OPERATIONAL MODALITIES FOR THE DEVELOPMENT OF LEARNING TO LEARN COMPETENCE AT HIGH SCHOOL STUDENTS WITH LEARNING DIFFICULTIES

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Abstract: The topic of this paper presents a complex and present-day issue, has an interdisciplinary character, that of developing the learning to learn competence for students with learning difficulties that can manifest themselves under various ways. Since this is one of the formalized eight European key competences, the formal pre-university education should provide a proper learning environment in order to develop this competence to all students. Qualitative manifestation of competence is directly influenced and dependent on context, on contextualized experiences that learners experience in the sense that not only the context itself might influence the quality of competence manifestation, but also the learners' subjective experiences that were determined by that particular context. Being a transversal competence, the learning to learn competence could not be attached strictly to just one discipline from the curriculum at the pre-university level. In this study, we presented the main elements of a formative intervention program focused on an operational model of development of learning to learn competence in order to diminish the frequency of learning difficulties in studying Romanian language and literature at 11th grades adolescents which are integrated into normal classes from technical high schools/colleges. Through this program we suggested concrete ways of developing learning to learn competence on the cognitive, metacognitive, non-cognitive dimensions to those students whose main limitations are mostly situated in the direction of efficiently managing the cognitive, metacognitive, motivational and socio-emotional resources. Finally, we analyzed the results of research that open wide possibilities for structured pedagogical actions in developing learning to learn competence, especially in educational intervention programs which aim to stimulate critical reflection, metacognitive reflection and strategic decisions making for students with learning difficulties.

Keywords: *learning to learn competence, development model, educational intervention program, learning difficulties, transversal competence.*

1. Paper Rationale

Considering its structure, objectives and content, education must respond continually to demands required by the evolution of national and international realities. The desired changes in society require increasing student performances, which will generate the necessary skills for future professional and social success of students today. In this context, learning to learn is an essential instrument for lifelong learning. Therefore, education and training have to secure the learning environment in order for this competence to be developed for every citizen, including individuals that are part of a disadvantaged group (those with learning difficulties,

special needs, in the situation of school failure) as well as through different learning contexts (formal, non-formal and informal). Organizing a supportive pedagogical environment becomes an essential condition of instruction, which allows students to learn from mistakes, to gradually develop their capacity of self-guidance, of learning management and of reflection over their own learning process. Learning difficulties are temporary obstacles in learning activities that affect the input of information, their processing and the output of process, both in terms of cognitive and metacognitive, in the case of persons who have basic intellectual capacities in terms of structural and functional integrity. Therefore, developing the learning competence at students with learning difficulties is an important pedagogical stake.

2. Paper theoretical foundation and related literature

Competence-based education is a learning process centered on the ability and the responsibility of each student and the development of autonomy and self-confidence. Briefly, it is a teaching and learning system focused on student in exchange for the previous teacher centered system. Competence-based learning consists in development the necessary generic or transversal competences and specific competences for each profession. “Learning to learn” is one of the desirable competencies proposed by EU for citizens. The expression “learning to learn” is accompanied by four goals of the present school: learning to know, learning to do, learning to live together, and learning to exist (Delors, J., 2000). Therefore, the Romanian school must become the school of innovative learning and in depth learning (Chiș, V., 2005), a school of forming and developing the competences.

We say that learning is strategic when the learner is conscious about the process of learning and is controlling his/her efforts in using certain personal habits and strategies (Paris, Lipson and Mixson, 1983 apud Vianin, P., 2011). According to Butler (1998), strategic learning involves “a recursive cycle of cognitive activities, including tasks analyze, selection, adaptation or invention of strategies, monitoring performance as well as changing approaches that are needed”. Therefore, effective strategic learning should promote all these activities cognitive, as well as motivational and emotional processes. Students who don’t have specific learning difficulties, but are slower, less strategic, generalize less knowledge and have more difficulties to connect tasks as a consequence of the fact that they don’t transfer learning strategies (Bosson, M., 2008), that metacognitive skills are low level for this students (Borkowski et al., 2000; Fuchs et al., 2003; Wong, 1994; Björklund, 2005) or they are trying

to compensate for difficulties, overusing the ones they are most familiar (Saint-Laurent et al., 1995 cited Vianin, P., 2011).

