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THE OPERATIONALIZATION OF LEARNING OBJECTIVES. AN ALTERNATIVE INTERPRETATIVE SCENARIO

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Abstract

The challenge of this paper is to provide a comprehensive picture not only of the most important ideas on operational learning objectives technique, but also to propose an alternative scenario to it.

A set of premises which assumes the status of arguments should be specified. First, there are two major drawbacks associate to the current scenario practiced for operationalization: it nurtures the backwash effect, implicitly validates a learning for evaluation. Secondly, the operationalization of objectives must be understood in relation with its essential function, that to specify the desirable performing that had a specific nature: are the result of learning associated with a sequence didactic called lesson. As a result, the statements must contain specific performing of the lesson, which generates a natural consequence: different lessons may not have identical finalities (objectives). Thirdly, in a learning regulated by the skills centered paradigm, the operationalization of objectives should be achieved at the level of competence's components: knowledge, skills / abilities and attitudes.

Because the homework should be considered part of the lesson, the teacher is entitled to exploit the homework as a student's opportunity to continue learning in the classroom, and this can and should be reflected in operationalization philosophy. Finally, it should not be ignored a reality: the most impressive statements which claiming to be operational objectives have not this quality, being incomplete. But they set up a real spider web which causes many negative effects, one of them being diminishing the quality of learning.

1. Introduction

The instructive role of teacher is to ensure student learning. To manage it. This initiative, combined with other efforts in the area of classroom management can be defined as teaching. School

learning should be seen as an endeavour whose quality is assessed in relation to relatively precise standards: the goals set out in the curriculum.

These statements, called competencies, forcing the teacher to design a specific training plan for students. In the specialist language the competencies is named goals, because they have an increased level of generality which does not facilitate an easy access to surprise and evaluate its. It is necessary, therefore, a configuration of another set of functional milestones: learning objectives. The literature confirms that these aims have a certain profile: to capture visible, measurable acquisitions.

The paper focuses on operationalization phenomenon because, on the one hand, considers as inadequate the lack of specialists' (theorists and practitioners) critical attention in a delicate period in terms of curriculum. On the other hand, it attempts to offer an alternative to the traditional understanding reasoned and building these goals. In addition, the conceptual approach is reported permanently to another evaluation criterion: SMART attribute set that the aims of a lesson must prove it.

2. Paper Theoretical Foundation and Related Literature

2.1. A First Landmark: Conceptualisation and Operationalisation

The issue of operationalization objectives begins with a general statement (specific competence) derived from other sets of statements, more general (the objectives of curricular cycles, the general competencies). All coordinated to generate a final educational profile (the educational ideal). Any of these statements provides images about what should be, but they invite at doubts about how it should be done.

This is the challenge, methodological, but in the procedural sense. Why and how it should be done at the microscopic level, that of the lesson? Ironically, the images are not clear, analytical, they hide essential details. The cells of new construct (competence) are invisible. The teacher must go through decoding way. A decoding of meanings that each competence posed as conceptual challenge.

This idea of operationalization assumes two basic categories: the concept and the operationalization of a concept. For Ågerfalk (2004), the concept is always more abstract than its operationalization and both need to be an explicitly stated linguistic aspect of the action knowledge under scrutiny.

The operationalized concept can then be applied in practice whereupon consequences arise. To summarize, one piece of knowledge can be instantiated and studied in (at least) four different shapes: as a concept, as an operationalization of the concept, as an application of the operationalization, and as a consequence of the application.

Conceptualization attributes means a clear understanding of a concept by specifying one or more indicators that express the things that we think (Babbie, 2010). Conceptualization is refinement and specification of abstract concepts and operationalization is developing procedures (operations) specific research that will result in empirical observations representing these concepts in the real world (ibid).

