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THE ROMANIAN CURRICULUM WITHIN THE EUROPEAN EDUCATIONAL FRAMEWORK

Abstract: This study is focused on various key concepts of curriculum from the European and Romanian perspective. The aim of this research is to structure the main definitions of the word 'curriculum' so that the multiple definitions may be associated with different conceptualisations of objectives or simply products or ends from different perspectives: teacher-oriented or student-oriented levels. The first chapter introduces the European and American theoretical background built upon the curricular studies starting in the 1970s: Scribner and Cole (unwritten curriculum, 1974), Anderson (official curriculum, 1984), Oliva (phantom curriculum and concomitant curriculum, 1988), Longstreet and Shane (hidden curriculum, 1993), Eisner (null curriculum, 1997) and studies after 2000: Bjornavold (2000), Eraut (2000), Livingstone (2001), Billett (2001) and Beckett and Hager (2002). In the second chapter, the Romanian school is represented by education researchers whose recent studies regarding curricula as a system of principles have been applied in modern school. The theoretical framework is based on a functional-communicative model of learning and teaching. Innovative ideas like the 'accomplished curriculum' and 'real curriculum' (Păun, 1982), the difference between educational process and curriculum (Nicola, 2003) or the personal curricular model that Dobridor offered in 2011 as a model of correspondence between objective-centered and competence-centered curricula for a better conversion into the curricular implementation, are specifically defined inside the Romanian educational system but with future European consequences.

Keywords: curriculum, official, unwritten, hidden, null, phantom, concomitant, accomplished.

1. The modernist researchers have increased the number of study perspectives upon the concept of curriculum. The world nowadays still debates upon different types of curriculum:

a) Official curriculum (*overt/ formal/ written curriculum*): all the official documents in schools and other teaching institutions presenting the teaching planning (objectives, mission, final target, admittance, graduation, learning experiences, timing, school year program, norms, human resources, certification, interdictions, etc.). The concept was first defined by Cuban (1992:4), but the roots had appeared previously in Anderson's (1984) and Schoenfeld's studies (1990).

The official curriculum is what state and district officials set forth in curricular frameworks and courses of study. They expect teachers to teach it; they assume students will learn it.

b) Unwritten curriculum: education coming from family or other educational backgrounds: church, television, the internet, museums, etc.). The first researchers of this domain were Scribner and Cole (1974). Starting from their theories the European Union has attached many new theories about lifelong learning. One of the most famous is Bjornavold's (2000) studies at University of Leeds Lifelong Learning Institute (see Colley *et al.* 2002) operated a clear distinction between formal, non-formal and informal learning by putting together literature about this domain starting from 1974: Stern and Sommerland (1999), McGivney (1999), Eraut (2000), Livingstone (2001), Billett (2001), Beckett and Hager (2002), (European Union, 2002). The main conclusion is that the border between terms is

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penetrated by the conception about formal/non-formal/informal social backgrounds. Unwritten curriculum is usually pervaded by elements in overt-curriculum or hidden curriculum depending on students' access to the sources of information.

c) Hidden curriculum: education without norms which is usually not controlled by teachers (students learning from each other, or from the people around them). The concept was first defined by Jackson (1968), but the most commonly accepted definition is that of Longstreet and Shane (1993: 46) as: "the kinds of learnings children derive from the very nature and organizational design of the public school, as well as from the behaviors and attitudes of teachers and administrators [...]". Jackson drew attention upon the fact that hidden curriculum is formed of many categories which prove to be of more importance in students' life than the formal curriculum. Examples of the hidden curriculum might include the messages and lessons derived from the mere organization of schools, with the emphasis on: sequential room arrangements, timed segments of formal instruction, an annual schedule that is still arranged to accommodate an agrarian age, disciplined messages that concentration equates to classrooms where students are sitting up straight and are continually quiet, students getting in and standing in line silently, students quietly raising their hands to be called on, competition for grades. The hidden curriculum may include both positive and negative messages, depending on the perspective of the learner or the observer.

d) Null curriculum: learning contents that students find to be obsolete and are consequently rejected. The concept was defined by Elliot Eisner (1985: 97):

There is something of a paradox involved in writing about a curriculum that does not exist. Yet, if we are concerned with the consequences of school programs and the role of curriculum in shaping those consequences, then it seems to me that we are well advised to consider not only the explicit and implicit curricula of schools but also what schools do not teach. It is my thesis that what schools do not teach may be as important as what they do teach. I argue this position because ignorance is not simply a neutral void; it has important effects on the kinds of options one is able to consider, the alternatives that one can examine, and the perspectives from which one can view a situation or problems.

