competences has invaded the field of education for almost two decades and is part of the critical movement of the dominant conception according to which „education/training mainly aims at transmitting formalized knowledge" [*Apud* 7, p. 123].

In fact, all debates in this regard focus on the dimension of the transition from knowledge to actions, from "knowing" to "knowing how to do", "knowing how to be". Competence-centered approaches were born in the professional and linguistic fields. In the first case, as a reaction to the rational organization of work and ensuring its greater profitability. In the second case, as a need to make language learning more efficient (60s-70s, 20th cent.). Later, the concept of "competence" is "transferred" to other fields: management, education (70s-90s, 20th cent.), etc. In the last two decades in education, competence is approached as the end of the educational process and a component part of the school/university curriculum. Many authors state that this period is also characterized by transition. Defining the concept of competence is a difficult task, and in the view of some authors even impossible, because it is a "vague concept" (Ruano-Bordalau, 1998). As a rule, definitions of the concept of competence contain various dimensions/substances and may have different theoretical positions depending on the context addressed, the field of knowledge, the point of view of the competence conceptor. At the same time, for any field of activity, competence represents the condition and indicator of performance and efficiency.

Therefore, competences represent a transferable and multifunctional package of knowledge, capacities,

skills, abilities, values and attitudes that allows the individual to achieve professional fulfillment and development, social inclusion and professional insertion in the respective field. Competence is born and formed at the confluence of the meanings given by the verbs *to know, to know how to do, to know how to be, to know how to coexist, to know how to become,* so it is not the result of educational action only in the cognitive field, but also relates to the affective-attitudinal one from the “pedagogy of objectives” to the “pedagogy of competences”. At the same time, there should be mentioned the existence of several debatable problems on the “competences” dimension: the definition of competence, the structure of competence, the operationalization of competence, the gradualness of competence manifestation, the design of competences, the formation and evaluation of competences, the interaction of different categories and types of competences, etc. [3].

Situational, Actional and Structural Approach to Competence

The situational approach to the concept of competence focuses on the triple logic of action in the situation, of curricular logic and of learning logic. The situational approach involves a set of situations prescribed in the training profile/field of knowledge and which have a complex and multidisciplinary character [*Apud* 7].

Situations represent the “source and criterion” of competences. Competence represents the result of the interaction between person-action-situation. Treating a competence from a situational perspective also relates to curricular logic (competence as a purpose and form of manifestation) and is a curricular tool intended to ensure the learning process (learning logic).

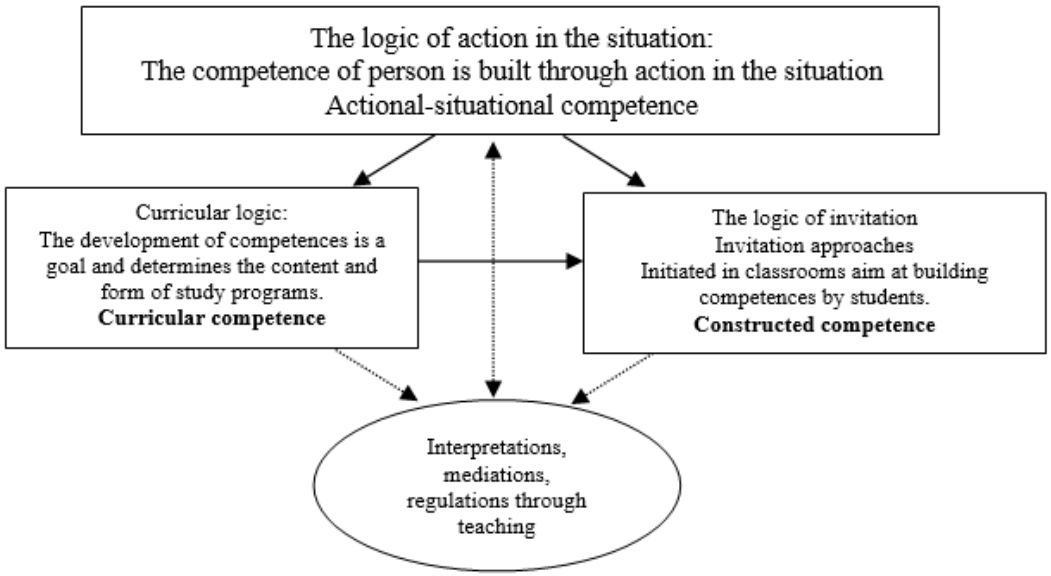

Fig. 1. Concept of Competence in Logical Triple [3]

In other words, this process is organized around four frames: a situational frame, an action frame, a resource frame, and an evaluation frame [*Apud* 7].