2.2. A Second Landmark: The Learning Objectives and the Necessity to Operationalize Them

Ambrose and Bridges and Lovett and DiPietro and Norman (2010, pp. 3-6) define learning as a process that leads to change, which occurs as a result of experience and increases the potential for improved performance and future learning and identify seven principles of learning: students' prior knowledge can help or hinder learning; how students organize knowledge influences how they learn and apply what they know; students' motivation determines, directs, and sustains what they do to learn; to develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned; goal-directed practice coupled with targeted feedback enhances the quality of students' learning; students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning; to become self- directed learners, students must learn to monitor and adjust their approaches to learning.

In pedagogical literature, an important topic is the differences between the terms "learning outcomes" and "instructional objectives". Prideaux (2000) suggests: "Contemporary experienced educators are now called upon to distinguish between outcomes and aims, goals and objectives". Five differences are highlighted which have practical implications for the curriculum developer, the teacher and the student. These relate to: 1. the detail of specification; 2. the level of specification where the emphasis is placed; 3. the classification adopted and interrelationships; 4. the intent or observable result; 5. the ownership of the outcomes (in Harden, 2002, p.151).

Learning objectives are statements of intent that describe what a student will be able to do as a result of learning. They help to clarify, organize and prioritize learning and students are able to evaluate their own progress and encourage them to take responsibility for their learning (Saul, Hofmann, Lucht & Pharow, 2011, p.22).

Objectives define "where you are headed and how to demonstrate when you have arrived" (Kaufman, 2000, p.44), emphasizing the end outcome or results that are intended to be exhibited by the learner. According to Mager (1984), objectives are critical in selecting appropriate materials and procedures, promoting instructor ingenuity, providing consistent and measurable results, setting goal posts for students, and realizing instructional efficiency (in Yamanaka & Wu, 2014, p.75)

Kemp (2001) defines an instructional objective written from a behavioural perspective as "a precise statement that answers the question, 'What behaviour can the learner demonstrate to indicate that he or she has mastered the knowledge or skills specified in the instruction?'" Writing "precise" instructional objectives can be challenging but offers instructional designers clear, measurable goals to which to guide their instructional design (in McLeod, 2003, p.37).

Educational objectives means an explicit formulations of the ways in which students are expected to be changed by the educative process (Bloom, 1981, 26). Moreover, when students have clear objectives, they are more likely to seek feedback to close the gap between their current understanding or skill and the desired goal (Hattie & Timperly, 2007).

Specifically, when students set their own goals, they take responsibility and ownership of their learning goals. Such goal-directed behavior that results from goal setting is empowering and proactive (Elliot & Fryer, 2008). Research has shown that proactive actions increase sense of agency: a recent fMRI study found that self-determined behavior of goal setting is indeed closely related to people's sense of

agency and correlated with increased intrinsic motivation (Lee & Reeve, 2013). Setting goals can be especially important for students with low achievement motivation.

Drafting learning outcome objectives for the development of desirable feelings, beliefs, attitudes, or values is difficult. (…) when you are teaching abstract states as attitudes, you can only know whether you succeeded by observing learners doing something that represents the meaning of these abstractions (Houlden, Frid, & Collier, 1998, p.330).

Merriam and Caffarella (1999, p.251) identify three assumptions all behaviourists such as Mager, Skinner, Thorndike and Watson share about the learning process. First, observable behaviour rather than internal thought processes is the focus of study; in particular, learning is manifested by a change in behaviour. Second, the environment shapes behaviour; what one learns is determined by the elements in the environment, not by the individual learner. And third, the principles of contiguity (how close in time two events must be for a bond to be formed) and reinforcement (any means of increasing likelihood that an event will be repeated) are central to explaining the learning process.

Hattie (2014, p.101) identifies two parts of goal-oriented learning process: clarity of educational objectives and the set of criteria for success. Both must be transparent for students. According to Hattie (idem, pp.101-102), "effective teachers successfully plan a lesson by choosing objectives that are sufficiently stimulating and by organizing learning situations that will help students achieve these goals."

