

# INTENSIFYING THE INTRINSIC MOTIVATION BY DIFFERENTIATING THE TEACHING STRATEGIES IN HIGHER EDUCATION

Cristina TULBURE<sup>1</sup>

**Abstract:** *Learning motivation represents one of the most important predictors of academic achievement in higher education. In this empirical study, we have implemented a formative program to improve the university students' academic achievement and their intrinsic learning motivation. To fully use their intellectual potential, students were treated according to their learning style, throughout one academic year. When we considered the within subject design, both intrinsic motivation and academic achievement significantly increased at the end of the study. Only intrinsic motivation proved to be significantly higher for the between subject comparison. Because our formative program proved to have a significant impact on students' learning motivation, we recommend the differentiated teaching strategies to improve the academic achievement in higher education.*

**Key words:** *learning motivation; academic achievement; learning styles; differentiated instruction.*

## 1. Introduction

As an internal variable having a support role in releasing and encouraging the individual behaviour, motivation conditions the efficiency of the learning activity and implicitly the academic achievement. For the question 'What are the solutions we may find in order to intensify the *intrinsic motivation* within the frame of the instructional process?', the specialists in the field of school and university psycho-pedagogy offer a possible answer: *differentiated instruction*. The specialty literature consigns numerous studies that underline the significant impact of differentiated instruction upon

the learning motivation of pupils and students [3], [6], [13-16]. More than that, there is considerable research demonstrating that differentiating instruction according to individuals' particularities contributes to the improvement of the level of academic achievement [1], [2], [7], [8]. For example, the studies designed by Lewiss and Batts [apud 13], disclose significant increase in pupils' performances as a consequence of a 5-year differentiated instruction program. Thus, if before the differentiated instruction the pupils' results in summative testing at the end of the school year indicated a promotion rate of 79%, consequently to the differentiated

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<sup>1</sup> Faculty of Psychology and Educational Sciences, *Transilvania* University of Braşov.

instruction program the promotion rate increased to 94.8%, the results showing the superiority of differentiated instruction against the whole-class one. Considering the benefits of differentiated instruction towards the improvement of the level of intrinsic motivation and academic achievement, we've decided to implement a program based on differentiating the instruction according to the students' learning styles into the instructional process.

The studies performed in this area discuss several criteria of differentiating instruction: students' needs, learning styles, interests, the level of development of different capacities [10]. By performing more studies concerning the differentiated instruction, Tomlinson [14], has reached to the conclusion that the differentiation of the instructional process is to be accomplished mainly according to the pupils/students' interests and learning styles. Our option to differentiate the instruction strategies upon the students' learning styles is grounded on the following theoretical-methodological arguments:

- Consequently to a meta-analysis performed by Sullivan [apud 15], it was established that a flexible instruction, differentiated upon learning styles, leads to an improvement of the level of academic achievement;
- Recent studies in the field of learning psychology revealed the fact that adults are individuals whose learning style and rhythm is stabilized [12], an aspect that implies respect for and capitalization of inter-individual differences within the frame of higher education;
- The experimental intervention was accomplished during the Pedagogy seminars, a fact that implies compliance of the curriculum regarding the pedagogic disciplines studies made by the students during the 2nd year of study;

in this circumstances we have considered that the differentiation of instruction according to the students' learning styles allows the reaching of aims and observance of the contents provided by the curriculum.

## 2. The objectives and hypothesis of the study

The investigation measure corresponding to the experimental research followed one general objective and three specific objectives.

*The general objective:* The implementation of a formative program of psycho-pedagogical intervention regarding the improvement in the level of intrinsic motivation and academic achievement.

According to this objective and in order to outline the actual research directions, we have named the following specific objectives:

*Objective no. 1* - to establish the starting level of the experimental and control groups under the aspects of the investigated dependent variable;

*Objective no. 2* - to project and implement some instructional strategies aiming to improve the intrinsic motivation and academic achievement;

*Objective no. 3* - to evaluate the impact of the formative intervention at the level of within subject and between subject designs.

While following these objectives, within the experimental stage, we have aimed at testing the following hypothesis: *If we are implementing a program based on differentiated instruction, then some improvements on the levels of the students' intrinsic motivation and academic achievement will happen.*

## 3. Method

### 3.1. Procedure

The design used within the frame of the psycho-pedagogical experiment is one of a

pretest-posttest type and it involves an experimental group and a control group and two types of experimental designs: the within subject and the between subject designs. The experimental intervention had in view the implementation, at the level of the experimental group, of a formative educational program that included 30 hours. During the intervention, for the seminars carried on with students belonging to the experimental group, we projected and implemented instruction strategies differentiated upon the dominant learning style in order to offer every student the possibility of a maximum reevaluation of the intellectual potential he or she disposes of.

### 3.2. Participants

A total of 94 second-year pre-service teachers from a Romanian college participated in the study. There were 41 Foreign Languages pre-service teachers in the experimental group and 53 Mathematics pre-service teachers in the control group. The age range for the experimental group was 19-26 ( $M = 20.85$ ;  $SD = 1.62$ ) and for the control group was 19-27 ( $M = 20.81$ ;  $SD = 1.48$ ).

### 3.3. Measures

The dominant type of learning motivation (intrinsic or extrinsic) was identified through the questionnaire-based inquiry method, using the *motivation questionnaire* designed by Teresa M. Amabile as an investigation tool [apud 5].

Within the experimental group, Kolb's self-report Learning Style Inventory, adapted by Lussier [11], was used in order to assess students' learning styles. After completing the self-report, students were divided into four categories: assimilators;

convergers; divergers; accommodators, as proposed by Kolb [9].