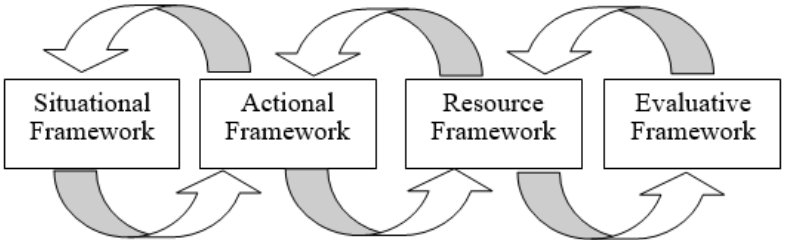

Fig. 2. Interdependence Between 4 Frameworks: *Situational, Actional, Resource, Evaluative* [3]

This approach to the situation must lead to the formation of an individual who acts competently. Competent action is based on several elements: understanding of the situation; perception of the goals of own action; has the effect of dealing with the situation; *sa possibilité d’entrer dans la situation avec ce qu’elle*

est et son déjà-là; the ability to use a plurality of resources, to adapt them and to build new resources; the ability to reflect on his/her action, to validate and conceptualize it; the ability to adapt all the constructions resulting from a situation or a class of situations [5, p. 22-23].

Experience *in action* is the engine of a person's development and all its dimensions" [4]. A competence "is always built through a learning "in the situation" which implies the appropriation not only of knowledge and abilities *(savoir-faire)*, but also of the modes of interaction and of the tools valued in the context of the problem" [1]. The implementation of a competence is possible only if the declarative, procedural *(savoirs-faire)* and conditional knowledge *are organized hierarchically and integrated* in a synergistic manner in various practical situations. The situational approach largely determines the structure of the competence and the forms of its manifestation. There are several approaches to the structure of competences. The structure of the competence can be established in relation to one or another definition/approach of this phenomenon, but also to the degree of complexity, and the forms of manifestation.

Therefore, from the definition of competence as "integration of knowledge, capabilities, attitudes...", we can deduce the triadic structure of competence: knowledge, capabilities/skills, attitudes/values in their integrity.

Based on the way competence is manifested as an outcome, it can include the following components: action/activity represented by a verb; indicator of the outcome time (knowledge, application, integration/transfer); conditional aspect of the outcome (domain, discipline, subject); general indicator regarding the level of achievement of the action or product in the given learning context.

Table 1. Structure of Competence According to Purpose

No. Crt.	Verb: Action/ Activity	Domain/Discipline/ Subject	Level/Modality/ Norm	Context
1.	Usage	primary historical sources	by applying specific methodology	To solve certain problems of interpreting the historical phenomenon

A similar approach to the structure of competences is taken up in the PISA documents.

Fig. 3. Structure of Competence in Dynamics (PISA) [3]

The advantages of this approach are the following: *action – is the key element of competence; achieving the fullness of knowledge, skills, attitudes in dynamics and in stages; correlating global competences with disciplinary ones; focusing on local, global and intercultural issues.*

The National Curriculum Reference Framework provides the following variant of the competence structure (*see* Table 2).

Table 2. Structure of Competence Specific to School Subject

Abilities	Knowledge	Values, Attitudes Involved
Fundamental abilities expressed in action (through verbs in the long infinitive)	Knowledge/domains of knowledge/strategies and technologies specific to the domain	Values/attitudes/contexts for achieving competence

Justification	to an approach or result obtained or given, resorting to arguments,	supporting own ideas and opinions.
Resolution	to problems in real and/or modeled situations, integrating mathematical acquisitions acquired with those from other domains	demonstrating critical thinking and creativity.

At the same time, it is important to establish the “place” of competence units (pre-activities) in the structure of competences (the dynamics of competence formation).

