HOW TO STIMULATE FUTURE TEACHER-STUDENTS TO PARTICIPATE IN SPECIFIC INSTRUCTIVE-EDUCATIONAL ACTIVITIES

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Abstract.*Teacher training is one of the concerns of the educational policy which is more and more recquired in its pragmatics, as related to the development of the social environment. As initial teacher training is the first step in professionalizing the teaching career, we consider stimulating the participation of future teacher-students in specific activities to be important. Therefore, starting from the clarification of the conceptual framework, we intend to verify to what extent the use of certain models and teaching strategies encourage the opportunities of active learning by stimulating students to get involved. There was observed an improvement in the results obtained by the students in the groups we worked with, as a result of the amending research we had unfolded. The findings are based on results obtained from implementing the independent variable and it also emphasizes the practical aspects of strategies that can optimize active participation achieved by cooperation and by being computer aided. It follows that modern information technology can be successfully used in the initial training of future teachers whereas collaborative learning stimulates the active involvement of students.*

Keywords: *initial training, students, group, collaborative learning, informational technologies*

1. Introduction

The theoretical framework of this theme is generous and enters the area of research on optimizing teaching activities specific to the training of future teachers. The efficiency and effectiveness of teacher education systems depend on the substance of the concept it underlies on, its parts generating a specific strategy for teacher training. Initial and continuous training of teachers has become one of the concerns of contemporary society. This

process relates to the educational policies and programs designed to shape in the future teachers skills that are necessary to perform specific tasks and roles resulting from their statute.

In the mid 1980s, some states have adopted "alternative routes to teacher training" that were created in order to attract people with bachelor's degree who want to teach in schools. Feistritzer E. (2005), founder of the "National Center for Education Information", collected and analyzed data on alternative routes to teacher training [1]. We can assert that political cooperation at EU level has led to a broad description of the types of attributes that teachers in Member States have to possess.

The resources available on the Internet are increasingly used to support teacher training, the effectiveness of teacher training policy depending mainly on the quality of the structures and mechanisms designed to support it and on the available resources to achieve its objectives. We believe that fostering the participation of students-future teachers derives from their trainers' option for methodological alternation.

The paradigm of alternatives is essential in the formation and activity of the educator and the cognitive, methodological and organizational alternation (understood as a sign of flexibility and creative adaptation to different situations) contributes to creating a formative style in action. The concept of experience achieves, thus, a higher meaning, based on reflection, perception and problem solving, critical self-analysis, communication and collaboration.

2. Conceptual framework
2.1. Aspects of initial teacher training

The initial training is the construction of a set of skills that enable the individual to act creatively and flexibly in the field he trains himself. The experience of many countries in professionalization proves positive; they can therefore be used as a source of inspiration in the process of readjustment and restructuring of the teaching profession in Romania.

In Anglo-Saxon countries, teacher training focused on the idea of professionalism and in specifically Latin countries they have focused on the intellectual training of teachers. Ph. Perrenoud (2001) has a number of studies on teacher training. He suggests three steps that must be taken in the initial training: identification and construction of cognitive resources (including knowledge), mobilization, implementation of practical internship situations (simulation exercises, role playing, problem solving) and their registration in a reflective register to activate the student to become its own engine in the professionalisation process [2].

In the Unites States, one third of the new teachers come from alternative routes of teacher certification [3]. H.R. Milner talks about de-professionalization in American political reforms. From this angle of

responsibility and increase of the quality of teachers, training models take into account the ways that lead to increased performance in standardized tests. It can be considered that this approach is the added value of the professionalisation endeavour of teachers. Comparing professionalization and de-professionalization according to the added value, there is stress on the importance of the standardized assessment system and the subjects taught, but it also highlights the pressure on teachers to give tests, the reference to the added value mentioned and the responses to the pressures of the added value – teachers cheating to increase student test scores [4].

In Romania, there were performed investigations in the problem of teacher training, the research directions including: developing models and initial and continuing training programs (Mitrofan N., E. Păun, Niculescu R.M, Iucu R., Joiţa E., Maciuc I.), the analysis of the skills taxonomy of an ideal teacher and the development of occupational standards for a teaching career (Cristea S., Călin M., Potolea D. Toma S.), the identification of training and professional development needs (Păun E., Ionescu M., Pânişoară I., Gligor L., Jinga I.), the teacher's personality (Mitrofan N., Neacşu I., Dragu A.). According to the results of a recently completed research, initial teacher training corresponds to the needs of the teaching profession in terms of scientific content and, to a lesser extent, in terms of teaching and managerial skills. One of the work premises (partially confirmed) refers to the main causes contributing to the lack of adequate quality of initial teaching training.