The results of studies on the impact of objectives' setting (Wisey & Okey, 1983, Lipsey & Wilson, 1993; Walberg, 1999) confirms its importance: the average size of the effect is between 0.40 and 1.37, and progress (percentile) is between 16 and 41 (in Marzano, 2015, p.25).

3. Author's Contribution on the Existing Theory and Practice in Educational Field

The operationalization of the objectives is a step which specifies the performing set of anticipated proposed for a lesson. Performing constitutes a concrete and measurable behaviour, result of school learning experiences. Lesson is a learning experience that takes place over a project whose beginning and end are formulating the objectives and evaluation of its. Performing formulation shall be in accordance with pedagogical sense/ reason.

In previous papers (Petre 2013; Petre, 2014; Petre, 2015) it has been proposed an alternative way to understand the lesson, as a school learning experience: "A functional unit motivated and meant to produce performing indicated by operational objectives" (Petre, 2015, p.206). The definition tries to capture some essential attributes of a lesson:

- lesson starts from the moment of formulating the specific aims (operational objectives) and ends when these are verified through evaluation (Petre, 2014)

- there are two moments of the beginning of the lesson: one for teachers and one for students; for the teacher, the lesson begins from the moment of finalizing the set of operational objectives (and the event is before class). For students, the lesson starts since they discover these expectations formulated by the teacher,

- the lesson ends when the teacher asks the student to prove performing. And this requires an evaluative, self-evaluative or inter-evaluative effort,

- the school learning experience specific for a lesson is not limited to learning class, but is continued and is completed by learning at home; this second experience is called homework,

In conclusion: a. the lesson has four stages (Petre, 2014, p.158):

Phase 1	Phase 2	Phase 3	Phase 4
The teacher beginns the lesson/ setting the operational objectives	Learning in the classroom	Learning at home/homework	Evaluation

Fig. 1. The four stages of a lesson

b. temporally, the lesson does not overlap with class time; a lesson does not have the same points in time as class time (ibidem):
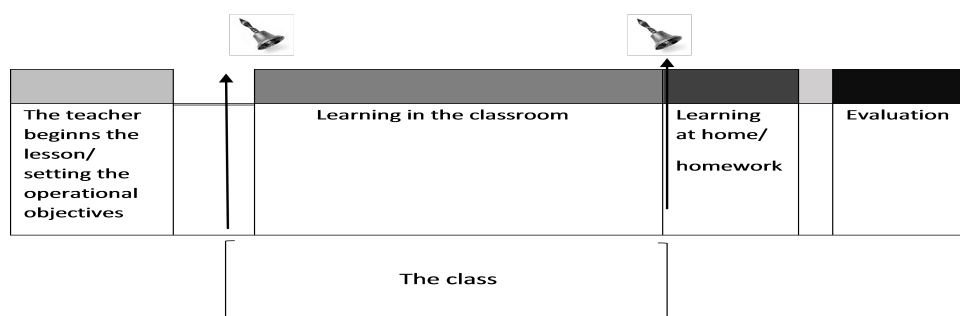

Fig. 2. Lesson vs Class

4. Author's Contribution on the Topic

The references of pedagogical logic for formulating the performing behaviour specific to a lesson (operational objectives) are likely genetic and functional, typological and structural. The proposed analysis is a comprehensive, but organized according to the structural dimension. A very popular topic in the pedagogical literature is the operationalization of objectives. Therefore, a history of ideas has a chance to be useless. So, brief.

R.F.Mager (1962, p.53) considers that a performance objectives must contain: an observable behaviour, the description of the important conditions under which the behaviour is expected to occur, and how accurate the performance must be.

R.F.Gagné (1965, p.34) breaks the statement of an objective into four basic components: the stimulus situation which initiates the performance, the observable behaviour, the object acted upon and the characteristics of the performance that determine its correctness. Performance objectives then ae described in a concrete manner/ terms.