Pre-acquisition (pre requis) (competence unit) answers the question: *What should the individual already know how to do in order to acquire a new competence?*

Pre-acquisition (competence unit) means the previous knowledge that the learner must possess in order to approach a new learning with good chances of success [6, p. 77].

Pre-acquisitions (competence units) are constituents of competences. They facilitate the formation of specific competences, representing stages in their acquisition. Competence units represent the acquisitions that the student must acquire in order to form his/her competences, not only those specific to the discipline. One and the same pre-acquisition can be significant for all categories of competences formed in students.

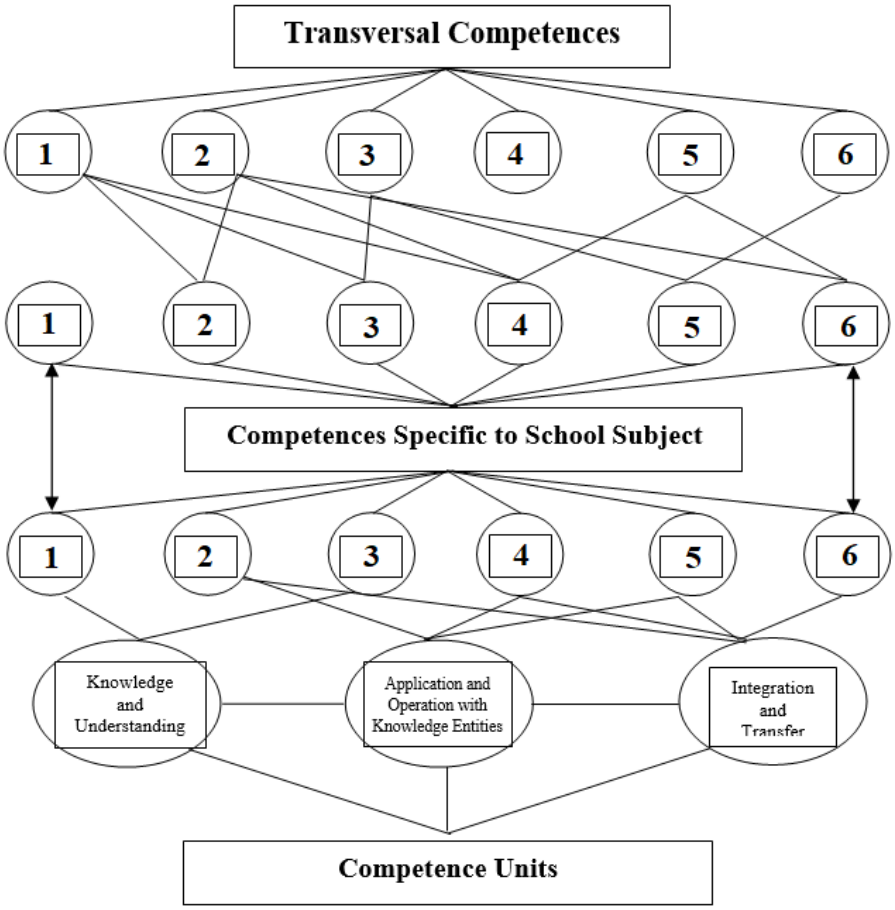

Fig. 4. Connections/Interconnections Between Different Categories and Types of Competences [3]

Pre-acquisition is the “assimilative framework” of the new cognitive element [6].

Pre-acquisitions (competence units) are structured and developed during a school year, being cornerstones in the construction of competences. Compared to specific competences, they are more specific (analytical) systems, integrating, in turn, knowledge, abilities and attitudes/values. Through their degree of concreteness, they are suggestive for the selection of learning contents for the different school subjects.

Pre-acquisitions (competence units) subsumed under specific competences by school subjects are defined in the disciplinary curriculum.

It should be noted that between different categories and types of competences there is a great diversity of connections/interconnections that ensure a systemic approach to them. This diversity of connections/interconnections between different types and categories of competences can be presented graphically (*see* Figure 4).

The connections/interconnections between different categories of competences in the given figure are presented arbitrarily. It should be noted that one and the same competence specific to a discipline can "contribute" to the formation of one or more transversal competences and vice versa, several competences specific to the discipline can "contribute" to the formation of a transversal competence. This diversity of connections/interconnections between different categories of competences depends on the "substance" of the discipline studied, the content and complexity of the formation of the specific competence, the degree of correlation between them, etc.

