

CLASSROOM CLIMATE AS A PART OF CONTEMPORARY DIDACTICAL APPROACHES

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Abstract

To achieve successful teaching in the 21st century school, teachers must change their didactical approaches in order to create a stimulating pro-activeness in a pleasant classroom climate for better development of student's achievement. A classroom climate in the present research means the combination of variables within a classroom that work together to promote learning in a comfortable environment. In the present research, classroom's climate will be evaluated, and what kind of influence different didactical approaches have on the atmosphere in the classroom. The classroom climate of two 6th grade classes at a lower secondary school will be studied: a class with traditional methods of teaching and a class with innovative methods, as regards searching for ideas, monitoring the students' progress and giving instructions. Students in both classes filled out a questionnaire with thirteen statements, which included three dimensions of a classroom atmosphere: personal relationship, contribution to the class and research work. The results confirmed a change in the perception of the classroom climate, depending on different innovative didactical approaches. The values of individual dimensions are higher in the class with innovative methods, which was confirmed with a better atmosphere in this class and an increased activeness of the students. When introducing changes in an educational process, it is necessary to establish a positive classroom atmosphere.

Key words: active learning, classroom atmosphere (climate), innovative didactical approaches, lower secondary education, structure of education.

Introduction

Development of teaching techniques is probably one of the most dynamic and fast-changing systems in society. With similar dynamics as the technique it-self, its content and its didactic paths which lead towards achieving the set goals are also changing. It is therefore necessary to verify at the technique's didactic level at least every decade which methods (paradigms, concepts, strategies, procedures) are still useful and which should be added or replaced (Aberšek, 2012). Not only methods are changing; students are changing also and with them so do all the participants of an educational process. Increasing emphasis is now placed on the atmosphere in a classroom which is reflected in an individual's wellbeing and feeling of commitment to the class (Zabukovec, 1998). It is therefore necessary when introducing changes or new methods to establish the current classroom atmosphere and ways of changing it.

The classroom's function is first and foremost to cultivate learning. Students should sense the classroom's academic atmosphere from the moment they enter it. A part of the definition of the classroom climate centers on an atmosphere that promotes learning. Every item

in the classroom needs to emphasize learning in some fashion. Once teachers organize their classes to promote learning, they establish a climate of respect and safety and behave in a way they wish their students to follow; it is up to the students to create the classroom climate that is specific to their personalities. Every classroom climate is different because it relies so heavily on the variables within it. Students make up the most popular of these variables and, when they feel they are in a safe and respectful environment, they will express themselves freely. Students' personalities are integral in a unique and successful classroom climate. Schematically a model of positive climate based education (CBE) is presented in figure 1.

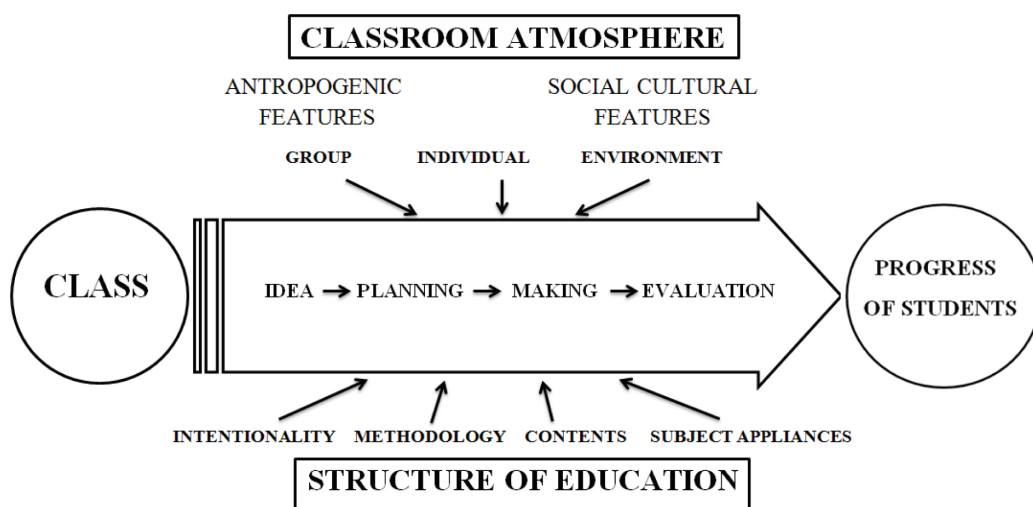


Figure 1: Model of climate based education (CBE).