## 4. Results

The within group comparative analysis has the role to identify the progress of every group that is subjected to this study, to establish to what extent the differences registered between the results obtained in pre and posttest have a statistical significance that may confirm the relevance of the independent variable introduced in the experiment. Therefore, we will start by presenting and analysing the results on the level of the within subject design, by presenting comparatively the evolution of every group as against itself during the pre and post intervention phases to evaluate in what extent the improving program has produced significant changes on the level of the two dependent variables investigated: intrinsic motivation and academic achievement.

### 4.1. The progress of the experimental group

In order to check up if the differences registered between the results obtained in pretest and posttest by the experimental group subjects are statistically significant, we referred to the application of the *t* test for paired samples and the establishment of the statistical significance of its value at the thresholds of  $p < 0.05$  and  $p < 0.01$  (Table 1). The data analysis reveals the existence of some significant differences between the scores obtained by the students belonging to the experimental group, during the pretest and posttest phases, under the aspect of the intrinsic motivation ( $t = -2.54$ ;  $p < 0.05$ ).

*Paired samples t-test for the experimental group (within group comparison)* Table 1

Dependent variables	Experimental phases	N	M	<i>t</i>	<b>p</b>
Intrinsic motivation	pretest	41	22.14	-2.54	< 0.05
	posttest	41	25.04		
Academic achievement	pretest	41	7.13	-2.57	< 0.05
	posttest	41	7.60		

Consequently to the experimental intervention, the level of intrinsic motivation presents a significant increase, passing from a value of the mean of 22.14 (in pretest) to a value of 25.04 (in posttest). The value of the significance threshold indicates the fact that the likelihood for the change in the level of intrinsic motivation to be due to the hazard and not to the experimental intervention is lower than 5%.

Thus, from the perspective of the within subject design, we are in condition to reject the null hypothesis and to accept the specific hypothesis according to which, consequently to the experimental intervention, improvements are producing at the level of the intrinsic motivation of the subjects included in the experimental group. If we refer to the level of the academic achievement, we notice the existence of some significant differences between the results obtained during the two experimental phases ( $t = -2.54$ ;  $p < 0.05$ ), and the results come to confirm further our hypothesis, by indicating the fact that consequently to the experimental intervention some improvements produced also on the level of academic results. We may state that the values obtained are demonstrating the efficacy of the formative intervention realized during the experimental stage.

We consider that the differences in academic results registered between the two experimental measurements may be explained, firstly, through the improvement of the level of intrinsic motivation for learning, a variable which,

as the specialty studies show [4], positively influences and intensify the strategies of processing the information that, in their turn, entail an improvement in quality of learning and, implicitly, of results obtained following the summative evaluations. Secondly, we think that the improvement of the learning motivation level, also determined, among the under-accomplished students, a positive change of attitude towards the academic tasks.

#### **4.2. A comparative analysis between the experimental group and the control group**

The between subject design aimed at identifying the differences appeared between the experimental and the control groups as a result of the experimental intervention. The comparative analysis of the average scores obtained by the two categories of subjects at the level of the dependent variables was realized by applying the *t* test for independent samples and establishing its statistic significance at the thresholds of  $p < 0.05$  and  $p < 0.01$ . In Table 2 we present, in a comparative manner, the significance of the difference in means obtained by the experimental and the control groups along the pre- and post intervention phases, in order to establish in what extent the differences observed during the posttest phase may be assigned to the independent variable introduced in the experiment or they are due to some factors independent from the realized intervention.

*Independent samples t-test (between group comparisons)*

Table 2

Dependent variables	Group	N	Pretest			Posttest		
			M	t	p	M	t	p
Intrinsic motivation	Exp.	41	22.14	-3.77	<0.01	25.04	-1.56	NS
	Control	53	27.22			27.37		
Academic achievement	Exp.	41	7.13	-1.84	NS	7.60	0.94	NS
	Control	53	7.54			7.35		

The first data analysis reveals the absence of significant differences between the means recorded by the experimental and the control groups under the aspect of intrinsic motivation and academic achievement. A more accurate analysis of data brings to light the significant progress recorded by the students included in the experimental group regarding the level of intrinsic motivation. Thus, when we compare the significant differences recorded in pretest with those in posttest phase, we notice the significant abatement of those belonging to the experimental group which recorded a significant progress at the level of this dependent variable. If before the experimental intervention the differences in the mean scores obtained by the two groups were -5.08 ( $t = -3.77$ ;  $p < 0.01$ ), the differences decreased, as a result of the experimental intervention, in a strongly significant measure (the difference in means being that of -2.32;  $t = 1.56$ ), a value that does not reach the first threshold of statistic significance. It turns out that, at the level of the intrinsic motivation, the experimental group registered a strongly significant bettering, meanwhile the control group kept itself quasi-constant under the aspect of scores for this variable. Based on these results, we may disprove the null hypothesis and consider that the specific hypothesis is demonstrated against the intrinsic motivation, in the sense that the improving intervention implemented in the instructional process of the students from the experimental group leads to the

intensification of the learning motivation level.

## 5. Conclusions

On the level of the within subject design, starting from the comparison of the results obtained by the subjects belonging to the experimental group along the two phases of the experiment (pretest and posttest) we may say that the specific hypothesis was confirmed, as consequently to the experimental intervention some statistically significant improvement was noticed at the level of the intrinsic motivation and academic achievement. Under the aspect of the between subject design, the results of the posttest stage came to partially confirm the specific hypothesis by demonstrating that, through the implementation of the formative experimental intervention, there are significant improvements producing on the level of the students' intrinsic motivation. As concerns the academic achievement, there are no statistically significant differences between the scores obtained by the students belonging to the experimental and the control groups.

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