Practically according to the same logic, the connections/interconnections between the competences specific to the discipline and the competence units are established.

At the same time, curriculum designers and teachers must take into account the gradual manifestation of competences at different levels of education.

In the context of the definitions of competency and its basic characteristics, we can extract/deduce the following terminological concretizations:

- *Competence* in its various forms of manifestation and complexity represents *an outcome*, which can be measured/evaluated through the respective descriptors.

- *Competence* can be viewed as *a designed objective* (what the teacher intends to achieve in the teaching process) and/or as *a terminal objective* (what the student must achieve in the learning process), as *an evaluation objective* (result, what the student has actually acquired).

In this sense, the "objective" is viewed as an outcome.

Competence represents a behavioral acquisition (psychological approach to competence). In this sense, competence is complex, indivisible, inoperable.

Competence of a lower degree of complexity can be seen as a descriptor of competence with a higher degree of complexity, which in turn is characterized by its own descriptors.

It is also important to delimit the notions of „competence" - „capacity".

J. Cardinet states that the concepts of capacity and competence are not synonymous. Capacity represents an outcome of a general training common to several situations, while competence is an outcome of a global training that puts several capacities into play in a single situation.

Ph. Meirieu, F. Raynal, B. Ray define capacity as *"a stabilized and reproductive"* transdisciplinary mental activity in various fields of knowledge", which must be used to mobilize a competence, and competence is "a concrete action manifested, a dynamic knowledge identified, putting into play one or more capacities in a determined national or disciplinary field.

Designing competences specific to a school discipline is a complex, difficult, creative and responsible procedure. Designers of the competence system (or also curriculum designers) will be able to use the following algorithm of actions and steps:

For competences specific to a school discipline:

✓ identifying one or another taxonomy of competences as a tool for designing them;

✓ identifying the structure of competences: verb, in active form, domain/subject, level/modality/norm, context/result;

✓ establishing the formative values of the given discipline of the action framework/typology of specific actions; for example: the discipline "Romanian Language" has the values of training in listening, reading, writing, speaking, and the discipline "Music Education" - of training in the perception of musical works, reproduction of musical works, creation of musical works, etc.;

✓ establishing the opportunities for deriving discipline-specific competences from transversal ones in relation to their level of correlation and interconnection;

✓ carrying out the procedure for formulating discipline-specific competences by applying the taxonomic framework and/or the action framework, specific to the school discipline.

If the taxonomic framework (for example: knowledge and understanding, application and operation with knowledge entities, integration and transfer) regarding the formulation of competences is put in the foreground, then the action framework takes over the content substance of the competence and vice versa, if the action framework is put in the foreground in the design of competences, then the taxonomic framework takes over the respective function. This concept can be graphically presented through the respective matrix, for example: based on the “Romanian Language”.

Table 3. Taxonomic Framework for Design of Competences Specific to School Subject *(Variant 1)*

	Listening	**Reading**	**Writing**	**Speaking**
Cognition and Understanding	↓ →	↓ →	↓ →	↓ →
Application and Operation	↓ →	↓ →	↓ →	↓ →
Integration and Transfer	↓ →	↓ →	↓ →	↓ →

Table 4. Taxonomic Framework for Design of Competences Specific to School Subject *(Variant 2)*

	Cognition/ Understanding	**Application/ Operation**	**Integration/ Transfer**
Listening	↓ →	↓ →	↓ →
Reading	↓ →	↓ →	↓ →
Writing	↓ →	↓ →	↓ →
Speaking	↓ →	↓ →	↓ →

It is important to note that both approaches lead to fulfillment – the achievement of an action/activity, but through different paths. In the first case, the emphasis is on the cognitive component in the formation of the respective competences, in the second case the emphasis is on the action component and the cognitive competence takes on the function of a means/tool.

For Competence Units

As in the case of specific competences for the study discipline, the design of competence units is a complex and difficult procedure.

If in the process of designing general competences specific to the discipline the taxonomic framework focused on the dimensions: knowledge and understanding, application and operation, integration and transfer was applied, then the same taxonomic framework is also applied in the process of designing competence units. In the second case, when the action framework is applied in the design of general competences specific to the discipline, they are “dissociated” into the respective derivatives.

