

## MULTIPLE INTELLIGENCES AND LEARNING REGARDING STUDENTS – AN EXPERIMENTAL APPROACH

Anca-Olga ANDRONIC, Răzvan-Lucian ANDRONIC

„Spiru Haret” University, Brasov, Romania

**Abstract:** *During faculty, students in psychology and pedagogy experience different learning problems. Some of them need rigorous directional elements (what and how much to learn), while others need only to be guided towards the sources of learning. Once at the graduation level, one rarely asks the question: how could I learn more easily, more durable and in a nicer manner. And this happens because, until they reach faculty, each person had already outlined a personal learning style that they consider it to be the best one. Is there a relationship between student learning and multiple intelligences? Could the application of multiple intelligences make teaching / learning more attractive both for teachers and students? Could it increase the motivation for learning following the application of Gardner's theory? Are students' results better after differentiated instruction? The psycho-pedagogical experiment carried out has attempted to answer these questions and it started from the following hypothesis. 1. If the teacher uses in his teaching activity the theory of multiple intelligences then, the students' motivation for learning increases. 2. If the student learns based upon the profile of multiple intelligences, school performance increases. 3. If the teacher uses Gardner's theory, teaching / learning becomes more attractive for both the teacher and the student. The sample included two groups of first year students from the Faculty of Psychology and Pedagogy - 25 students in the experimental group and 25 students in the control group. Methods: psycho-pedagogical experiment conducted during the second semester, school year 2009-2010. The results confirmed the three hypothesis described and showed that there was a significant difference between teaching based on the theory of multiple intelligences and the classic one. Conclusions and recommendations: a classical education addresses rather the mathematical and verbal intelligence, the intrapersonal and interpersonal intelligence – so necessary for the psychologist and the pedagogue - are least developed. Therefore, the introduction of a differentiated teaching/ learning strategy is required in order to develop the bio-psychological potential of each student.*

**Keywords:** *multiple intelligences; teaching; learning; motivation; performance.*

### 1. PROBLEM STATEMENT

From year to year the psychology and pedagogy students (and others) seem to have less and less motivation, to learn with more difficulty, considering the whole process almost to be a chore. Seeing this, a question arose in our mind: "How can we help students to learn, how can we motivate them to learn? " A few years ago I heard about the Theory of Multiple Intelligences. It was first published by Howard Gardner in "Frames of Mind: The Theory of Multiple Intelligences" in 1983. Starting from the existence of different and autonomous intelligences, leading to different

ways of knowing, understanding and learning, Howard has achieved the most important discovery in the field of pedagogy, after Jean Piaget. In Gardner's view, an intelligence is "a computational capacity - a capacity to process a certain type of information - which is found in human biology and in human physiology as well [...]. An intelligence entails the ability to solve problems or to create products that are important in a particular cultural context or in a community "(Gardner, 2006, 14). The conclusion reached by Gardner is that intelligence is not an inborn trait which dominates the other skills that people have. He does not question the existence of a general

intelligence, but he supports with evidence the fact that the traditional definition of intelligence does not cover newly discovered cognitive possibilities. The results of his research suggest that intelligence is located on different areas of the brain that are connected to each other, support one another, but can function independently if necessary. They can also develop in optimum environmental conditions.

The eight intelligences found by Gardner are: the verbal/linguistic intelligence or the intelligence of words; the mathematic/logic intelligence or the intelligence of numbers and reason; the visual/spatial intelligence or the intelligence of images, drawing and painting; the musical-rhythmic intelligence or the intelligence of tone, rhythm and timbre; the bodily-kinesthetic intelligence, or the intelligence of the whole body; the interpersonal intelligence or the intelligence of social interaction; the intrapersonal intelligence or the intelligence of self-discovery; the naturalist intelligence or the intelligence of the patterns of regularities and behaviors. The existence of the ninth intelligence, the existential intelligence, which however is still a subject to research is being put into question.