These are the low motivation of students who are preparing to become teachers and the specific national legislation [5]. Moreover, in Romania the attitude of students (motivation) – as well as the teaching methods –is a compulsory indicator in the external evaluation of initial teacher training in the general educational system [6].

The strategies used in teaching indirectly influence the initial and/or continuous training, but they must take into account the specific of the training model, the general concept underlying the specific activities. From this point of view, the psycho-pedagogical literature of the 1980s was dominated by the cognitive psychology. As M.H. Dembo stated, "a new *ism* – constructivism – dominates the scene, and again many psychologists are convinced that they finally found the perspective. The buzzwords are now mental models, authentic tasks, and metaphors" [7]. It is estimated that "a (learning) situation should be a challenge that would engage students, would arouse their interest and would actively introduce them in understanding the tasks in order to achieve goals (...). A situation should present a real-life situation, in relation to the conditions that the learning unit allows" [8].

If passive learning is based on avoiding learning failure, on obtaining grades and external rewards (the most common strategies are memorizing,

minimizing the effort of studying and anticipating assessment exams), active learning is based on intrinsic reasons such as personal development and the desire to form specific competencies [9, 10, 11, 12].

2.2. The characteristic of group/team activity

Human beings have a social nature. They learn by interacting and depend on their interaction with other human beings. Creators of groups and shaped by these groups, each of us interlace personal life with social life. Groups are important for individuals as they achieve goals that are unaccomplishable for us as ordinary individuals, they meet specific psycho-social needs, they represent an antidote to anonymity and solitude, they are therapeutic by reducing the effects of stress by means of the social support offered, they provide security, ensure social identity (the more important the group is, the more group identity matters in concept and self-image).

Organizing students into groups aims at providing opportunities, including that of showing others what they know, how they documented, how they reported to objectives, how they approached their task or homework. Used in working with students, it capitalizes interpersonal relationships in solving learning tasks.

Working in homogeneous groups involves differentiation of tasks by level of cognitive development, of acquiring knowledge and training skills. The activity in heterogeneous groups involves a closer relation to the social reality we live in.

From this perspective, the teacher must start from the following questions:

- How can he group students to better solve tasks?
- What grouping shall I use (randomized or on a specific criterion, intentionally)?
- What kind of group do I intend to work with (more sophisticated, including students with personality, with academic knowledge or students chosen according to certain criteria)?
- Why is it important to know the leaders in a group and how will I refer to them?
- How should I plan training group situation so that each group member to make sense of personal experience and contribute to achieving the objectives?

There are *formal* and *informal groups*. The first are set by an organization in order to achieve organizational goals and they are classified in groups of control (specified by the chart), work groups (temporary, formed to carry out a project, to solve a task) and functional groups (created by the organization to achieve specific objectives in an unspecified period).

The configuration of groups varies as there is no single recipe for a group size.

The small, limited or *initial group* has some distinct features: it implies direct association and cooperation, face to face, it perceives membership in a certain way and the mutual influence is greater. In common language, a small group is also known by the term "team". According to J.F. Leroy, the team is "an entity known by an organization, formed by a permanent or long-term group, made of interdependent individuals pursuing one or more common goals in a constraining context" [13]. Another operational collective configuration is *the self-directed team*, "a working group that has the chance to accomplish the stimulating task under reduced supervision" [14].

A valuable model is also that of *multifunctional teams*, supported by individuals with different specializations that contribute to accomplishing a project. Worth knowing is the term "performative team" which refers to that "group of individuals working together to stage a certain routine" [15].

From the perspective of the subjectapproached in this study the important part is *the training group (T-group)* because it is considered one of the most effective means for activating the group, encouraging cooperative learning. In building itself around the idea of "mutual learning", of acquisition by appealing to the experience of others, *the T-group* has the following roles [16]:

• It encourages the spirit of research and experimentation in social relations, promoting the idea of self-information, by articulating the social context;

• It increases sensitivity to the expectations of others (enlarged interpersonal awareness);

• It provides greater authenticity in interpersonal relationships;

• It develops the ability to diagnose social situations (interpersonal, intergroup) to employ collaborative behavior and resolve conflict situations by engaging in problem solving.

