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Asking questions - critical thinking tools

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Abstract

The study aims at highlighting the way in which the theories of critical thinking from the last 25 years may be exploited in the school practice from primary education. By exploiting the didactic experience and practice from the psycho-pedagogic experiment conducted, we shall illustrate a way of formative intervention in the direction of building critical thinking. The purpose of our intervention is to value the R.W.C.T. methods, the taxonomy of interrogation and the Socratic seminar with a view to forming/building critical thinking skills at students in the 4th grade. On this basis, we shall demonstrate how we have applied a critical thinking stimulation process, during a school year, within the program Asking Questions OMC 3-3-4.

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1. Critical thinking and forming/building the related skills

References to the term of critical thinking have been identified as of antiquity, being related to the name of the great philosopher Socrates. He highlighted the fact that, in reality, things are not what they seem to be. Only a critical mind is able to analyse things, moving beyond the surface and succeeding in heuristically reaching their essence through well formulated and clearly aimed questions. The last century approaches in psychology and pedagogy have resumed and developed the issue of critical thinking, turning its evolution into a major objective of intellectual education (and of integral education, also!) by means of implicit as well as explicit strategies.

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1.1. What is Critical Thinking?

Facione, P. (2009) believes that the critical thinking skill is an ability – a key to academic success, the “corner stone of high education” (p.5). To organize the program of stimulating critical thinking we have started from the perspective provided by Fischer&Scriven (1997) according to whom “critical thinking is skilled and active interpretation and evaluation of observations and communications, information and argumentation” (apud Fischer, 2001, p. 10).

1.2. Critical Thinking Skills

A person endowed with critical thinking neither listens passively nor accepts everything s/he sees and hears. The students with critical thinking are active thinkers, address questions in order to understand, search for answers and solutions, support their answers with arguments, interpret, analyze logically and evaluate the arguments of others. Beyer, B. (1995) presents 6 essential aspects of critical thinking: 1. *Dispositions*: Critical thinkers are skeptical, open-minded, value fair-mindedness, respect evidence and reasoning, respect clarity and precision, look at different points of view, and will change positions when reason leads them to do so. 2. *Criteria*: To think critically, one must apply certain criteria. One needs to have conditions that must be met for something to be judged as believable. Although the argument can be made that each subject area has different criteria, some standards apply to all subjects; 3. *Argument*: A statement or proposition with supporting evidence. Critical thinking involves identifying, evaluating, and constructing arguments. 4. *Reasoning*: The ability to infer a conclusion from one or multiple premises. To do so requires examining logical relationships among statements or data. 5. *Point of View*: How one views the world, which shapes one's construction of meaning. In a search for understanding, critical thinkers view phenomena from many different points of view; 6. *Procedures for Applying Criteria*: Other types of thinking use a general procedure. Critical thinking makes use of many procedures. These procedures include asking questions, making judgments, and identifying assumptions (p.12). Among these, the critical thinking stimulation program aimed at developing: C1. argumentation skills; C2. correct inference skills; C3. skills in approaching a problem from different points of view; C4. skills in complying with the procedures of critical thinking.

The program implementation was achieved during the 2011-2012 school year on a group of 14 students (5 girls and 9 boys) from “Alexandru cel Bun” Primary School, Bacău.

The purpose of the research was to systematically implement the methods of stimulating critical thinking during the lessons of Romanian Language and Literature from the 4th grade. Forming the 4 aforementioned skills and their subsequent development shall ensure, in time, their intellectual maturation, the shaping of mental processes with a view to enabling the youth to manifest themselves as authentic citizens for an open society, cooperative, with leadership skills, tolerance towards individuals coming from any environment, displaying personal initiatives, guided by principles but able to find solutions which may be adjusted to the changing reality.

2. How we organized the program of R.W.C.T. methods, the taxonomy of interrogation and the Socratic seminar in order to build critical thinking at primary students

The research started from the following hypothesis: Applying the R.W.C.T. methods, the interrogation taxonomy and the Socratic seminar during the lessons of Romanian Language and Literature from the 4th grade leads to building skills in argumentation, correct inference, approaching a problem from different perspectives and complying with the procedures of critical thinking.