Since many of the learning experiences are unplanned and experiential, the key for an effective learning is reflection that transforms experiences in learning. The reason that some people are poor reflective learners is because they have a limited repertoire of reflective questions search. Its importance, however, is in providing opportunities to practice them. Reflective learning does not represent what happens with the learner, it represents what the learner does with what happens to him. Reflection helps learners to link new learning experiences to previous ones, so that they can assimilate unknown, particular items, in a holistic and wide-range learning (Jordi, R., 2011). Reflective learning is closely related to reflective teaching. Above all, it is an assumed and self-determined learning, is active (even interactive), self-regulated, assisted, of self (self-monitoring, self-assessed), constructive, significant.

In this paper we choose the definition of the European Union (European Commission, 2006), which supports the existence of three structural dimensions of learning to learn competence: cognitive dimension, metacognitive dimension and emotional and motivational dimension combined with socio-cultural learning environment. Thus, according to Hoskins and Fredriksoon (2008), the concept of learning to learn is studied to consider a European framework and to test measuring the expression "learning to learn". The definition emphasizes that this combination of capacities must be used in multiple and different contexts by people who have purchased and, thereby, reference is made to the fact that this competence is rather general than one related to a specific study discipline.

The need to develop the learning to learn competence is justified by the fact that it is one of the most poorly represented areas for most subjects within the national curriculum. Therefore, in practical-applicative research on this field we suggest concrete actions to build the teachers' way of thinking and action that favors changing the emphasis from *how to teach* to *how to learn* so that the student be helped to acquire the autonomy in learning. While studying the Romanian language and literature one could not avoid this competence which engages transversal knowledge, abilities, attitudes, all of which this discipline implicitly requires. During secondary education, students must form their communication skills that are necessary to perform any activities in society, but also the learning to learn competence. Thus, are formed and developed fair, clear, consistent speech skills, competences to understand and produce oral and written messages in various communication situations, learning management

competences, capacities of planning, monitoring and control of learning strategies, metacognitive reflection skills.

3. Methodology

Our applicative research is based on a model of developing learning to learn competence that was conceived by us through valorisation of results achieved from fundamental-theoretical research and our pedagogical intuition.

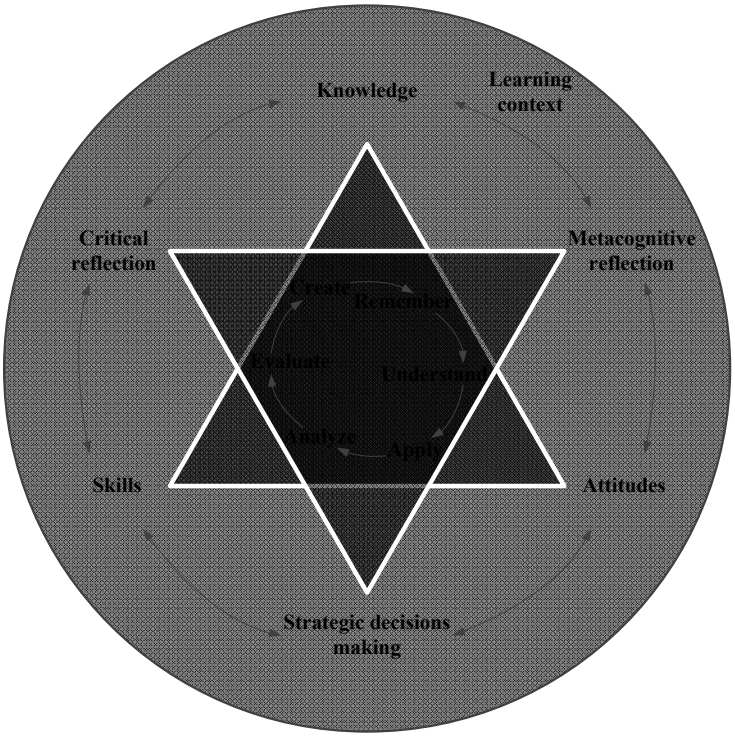

Figure no.1. The theoretical development model of learning to learn competence (original model)