Two major dimensions are important in a 'null curriculum': *the intellectual processes* emphasized or neglected by schools and *the content* which is present or absent in school curricula. Eisner (1994: 100) distinguishes among the three parameters of mind: cognition, affect and psychomotor which is thinking, feeling and acting. The 'cognitive' aspect is considered in its basic meaning, that of designating "all processes involved in knowing" despite the school process of cognition which operates with pre-established figures and symbols, thus "being robbed of its scope and richness". In the natural cognitive processes: "Not all thinking is mediated by words or numbers, nor is all thinking rule-abiding." The intellectual competence in school should necessarily focus on 'the forms of thinking and experience that are available and salient. Moreover,

If we are concerned in schools with the development of productive thought, if we are interested in strengthening those processes through which invention, boundary pushing, and boundary breaking occur, then it seems reasonable that school curriculum should provide children with the opportunities to use those processes in the course of their work. (...) The cultivation of imagination is not a utopian aspiration. (Eisner: 1994: 100)

In order to rediscover the meaning of the words, students should free themselves from the literal perception so that they should come back to letters later:

Who teaches stars not to dance? How does one teach stars not to do something? Astronomers do. Astronomers teach us that stars do not dance. What we see are simply the light waves that flicker as they traverse the atmosphere. The poet (...) chooses joy over knowledge. But to

know that, no literal reading will do. An ability to allow one's imagination to grasp and play with the qualitative aspects of (...) impression is a necessary condition for recovering the meaning [...]. (Eisner: 1994:101)

Eisner explains that even if educators have personal beliefs about what parts of the official curriculum to teach (on different reasons: timing, feelings, personal opinions, prejudices, teaching methods, etc.) the excluded parts are no less important.

Modern curricula are not based any more on larger paradigms but on 'small chunks' – often selected in the perspective of easier pragmatic evaluation, but the 'whole', the 'big idea', the 'landscape' should not be neglected. Schools are virtuous of what they neglect to teach as these processes are very important in human life. Besides the traditional subject matters, like History, Geography, Mathematics, etc. school curriculum should offer alternatives to the modern world like: filmmaking, communication, economics, war and revolution, law, vernacular arts. The huge variety of visual forms (design of shopping centers, mass-media, television, film) are called the 'hidden persuaders' of any culture because the skills used in their designs serve different interests: the manufacturer's, the politician's, the builders', the salesmen's – all of them purely mercantile. So,

How do these images work? Are we or can we become immune to their messages, or do we delude ourselves into thinking so? Are there ways students could be helped to become aware of such forms and how they function? Could they be enabled to learn to 'read' the arts of the vernacular, to understand how they themselves use such arts to persuade and motivate? Is there a grammar to these images, a syntax that, although not following the forms of logic used in verbal and written discourse, nevertheless exists and can be revealed through analysis? (Eisner: 1994: 104)

The level of critical consciousness should be increased so that visual and verbal messages can be correctly decoded in the real world even if the school curricula are habitually organized in a linear way. Non-linear visual sources of imagery and verbal messages have been changing constantly and are cheaply and instantly available. Eisner draws attention that linear traditional curricula have decreased the importance of teaching arts, for example, especially at primary and secondary levels. That is why millions of students neglect this domain all their life and are incapable to understand highly sophisticated works of art like Matisse, Corbusier or Brancusi.

e) Phantom curriculum (Oliva: 1988): based on students' attraction for different media cultures. Messages insidiously carry mean objectives under the form of noble and attractive ideas (political, economical targets);

f) Concomitant curriculum (Oliva: 1988): important life experiences known under the names of "life school".

2. The Romanian school of educational sciences has its own representatives in the curricular domain. According to Frunză, the term was first explained in 1984 by Văideanu under the name of 'content/s',

... a sum of knowledge, skills, values and behaviours under the concrete form of study plans (school schedules and programmes) and conceived according to final targets and objectives sent to school by societies; these contents which are organized on levels or types of school institution, on grades and subjects are the result of a large elaboration for a pedagogical result and are the object of a specific process: learning. (Frunză, 2003: 131)

Cucoş (1996) and Nicola (2003) made the distinction between the educational content/s and curriculum. Cucoş (1996: 68) specifically defined education as a sum of values used in projecting instruction (information, skills, thoughts coming from the educational ideal principles and the specific

tasks education has to fulfill in order to insert the individual in the social present and to prepare him/her for the future.