The principles this theory follows are: the application of multiple intelligences can make teaching / learning more attractive for both teachers and students; each student should be encouraged to use the preferred type of intelligence when learning; students remember best the materials if they had learned them in their personal style. Our schools address rather the mathematical and verbal intelligence and the intrapersonal and interpersonal intelligence are least developed in school. Children are often labeled as having learning difficulties or hyperactivity, but in reality they are not involved in learning through a certain task adapted to the type of intelligence. Howard Gardner's findings were followed with great interest by the international educational community which was accustomed to another way to deal with intelligence: unique, measurable, an indicator of academic success.

The training opportunities offered by the theory of multiple intelligences: we can be

identify at least three ways in which this theory can be used by teachers: a. Knowing the student's intelligence profile for the development of bio-psychological potential of each student; b. The examination of own training strategy in terms of human potential differences c. The contribution to differentiated instruction for students in accordance with the intelligence profile (Gardner *apud* Gliga and Spiro, 2001,12).

In short, the theory of multiple intelligences leads to three conclusions: 1. We all benefit from the full range of intelligences; this makes us human beings, cognitively. 2. There are not two individuals – not even twins – that have exactly the same intellectual profile. This is because, even if the material is genetically identical, individuals have different experiences; twins are often highly motivated to distinguish themselves one from another. 3. If one has a strong intelligence, this does not necessarily mean that one acts smart [...]. All these allegations relate to the psychology of human intelligence -where the theory of multiple intelligences seeks to make a contribution. But of course they involve important issues regarding education, politics and culture" (Gardner, 2006, 33).

Regarding motivation, as we know, it refers to those states and emotional and cognitive processes that can trigger, guide and support various behaviors and activities. Motivation determines the initiation of an activity and persistence in achieving a task or its abandon, being one of the main factors influencing performance. In most cases, the motivation to achieve human behaviors results from the interaction of complex sets of reasons: the need to maintain the balance of physical and mental functioning; the need to adapt to the environment and the need for personal development. In what concerns the relationship between motivation - performance, motivation is undoubtedly an important factor of performance in activity. It is seen, both by experienced teachers and the newest in the field, as a prerequisite for effective learning, and the biggest challenge for most teachers is to make students wish to learn. If a student does not wish to study,

learning effectiveness will be so small that he will probably not learn anything.

## 2. PURPOSE AND METHODS

Is there a relationship between student learning and multiple intelligences? The application of multiple intelligences can make teaching / learning more attractive for both teacher and student? Can motivation for learning increase due to the application of Gardner's theory? Are students' results better after a differentiated instruction? The psycho-pedagogical experiment carried out has tried to answer these questions. The purpose of the experiment was to increase motivation for learning and to develop bio-psychological potential of students.

The main methods used: the psycho-pedagogical experiment, the observation, the questionnaire, the study of digital social documents (catalogs). For more than a century, the application of the experiment in social life has given birth to a dispute between supporters of this method and positivists - a dispute that, in one form or another, is perpetuated today. In terms of the history of the experiment, there is a full conformity among specialists, "it is considered that the studies of Norman Triplett in 1898 represent the first attempts of a rigorous enforcement of the experiment in the field of psycho-sociology" the paradigm introduced by him being not only the oldest of field, but also one of the most fruitful experimental paradigm (Chelcea, 2007, 422).

Regarding the definition of the experiment, Leon Festinger believes that it "is to observe and measure the effects of the manipulation of independent variables on the dependent variables in a situation in which the action of other factors (actually present, but foreign to the study) is minimized" (*apud* Hohn and Vârgă, 2000,13). The psycho-pedagogical experiment is an alternative of the natural experiment.

In the psycho-pedagogical experiment conducted, we have followed several steps: choosing the problem - as Einstein said "the formulation of a problem is often more important than its solution." Identifying the problem started, as most often happens, from

practical intelligence, from daily observations. Observing how children learn, I found that some of them need rigorous directional elements (what, how and for how long to learn), while others needed the indication of more diverse sources of learning. Once at the graduation level, one rarely asks the question: how could I learn more easily, more durable and in a nicer manner. And this happens because, until they reach faculty, each person had already outlined a personal learning style that they consider it to be the best one.