Competence units (pre-acquisitions) are usually associated with concrete contents/contents units. Competency units ensure the gradual formation of subject-specific competences per grade and study year.

To fully valorize on the learning of the taxonomic and action framework, the concept of a dominant competence unit can be applied for one learning unit and another – for another learning unit. For example, in one case, the dominant one will be “comparing different approaches”, and in another case “analyzing phenomena”. This concept assumes that in the process of studying learning units, during a year (a period of

time) that diversity of learning operations/types of actions will be applied that will ensure the efficient and gradual development of the competences specific to the given discipline.

It should be noted that competence units can also be viewed as ways to contribute to the formation (directly or indirectly) of transversal competences.

At the same time, it is important to specify that the theory of competences does not cancel *the operational objectives* of a lesson. On the contrary. They are interdependent. Their correct formulation must be in accordance with the competences and competence units specific to the given discipline. Namely, by achieving the operational objectives within the lesson, students assimilate their initial pre-acquisitions, which constitute the competences.

The focus on competences is argued by the need to develop complex abilities in students, which will allow them to better adapt to changes in the socio-economic and cultural environment. Competence – means acting by mobilizing and effectively using a set of resources available to the individual at a given time and in a given context.

The approach to the concept of "competence" in this paper does not claim to be exhaustive. At the same time, an attempt was made to reconceptualize and argue for a situational approach to competences viewed from the perspective of the logic of action in concrete situations, from the perspective of curricular logic and from the perspective of learning logic.

In this context, a taxonomic design method of the competency system was proposed, focused on the degree of interconnection between different categories and types of competences, but also on the progressive framework for their formation and development [3].

Analysis of Interconnection of Competences Specific to School Subject and Competence Units: Analysis Model

Computer Science Specific Competences Versus Competence Units (based on the Curriculum for the school subject of *Computer Science*, study by A. Gremalschi) [3]

The degree of association of the competence units with the competences specific to the discipline are presented in the following table. Also in this table is indicated the level of complexity of the competence unit according to the Bloom-Anderson taxonomy.

Table 5. Association of Competence Units with Competences Specific to *Computer Science* Discipline

No. Crt.	Competence Unit	Complexity Level	7th Grade		8th Grade		9th Grade		Total	
			N	Association	N	Association	N	Association	N	Association
1.	Application	Application	3	CS10	0	-	2	CS6	5	CS6, CS10
2.	Argumentation	Evaluation	1	CS3	0	-	0	-	1	CS3
3.	Classification	Analysis	1	CS3	0	-	2	CS6	3	CS3
4.	Coding	Application	1	CS1, CS2	0	-	0	-	1	CS1, CS2
5.	Creation	Creation	4	CS7	4	CS4, CS7	0	-	8	CS4, CS7
6.	Decoding	Application	1	CS1, CS2	0	-	0	-	1	CS1, CS2
7.	Definition	Reminding	0	-	2	CS5, CS7	1	CS5, CS6	3	CS5, CS6, CS7
8.	Description	Reminding	1	CS1, CS2	1	CS5	0	-	2	CS1, CS2, CS5

9.	Editing	Application	2	CS7, CS8, CS10	1	CS10	0	-	3	CS7, CS8, CS10
10.	Performance	Application	3	CS7	0	-	0	-	3	CS7
11.	Elaboration	Creation	0	-	4	CS5, CS6	3	CS6, CS9	7	CS5, CS6, CS9
12.	Estimation	Analysis	2	CS1, CS2	0	-	0	-	2	CS1, CS2
13.	Explanation	Understanding	0	-	0	-	1	CS6	1	CS6
14.	Identification	Reminding	4	CS3	4	CS6, CS7	2	CS6	10	CS3, CS6, CS7
15.	Insertion	Application	1	CS7	0	-	0	-	1	CS7
16.	Modification	Application	0	-	1	CS7	0	-	1	CS7
17.	Processing	Application	1	CS7	0	-	0	-	1	CS7
18.	Establishment	Analysis	0	-	2	CS4, CS7	0	-	2	CS4, CS7
19.	Testing	Creation	0	-	0	-	1	CS5, CS6	1	CS5, CS6
20.	Translation	Application	0	-	0	-	1	CS6	1	CS6
21.	Usage	Application	7	CS3, CS7	12	CS4, CS5, CS6, CS7	5	CS5, CS6	24	CS3, CS4, CS5, CS6, CS7
	Total	**-**	**32**	**-**	**31**	**-**	**18**	**-**	**81**	**-**

Source: Author’s estimates

From the data presented in the table above, it can be seen that the competence units are designed in such a way as to ensure the mastery by the student of the competences specific to the discipline. No specific competences were indicated to which competence units would not correspond.