The studies on the role of group dynamics and group/team work are numerous and they highlight the major impact that interaction has on human activities. The areas of interest include: developing a sense of responsibility within the group (Mahler, Pine & Bergman, 1975), strategies on group dynamics in classrooms (Glasser, 1992; Stevens, 1998), conflicts specific to teamwork and negotiation inside the team (Shah & Jehn, 1993; Jehn, 1995, 1997; Amasonia, 1996; Thompson & De Harpport, 1998; Edmondson, Bohmer & Pissano, 2000) [17, 18]. A very good summary of articles published in scientific journals on this subject, is made by LR Frey, University of Colorado Boulder [19].

D. Harrington-Mackin mentions the following *advantages* of teamwork: a highly encouraging work environment, fast response to technological

change, proactive approach to problems, the development of staff skills. It also asserts the superiority of collective decisions as opposed to the individual ones [20].

We add, to the already mentioned positive aspects, other benefits on organizing groups, group or team work: the possibility of cooperation and mutual control, the stimulation of intellectual education in intensive and creative situations, the internalization of the social reasons of learning, the stimulation of moral education, with impact on social communication.

In terms of limits, especially if we talk as teachers, sometimes there are *difficulties* in working with small groups of students, related to their behaviour (students' behaviour may be too challenging, disruptive or unfocused on the purpose of the activity) [21].

It can be said that every team is a group (work group), but not every group is a team. Unlike the group, the *team* is defined by the following *main features*:

• The objectives are chosen, and their achievement is assumed;
• The leader is informal, and leadership may be taken by any of the team members, depending on the context;
• Responsibility is first of all common and then individual;
• Both interdisciplinary approach and changing roles are preferred;
• There are strict but unwritten rules;
• In case of success, the rewards are collective, development is achieved by spontaneous and effective actions (team building).

The research carried on by M. Deutsch lead to the idea that "constructive processes of conflict resolution are similar to cooperative processes of problem solving, and destructive processes of conflict resolution are similar to competitive processes" [22].

Competition brings poor interaction between mates, lack of communication and mutual trust. Instead, cooperation means a gain in terms of interaction, encouraging prosocial behaviour, facilitating other people's success and bringing understanding.

2.3. The importance of collaborative learning

Teaching is valuable only when it leads to learning. It states that "effective teaching must consider all of the students' characteristics in order to buildnovel learning experiences in the classroom;otherwise, students will find waysto access the required information from home, a library, or the mall" [23]. Therefore, it is recommended to encourage interactions in the classroom or seminar/ laboratory, "the teacher being a human agent whose main function is to initiate the acceleration of the changing rate of concepts and accomplish this characteristic" [24]. The best way to cause generative

learning and collaborative learning supports the understanding of different points of view, especially when it is facilitated by the computer.

Starting from the question "is collaborative learning a teaching method or a psychological process?" P. Dillenbourg believes that "the pedagogical sense is prescriptive: one asks two or more people to collaborate because it is expected that they will thereby learn efficiently. The psychological sense is descriptive: one observes that two or more people have learned and collaboration is viewed as the mechanism which caused learning" [25]. He argues that it is neither a mechanism nor a method.

Both the viability of the previously accomplished individual understanding and the outlining of some common aspects are seen in cooperation, which is an opportunity to find out how many construction alternatives may arise, what interpretations can be made and from what perspective [26]. The constructivist perspective can take two forms: cognitive perspective (does not deny the possibility of learning in groups) and social approach (does not infirm the value of working independently of the others).

Analyzing training from a constructivist perspective, E. Joiţa summarizes the contributions that highlight the role of group collaboration (Tinzmann, 1990; Gaines & Shaw, 1995; Murphy, 1997; Ouellet & Guilbert, 1997; Cicognani, 2000; Novak, 2000; Carter & Ching, 2001) in terms of social constructivism, stating that this was firstly promoted by the active school [27].

It is stated that "cooperative learning is a phrase used to describe small group strategies where each student is helped by others in learning. In fact, the success of each member is the success of the other members of the group" [28] and "cooperation is not levelled behaviour, but it is meant to create a space completed with a task that requires players to establish a functional interdependence which needs minimal cognitive conflicts" [29].

