# THE OPINION OF PRACTICANT STUDENTS ON THE STIMULATION OF MULTIPLE INTELLIGENCES WITHIN LESSONS

**Gabriela-Paula PETRUȚA**[1]

e-mail: petruta_gabriela@yahyoo.com

**Abstract**

The aim of this paper consists in emphasizing point of view of the practicant students on the stimulation of various intelligences within the lessons they taught in gymnasium. The methods used in this research were the questionnaire and analysis of the activity's products carried out by the students within the activity of pedagogical practice. The research was carried out during academic years 2011-2012 and 2013-2014. The group participating to the research included students in the 3rd year of study at the Faculty of Sciences, University of Pitesti, as follows: 55 students, in the academic year 2011-2012 and 22 students, in the academic year 2013-2014. By analyzing the given answers was found that in the academic year 2011-2012, as compared to the academic year 2013-2014, the great majority of students were willing to stimulate the various intelligences of schoolchildren. So, they have stimulated a higher number of intelligences, using a diversified range of didactic methods within the lesson, being much more concerned about organization of some learning activities for the school children, than about transmitting knowledge. In conclusion, it can be stated that, according to the opinion of students, the stimulation of various intelligences within the lesson depends on both subjective and objective factors.

**Key words**: multiple intelligences, lesson, practicant studens, subjective factors, objective factors

The concept of multiple intelligences is plural of the traditional concept of intelligence, used in psychology, and it is atributed to Gardner. The author of Multiple Intelligences Theory (MI theory) considered that "it can be described better the human cognitive competence in terms of a set of abilities, talents or mental aptitudes", which he named "intelligences" (Gardner H., 2006). Gardner supported the idea that human intelligence is a "biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture" (Gardner H., 2000). Following his researches, Gardner identified initially seven intelligences, and subsequently nine, considering that each person is unique and possess a certain intelligence profile composed from at least nine different intelligences (musical/rhitmic, bodily/kinesthetic, logical/mathematical, verbal/ linguistic, visual/spatial, interpersonal, intrapersonal, naturalistic, and existential intelligence), from which he/she has developed one, or two intelligences. In the author's vision does not exist two persons who have the same intelectual profile, not even the twins, who, although have entirely or almost entirely the same genotype, have different experiences and are different one to each other. He mentioned that is very important "to recognize and to take care of all the different human intelligences, and all combinations of intelligences". Regarding to the development of intelligences, Gardner emphasized that "any individual can develop his/her own intelligence if is well motivated, if lives in a culture which values that intelligence, and if exist human and artefactual resources (for instance, texts, PC programs, study groups) which he/she can use" (Gardner H., 2006). Considering the MI theory, Armstrong emphasized that each person is using daily all types of intelligence, but each one "has a unique mode of showing his/her inteligence" (Armstrong T., 2011).

The teachers have an important role in identifying, developing and using intelligences within the activity of teaching-learning-evaluating carried out in school. As mentioned by Oprea, teaching in accordance to the strong points of schoolchildren means to know them well and to adapt the didactic strategies to their particularities. Thus, the teacher can choose which the methods and didactic procedures to use within the lesson, taking into consideration what the schoolchild can perform at best, what he/she like to do, how he/she learn better, and by which modalities this can be

[1] University of Pitesti

stimulated. Dwelling on learning, in the case when the strong points of the schoolchildren are taken into consideration, the author mention that is necessary that the schoolchildren are aware "of their own attitudes, talents, abilities" and to use them "to compensate the lack of others, or their less expressed presence". For stimulating each type of intelligence, she proposed learning activities within the lessons of language and communication, and mathematics (Oprea C.L., 2009). Also, Bocoş dwelling on curricular design at micro level, mentioned a series of questions concerning the precise modes to show different intelligences and proposed learning tasks for a whole range of intelligences identified by Gardner, in the case of a chemistry lesson (Bocoş M., 2013).

Taking into consideration the numerous books and papers published in our country and abroad, which reffers to the Theory of Multiple Intelligences and to its valorization in the educational practice, we consider that is necessary that the practicant students, the future teachers, know this theory and particularly the mode in which it can be applied within the didactic activity. In this paper we are aiming to emphasize the students opinion on the stimulation of different intelligences of the schoolchildren within the lessons they teached during the pedagogical practice carried out in gymnasium, in the academic years 2011-2012 and 2013-2014. In carrying out this research we focussed on the following objectives:

- to establish the interest level for stimulating the types of intelligences within the final lesson;
- to identify the mode in which practicant students have stimulated the different intelligences;
- to emphasize the reasons they rest on choosing to stimulate/not to stimulate certain types of intelligences within the final lesson.