The term 'curriculum' is explained as a succession of steps (the linear model) like:

1. the specific objectives in a domain (educational level, profile, school subject matter) or educational activity;
2. informational and educational contents necessary for the accomplishment of the established objectives;
3. implementation (methods, means, activities), programming and the organization of the instructive and educational situations;
4. evaluation of the results.

Like D'Hainaut (1981), the author places the student in the middle of the curricular process (not the subject matter). Thus he accounts for curriculum through skills and ways of action and not as a simple list of titles to be studied.

Following Kneller's (1971) logic in separating between logical and pseudo logical order of the contents, Cucos orders the subject matters into:

- *Logical coordination* which can be linear when the relationship between subject matters is continuous or concentric and the explanation is of an 'anchor' type: the student is offered concepts to be developed by adding information from other domains.
- *Genetic coordination* which is accumulated according to historical chronology but does not belong only to history; instead it is present in all subject matters.

The author also mentions *a spiral order of coordination* which can be understood as a reiteration of information at certain times in order to reinforce the data but also to be progressively increased, by adding new details.

Cucos is aware that modern culture cannot be Aristotelian any more. It is almost impossible to try to select the most important concepts, to put them together into a nucleus so that logical connections should operate from general to specific. The modern world learns through trials and errors. The 'mosaic' culture is formed of chunks of information without classification, juxtaposed randomly, and ready to be selected in order to become important.

Inside a curriculum objectives are centered according to constancy and general use but also according to the momentous needs. By pursuing the targets, syllabi should implement means to get to new data and that is why teachers are to be sufficiently 'active' and 'autonomous' and 'responsible' and 'creative'.

Nicola (2003: 428) makes the difference between the contents of the educational process and the contents of a curriculum. In the author's perspective, the educational process is *a larger project, covering all the aspects of an educational action: objectives, contents, strategies, evaluation and a 'curriculum' is the concrete organization and structure of the learning process: grade, subject matters, chapter, topic, lesson.*

The main values which fundament the idea of education are: the identification of the whole informational quantum deriving from the social memory and the stimulation of learners' creative capacity. Projecting the education through content/s and projecting the curriculum through objectives is an interdependent approach; the former offers suggestions for defining objectives, the latter delivers the psychological background for new definitions of the contents.

Another important relationship between *education* and *curriculum* is the quantification of the results. A curriculum is always strictly quantified in grades but the semantic message of the educational process should also be reflected by students' answers. However, the author draws attention upon the fact that the content of education cannot be always precisely transformed into a curricular evaluation. The educational content is permanently multiplied and has results in the development of the human personality, too. The educational process does not always have a mechanical translation into the objectives inside a curriculum. A perfect analogy between education and curriculum is that between science and the matter object (the science of history and the lesson of history).

In other words, the educational domain is formed by all the contents of the learning process inside a national teaching system and it is a 'global' content (types of school, organization, etc.) while

the curricular content is 'differentiated' and is focused upon diversity inside the educational components.

The main educational factors which are important for curricular development are: philosophical conceptions, scientific criteria, psychological analysis and diagnose, pedagogical studies and discoveries.

Potolea (2002) designs two curricular models: the *triangular* and the *pentagonal* one. The triangular model is a vibrant functional relationship among three elements: the educational content, learning activities and the final target. The subject matter is placed in the middle of the triangle requiring specific research domains for each of the three variables. The final educational target, for example, is thus asked multiple questions like: the main determinant factors and the pedagogical functions of the objectives; methods for defining concepts, methodological systems. The educational content is described through sources and criteria, types of educational organization, significance and typology. Learning activities raise questions about timing, identification and evaluation of the necessary time for each activity and the relationship between the allocated time and the used time.

The pentagonal model adds two new variables: learning strategies and evaluation strategies.