De Landsheere (1979, p.203) believes that "formulating a complete operational objective comprises five specific directions: who will produce the desired behaviour, observable behaviour that will prove that the objective is achieved, which will be the product of this behaviour (performance) under what conditions must occur behaviour on the basis of which criteria we conclude that the product is

satisfactory". It easily finds similarities of these representative viewpoints. And yet, these components, either three or five, have weaknesses that this paper will surprise during the subsequent development of ideas.

Goals (learning intentions) specific to each lesson should be a combination of surface, depth and conceptual learning; they can be on short term (for a lesson or part of the lesson) or on long term (for a series of lessons). When these goals are clear for students, enabling them to anticipate the necessary steps success, they become functional (Hattie, 2014).

4.1. „When?"

The predict answer: "At the end of the lesson" is a component of the objective. Probably many theorists and practitioners will consider unnecessary this statement, considering that this location time is implicit. Moreover, the writing of this segment for each statement / objective can be characterized even as energetic-consuming act.

However, the continuous updating of this milestone is very useful because it invites teachers, in their role as designers of school learning, use psychological and pedagogical valid criteria. First, it is necessary that the entire set of operational objectives to be preceded by this formula: "At the end of the lesson." Secondly, it is important that the teacher-designer to be aware what this "end of the lesson."

Previous ideas should have effects on the understanding component "When?" the objective. When will formulate the objective, it must be time bound. In other words, the performing presumed by the objective must be achieved on the basis of both learning experiences: in the classroom and at home. At the technical level of operational, together with the need to specify the landmark "at the end of the lesson," it configures an important consequence: the aim will specify the behaviour performative purchased not only from experience in the classroom, but also on the basis of the home learning experiences.

Changing the perspective from SMART attributes set, the teacher-designer guarantees the T (Time / Timely / Time Bound). Second, they will reflect and attribute level Achievable / Attainable.

4.2. „Who?"

The predict answer: "The students". Naturally this component of the objective is easy to predict, too. But what does it mean to be in terms of pedagogical logic? First, the "students" can means "all students". But can be performed the same desirable behaviours (in its quality of school learning product) by all students in a class at the same level of complexity and difficulty? If not, must recognize the following fact: the objective specify a purchase achievable only by some students. Not by the all.

If the answer is affirmative, must recognize another reality: the teacher sets the challenges on the minimum difficulty and complexity level, an entire non-pedagogical decision: what about the students with higher learning tools. It outlines thus a problem: how to ensure conditions Achievable / Attainable and Realistic?

A possible solution is compliance with one of the fundamental principles of differentiation and individualization instruction (Petre, 2013): every teacher-designer will formulate different levels of the performance or will formulate different types of behaviours performative adapted to levels of class'

student (usually, a teacher identifies three levels: good students, average students, weak students). This idea is formulated, in a way, by Negreț-Dobridor (2005).

But this strategy will be detailed at "the performance' level" component. In conclusion, the segment "the students" should be understood in a realistic way. Technically, the teacher will formulate objectives so as to provide visibility of purchases that each student must achieve. Therefore, in the content of an operational objective must be specified "each student" (ibidem, 2005).

4.3. „What?"

The predict answer: "the behaviour". Although it seems the most "transparent" part of an operational objective reality is not. Naturally, "for all practical behaviour, in this case the action, translates into a verb to be chosen carefully. (...) We must avoid intellectualist verbs and verbs that express behaviours to choose concrete, observable" (De Landsheere 1979, p.206). These ideas are useful and criticisable, too, because they seem to give importance exclusive to observed behaviours, ignoring the unobserved ones: "The objectives of cognitive and affective features include thinking and sensitivity that are not directly observable" (Kibler et al., 1970, in De Landsheere, 1979, p.205). True, but the teacher must anticipate these events and to accept the challenge to surprise them as purchases of pupils, so to anticipates them in objective content.

It is important to note a condition: the verbal formula which is called the desirable behaviour must be concrete, a non-intellectualist one. Thus, the desirable behaviour (performing) can be easily observed and evaluated. This condition ensures the M (Measurable) attribute.