Defining the assumptions. In the present experiment we started from the following assumptions: 1. If the teacher uses in his teaching activity the theory of multiple intelligences then, the students' motivation for learning increases. 2 If the student learns based upon the profile of multiple intelligences, school performance increases. 3. If the teacher uses Gardner's theory, teaching / learning becomes more attractive for both the teacher and the student.

In what concerns the planning of the experimental design, it involved: 1. The election of variables - the dependent variables were: motivation, school performance and attractiveness of course; independent variable - teaching (lecture and seminar) / learning after the theory of multiple intelligences.

The investigated group: 50 students in the first year of the Faculty of Psychology and Pedagogy of Brasov, University "Spiru Haret" - 25 students in the experimental group (G1) and 25 students in the control group (G2). The sample (although not representative for the investigated population) was extracted by simple randomization process (lottery method) from a total of 180 first year students. The average age of the students was 37 years and two months old, including students between 19 and 65 years old. Each group included 21 women and 4 men.

The psycho-pedagogical experiment was conducted during the second semester, school year 2009 - 2010 and involved three stages: 1. the pretest phase: all the participants in the experiment have written their own profile of intelligences by filling up the questionnaire for identification of multiple intelligences; the students have also filled up the motivation

questionnaire, the questionnaire for identifying class attractiveness and also, school performance was noted. 2. the experimental phase, where G1 benefited from teaching / learning by Gardner's theory. 3. the post-test phase in which the participants (both in the control group and the experimental group) were retested (the motivation questionnaire, identifying the intelligence profile and the questionnaire for identifying the attractiveness of the course), noting the school performances.

Regarding the teacher, he was the same for both groups, the differences between the two approaches - the traditional manner in the control group and the manner in the light of Gardner's theory in the experimental group - have been noted on observation forms and in the research journal. The experimental instrumentation included all the technical means of realization of the experiment: sound and audio-visual recording, computers, questionnaires, forms etc.. The application itself: the research was conducted over 14 weeks, four hours per week - two hours of lecture and two seminars. Regarding other methods used, the observation is with no doubt " the first and fundamental method in the knowledge of the surrounding reality and, therefore, the cognitive canvas of our actions" (Iluț, 1997, 76).

The need to understand human behavior, for than to be able to make predictions on their way to act, has always been alive throughout history and speculated in various forms. Physical sciences (called "hard sciences"), started with rigorous observations that led later to experiment along with observation which, however, as a specific method, continues to be a main one (ibid., 76). Regardless of its forms: self-observation, observation (oriented to capture behavioral manifestations of others), passive/external observation; structured/participatory observation quantitative), which involves to follow a list of pre-established categories of behavior etc., the observational act is designed to bring more information to the one using it. I used observation in the following situations: observation of behavior during role-play; observation during problems solving; observing the behavior during communication. The effort of observation

involves three landmarks: noting the attitudes and behavior; acknowledging the context in which the behavior occurs; the availability of an intellectual sympathy of the counselor towards the subject (Dafinoiu, 2002, 87). Among the conditions of a good observation are: the clear and precise establishment of the goal and objectives, selecting the most appropriate forms of observation to be used, the necessary conditions and means for an accurate observation, the immediate record of the observed facts (within an observation protocol) because subsequent noting might be affected by obliteration; making an optimum number of observations; the development of the observation in conditions as varied as possible; compiling a list of units of observation (behavioral sequences, where applicable) (Jigău, 2007, 287)

### 3. FINDINGS AND RESULTS

The obtained results confirmed the three assumptions described and showed that there was a significant difference between teaching based on the theory of multiple intelligences and the classic one. From the analysis of the responses to the applied surveys in the first stage of the experiment, the following results emerged: regarding the first method used – the questionnaire for identifying multiple intelligences - the majority of students (86%) have outlined a profile where two, maximum three intelligence scored high, the rest being insignificantly pointed. The first identified intelligences (with high scores) were: 1. the naturalist intelligence (58%), the intrapersonal (30%), the interpersonal and the visual intelligence took the third place (24%). In last places: the linguistic and the musical intelligence (12%). There were also students who scored the lowest regarding all 8 types of intelligence.