Păun (1982) brings into analysis four different curricular models:

- Written curriculum
- Real curriculum
- Accomplished curriculum
- Hidden curriculum

The author translates the main features of the curricular domains for the Romanian teachers. His personal contribution is the idea of a 'real curriculum' as a total amount of knowledge, information and attitudes which the teacher effectively transmits to the students starting from the exigent formal curriculum. The personalization of a strict content through human qualities is based upon a series of variables like:

- Scientific competence;
- Psycho-pedagogical competence;
- Personal significance offered to the final results of education;
- Pedagogical theories the teacher may choose to internalize;
- Students' personal perception and their possibilities.

It is through this real curriculum that a teacher can prove all the creative capacities and didactic skills in order to transform the strict formal curriculum into attractive content.

Another innovative idea is that of the 'accomplished curriculum': the concrete acquisitions the students have accumulated inside the teaching process. The real curriculum is generally an abstract concept. The students will never internalize it *ad literam*. There is a number of variables in the students' way of learning:

- The previous information they had received before a new teaching stage;
- The personal skills the students have developed inside different teaching stages;
- Learning experiences;
- Interests and motivation;
- The personal rhythm;
- The personal system of values;
- Their own conception about education and its effects;
- Personal psychological features (perseverance, consciousness, honesty, etc.).

The less distance between the real and the accomplished curriculum, the more effective is the teaching process.

Frunză (2003: 139) defines other curricular designs like:

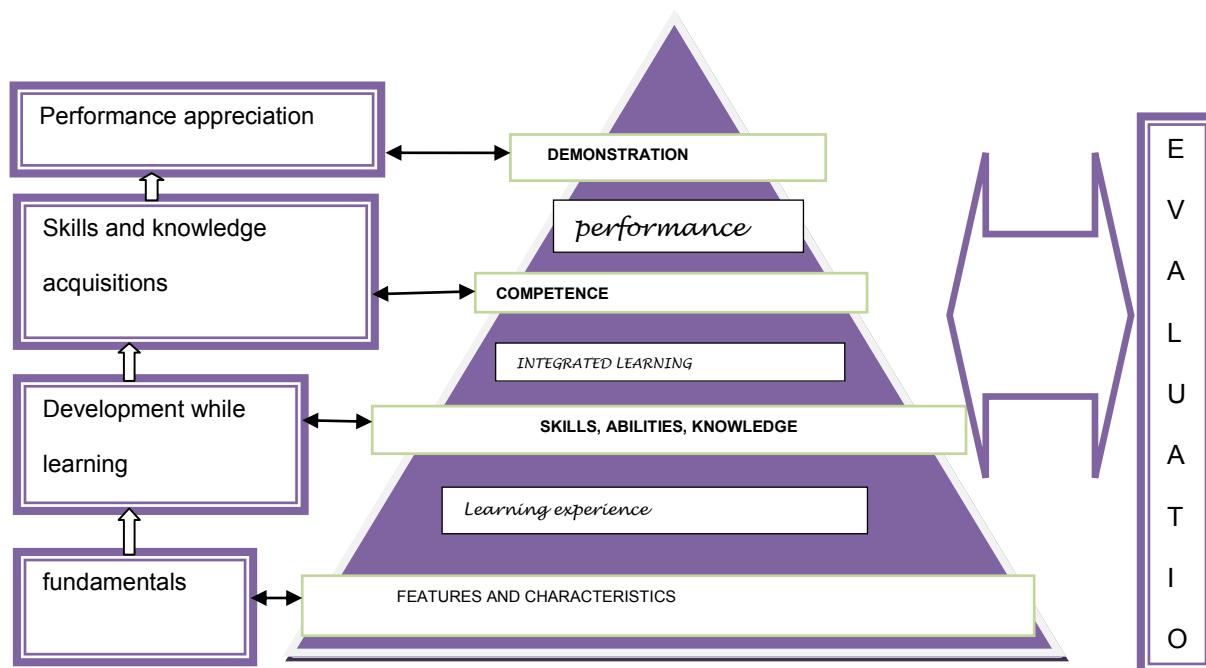
- The support curriculum: a curricular variant including knowledge, information, and data which do not belong to the main concrete documents used in the teaching process (teaching programs, schoolbooks, etc.) but are presented in teaching support varieties like: media, guides, monographs, manuals, books of exercises. The author draws attention that these auxiliaries are necessary in the teaching process (they are attractive and creative), but they should not become a burden on the students' shoulders.