A summary of the distribution of competence units by complexity levels is presented in the table below.

Table 6. Distribution of Competence Units by Complexity Levels

No. Crt.	Complexity Level	7th Grade	8h Grade	9th Grade	Total 7th - 9th Grades
1.	Reminding	15.6%	22.6%	16.7%	18.5%
2.	Understanding	0.0%	0.0%	5.6%	1.2%
3.	Aplication	59.4%	45.2%	44.4%	50.6%
4.	Analysis	9.4%	6.5%	11.1%	8.6%
5.	Evaluation	3.1%	0.0%	0.0%	1.2%
6.	Creation	12.5%	25.8%	22.2%	19.8%
	Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Author’s estimates

From the analysis of the data presented in the table above, it is observed that in the current curriculum the emphasis is placed on the formation of applied competence units, and less on understanding and evaluation.

Comments:

1. If specific competences are formulated adequately/coherently, with possible gradual development, then all content units can be valued to a greater or lesser extent in the formation of the specific competences of the discipline. Of course, a content unit can be valued as dominant for one or more specific competences and vice versa.
2. If only one content unit is valued to achieve only a specific competence of the discipline, then this competence is inadequately formulated (although, there may be exceptions).
3. At the same time, all content units, depending on their potential, opportunity and formative value, must be valued indirectly through the specific competences of the discipline, but also directly through the competence units regarding the formation of transversal/transdisciplinary competences.
4. Content units must also be analyzed from the perspective of the structure and importance of knowledge for the general formation of the personality and from the perspective of its professional orientation.

Conclusions:

Following, we present the conclusions regarding the structuring of key competences, transdisciplinary competences and those specific to study disciplines:

1. *Transversal/transdisciplinary competences* are deduced from the system of key competences, but are not reduced to them. The construction/design of the set of transversal/transdisciplinary competences must take into account: the transferability and/or discrimination of key competences in transdisciplinary/transversal ones; the identification of the strong core of transdisciplinary/transversal competences valid for all study disciplines (for example, learning to learn, etc.) and the varied core specific to curricular areas; the structure of the personality and its formation models (from this other types of transversal competences than those provided for in the curricula will be deduced, for example: analytical, investigative, managerial, etc.).

2. The construction/design of the set of *competences specific* to the study discipline must take into account the following: transferability and/or discrimination of transdisciplinary competences into specific competences; the taxonomy of cognitive, affective and psychomotor competences in their entirety; the specificity and potential of the content of the discipline; the form of manifestation of the competency reported to the level/cycle of education.

3. The construction/design of the system of *transdisciplinary/transversal competences* and those *specific to the study disciplines* must take into account two axes: *vertical* by discriminating key competences into transversal/transdisciplinary ones and the latter into those specific to the discipline and *horizontal* by reporting to the taxonomy of cognitive, affective and psychomotor competences, to the form of manifestation of competences over time, but also to the modalities of their formation.

In this context, it should be mentioned that the formation of competences is carried out in accordance with these axes.

Specific competences constitute acquisitions (they are the basis) for the formation of transversal competences, and the latter – acquisitions for the formation of key competences (in the case when key competences do not also fulfill the function of transversal ones).

However, this logical line does not ensure the formation of the respective competences on the vertical axis, because not every specific competency directly influences (as an acquisition) the formation of transversal competences and, respectively, not every transversal competency leads to the formation of the key competence.

Another way of forming transversal competences (we *conventionally* call it *complementary*) is carried out within the study of content units, when very often there are needs to call on subjects from other disciplines, or cognitive acquisitions of students obtained within the study of other disciplines. In this case, we can talk about the "indirect" training of transversal competences (conventionally) through the training of subject-specific competences or about using transversal competences to streamline the process of training specific competences within the study of the school subject.

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