One detail: must be encouraged the formative dimension of learning. Learning outcomes are formulated in syllabus/ curriculum in terms of competencies. Therefore, the set of the specific operational objectives of a lesson must contain competences' derived components. There is no the context to drill this process. In short, the set objectives of a lesson must specify the type behaviours as: knowledges, attitudes, attitudes.

Do not forget: at the level of a lesson is formulated the operational objectives type, therefore, the knowledge, abilities and attitudes that are targeted must be derived at an operational level. At the specific level it remain generally formulated, which would impede their realization.

Exemplification. The specific competence: Respecting the personal hygiene rules. Syllabus for 2nd grade

At le specific level, can be derived components as:

a.   Knowledges: a1. Knowing the personal hygiene dimensions/ a2. Knowing the tools for/ of personal hygiene/ a3. Knowing how to use the tools for/ of personal hygiene/ a4. Knowing a set of personal hygiene rules

b.   Abilities: b1. Correct using of tools for personal hygiene

c.   Attitudes: c1. Collaborating with parents for respecting the personal hygiene rules/ c2. Manifesting initiative for respecting the personal hygiene rules.

Of course, it can be formulating other expectation, too. Important is to be aware at the general level of these statements. So, they cannot be the aims of a lesson. They cannot be objectives. For the lesson's level we need a new derivation. This leads to the syllabus competencies' operational

components. This means identifying concrete, operational landmarks, for each specific statement from the list above.

The statement a1. Knowing the personal hygiene dimensions (a specific knowledge) may generates the following operational knowledge: Knowing about five dimensions of personal hygiene: corporal hygiene, food hygiene, life's and work's space hygiene, clothing hygiene, daily schedule hygiene.

From this "point" it can start the formulating the knowledge performs at a desirable level, operational one. For example, "to list the five dimensions of personal hygiene." At a higher level of complexity and difficulty can be formulated the performing "formulate statements on the content of each dimension of personal hygiene." More analytical: "to make statements on the content of bodily hygiene / natural" or "to make statements on the content of food hygiene", etc. If these knowledge objectives are considered by the teacher not relevant enough, then he can check the set of operational knowledge derived from other knowledge existing at specific level.

The statement b1. Correct using of tools for personal hygiene (a specific ability) may generates the following operational abilities: "a correct using of tools specific for each personal hygiene dimension (corporal hygiene, food hygiene, life's and work's space hygiene, clothing hygiene, daily schedule hygiene)". Or, more analytic: "to use correct the tools for corporal hygiene", "to use correct the tools for food hygiene", etc.

The statement c1. Collaborating with parents for respecting the personal hygiene rules (a specific attitude). This represents a serious challenge to the operational approach. In fact, this was one of the most serious weaknesses associated to operationalization approach: impotence in the face of type attitude expectations. Considered time-consuming acquisitions, it is believed that attitudes cannot be associated with lesson's learning experiences. However, pedagogical challenge for the teacher is to be able to shape attitudes indicators that they consider desirable, and this approach is one of operationalization.

The challenge, in this example, is to establish several indicators for collaboration, and based on this approach, to formulate some expectations by objectives. We used the concept of "indicators" because, in their capacity as "observable and measurable signs" (Chelcea 2004, p.137) are designed to capture the attributes of a unit / realities. It outlines an exciting event: the teacher really is a scientist who must solve the kinetic senses provided by nominal and operational definitions.

Thus, at the operational level, it decides what is most relevant behaviours of students; for example, "to communicate daily with parent / parents to determine the menu" or "to decide with parent / parents at the end of the week, the program of activities for the coming week", etc.

All those performing of operational level, regardless of their nature (knowledge, skill, attitude) will be introduced into the operational objectives' "body". Based on operational technique will become components of operational objectives. The reflexive attitude of teacher will guarantee the desirable performs. He will decide whether to opt for more knowledge or for more abilities type performing behaviour. But it must not ignore the principle of formative school learning experiences. This will ensure attribute S (Specific / Significant). A last idea: The verb can be putted on future! In this way, the objective express very clear the predictive nature of statement.