- The tested curriculum: the total amount of acquisitions the students can demonstrate during the evaluation activities. Through this type of curriculum the students need not prove that they succeeded in internalizing all the theoretical data, but they can use them in various situations.
- Territorial curriculum: the educational offer adapted to the beneficiaries of a certain geographical territory so that they could cope with the needs of specific activities; a *mountain* curriculum is different from a *seaside* one.

Frunză emphasizes the fact that, generally speaking, curriculum is a ‘dynamic entity’, quite sensitive to different mutations at the knowledge level but also at the changes inside the specific society in which the learning processes take place.

2.1. Romania has opened a new chapter in the national educational field starting 2000. The previous objective-centered school curriculum was replaced by the modern competence-centered one. Dobridor (2012: 38) underlines the fact that major changes like this should rely on consistent studies of the educational specialists in order to adapt modern concepts to the Romanian educational background, especially in non-technical schools.

As an example, the author offers Voorhes’ model of competence-centered curriculum (2001), a target of the ‘life school’ in an Arbeitsschulen. (figure1).

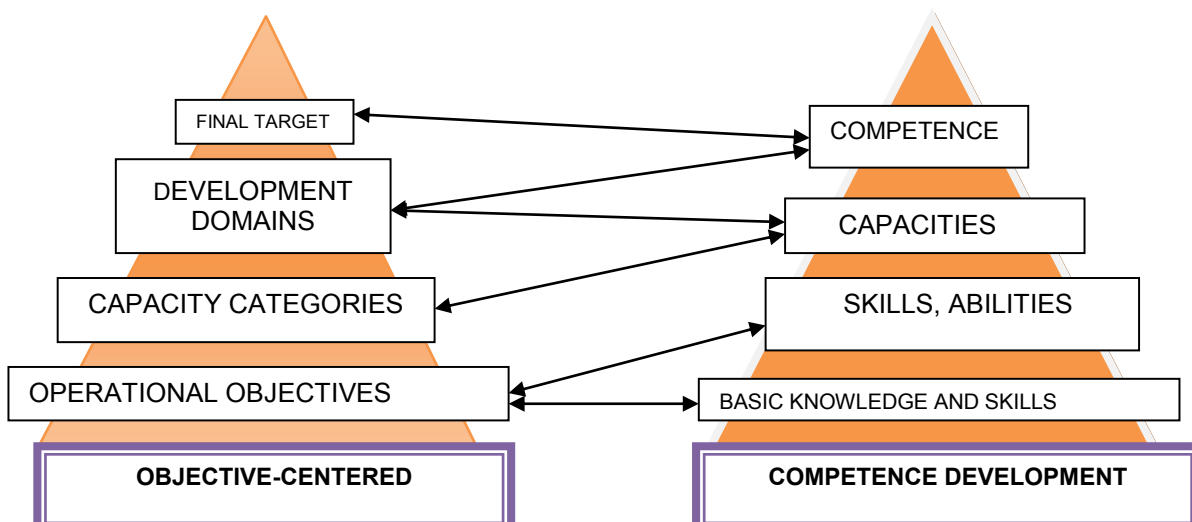


(figure 1: The conceptual model of building competences, Richard Voorhes, 2001)

Nevertheless, the author does not reject the competence-centered curricula converted from the objective-centered model. Positive and negative sanctions are to be applied to the curricular models over time.

Dobridor (2011:55) offers a personal model of correspondence between **objective-centered** and competence-centered curricula for a better conversion into the curricular implementation.

Moreover, the author completely submits to ‘THE EIGHT KEY COMPETENCES FOR LIFELONG LEARNING’ programme recommended by the European Parliament and the European Council in December 2006 which he considers to be ‘one of the greatest syntheses of the after-post modernist curricular models’ (Dobridor 2011: 295):



(figure 2: Dobridor's model of correct correlations for model conversion)