Among the objectives derived from the hypothesis, we shall only relate our present study to the following:

- O1 – Selecting the methods of critical thinking stimulation (the R.W.C.T. methods, the taxonomy of interrogation and the Socratic seminar) and analyzing them synthetically;
- O2 – Designing and organizing the teaching activities in the context of E-R-R for the discipline of Romanian Language and Literature, the 4th grade, in order to stimulate critical thinking by means of the selected methods;
- O3 – Conducting the lessons of Romanian Language and Literature for the 4th grade based on the critical thinking program, by integrating the selected methods.

Practically, the program we have suggested in this study with a view to building critical thinking is called *Asking Questions OMC 3-3-4* (3 objectives - 3 methods – 4 skills).

To reach objective O1, we have started by defining the 3 categories of methods used. All of them have in common the action of formulating problems, praised by other authors as art (Boswell, C. (2006).

Reading and Writing for Critical Thinking (RWCT) is a system of strategies for organizing and conducting the educational process with a view to stimulating critical thinking by exploiting language. These enrich and activate the vocabulary and critical thinking, generating a heuristic process, centred on the stimulation of curiosity, formulating original opinions, solving problems but, especially, responsibly debating upon ideas, democratic acceptance of perspectives, active and motivating involvement of all subjects (Chereja, F., 2004; Temple, Ch., Steele, J.L, Meredith, K.S., 2003). By means of the methods from this category, the students are engaged, like in a game, in continuous participation and cooperation.

Our initiative was inspired by Howard Gardner's opinion (2000) according to which "questions are more important than answers. Knowledge and understanding should result from the constant investigation of questions" (p.4). Based on this, we have decided to exploit, in our process, the most important tools from the critical thinking box: questions.

To avoid the relatively stereotypical formulation of questions and restricting them to one type, and to build appropriate questions which may help students think critically on all levels, we have used Bloom's taxonomy. This consists of a hierarchy of operations which are integrated from the simple to the complex. In this way, the *taxonomy of interrogation* is generated like a structure useful in avoiding the standardization of questions and building critical thinking in terms of all its operations.

According to the maieutic tradition, the *Socratic seminar* is understood concurrently in most specialized studies. According to some of these, to which we relate (Mitchell, S., 2006; Chorzempa, B. F., & Lapidus, L., 2009; Chowning, J. T., 2009) the Socratic seminar is a motivating type of intellectual exercise consisting in encouraging students to build dialogue by asking new questions to the questions addressed (instead of only answering the respective questions). Chowning, J. T. (2009) argues that in this way students are encouraged to look inside themselves for insights and for inconsistencies in their thinking, to gain a better understanding of ideas and values from a particular text, to formulate different points of view regarding the same idea or problem. The seminar starts with an open question. This allows students to think critically, analyse multiple significations, express ideas with clarity and trust. Once the students have explored a question and provided solutions, they will ask other questions generated by what they have discovered. The conversation should be disciplined and reflexive. Based on this, students have the opportunity to share the examination of a literary text, song, painting, piece of art.

To reach objective O2 we organized and managed the E-R-R type of approach (Evocation – Realization of meaning – Reflection). The E.R.R. frame (Bratu, G., 2004; Temple, Ch., Steele, J. L, Meredith, K. S., 2003) expresses a reflexive approach to the organization of the didactic process, in agreement with the principles of critical thinking. Within this frame, we elaborated the personal curricular design documents by integrating the methods selected and analyzed previously during the entire didactic process of the 2011-2012 school year, in the lessons of Romanian Language and Literature from the 4th grade.

To reach objective O3, we combined and complementarized, in the lessons of Romanian Language and Literature during the 2011-2012 school year, organized within E-R-R, the R.W.C.T. methods (Reading and Writing for Critical Thinking) with questioning techniques (the taxonomy of integration and the Socratic seminar). These were associated with different activities which aimed at the students developing skills in formulating questions, listening actively to the others' opinions, recognizing a good question, making a difference between various types of questions, expressing courageously their own points of view, bringing arguments, accepting their colleagues' views, building empathy. We applied continuous evaluation during the entire training program for each learning unit, to ensure systematic and continuous training. The alternative evaluation methods used were: the essay, the minute book, the story map, the review scheme, the double diary, the cube, the quadrant. We shall illustrate, in our study, how some of the methods for stimulating critical thinking were integrated.