Collaborative learning provides general, organizational conditions for the exchange of ideas originally obtained at an individual and independent level, and subsequently at the front (*collaboration*). *The collaborative and cooperative learning model*, also called "mutual learning" [30] is relevant to the present research as it provides dynamic activation of each group member.

Reflecting a way of relating with others, collaboration becomes a condition of learning. Approached as a model that integrates external conditions of learning, collaborative learning may be associated to *the model of learning through problem solving*. It is observed that "some research (Poirer, 1997) advocates the affirmation of cooperation in small groups, even in pairs, to demonstrate the role of continuing involvement in discussions, in argumentation, in negotiation, in deepening meanings. Especially for pairs or a group of 3-4 students it is easier to shift from the subjective to the objective

knowledge through confrontation, correction, completion, re-structuring, eliminating confusion, reconstruction, internalization of new data, forming mental representations" [27].

In 1982, A. Whimbely and J. Lochhead described this strategy that involves thinking and learning in pairs, by rotating roles. Students are more involved and become more active [31]. *Using pairs in the problem solving method* is among the most effective teaching strategies, and when it is accompanied by information technologies, the active participation of students increases and leads to superior results on an emotional and cognitive level as well as on a social, relational and attitudinal level.

In an experimental study, S.D. Johnson and S.-P.Chung observed the effectiveness of a training strategy called "*Thinking Aloud Pair Problem Solving*" (TAPPS). Following a dyadic-learning procedure, two students work as a team and take turns playing the role of the problem solver. The non-solving student assumes the role of monitor, observes, critiques and evaluates the problem-solving performance. The goal is to make the problem solvers aware of what they know, what they can do, whether they are doing it correctly, and whether the process is reasonable [32]. *The strategy of thinking aloud in solving problems in pairs* has been used in other curricular contents (eg. Chemistry), as it is shown in a study by L.K.W. Lee in 1998 [33].

These models and strategies encourage the active learning opportunities, providing real-life examples, integrating new information technologies and multimedia. In recent years there has been more emphasis on the use of information technology in teaching: "Educational software packages, the World Wide Web, course web pages, email, discussion groups, bulletin boards and applications of audio, video, or computer-based multimedia, have changed teaching in all disciplines and at all levels" [34].

There is a number of "methods that integrate technology in classes or laboratories and seminars: Videos Explaining Concepts and Solutions to Problems, Screen-Capture Movies for Software Demonstrations and Tutorials, Animations Explaining Course Concepts, Group Web Sites, Electronic Forums, Web-Based Feedback, Virtual Office Hours, Real-Time Collaborative Computing" [35].

Roschelle (1995) proposed the term "collaborative technology" which was aimed at building common ways to perceive, react and know. He argues that technology can be a means by which the company builds common practice. We also believe that the implementation of new information and communication technologies in school has a number of *advantages*: it facilitates the individualization of instruction, its relatively low cost, the relative ease of access, a dynamic activity group, etc. Recent technical

progress has made the new services (multimedia services) together with the new infrastructure (information highways) become a reality.

The optimization approach of student-teacher participation in specific activities of their initial training is based on studies which emphasize the positive impact that technology has in a collaborative learning context. The most recent are: Wasson, Ludvigsen & Hoppe, 2003; Andriessen, Baker & Suthers, 2003; Strijbos, Kirschner & Martens, 2004; Bromma Hesse & Spada, 2005 [36], Resta & Laferriere, 2007; Tsue, 2009; Stahl, Lao, & Hesse, 2013; Burns, 2013 [37].

Reasons for using computer-supported collaborative learning include [38]:

• To prepare students for the knowledge society (collaboration skills and knowledge creation);

• To enhance student cognitive performance or foster deep understanding;

• To add flexibility of time and space for cooperative/collaborative learning;

• To foster student engagement and keep track of student cooperative/collaborative work (online written discourse).

Computer-supported collaborative learning is a pedagogical approach in which learning occurs through social interaction using a computer or the Internet. This type of learning is characterized by sharing and building knowledge among the participants who use technology as a primary means of communication or as shared resource.

Being approached as interaction, effect of the interaction, coordinated and synchronous activity, situation, mechanism, method, tool, social contract, principle, integrating concept, collaborative learning is, for us, *a social construct*, an effect of interaction which emphasizes the meaning that each participant is given by personal experience from the perspective of achieving the joint aims (goals and objectives).