4.4. „How?"

Predictive answer "the conditions". Another component of the operational objective, often reduced to the significance of conditions for acquired behaviour manifestation. A wrong meaning, in pedagogical terms, it lays the purchase in relation to a temporal landmark insignificant for process itself: after project's realization.

In other words, when specifies the conditions for manifestation of the behaviour-performing, it assumes that it has already been formed. In this way, the objective no longer has its essential function, to adjust/ to regulate learning, but fulfils a function attractive, but perverse, regulating the evaluation. By mentioning this kind of condition, the teacher ensure manifestation of a negative influences of assessment on learning: back-wash effect.

Moreover, such a condition specifying compromise condition of flexibility, adaptability, functionality that must having the acquired behaviour. If performing must be proven in a default condition, what arguments can be brought that that behaviour will manifest itself in various other conditions?

Or that it might be usefully for the student in other situation or it can be accessed in other circumstances. If required a child to identify the domesticated animals by circling the corresponding figures which are on a page, it confirms the evaluative role of the request, on the one hand, and kept insecurity that in another context, the child will recognize these animals, on the other side. In this way, another condition-attribute is contradicted: S (Significant) or R (Relevant). The objective must be an important purchase behaviour, useful for the economy of his future knowledge tools. Component "condition" must be understood in another way: genetically, of specify the learning experiences through that students form their expected behaviours. In other words, in the contents of an operational objective, the teacher must anticipate not only the behaviour that must form (expressed by the verb, of course), but also a set of learning experiences upon which this behaviour occurs. In a genetic way, the conditions must show what are the learning experiences that produce the desirable performing behaviour?

An important detail: learning experiences can be both in the classroom and at home (homework). So, these conditions can include: views of videos thematic, heuristic conversation, text analysis, observations, conversations in work-group, independent study materials, discoveries...Such details allow a good anticipatory visibility for learning experiences of students, and ensures landmarks regulating these experiences.

4.5. „How much?"

The predictive answer: "the level of performance". Professor skills are very important in determining what level of the performance is desirable. In terms of quality or/ and quantity. Not all students can perform at the same level, so it is essential that the teacher expected to adapt the expected performing behavior to different levels existing in class. This provides a healthy differentiation in terms psychological and pedagogical. Is managing the dynamic individualization - differentiation. According to Hattie (2014, pp.101-102), "effective teachers successfully plan a lesson by choosing objectives that are sufficiently stimulating and by organizing learning situations that will help students achieve these goals."

In the meta-analysis conducted on the impact of exercising, Marzano (2015, p.107) presents the results of studies made by Bloom (1976), Feltz and Landers (1983), Ross (1988), Kumar (1991). The average effect size is between 0.48 and 1.47 and progress percentile is between 18 and 44.

5. Conclusions

It is necessary to mention some of the consequences of such an approach. Specifying all the components of an operational target provides consistency to the effort of learning design. Teachers must accept that the wording of a statement as operational objective cannot ignore any parts. Then it is important that each component be appropriate understood, in a psycho-pedagogical way. The essential role of operational objectives is to regulate learning, so their components cannot be built with an eye on evaluation. Evaluation relates to the performing behaviour specified in goal, is truth, but assessment tasks are not the learning tasks. The learning tasks are just learning experiences. And these are condition for a new performing behaviour. This function of learning regulate is accompanied by another: to give a clear advanced image on those purchases that the teacher believes as relevant. In this context, conceptualization and operationalization actions are essential. They allow the passage from the general level of goals (specific competencies) at the concrete level, of the lesson's objectives. It is also important that the operationalization not be limited only to knowledge behaviour. Of course, depending the content of school object, the challenges for operationalization are different, but the principles are the same. Finally, an operationalized objective as example: *At the lesson's end, basis on PPT presentation, the tasks group resolving, but even on independent home study, each student/ pupil will list five activities for a balanced daily schedule.*