The second method applied to students – the motivation questionnaire. The results showed a low to medium motivation. In the end of the phase their school performance in the first semester was noted (the study of catalogs).

In the experimental phase where G1 benefited from activities developed after

Gardner's theory. Thus, a part of the workshops were held outdoors (for example for the topic on research methods in education psychology, the observation was made in the park, but also in kindergartens and schools); it was provided a musical background where the theme allowed it, the students were asked to express through sounds the feelings they believed that some of the subjects presented in the case studies were having. Activities aimed at expressing through body (exercise "human statues" for a particular concept for each group) were also used.

The main feature of the faculty is understanding and relationship with man, so there have been presented several problematic situations in which the student had to resort to inter- and intrapersonal intelligence so as to finally be able to find optimal solutions to resolve them.

In posttest phase, the questionnaire for identifying multiple intelligences was applied again: the results of most of the students in the experimental group were surprising: 92% of the respondents attributed high scores to almost all multiple intelligences (some of them have even filled up the applied questionnaire - where there are only eight intelligences - and the existential intelligence). Although the latter does not have specific questions in the questionnaire, some of the students (28%) felt the need to specify that they are aware of it and use it equally.

In the motivation questionnaire, the results showed a significant difference – in the experimental group as opposed to the control group and to the initial results, the motivation for learning increased, being also confirmed by a permanent and constant presence of all students in the activities developed (although it had been explicitly stated that that presence is not mandatory!). The presence of the students in the control group decreased significantly during activities – from 25 students remaining until the end only one group of 12 people.

The questionnaire identifying the attractiveness of the course was applied to both groups only during posttest phase. The significant difference was made by the final item in which the students were being asked to make suggestions on how to conduct future

activities in order to improve the quality of the seminar. In the experimental group all questionnaires show remarks like: " they are to be the same as those carried out", " I don't have any suggestions, everything has been very well and if all classes were as attractive I would come to school more often and learn with more pleasure". In the control group the majority of responses were: " certain group discussions on specific case studies would be more useful", " I would like some activities to take place in nature"; " I think we could use a musical background in some classes " etc.. The attractiveness level of the course was rated as "low".

Regarding the teacher, the differences between the two approaches of the groups were noted on observation forms and in the research journal. There were days in which I find noted in my journal a great enthusiasm after meeting with the experimental group, "students have expected me today with big, playful eyes and inquisitive as children and one of them have even told me: " We're looking forward to seeing what you we have prepared for us today!. " It is certain that working with the control group was very difficult, making it hard to resist the temptation to accelerate the activity through the strategies used in the experimental group. Finally, because I did not want that the 25 students in the control group to be denied of the benefits of Gardner's theory, I held three sessions where I presented in essence the means by which everyone can support and develop one or other of the intelligences. Knowing that the selection was made by the lottery method at the end, their reaction, was: " what a pity we didn't have the good fortune to be elected in the experimental group!"

#### 4. CONCLUSIONS

The Even though, unlike children, adults are predominantly intrinsically motivated to learn, it does not mean that in their case we should not use motivational strategies. Learning to teach from the perspective of multiple intelligences or how to improve your teaching can be a great challenge. Sometimes, at first, students "fight" these methods because they

are not used with them and one can spend a long time teaching both partners in education to use them in their favor.

Sometimes one makes many mistakes until finding the most appropriate way for each of those with whom one works. The experiment undertaken, but especially the daily reality shows us that the traditional education addresses the mathematical and the verbal intelligence, and the intrapersonal and interpersonal intelligence – so necessary to the psychologist and the pedagogue - are the least requested. Therefore, the introduction of a differentiated teaching and learning strategy in order to develop the bio-psychological potential of each student is mandatory.

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