The theoretical model that we suggest articulates systemically the combination of knowledge, abilities and attitudes necessary for the development of learning to learn competence according to the levels of learning taxonomies; it values entirely the processes of critical reflection, of metacognitive reflection and strategic decision making within a socio-constructivist context. Between these internal structural components there is an inter-dependency relation, namely one emphasizes reciprocally the other.

For an instructive strategy to be efficient for students with learning difficulties, it is necessary to focus on the cognitive, metacognitive and non-cognitive (motivational, emotional and contextual) processes, following a coherent model of action. The challenge that we introduce is to apply a model as comprehensive as possible. ***The critical reflection***

demands students to think about the text content, about the exploitation of knowledge or previous knowledge as well as to think of text structure and shape. It seems that there is a lack of consensus regarding the definition of critical reflection, being difficult to define depending on the text and ideology. Reflection implies students' meditation on what they have learnt by means of relating the new contents to previous knowledge, thus reconstructing their cognitive schemata for integrating the new acquisitions, students developing them and their knowledge. Reflection on thinking and processes implies students thinking about thinking (metacognition), about actions and processes, as well as transfer of knowledge in new contexts and creating alternatives or opening new possibilities. ***Metacognitive reflection*** implies the evaluation, monitoring and control of personal cognition or mental functioning (Flavell, 1979; Jost, Kruglanski and Nelson, 1998; Metcalfe and Shimamura, 1994; Nelson, 1992; Wells, 1995). Reflection offers students the context in which they use their ***ability to make decisions*** when analyzing their own performance, as well as their colleagues' performance, questioning what they have learnt and making decisions regarding the possible alternatives of the problem in question. The process of developing or adopting a decision to use a particular learning strategy has a common operational scheme with other decisions, which consists of several steps. Decision-making is a part of the problem solving as decision making occurs at each step of the problem solving process.

Thus, the learning to learn competence means that students are able and prepared to establish independently learning objectives, to plan their appropriate learning stages, to find information relevant for learning, to solve problems, to reflect critically on the learning process, individually or with others.

The main ***aim*** of this research is to stimulate the development of learning to learn key-competence by means of implementing an intervention program to 11th grade students with learning difficulties in studying Romanian language and literature, so that the learner reaches the authentic, reflexive and strategic, efficient, autonomous/independent learning based on comprehension.

As ***general objective*** of the research that we suggest we mention the elaboration and implementation of a formative intervention program centered on an operational model of development of learning to learn competence at cognitive, metacognitive and non-cognitive levels, for 11th grade students with learning difficulties in studying Romanian language and literature.

Starting from the identified problems in the analysis of the school results of 11th grade students, of their learning difficulties, we have elaborated the following ***hypothesis of the research***: *The implementation of an educational intervention program to 11th grade students in order to value entirely, in personalized manner and in a socio-constructivist framework the critical reflection, the metacognitive reflection and the strategic decisions making, will diminish the frequency of learning difficulties in studying Romanian language and literature.*

The ***sample of subjects*** included within the observational research a number of 186 teachers and 560 students from 8 technical high schools and colleges from Cluj-Napoca. After coding the names of students, interpreting the results of pre-test evidence and analyzing of school results in Romanian language and literature discipline (the final grade of the 1st semester being between 4 and 6, school year 2013-2014) were included in the unique experimental group a sample of 106 students from 11th grade with learning difficulties from three technical high schools and colleges. Thus, the sample of subjects gathers students whose limits are situated mainly in the direction of efficiently managing the cognitive, metacognitive, emotional and motivational resources.