## MATERIAL AND METHOD

The present paper represents a continuation of a research carried out during the academic year 2011-2012, in which we investigated the stimulation of multiple intelligences by the practicant students within the lessons, whose results were published in 2012 (Petruţa G.P., 2012). This time, taking into consideration the opinion of practicant students regarding the stimulation of multiple intelligences during lessons, we carried out an empirical based on the questionnaire method and on the analysis of the activity's products carried out by the students within the activity of pedagogical practice. The questionnaire comprised questions concerning to: the interest of students in stimulating different intelligences within lesson, type of lesson, methods and didactic tools used, as well as the working tasks given to the schoolchildren during the lesson, the reasons they rest on stimulating/not stimulating certain types of intelligences during lesson and the opinion regarding additional stimulation of other intelligences, if they would teach again the lesson. The data obtained by analyzing the answers given by the students to questions from the questionnaire were completed with those obtained from analysis of the lesson project and working records. The starting hypothesis was the following: stimulation of the different intelligences within lesson depends on the interest showed by the students for its realization, conscientiousness in designing the lesson, and also other factors such as big number of schoolchildren in class, short time in which they must reach the proposed objectives, scientific content which must be teached, etc. The population sample investigated in our research comprised 55 students in the third year of study, from the University of Piteşti, Faculty of Sciences, in the 2011-2012 academic year and 22 students, in the academic year 2013-2014 The population sample included 15 students in Biology, 11 students in Ecology and environment protection, 5 students in Horticulture, 9 students in Chemistry, 8 students in Environment engineering, 7 students in Physical engineering. in the 2011-2012 academic year, and 14 students in Biology, 4 students in Chemistry, and 4 students in Physical engineering, in the academic year 2013-2014.

## RESULTS AND DISCUSSION

From the practicant students questionned in the academic year 2011-2012, 72.72% have mentioned that they wanted to stimulate to high extent the different intelligences to the schoolchildren during the lesson. A smaller percentage of practicant students, respectively 27.27%, wanted to stimulate to a certain extent the schoolchildreen's intelligences. In the academic year 2013-2014, half of the students (50%) stated precisely that they wanted to stimulate to a great extent the different intelligences to the schoolchildren during the lesson. The same percentage of students (50.00%) were willing to stimulate to a certain extent the types of intelligences to the schoolchildren. None of the practicant students have mentioned that he/she wanted to stimulate to a small extent, or not at all, the schoolchildren's intelligences.

In the academic year 2011-2012, for the majority of practicant students (89.90%) the final lesson they teached in gymnasium was a mixt lesson. In the academic year 2013-2014, the final lesson was one of transmitting/acquiring new

knowledge in the case of 50% from the practicant students, and a mixt lesson in the case of 10% from students. A small percentage of students, respectively 10.90% from them in the academic year 2011-2012, and 4.54% in the academic year 2013-2014, have been teaching lessons for the formation of intelectual skills and abilities.

Regarding on the intelligences that the practicant students stimulated to the schoolchildren, it can be stated that by combining different didactic methods, tools and organization forms of activity with the schoolchildren, they have stimulated many more types of intelligences (tab.1), in different moments of the lesson.

Thus, within the mixt lessons, in the stage of verifying the schoolchildren's knowledges, 90.90% from the questionned students in the academic year 2011-2012 have stimulated the verbal intelligence of the schoolchildren, by using conversation. A small percentage, representing 9.09% from students, have activated the verbal and intrapersonal intelligence of schoolchildren, by using the individual working record. Also, the verbal intelligence have been stimulated by the majority of students in the academic year 2013-2014, the filled questionnaires showing that 86.36% from the students used conversation for verifying or updating the knowledges of schoolchildren, within the mixt lessons, respectively lessons of transmitting/ acquiring new knowledges. Only 13.63 % from the students have activated the verbal and interpersonal intelligence, asking the schoolchildren to fill in an working record in pairs.