3. The purpose and objectives of the research

The action-research presented in this study lasted for two years (2013-2014 and 2014-2015), at the University of Craiova, as part of *the psycho-pedagogical training module*.

The purpose of this research is to encourage students-future teachers' participation, in specific educational and instructive activities, in the context of using certain teaching and learning strategies based on interaction and implementation of the information technology.

The research objectives relate to:

• Shaping the framework of the initial training of teachers;

- Highlighting the role of group activity in initial teacher training;
- Identifying models and optimization strategies of students-future teachers' participation in specific educational activities;
- Valorizing the advantages during a semester, during specific activities, in pedagogy classes.

In our research, we started from the following *general hypothesis*: The use of teaching strategies based on interaction and implementation of information technology facilitates and promotes the students-future teachers' participation in educational activities.

Derived from the general hypothesis, the *particular hypotheses* that have particularly interested us are:

- *Hypothesis 1*: Collaborative learning leads to increased student activism
- *Hypothesis 2*: The call to new information and communication technologies positively influence students' participation in educational activities.

The results were the basis for the conclusions of this study which shows the importance of group work and the need to stimulate students to participate in their professional training, during the initial training stage.

4. The Research Methodology

The research sample includes 118 students attending the courses of *thepsycho-pedagogical training module*, students of the Faculty of Natural Sciences, Mathematics and Informatics, Chemistry and Physics specializations.

Being an ameliorative pedagogic research, we started from an initial position where we found the students' lack of involvement in the applied activities and we designed a teaching approach that would stimulate and motivate them more. The research lasted for over two semesters (the 2nd semester in the academic year 2013-2014 and the 1st semester in 2014-2015).

In order to test the hypotheses and to achieve the purpose and objectives, we used the following *methods and research tools*: the systematic observation (through an observation grid), the psycho-pedagogical experiment, the table, the graphical representation.

The stages that we followed during the investigation are:

1. *Stage 1* (the second semester of the academic year 2013-2014):
   - *Step 1*. Identify the students with a high level of involvement in teaching activities as well as the very good ones (based on the results in the partial evaluations and in the final evaluation at the end of the 1st academic year)

- *Step 2.* Detect "satellites", students who feel comfortable around those in the first category (during applied activities in the seminar)
2. *Stage 2* (the first semester of the academic year 2014-2015):
- *Step 3.* Organize activities in group sessions, involving those who integrate harder or have relationship difficulties, gaps in content, poor attendance at the educational activities (lectures and seminars)
- *Step 4.* Implement strategies to optimize student participation in instructive and educational activities by using the computer
- *Step 5.* Compare the training situations (the one designed during stage II and the one in stage I) based on reporting to some indicators that express the activism of the participants.

The indicators expressing activism include the number of interventions made by the students during the seminar activities. Aiming to know the level of participation in educational activities specific for *the psycho-pedagogical training module*, we registered the number of times each student intervened, during the 2nd semester of the first year (2013-2014), in the pedagogy course and seminar ("Fundamentals of Pedagogy" and "Curriculum Theory").

Having as a reference point the interventions of students during specific activities we have registered in a table, at what extent students got involved, expressed in percentage level.

Table 1. *Level of student participation*
in activities specific to the pedagogy course

Specializat ion	Level of participation							
	Unsatisfactory		Satisfactory		Good		Very good	
	No. of particip ants	Perce ntage	No. of paricip ants	Perce ntage	No. of paricip ants	Perce ntage	No. of parici pants	Perce ntage
Mathemati cs and Informatics (75 students)	23	30.67 %	19	25.33 %	22	29.33 %	11	14.67 %
Physics and Chemistry (43 students)	14	32.56 %	16	37.21 %	8	18.60 %	5	11.63 %

From the initial data can be observed that the number of students who are actively involved in seminars is low, they do not have the skills required to support dialogue, to initiate interpersonal relationships, to solve learning tasks by using a computer, to take responsability in the interventions they made. The results in the final evaluation were themselves reference points

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for the conscious and active involvement of students-future teachers and helped us in establishing a hierarchy on their psycho-pedagogical education.

In the second stage of the research, we insisted on implementing certain strategies to stimulate student involvement in the group of the two groups *(Mathematics and Informatics*, *Physics and Chemistry*), in educational activities. We put stress on *group work and pair work* (as we wanted to valorize interpersonal preferences, too) and on *computer use* in preparing applications and in organizing and presenting themes based on solving certain teaching tasks that were specific to the learning process (in accordance with the curriculum frameworks and the curricula appropriate for the training of future teachers).