One of the first directions of ***sample content*** formation was the identification of the themes and contents that were to be included in the experimental approach. The contents were chosen according to the specific program from the curricular area Counseling and Orientation for 11th grade. A second direction of sample content formation was the decision regarding the strategic and reflexive processes and behavior that were to be practiced during the intervention.

The behaviors frequency of using the critical thinking abilities when studying the Romanian language and literature (critical reflection) was measured by ***Motivational Strategy Learning Questionnaire (MSLQ)*** developed by Pintrich, Smith, Garcia and McKeachie, 1991 (critical thinking subscale) translated and adapted by us. From the repertoire of methods for assessing metacognition in school learning, available in literature, we selected the scale developed by G. Schraw and RS Dennison (1994) and named by the authors ***Metacognitive Awareness Inventory (MAI)*** (translated and adapted by A. Glava, 2007), that we decided to use in pre-test and post-test phases of this investigative approach. Another instrument used to measure strategic decisions making was ***Metacognitive Awareness of Reading Strategies Inventory (MARSI)*** created by Mokhtari and Reichard, 2002, problem-solving strategy subscale, translated and adapted by us for measuring the degree of practicing the problem-solving strategies in reading texts. Both the psychometric qualities of the instruments

produced in their original form translated and adapted for the Romanian school population and achieving significant correlations between the variables represented the interest points in the pilot study of instruments. The values of Cronbach alpha coefficients for each scale applied showed a high degree of fidelity. Interpretation of data collected allowed drawing conclusions favorable to further research on a larger scale.

4. Results

In the pre-test phase we used the analysis of global average scores and on subscales of questionnaires/inventories applied. Thus, we calculated the means of the scores by summing the scores obtained by subjects and calculating the arithmetical mean of the scores for the entire sample of subjects, students with learning difficulties.

Overall data	N	Minimum Value	Maximum Value	Average Scores	Standard Deviation
Score_critical_reflection_pretest	106	1	7	4,12	0,676
Score_ metacognitive_reflection_pretest	106	1	5	3,02	0,453
Score_strategic_decisions_making_pretest	106	1	5	3,10	0,561
Score_global_pretest Valid N (listwise)	106 106	1	5	3,11	1,009

Table no. 1 Descriptive statistical analysis of data obtained from pre-test in experimental sample

Analysis of mean scores obtained for the three categories of variables and relate them to the overall scores mean obtained by all subjects at administered inventories allow us to observe that the critical reflection variable is above the group mean (4.12), with a score higher than the mean (3.11), while the metacognitive reflection variable is slightly situated below the group mean (3.02). This means that students' cognitive approaches are more valued in educational practice than the metacognitive ones focusing on observation of the learning process. Scales and subscales data allow us to focus on the trends in the processes of critical reflection, metacognitive reflection and strategic decision making with the advancement in the intervention program.

Also, in this pre-testing stage we were interested in analyzing the way in which the three variables correlate to each other. For this reason we used the Pearson correlation coefficient. The following table presents the results obtained for each of the three variables in this stage, so that in the post-test phase to analyze comparatively results obtained during the experimental approach.

		Critical reflection	Metacognitive reflection	Strategic decisions making
Critical reflection	Pearson Correlation	1	,424**	,510**
	Sig. (2-tailed)		,000	,000
	N	106	106	106
Metacognitive reflection	Pearson Correlation	,424**	1	,499**
	Sig. (2-tailed)	,000		,000
	N	106	106	106
Strategic decisions making	Pearson Correlation	, 510**	,499**	1
	Sig. (2-tailed)	,000	,000	
	N	106	106	106
**. Correlation is significant at the 0.01 level (2-tailed).				