For psychological preparation of the schoolchildren for acquiring new contents, the verbal intelligence have been stimulated, in the academic year 2011-2012, by 80% from students who have used conversation, and 7.27% from students who have been asking the schoolchildren to fill in a rebus, whose solving result in the lesson title. The verbal and visual intelligence have been stimulated by 12.72% from students, who have used conversation based on images downloaded from internet. In the academic year 2013-2014, a high percentage of students (72.72%) have stimulated the verbal intelligence by using conversation, and 13.63 % from students by using the riddle for finding the lesson title. The verbal and visual intelligence have been stimulated by 13.63% from students, who have used conversation based on images.

In the stage of communicating/acquiring new contents, in the academic year 2011-2012, students activated the following intelligences:

1) verbal, visual, naturalistic and logical intelligences (37.54% from students), applying within the lesson following didactic methods:

a) explanation, demonstration by drawing, observation, and conversation – 16.36% from students;

b) explanation, demonstration, model device (drawings/plastic models), conversation – 21.18% from students;

2) verbal, logical and visual intelligences (27.26% from students), by using:

a) explanation, demonstration, model device (chemical formulas and ecuations of the chemical reactions), conversation, exercise - 5.45% from students;

b) explanation, demonstration of images, observation, and conversation – 18.18% from students;

c) explanation, demonstration of Power Point presentation, observation, and conversation – 3.63% from students;

3) naturalistic, verbal and logical intelligences (10.90% from students) by using:

a) observation (for instance, leaf and fruit in oak, hazelnut tree and beach tree), conversation, learning by discovery, and explanation – 5.45% from students;

b) observation, conversation, problem solving, and explanation - 5.45% from students;

4) logical, kinesthetic and verbal intelligences by using within the lesson practical work, observation, conversation, and explanation - 3.63% from students;

5) verbal, logical and interpersonal intelligences, by using Summarize-Pair-Share, explanation, conversation and demonstration - 3.63% from students;

6) verbal, logical, interpersonal, and naturalistic intelligences by using explanation, demonstration, brainstorming - 1.18% from students.

By analysing the content of lesson projects was found that 16.36% from students have stimulated the verbal and naturalistic intelligences, asking the schoolchildren to observe and describe the constitution of some plants or different organs of the observed plants/animals. Naturalistic and logical intelligences have been activated by 18.18% from students, who asked the schoolchildren to compare the plants/animals studied in the new lesson with those studied previously, or with the plants/animals related to them, in order to establish similarities and dissimilarities. A small percentage of students (3.63%), have activated the logical intelligence of schoolchildren, asking them to motivate their own opinions concerning various processes (over exploitation of natural resources, etc.). Interpersonal and ecological intelligences, have been stimulated by 1.18% from students, who have

asked the schoolchildren groups to propose ideas for collecting and recycling wastes on categories, by applying brainstorming (Petruța G. P., 2012).

Table 1

**Multiple intelligences activated within the lessons presented by the practicant students**

| How multiple intelligences were stimulated within lessons | Students | |
|---|---|---|
| | in the academic year 2012-2013 (%) | in the academic year 2012-2013 (%) |
| **Verbal intelligence** | | |
| - using conversation for verification | 90.88 | 86.36 |
| - using conversation for drawing attention | 79.97 | 72.72 |
| - using a riddle to call the schoolchildren attention | - | 13.63 % |
| - using conversation based in images | 12.7 | 13.63 % |
| - filling in a rebus | 7.26 | - |
| - using conversation | 81.79 | 95.42 |
| - using explanation | 61.78 | 90.88 |
| - using problem solving | 5.44 | - |
| - using brainstorming | 1.81 | - |
| - using Summarize - Pair – Share | 3.63 | - |
| - describing some organisms | 16.35 | - |
| - explaining with the own words of some concepts | 14.53 | - |
| - explaining of an image from the manual, etc. | 9.08 | - |
| - using conversation for fixation of knowledges | 54.54 | 72.72 |
| - using lecture for fixation of knowledges | 14.53 | - |
| **Logical intelligence** | | |
| - using demonstration | 9.09 | 13.63 |
| - using learning by discovery | 5.45 | - |
| - using exercise | 19.99 | 18.17 |
| - using algorithmization | 14.53 | 4.54 |
| - comparing different plants/animals | 18.17 | - |
| - using Graphic Organizer | 1.81 | - |
| - extracting the essential from a text using Summarize | 3.62 | 13.63 |
| - motivating of the own opinions | 3.62 | - |
| **Visual intelligence** | | |
| - using demonstration by drawing | 16.35 | - |
| - using demonstration of drawings/images/plastic models | 41.78 | 45.44 |
| - using observation | 49.06 | 68.16 |
| - using model device | 41.78 | 27.26 |
| - using practical work | 3.62 | - |
| - using Graphic Organizers | 1.81 | - |
| - presenting of a scientific content in PowerPoint view | 3.62 | 13.63 |
| - realizing a schematic drawing based on a image | 9.08 | 18.18 |
| - realizing a schematic drawing based on the new acquired knowledges | 7.27 | - |
| - explaining an image from the manual, etc. | 9.08 | - |
| - sticking onto a flipchart, near the names of species studied, drawings representing different organs specific to them | - | 9.09 |
| **Kinesthetic intelligence** | | |
| - using practical work | 3.62 | 18.18 |
| **Intrapersonal intelligence** | | |
| - using the individual working sheet for verification | 9.08 | 9.09 |
| - using individual working sheet for fixation | 21.80 | 36.36 |
| **Interpresonal intelligence** | | |
| - solving the working tasks in groups | 5.44 | 18.17 |
| **Naturalistic intelligence** | | |
| - observing and describing the constitution of some plants or different organs of plants/animals | 16.35 | 4.54 |
| - comparing different plants/animals | 18.17 | - |
| - proposing of ideas for wastes collecting | 1.81 | - |