Problem of Research

The issue at hand thus presents itself in two layers: in a today's school working methods must be continuously changed so as to ensure that the students can be as active as possible, and at the same time the learning atmosphere must be maintained, which enables their activity and simultaneously encourages their creativity.

Contemporary didactical approaches must satisfy two functions: to determine what the lessons like are, and to offer suggestions for improvement of teaching and learning methods (Jank and Meyer, 2002). A contemporary school's task is to place the student in the most active role in contrast to traditional classes where the student is largely just a passive participant. Theoretical foundations of presented research can be found in Heimann's (1976) didactics of learning theory, also known as the Berlin model, which builds lessons on the basis of a structural and functional analysis of teaching, by incorporating modern teaching strategies, tools, content for improving the quality of teaching and learning by taking into account classroom climate. A model in the form of active teaching emphasizes focus on interests, autonomy, connection between intellectual and physical work, introduction of solidarity and commitment to results (Jank and Mayer, 2002). For the model to be efficient in practice, students have to be involved in the planning, implementation and evaluation of educational process from the early beginning.

The process of education requires different teachers' working methods, different teachers' attitudes towards students and towards knowledge in general, and therefore, a different learning climate (Rupar, 2003). The influence of the climate in the classroom with regard to teaching strategies, organizational factors and student learning achievements has been studied in many studies (Fraser, Fisher, 1984; Zabukovec, 1998; Westling, 2002; Ghaith, 2003; Schmidt,

Čagran, 2005; TIMSS, 2011). Research has confirmed that a positive classroom climate can only be established through mutual respect, conversation, listening, cooperation, assistance and patience. The Teaching and Learning International Survey - TALIS (2008) ranked school climate among the most important atmosphere factors in education, highlighted its important correlation with teaching and students' achievements.

Modern Didactic Models of Teaching

Two didactic models of teaching were compared in the study: the traditional, mostly transmission oriented teaching model and the modern didactic model of teaching. Students were divided into two groups, an experimental and a control group. Work in the experimental group was project-based and included problem-based and research-based lessons, an experiment and a technical analysis. Students drilled and practised specific skills before being assessed. In the control group the lessons were taught conventionally, with a teacher providing explanations and teaching in front of the classroom, and working with textbooks. There was no drilling of a specific skill. The study was performed in order to verify the validity, reliability, objectivity and sensitivity of the recording form. The efficiency of a didactic model is measured in correlation with lessons' structure and the classroom's climate.

Six formal components of the Haimann's didactic learning theory model were taken as a starting point: intentionality, content, methodology, subject appliances, anthropogenic characteristics and social-cultural conditions. The didactics of the learning theory is accommodated to the contemporary trends of today's school emphasising a student and his activity. The classroom's atmosphere is measured in three categories that by Moos' theory (1979) incorporate the following fields of classroom activity: an interpersonal relationship in a group, individual's personal growth and systemic characteristics such as everyday environment. The changes and the development of the teaching models (Figure 1) are based on newly formed didactical approaches.

From the point of personal growth as a circle, it is necessary to encourage a positive attitude, motivation, and the enthusiasm for creativity and therefore raise the students' interest in the technical fields. According to the theory of an American psychologist Dweck (2006), it is important that students start to connect the feeling of success with their work and perseverance.