Table no. 2 The correlation between the three variables in the pre-test

It can be seen from the above table that there is a statistically significant correlation, but not strong between the degree of development of critical reflection abilities and the degree of metacognitive reflection abilities established at r = 0,424. Moreover, there is a positive correlation between the critical reflection abilities and the ability of strategic decisions making (r = 0,510). Between the degree of metacognitive reflection capacities and that of decisions making there is no strong correlation (r = 0,499). Thus metacognitive reflection variable scores increase with increasing strategic decisions making variable scores. In this way we can argue that there are significant but not strong correlations ($p < 0,001$) between the three processes that contribute to the development of learning to learn competence. To represent the data included in the correlation coefficients, mentioned above, we realized specific scatter diagrams, stating that there is no evidence of a curvilinear relationship or undesirable influence of aberrant values.

At the end of the pre-test phase, the results indicated that the experimental group contains an impressive number of students who cannot regulate their strategic and reflective behavior in learning or succeed at a medium level. Descriptive statistical analysis performed indicates that there is a predominance of low scores on metacognitive reflection variable before starting the experiment. Also, students have shown a slightly low level of decisions making abilities regarding learning strategies in reading situations. Subjects are unaware the intrinsic value of learning, their usefulness, considering they have low effectiveness of reflective and strategic abilities.

The sample content developed in the research, namely the formative intervention program, included topics covered in second semester of the school year 2013-2014, during a 10 weeks period of time within the activities of counseling and orientation. They correspond

to the five thematic modules set by the syllabus for Counseling and Orientation curriculum area for 9th to 12th grade, 2006. Thus, the intervention program framework included themes and curricular contents with the use of non-literary texts. Thematic units that constituted pedagogical investigation framework were organized so that curricular contents were selected to provide a foundation for the development of learning to learn competence, for engaging and holding reflective and strategic activities in good conditions.

For determining the existence of certain differences between the three variables within the experimental group we have used Paired-Samples T Test in order to compare the means. Considering the statistical data, we can assert that the average level of the critical reflection development during the post-experimental stage (M = 5,02, AS = 0,73) is significantly higher (t = -18,52, df = 105, p bidirectional < 0,005) as opposed to the average level of the critical reflection development during the pre-experimental stage (M = 4,12, AS = 0,67). Test *t* data shows that there is a significant difference between the average scores obtained by the subjects during the pre-testing and post-testing stages. In order to identify the degree of impact of this difference we have calculated Cohen's d coefficient based on test t value for pair samples (having dependent scores). After calculating d Cohen (d Cohen = 5,79, r = 0,94), we can conclude that there is a strong effect of our intervention regarding the development of critical reflection during the post-experimental stage as opposed to the pre-experimental stage. In the case of metacognitive reflection we can conclude that the average level of its development during the post-experimental stage (M = 4,05, AS = 0,44) is significantly higher (t = -51,21, df = 105, p bidirectional < 0,005) as opposed to the average level of metacognitive reflection development during the pre-experimental stage (M = 3,02, AS = 0,45). In what concerns the increase of the effect size regarding metacognitive reflection, Cohen's d coefficient, d = 7,03, meaning for a r = 0.96 represents a powerful effect of our intervention. Corroborating data from descriptive statistical analysis with the T test-pairs values, we can state that the average level of the strategic decisions making process development during the post-experimental stage (M = 4,21, AS = 0,48) is significantly higher (t = -37,95, df = 105, p bidirectional < 0,005) as opposed to the average level of the strategic decisions making process development during the pre-experimental stage (M = 3,10, AS = 0,56). We also mention that in the case of the strategic decisions making development, our intervention had a strongly significant effect (d Cohen = 5,10, r = 0,93).

These results demonstrate that during the experimental approach, because of exercising critical reflection, metacognitive reflection and strategic decisions making in complex

learning situations, there has been a significant increase in the incidence of learning behaviors, of cognitive, metacognitive, non-cognitive dimensions, an optimization of awareness, planning, monitoring and control of learning.