(After Petruța, G.P., 2012)

In the academic year 2013-2014, in the stage of communicating/acquiring new contents, the students have activated the following intelligences:

1) verbal, logical and visual intelligences (59.07% from students), using:

a) conversation, explanation, demonstration and observation of images – 31.81% from students;

b) conversation, demonstration, Power Point presentation, explanation, and observation – 13.63 % from students;

c) explanation, demonstration, model device (chemical formulas and equations of the chemical reactions), conversation, exercise – 13.63 % from students;

2) logical, kinesthetic, interpersonal and verbal intelligences, by using within the lesson practical work in groups, observation, conversation, explanation – 18.18% from students;

3) verbal, intrapersonal, logical and visual intelligences, by using explanation, work with the manual, conversation, modelation and demonstration - 9.09% from students;

4) verbal, interpersonal, visual intelligences, by applying conversation, explanation, work with the manual in groups, demonstration, observation of images - 4.54% from students.

By analysing the content of the lesson's projects was found that 4.54% from students, have stimulated verbal and naturalistic intelligences by asking the schoolchildren to observe and describe the different organs of plants. The intrapersonal and visual intelligences have been activated by 18.18% from students, who have asked the schoolchildren to realize independently schematic drawings representing certain human or animal organs studied in the new lesson.

In the stage of fixation of knowledges, 54.54% from students, in the academic year 2011-2012, have activated schoolchildren verbal intelligence by using conversation. Also, 14.54% from students have activated verbal intelligence by using work with the manual, asking the schoolchildren to answer to the questions from the end of lesson or to read the curiosities. A small percentage of students (9.09%), have challenged the verbal, logical, visual and naturalistic intelligences, giving to the schoolchildren as working task to explain an image from the manual/atlas or from the Internet. The same percentage (9.09%) of students have challenged the visual, kinesthetic and verbal intelligences, asking the schoolchildren to realize a schematic drawing based on an image from the manual. Some of the students (14.54%), have stimulated the verbal, logical and intrapersonal intelligences, by using an individual working sheet by which the schoolchildren were asked to solve the working tasks in writing (to explain concepts with their own words, to fill in lacunar phrases, etc.) A small percentage (7.27%) from the students have activated, apart from these three intelligences, the visual and kinesthetic intelligences, asking the schoolchildren to realize supplementary a schematic drawing. The verbal and logical intelligences have been activated by only 1.18% from students, who have realized a descriptive graphic organizer (Petruţa, G. P., 2012).

In the academic year 2013-2014, the most students have stimulated the verbal intelligence of schoolchildren, by using conversation in the stage of fixation of knowledges. A small percentage of students (18.18 %), have activated the verbal, logical and intrapersonal intelligences, by using an individual working sheet by which the schoolchildren were asked to solve the working tasks in writing. The verbal and visual intelligences have been stimulated by only 9.09% from students, who asked the schoolchildren to stick onto a flipchart, near the names of species studied within the lesson, drawings representing vegetative and reproductive organs specific to them (for instance, for common spruce, fir tree, pine tree, white cedar and larch tree, have been sticked drawings representing the stem, leaves and flowers).