2.1. *Applicative dimensions of using R.W.C.T methods*

From among the methods of interactive and collaborative learning characteristic of the R.W.C.T. program (Temple, Ch., Steele, J. L, Meredith, K. S., 2003), we exploited, during the lessons of Romanian Language and

Literature for the 4th grade, the following ones: brainstorming, cluster, know/want to know/learnt, the quadrant, the cube, the review scheme, the story map, the quintet, the double-entry diary.

At the beginning of the activity, we made the entire class of students consistent with the methods and able to use them. Subsequently, we proceeded to individual work, in pairs and groups.

We shall illustrate several methods used, which had a better impact upon the students:

1. The method *Review scheme* (Chereja, F., 2004). With the help of this method, the students provided feedback on the text. The method contains template-requirements, but solving them demands the students' adaptation to each text separately, according to the content.

Lesson topic: *The Story of the Crying Crocodile* after Vladimir Colin

- Write what the text is about: *A naïve deer is eaten by a crocodile.*
- Say what the text refers to in a short phrase: *evil soul*
- Say what the text refers to in one word: *naivety*
- Mention the colour which we associate with the content: *yellow – trickery*
- Write down the most important aspect (idea, thought, image): *Do not trust the tears of a crocodile.*
- Make a drawing to seize the essential.

2. The method *Discussion network/Argumentation* (Temple, Ch., Steele, J., L., 2000) – With the help of this method, the students exploited their thinking and reaction skills. To use this method, we asked for the students' opinion regarding a theme, character, event, inviting them to get into two groups according to their options: one for and one against. Then, they were expected to present, in turn, their arguments supporting their option.

Lesson topic: *The Dog* by Silvia Kerim

A dog may be wild or domestic. Bring arguments!

3. Angelo, T. (1995) proposes the *Minute book* (apud Leicester, M.; Taylor, D., 2010). This method may be used successfully at the end of the activities, both with students and teacher. Through it, the students are helped to become consistent with, acquire and systematize the main content nuclei. For the teacher, it is a good feedback lever. A book is made out of a sheet of paper folded in two. The students are required to answer the following questions: 1. What was the most important thing you have learnt today? 2. What question concerning today's lesson sticks to your mind?

2.2. Applicative dimensions of using the taxonomy of questions

We shall present a model for applying the multiprocessual investigation on a narrative text entitled *Fram the Polar Bear (fragment)* by Cezar Petrescu (Table 1).

Table 1 – Taxonomy of questions for the narrative text *Fram the Polar Bear (fragment)* by Cezar Petrescu

<i>Questions related to the literal level of a content (demanding exact information from the text)</i>	Where does the action in the text take place? Who are the characters in the text?
<i>Interpretational questions</i>	Why do you think the storm began precisely at that moment? Why do you think Fram chose to save the two friends?
<i>Applicative questions</i>	How can you measure the distance between your place and the North Pole? What other title would you give to the text?
<i>Analytical questions</i>	What were the reasons for which the two had got lost?
<i>Synthetic questions</i>	What do you think the two could have done to survive the storm?
<i>Transposition questions</i>	How did you feel while reading the fragment? What did you hear and see?
<i>Evaluation questions</i>	Do you think that the two travelled to the North Pole after this event? How do you appreciate Fram's behaviour?

2.3 Applicative dimensions of the Socratic seminar

We shall illustrate a model of Socratic seminar conducted at the end of the learning unit *Romanians Who Make us Proud*.

- Teacher: Do we have reasons to be proud of the fact that we are Romanians?

- L.P.: Yes. Because we have a beautiful and rich country.
- B.I.: Because many famous persons who honoured the country were born here.
- Teacher: How do we know that they honoured the country? What proofs do you have?
- B.I.: For example, Mihai Eminescu wrote many poems which were translated into several languages. I know that from my grandfather.
- C.C.: George Enescu was a great composer, conductor and violinist. His composition *Romanian Poem* was first played in Paris. I learnt that from the handbook of Romanian Language and Literature and also read about it on the Internet.
- P. T.: Constantin Brâncuși was a great sculptor and many of his works are exhibited in Paris. I heard on the news that his works are viewed by many tourists.
- Teacher: Do you think that artists, writers, musicians, sportsmen could be regarded as heroes? Could you say why?
- P.T.: No. Because these did not fight for the country. Stephen the Great is a hero. He fought for the independence of Moldavia and died.
- L.L.: I believe you do not have to die for the country in order to be called a hero. For example, a sportsman wins medals in competitions and we are proud of him.
- B.S.: Sportsmen represent the country. They climb up the podium and our national anthem is played. My parents cried when the gymnastics team won the gold medal.
- C.C.: Could a sportsman who participates in competitions and gains no medal still be called a hero?
- S.T.: No, because this means he is not well trained.
- P.R.: I think he can, because the important thing is not to win but to participate.
- Teacher: What makes you believe that?
- P.R.: Well...My basketball teacher said so. A sportsman trains a lot for a competition. Sometimes you are in a better shape, other times you are not. The important thing is to have the courage to participate.
- Teacher: Could somebody else develop this idea further?
- L.P.: I also believe it is important to participate. It is worse when you give up. Then, you do not show courage but cowardice.
- C.C.: Competitions were made to participate and not win.
- B.I.: Is this your own idea or have you heard it somewhere else?
- C.C.: I heard it from my father.