Intending to identify the degree of correlation between the three variables regarding the development of learning to learn competence during the post-testing period, we have used Pearson's correlation coefficients. Thus, after the data analysis we can notice that between the three processes contributing to the development of learning to learn competence, there are significant positive correlations ($p < 0{,}001$). Therefore, the level of development of critical reflection positively correlates with the level of metacognitive reflection at a $r = 0.78$ and with that of strategic decisions making at a $r = 0.80$. Also, the level of the development of metacognitive reflection positively correlates with the level of strategic decisions making at a $r = 0.76$. In other words, the mean values obtained from subjects at inventories applied in post-test were significantly higher for each of the three variables that contribute to the development of learning to learn competence, than the values obtained in the pre-test. In the same context, the correlations between the three variables remain positive and become highly significant in the post-test. We mention that although the correlation coefficients do not have an equal value with 1, although they do not indicate a perfect correlation between the variables, these correlations are significant. Moreover, the development of a competence and its structural components happens in time therefore we expected an unequal correlation between critical reflection, metacognitive reflection and the process of strategic decisions making. Thus, the existence of certain significant correlations between these components, although not perfect, intends to complete the rest of the statistical data and emphasizes the efficiency and functionality of our model for developing the learning to learn competence.

5. Discussions

The statistically significant differences between the results obtained from the practice activities during the pre-testing and post-testing stages along with the evolutions emphasized during the formative intervention by means of qualitative and quantitative tools, allow us to appreciate the hypothesis that stood at the basis of this experiment as being validated. Using critical reflection, metacognitive reflection, strategic decisions making and involving subjects in complex learning situations in an intervention program articulated proved their formative efficiency in the sense of activation and optimization learning behaviors and, consequently, a decrease of learning difficulties faced by 11th students.

The findings regarding the hypotheses confirmation are based on the comparative results of the experimental group before and after intervention. These results have shown, based on *t*-test and Cohen's d coefficient, which measures the effect size, the pattern of development of learning to learn competence, proposed by us, is functional, causing superior results to the experimental group in the two points of intervention. Also, based on Pearson correlations, which proved to be positive, significant, it can be concluded that between critical reflection, metacognitive reflection and strategic decisions making, being promoted by the development model of learning to learn competence, there are interrelations and interdependencies. Thus, the students in the experimental group with a high level of critical reflection have a high level of metacognitive reflection and also a high level of strategic decisions making and vice versa, as well as the students with a high level of metacognitive reflection have also a high level of strategic decisions making and vice versa. Positive correlations between the three variables obtained in pre-test phase maintained to post-test phase, even more, they become highly statistically significant. Experimental results validate the effectiveness of the model, but we must admit that they aimed only to stimulate critical reflection, metacognitive reflection and strategic decisions making; the generalization of this model based only on these variables is not sufficient to develop the learning to learn competence.

Our intervention has allowed each student with learning difficulties, on the one hand, and the group itself, on the other hand, to evolve in terms of the orientation of cognitive interests, the search for answers to complex questions, the analysis and synthesis of information and opinions, ensuring to understand the new and the learning, achieved in a broad sense as approach that goes beyond school and classroom space in the context of life situations of students with learning difficulties.

6. Conclusions

Intending to improve dysfunctional aspects related to learning processes, educational research undertaken in the development of learning to learn competence aimed to argue and demonstrate the importance and necessity for experimental intervention focused on developing learning to learn competence to students with learning difficulties from 11th classes in the context of studying the Romanian language and literature. At the same time, we believe that the research carried out is a pleading for shifting the emphasis from teaching to the learning, from informative side to formative one, thus contributing scientifically to improve the educational process. We also believe that the results of the experimental

approach, which was to implement an intervention program that values entirely critical reflection, metacognitive reflection and strategic decisions making within a socio-constructivist framework, demonstrate that the development of learning to learn key-competence is a viable solution for improving students' learning, their learning autonomy and responsibility, for optimizing strategic and reflective learning.

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