The strategy that was thought and considered the *independent variable* of the research was implemented during the first semester of the academic year II (2014-2015) in the course of "The Theory and Methodology of Education" and "The Theory and Methodology of Evaluation".

To determine whether the research hypotheses are confirmed, we compared, at the end of the intervention period, both the degree of involvement of students in the two groups in seminar activities and the final exam results.

That way we graduated the difficulty and the number of the requirements according to the training time given in the curriculum of the discipline mentioned.

After implementing the independent variable, we compared (at the end of the first semester of academic year II) the students' level of involvement, using the following *observationalindicators* (which we translated into items – I_1, I_2, I_3 and I_4):

1. *Solving problematical training tasks in small groups* (I_1 total: 42 – Group G_1; 35 – Group G_2);

2. *Systematic interventions (through verbal communication – oral and written) resulting from cooperative learning* (total I_2: 53 – Group G_1, 38 – Group G_2);

3. *Power Point Presentation of practical assignments (with a practical side) made in pairs* (total I_1: 37 – Group G_1; 24 – Group G_2);

4. *Prezi Presentations made in small groups* (total I_1: 31 – Group G_1; 12 – Group G_2).

After summarizing the data associated with each item, we registered the number of interventions for each grade and obtained the following results:

Table 2. *Percentage achieved by the students of the two groups in the indicators expressing active involvement*

Groups of	Interventions of students – level of participation			
	Unsatisfactory	*Satisfactory*	*Good*	*Very good*

students	Itemi	No.	%	Itemi	No.	%	Itemi	No.	%	Itemi	No.	%
G1 (Mathematics and Informatics)	I_1	2	4.76	I_1	3	7.14	I_1	13	30.96	I_1	24	57.14
	I_2	7	13.21	I_2	11	20.76	I_2	18	33.96	I_2	17	32.07
	I_3	1	2.70	I_3	7	18.92	I_3	10	27.03	I_3	19	51.35
	I_4	3	9.68	I_4	4	12.90	I_4	15	48.39	I_4	9	29.03
G2 (Physics and Chemistry)	I_1	4	11.43	I_1	6	17.14	I_1	12	34.29	I_1	13	37.14
	I_2	5	13.16	I_2	8	21.05	I_2	11	28.95	I_2	14	36.84
	I_3	7	12.50	I_3	6	29.17	I_3	3	25.00	I_3	8	33.33
	I_4	2	16.67	I_4	3	25.00	I_4	3	25.00	I_4	4	33.33

5. Results

By analyzing the percentages obtained at the end of stage I we notice that in both groups there is a percentage of over 50% indicating satisfactory and unsatisfactory student involvement. There is a small difference (about 15%) – in favor of group G1 – between good and very good involvement of the students with Mathematics and Informatics specialization and good and very good involvement of the students in Physics and Chemistry.
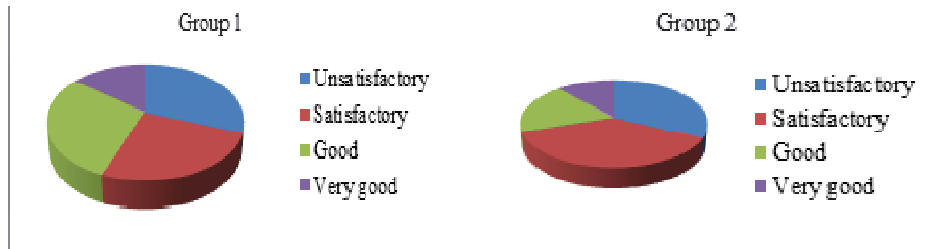

Figure 1. The level of involvement Figure 2. The level of involvement of G1 group students of G2 group students