- **communication in the mother tongue**, which is the ability to express and interpret concepts, thoughts, feelings, facts and opinions in both oral and written form (listening, speaking, reading and writing) and to interact linguistically in an appropriate and creative way in a full range of societal and cultural contexts;
- **communication in foreign languages**, which involves, in addition to the main skill dimensions of communication in the mother tongue, mediation and intercultural understanding. The level of proficiency depends on several factors and the capacity for listening, speaking, reading and writing;
- **mathematical competence and basic competences in science and technology**. Mathematical competence is the ability to develop and apply mathematical thinking in order to solve a range of problems in everyday situations, with the emphasis being placed on process, activity and knowledge. Basic competences in science and technology refer to the mastery, use and application of knowledge and methodologies that explain the natural world. These involve an understanding of the changes caused by human activity and the responsibility of each individual as a citizen;
- **digital competence** involves the confident and critical use of information society technology (IST) and thus basic skills in information and communication technology (ICT);
- **learning to learn** is related to learning, the ability to pursue and organize one's own learning, either individually or in groups, in accordance with one's own needs, and awareness of methods and opportunities;
- **social and civic competences**. Social competence refers to personal, interpersonal and intercultural competence and all forms of behavior that equip individuals to participate in an effective and constructive way in social and working life. It is linked to personal and social well-being. An understanding of codes of conduct and customs in the different environments in which individuals operate is essential. Civic competence, and particularly knowledge of social and political concepts and structures (democracy, justice, equality, citizenship and civil rights), equips individuals to engage in active and democratic participation;
- **sense of initiative and entrepreneurship** is the ability to turn ideas into action. It involves creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. The individual is aware of the

context of his/her work and is able to seize opportunities that arise. It is the foundation for acquiring more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance;

- **cultural awareness and expression**, which involves appreciation of the importance of the creative expression of ideas, experiences and emotions in a range of media (music, performing arts, literature and the visual arts).

2.2. The Romanian curriculum is built upon a principle system:

a. curriculum as a *system* - it is designed according to:

- the educational ideal of the Romanian school;
- the psychological learning rules;
- the students' age and individual characteristics;
- the students' potential (discovered, stimulated and brought to value by teachers): divergent and critical thinking, imagination, creativity, etc.;
- the social and cultural dynamics of the community.

b. curriculum as *learning activities*:

- different styles, techniques and teaching procedures for different learning rhythms;
- learning activities are based upon intellectual effort and self discipline;
- individual and group work;
- the final target is developing skills, capacities, competences, knowledge, attitudes, and conduct;
- the students' educational interests are the gist of efficiency in order to be actively integrated in the social life of community.

c. curriculum as *teaching principles*:

- diverse and efficient learning situations, in accordance to the educational objectives;
- stimulating and sustaining the students' motivation for permanent learning;
- discovering and developing the students' skills in accordance to their educational needs and interests;
- teaching as a forming process (not only teaching or informing, but mainly developing competences, skills, conducts);
- inter/intra – disciplinary transfers;
- connection between educational activities and communitarian life.

Like any other curricular program, the Romanian system is seen as a sum of:

- agents (educators and educated);
- objectives;
- educational contents;
- educational strategies;
- time, space and material resources;
- evaluation strategies.

The Romanian curriculum has seven 'curricular areas' scientifically founded along the 12 grades of the educational system:

- 'Language and communication';
- 'Mathematics and nature sciences';
- 'Citizen and society';
- 'Arts';
- 'Physical education and sports';
- 'Technologies';
- 'Counseling and career orientation'.

The educational levels are compulsory starting from 6-7 years (1st grade) up to 18-19 years (12th grade) and are grouped upon three levels: primary (1-4th grade), secondary (5-8th grade) and high school (9-12th grade).

Conclusions

The way a curriculum is planned may be considered the first step to implementation. The educational paradigm shifted from objective-teaching to the process of learning and evaluation, and it has as a final target the students' competences of written/oral comprehension and written/oral production. Curriculum is an operational tool which must release:

- A precisely referenced educational process given by the reference objectives, general/specific competences and contents;
- An instructional process to connect students with their environment and social background;
- A differentiated instruction through selected contents, teaching activities and individual needs;
- The interconnection between the logic of science and the applicative aspects of knowledge;

The way in which the instructional content is employed in the real teaching procedure is the determining element in designing a curriculum.