As the questions progress beyond the first step in the taxonomy (the literal level of a content) we may see that students begin to get actively involved in building meaning, they start to realize what is happening with them in the learning process. They develop meanings using their own words, expressions and learning experiences.

3. Results, conclusions and further actions

Taking into consideration the fact that the program proposed by us, entitled *Asking Questions OMC 3-3-4* (3 objectives - 3 methods – 4 skills) aims, first of all, at building argumentation skills, we have selected and presented, from all the results collected by means of an observation sheet, only those related to it.

Table 2 – Comparative presentation of the results obtained from the evaluation of the observational index “Give arguments”

<i>Give arguments</i>	<i>Percentage</i>		<i>Percentage</i>	
	Initial stage		Final stage	
<i>Never</i>	0	0%	0	0%
<i>Seldom</i>	4	29%	0	0%
<i>Occasionally</i>	8	57%	4	29%
<i>Frequently</i>	2	14%	3	21%
<i>Always</i>	0	0%	7	50%

The comparative analysis reveals the progress recorded by the 14 students, for the observational index “Give arguments”. If in the initial stage there were 4 children (29%) who rarely gave arguments and 8 children who brought arguments occasionally (57%), in the final stage, their number decreased: all of them give arguments more than seldom and only 4 students bring arguments occasionally (29%). The number of those who bring arguments frequently increased from 2 students (14%) to 3 students (21 %). The most relevant progress is that of the students who always give arguments, their number increasing from 0 to 7, representing 50% of the total number of students.

At the end of this action, we may highlight a set of conclusions and openings for future research:

- a. The methods for stimulating critical thinking hold a privileged position in the ensemble of the factors responsible for the students’ school success and for their appropriate intellectual and social development;
- b. Using the R.W.C.T. methods, the taxonomy of interrogation and the Socratic seminar during the lessons of Romanian Language and Literature (and not only) have a positive impact upon the students, meaning that they contributed punctually to the development of critical thinking and team work;
- c. The R.W.C.T. methods, the taxonomy of interrogation and the Socratic seminar constitute a challenge, a motivating methodological element both for students and teachers, stimulating their curiosity and involvement in collaborative initiatives;
- d. In terms of the lesson dynamics, those which integrate such methods are characterized by a quick pace which motivates and engages students in a better way;
- e. With the help of these methods, students are stimulated to formulate and express their own opinions, questions, points of view and creations.
- f. Based on the experience provided by the learning situations from the lessons of Romanian Language and Literature during the 2011-2012 school year in which we integrated these methods, we believe that they can be exploited in all the stages of the lesson as well as all types of lessons;
- g. For our future didactic activity, we intend to extend the integration of these methods on a wide scale to include the teaching-learning of other subjects, in relation to the opportunities provided by their contents and specificity.

As tools of critical thinking, questions play an essential role in the students’ intellectual and social development. Kowalski, K. (2007) highlights their advantages: stimulate the brain, create a communication exchange, discover knowledge or issues, encourage listening, provide the opportunity for acknowledgment, lead the process of discovery.

In conclusion, we have sufficient practical arguments to support the fact that the exercises for building critical thinking conducted during the experimental interval contributed to building skills in argumentation, correct inference, approaching a problem from various points of view, complying with the procedures of critical thinking. These skills are really useful for the overall evolution of students and personal development, as well as for enhanced school and social integration.

From this perspective, we regard as useful the provision of permanent application with a view to building critical thinking within the educational process for as many school disciplines as possible, as well as training teachers in this respect, for the entire pre-academic and academic educational process.

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