After entering the independent variable (during the second stage of the research) we found that the percentages corresponding to good and very good involvement of students increased.
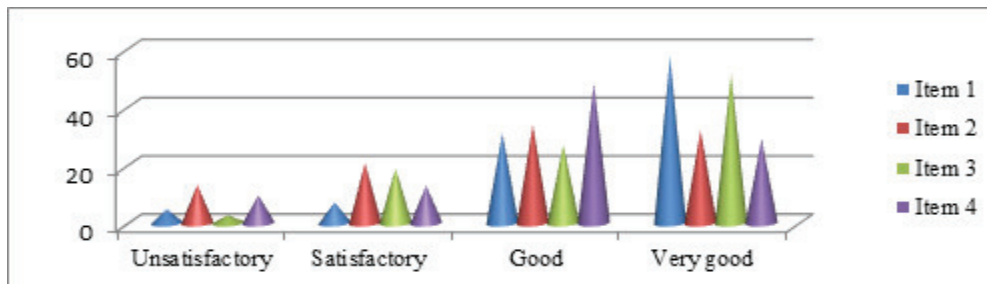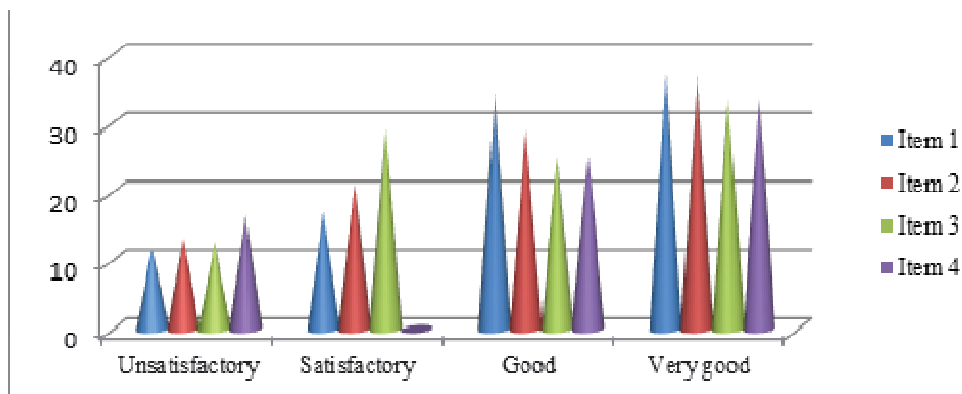
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Figure 3. *The results of the G_1 group students related to the four indicators*

G1 group students obtained very good results in items I1 and I3, being actively involved in solving the problematical learning tasks (57.14%) and in the PowerPoint presentations (51.35%). The number (and quality) of the students' interventions increased during stage II, in comparison to the first stage interventions, for each indicator getting a percentage that exceeds the percentage of interventions / responses from the initial stage of research.

Figure 4. The results of the G2 group students related to the four indicators

G2 group students have achieved very good results in I1 and I2 items, being actively involved as much as the others in solving problematical learning tasks (37.14%). About the same percentage (36.84%) has been obtained in I2 item, which quantifies the systematic interventions (through verbal communication – oral and written) resulting from cooperative learning.

The research purpose was achieved and the general hypothesis validated. This is confirmed by the results presented and by the higher quality work produced by the students in both groups in their final evaluation, at the end of the first semester of study year II.

5. Conclusions

The results lead to the conclusion that the strategies we used have a positive influence on activating the students, by encouraging their participation in training activities specific to The psycho-pedagogical module. By their characteristics, the teaching strategies we have used activate students and increase the percentage of those who participate actively and consciously in instructive and educational activities. Both problem solving and practical work were intensively used in seminars by making students work together, communicate and solve together (in pairs, teams or groups) the given tasks. The call for new information technologies has increased the number of interventions in seminars as well as their participation in joint applicable tasks, most students being interested in showing their contribution in front of the others.

We have shown that the number of students who participated actively and systematically in the seminar increased. It also increased the number of learning tasks performed in pairs, teams or groups by means of the computer. It is true that G1 group students had better scores in the last two items (which involve using the computer – Power Point and Prezi presentations, web application through which students could design more attractive and persuasive presentations), but this is also due to the specialization they attend (Mathematics-Informatics).

We can say that collaborative learning increases activism among students, and when integrated into activities and information technologies, students become more interested in solving training tasks by participating in a greater proportion.

There is no need to ask ourselves if training is improved through the use of computers, but how to use more the unique qualities of computers, qualities that distinguish them from other media. This will require a rethinking of the future educational system, where the training of future teachers will be the "engine" that will generate change. We refer to accelerating the transition from classical training, where the teacher has the main role – hence the emphasis on expository methods – to a modern training, where the students are motivated to participate in their initial training as teachers, to actively engage, as they are stimulated by the modern strategies, including new information technologies.

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