Within lessons for formation of intellectual skills and abilities, 10.90% from students have stimulated the schoolchildren's verbal and logical intelligences, by applying conversation, model device, algorithmization, and exercise in order to solve problems, in the academic year 2011-2012. The same intelligences have been stimulated by applying the same methods by 4.54% from students, in the academic year 2013-2014 (tab. 1).

Among the reasons mentioned by students regarding application of the Theory of Multiple Intelligences within lesson we recall the following: more we succeed to stimulate many more intelligences, more the schoolchildren are interested by the new knowledges they must to acquire, and the number of schoolchildren who participate actively at lesson is bigger; by the more various learning activities proposed by the teacher to be carried out within the lesson, the schoolchildren can develop themselves other intelligences, not only the dominant ones; the schoolchildren learn better if they likes the learning activities proposed by the teacher during the lesson. Regarding the reasons for which students did not stimulated certain types of intelligences during the lesson, they stated precisely the following: projecting of diverse learning activities, in such way to be stimulated as many as possible intelligences, needs a longer time

to prepare the lesson, compared to the case when the practicant student intends only to transmit the new knowledge; the too higher number of schoolchildren in the class rise difficulties in organization of some learning activities by which the interpersonal intelligence can be stimulated; the need to reach primarily the objectives formulated in the lesson project in a very precisely determined time represent sometime an impediment for the stimulation of verbal intelligence by realizing some processes of own creation, and of visual intelligence by realizing some graphic organizers; the possibility of organizing some activities aiming at stimulation of certain intelligences, such as kinesthetic or musical intelligence, depends on the scientific content of the lesson. Concerning the students willing to stimulate also some other intelligences, those who participated to this research during the academic year 2011-2012 stated precisely that, if they would teach again the lesson, they would stimulate the naturalistic and intrapersonal (9.09%), visual and interpersonal intelligences (3.63%), and respectively verbal and visual intelligences of the schoolchildren (3.63%). In the academic year 2013-2014, as revealed by the analysis of the filled questionnaires, 7.27% from the practicant students would activate additionally the verbal and intrapersonal intelligences, 13.63% would activate also the naturalistic intelligence, and 9.09% from the students would develop also the interpersonal intelligence of the schoolchildren.

## CONCLUSIONS

Most of students who carried out their pedagogical practice in the gymnasium during the academic year 2011-2012 have been interested to a great extent in stimulating the different intelligences during the final lesson, while in the academic year 2013-2014 equal percentages of students have been willing to activate the schoolchildren intelligences to a great extent and to a certain extent, respectively. In the academic year 2011-2012, the students have used a more diversified range of modes to stimulate the same intelligences, succeeding to activate a higher number of intelligences to the schoolchildren during the lesson, as compared to the practicant students in the academic year 2013-2014. It was found that, from the students point of view, the stimulation of intelligences within the lesson depends both of subjective factors (practicant student who projects the lesson), and objective factors (number of schoolchildren in the class, duration of the lesson, scientific content of the lesson). In order to optimize the didactic activity carried out by the practicant students, we recommand designing of the didactic activity with more attention, primarily by finding diverse modes of stimulating as much as possible intelligences during the lesson.

## REFERENCES

**Armstrong T., 2011** - *Eşti mai inteligent decât crezi. Un ghid al inteligenţelor multiple pentru copii.* Traducere din limba engleză de Boga, D. L. Ed. Curtea Veche Publishing House, Bucureşti, p.13.

**Bocoş M., 2013** - *Instruirea interactivă: repere axiologice şi metodologice*, Ed. Polirom, Iaşi. p. 147 - 156.

**Gardner H., 2006 -** *Inteligenţe multiple – noi orizonturi.* Ed. Sigma, Bucureşti, p. 13, 33, 97.

**Gardner H., 2000** - *Intelligence Reframed: Multiple Intelligences for the 21st Century*. Basic Books. p. 33–34. http://en.wikipedia.org/wiki/Theory_ of_ multiple_intelligences#CITEREFGardner2000

**Oprea C.L., 2009** - *Strategii didactice interactive*. EDP. Bucureşti. p. 72-98.

**Petruţa G.P., 2012** - *Multiple intelligences stimulated within the lessons by the practicant students from the Faculty of Science,* Procedia - Social and Behavioral Sciences 76 (2013) p. 676-680. www.sciencedirect.com.