References

- Anderson, Lorin W. *Time and School Learning: Theory, Research, and Practice*. London: Croom Helm, 1984.
- Beckett, David, and Paul Hager. *Life, Work and Learning*. Vol. 14. Routledge, 2001.
- Billett, Stephen. "Learning throughout Working Life: Interdependencies at Work." *Studies in Continuing Education* 23.1 (2001): 19-35.
- Bjornavold, Jens. *Making Learning Visible: Identification, Assessment and Recognition of Non-Formal Learning in Europe*. Bernan Associates, 4611-F Assembly Drive, Lanham, MD 20706-4391, 2000. May 2013, <http://ebookbrowse.com/22-es-bjornavold-pdf-d306450071>.
- Colley, Helen, Phil Hodgkinson, and Janice Malcolm. "Non-formal Learning: Mapping the Conceptual Terrain." *Consultation report, Leeds: University of Leeds Lifelong Learning Institute*. (2002). February 2013, http://www.infed.org/archives/etexts/colley_informal_learning.htm
- Cuban, Larry. "The Hidden Variable: How Organizations Influence Teacher Responses to Secondary Science Curriculum Reform." *Theory into Practice* 34.1 (1995): 4-11. --- (1995). *The Hidden Variable: How Organizations Influence Teacher Responses to Secondary Science Curriculum Reform*. Theory into Practice, Vol. 34, No. 1, 4-May 2012: <http://coefaculty.valdosta.edu/stgrubbs/Definitions%20of%20Curriculum.htm>
- Cucos, C. *Pedagogie*. Iasi: Polirom, 1996.
- D'Hainaut, ed. *Programe de învățământ și educație permanentă*. Bucuresti: Editura Didactica si Pedagogică, 1981.
- Dobridor, I.N. et al., *Formarea continuă a profesorilor de limba română, engleză și franceză în societatea cunoașterii*. Bucuresti: Vox, 2012.
- *Formarea continuă a profesorilor de limba română, engleză și franceză în societatea cunoașterii - suport de curs Abilitare pe Curriculum*, București: Vox, 2012.
- Eraut, Michael. "Non-formal Learning and Tacit Knowledge in Professional Work." *British Journal of Educational Psychology* 70.1, 2000: 113-136.
- The Common European Framework in its political and educational context*, European Union, 2002, May 2013 http://www.coe.int/t/dg4/linguistic/source/framework_en.pdf.

- Frunză, V. *Teoria și metodologia curriculum-ului*, Constanța: Muntenia, 2003.
- Jackson, Philip Wesley. *Life in Classrooms*. New York: Teachers College Press, 1990.
- Kneller, George F. *Introduction to the Philosophy of Education*. New York: J. Wiley, 1964.
- Livingstone, D. W. *Adults' Informal Learning: Definitions, Finds, Gaps, and Future Research: New Approaches for Lifelong Learning* (NALL), (2001). Working paper # 21-2001, Toronto: Ontario Institute for Studies in Education -- Advisory Panel of Experts on Adult, Learning (APEAL) May, 2013
http://www.lindenwood.edu/education/andragogy/andragogy/2011/Livingstone_2001.pdf.
- Livingstone, David W. "Adults' Informal Learning: Definitions, Findings, Gaps and Future Research." Centre for the Study of Education and Work, OISE/UT (2001). May 2013, <http://hdl.handle.net/1807/2735>.
- McGivney, V. "Informal Learning in the Community: A Trigger for Change and Development." *National Committee of Inquiry into Higher Education*. (1997). May 2013. <http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED439258&ERICExtSearch_SearchType_0=no&accno=ED439258>.
- Nicola, Ioan. *Pedagogie*. Editura Didactică și Pedagogică, București: RA, 1994.
- Oliva, Peter F. *Developing the Curriculum*. 2nd ed. Glenview, Ill.: Scott, Foresman/Little, Brown College Division, 1988.
- Păun, Emil. *Sociopedagogie școlară*. București: Editura Didactică și Pedagogică, 1982.
- Păun, Emil, Dan Potolea. *Pedagogie. Fundamentări teoretice și demersuri aplicative*. Iași: Polirom, 2002.
- Schoenfeld, A.H. *Reflections on a 'Practical Philosophy'*, American Educational Research Association, San Francisco C.A., 1990.
- Scribner and Cole. *Cognitive Consequences of Formal and Informal Education*, 1973. Science, at the website address: (extracted 20 February 2011).
- Scribner, Sylvia, and Michael Cole. "Cognitive Consequences of Formal and Informal Education." *Science* 73 (1973). February 2013, <http://www.sciencemag.org/content/182/4112/553>.
- Sommerlad, Elizabeth, and Elliot Stern. *Workplace Learning, Culture and Performance*. London: Institute of Personnel and Development, 1999.