References

Ågerfalk, P.J. (2004). Grounding through operationalization –constructing tangible theory in is research. *12th European Conference on Information Systems*. Retrieved from http://www.vits.org/publikationer/dokument/425.pdf

Ambrose S.A., Bridges M.W., Lovett, M.C, DiPietro, M. &Norman, M.K. (2010). How learning works. 7 research-based principles for smart teaching, San Francisco: Jossey-Bass

Babbie, E. (2010). *The practice of social research*, Iasi: Polirom

Bloom, B.S. (ed.) (1981). *Taxonomy of educational objectives. Cognitive domain*, (24th Edition), New York: Longman

Bloom, B.S., Madaus, G.F. & Hastings, J.T. (1981). *Evaluation to improve learning*, McGraw-Hill Book Company

Chelcea, S. (2004). *Methodology of sociological research. Quantitative and qualitative methods*, Bucuresti: Economică

De Landsheere, V. & De Landsheere, G. (1979). *Defining the objectives of education*, Bucuresti: EDP

Gagné, R.M. (1965). The analysis of instructional objectives for the design of instruction. In *R. Glaser (Ed.). Teaching machines and programmed learning. Data and directions*. Washington DC: National Education Association

Harden, M.R. (2002). Learning outcomes and instructional objectives: is there a difference? In *Medical Teacher*, 24(2), 151–155

Hattie, J. (2014). *Visible learning for teachers*, Bucuresti: Trei

Hattie, J. & Timperley, H. (2007). The power of feedback. In *Review of Educational Research*, 77 (1), 81-112

Lee, W. & Reeve, J. (2013). Self-determined, but not non-self-determined, motivation predicts actions in the anterior insular cortex: An fMRI study of personal agency. In *SCAN*, 8, 538-545

Mager, R.F. (1962). *Preparing instructional objectives*, Palo Alto: Fearon

Martin, R., Cohen, J.W & Champion, D.R. (2013). Conceptualization, Operationalization, Construct Validity, and Truth in Advertising in Criminological Research. In *Journal of Theoretical and Philosophical Criminology*, 5 (1), 1-38

Marzano, R.J. (2015). *The art and the science of teaching*, Bucuresti: Trei

McLeod, G. (2003). Learning Theory and Instructional Design. In *Learning Matters*, 2(1). Retrieved from http://principals.in/uploads/pdf/Instructional_Strategie/learningtheory.pdf

Merriam, S. B. & Caffarella, R. S. (1999). *Learning in Adulthood: A Comprehensive Guide*. (2nd Edition). San Francisco: Jossey-Bass

Negreț-Dobridor, I. (2005). *Didactica nova*, București: Aramis

Petre, C. (2013). *About school instruction. Nothing important*. Craiova: Sitech

Petre, C. (2014). About lesson. A chat model. In *Public Responsibility in Education*, Constanța: Crizon, 155-159

Petre, C. (2015). The lesson – experience of school learning. A possible pedagogical interpretative model. In *Education from the perspective of values. Tom VIII: Suma paedagogica* (pp.205-209), Bucuresti: Eikon

Saul, C., Hofmann, P., Lucht, M. & Pharow, P. (2011). Competency-based approach to support learning objectives in learning, education and training. In Rohland, H. (Ed.) *Gesellschaft für Informatik - GI, Fachgruppe E-Learning: DeLFI*. Retrieved from http://subs.emis.de/LNI/Proceedings/Proceedings188/21.pdf

Yamanaka, A. & Wu, L. Y. (2014). Rethinking Trends in Instructional Objectives: Exploring the Alignment of Objectives with Activities and Assessment in Higher Education – A Case Study. In *International Journal of Instruction*, 7(2), 75-88. Retrieved from http://www.e-iji.net/dosyalar/iji_2014_2_6.pdf