In presented research the main aim is to show, how with appropriate didactical approaches one can reach better results. The subject of interest is the analysis of the classroom climate and how positive the climate's influence is on the students' achievement. The investigated problem adopted the form of the following questions:

- How strong is the relationship between classroom climate and students achievement?
- Can the climate based education (CBE) have positive influence on working atmosphere in the classroom and consequently on the students' achievement?

Methodology of Research

General Background of Research

In order to get requested results, a psychological/pedagogical instrument was applied which is used in standard diagnosis (questionnaire) and incorporated an experimental factor in educational practice was used to study the influence of the education model on the classroom's atmosphere.

In this study the emphasis was put on developing and assessing the classroom climate and its influence on students' achievement. Among others, the main purpose of the study was also to establish, whether proposed didactical approaches provide better conditions for developing students' abilities than traditional instruction.

Sample of Research

The classroom's atmosphere was researched on 42 students of two 6th grade classes of the lower secondary school *Bistrica*: one class with traditional teaching methods as a control group and a class with innovative teaching methods as an experimental group. The experimental group consisted of 21 students, 12 male and 10 female. The control group consisted of 21 students, 10 male and 12 female. From January to March 2014, the innovative teaching methods were incorporated in the experimental group's lessons, knowledge criterion were already familiar to the students, interesting subjects, adapted to goals, were added, modern teaching accessories were used, when needed, the theoretical facts were explained while working on practical tasks (Fiksl, 2012). The changes were not incorporated in the control group where the classic teaching method that is based on a frontal explanation with a demonstration was used.

The collected data are presented in graphic and tables. The mean value and their differences according to their gender and group were calculated for the students (Table 1).

Table 1. Arithmetic mean and differences between genders for exploring the class atmosphere.

Category	Male-M/ female-F	Experimental group (N=21)		Control group (N=21)	
		\bar{x}	$ \bar{x}_m - \bar{x}_z $	\bar{x}	$ \bar{x}_m - \bar{x}_z $
Activity	M	21,17	4,83	20,80	0,20
	F	26,00		21,00	
Relations	M	32,83	0,63	20,80	2,37
	F	32,20		23,17	
Atmosphere	M	46,80	2,00	31,20	1,50
	F	44,80		32,70	

Instrument and Procedures

In March 2014 a research was conducted in both of the researched 6th grade classes. The default questionnaire Learning Atmosphere (Fraser and Rentoul, 1980; Zabukovec, 1998) was partly adapted to the research as shown in Table 2.

Table 2. Description of questionnaire Learning Atmosphere. (Zabukovec, 1998)

Category	Dimensions	Description
Class atmosphere (questionnaire)	personal relation (5 claims) contribution (4 claims) research (4 claims)	marks class atmosphere
Students' activity	contribution research	marks the level of student activity
Interpersonal relations	personal relations contribution	marks personal approach of students

The first part of the questionnaire was referred to demographic variable: gender, group. The second part of the questionnaire consisted of 13 statements (Table 1), the first 5 statements mark interpersonal relations, the next 4 statements mark contribution as a students' activity, the remaining 4 statements describe researched students' behaviour during lessons. Five levels marking scale was provided with each statement: 1 – never, 2 – rarely, 3 – sometimes, 4 – often, 5 – very often.

Category class atmosphere that characterizes the class climate will be taken into account with all three dimensions according to table 2: personal relations, contribution and research. The category of students' activity will be measured only with the dimensions: contribution and research. The last category, interpersonal relations, which indicates the personal approach, will be measured with students' personal relations and contribution dimensions.

In both sixth grade classes usable wood products have been produced. In the experimental group the students found the idea for a product themselves, they independently drew the plan for their ideas and then they found also a way to manufacture it. Students had the opportunity to independent and responsible act from generating idea to design and manufacture the final product. Teachers' role was only to moderate groups and to help plan students' work and allow them to be active all the time. Opposite, the work in the control group was organized in the frontal form of instruction through the use of explanations and demonstrations, where a teacher was in the role of the performer - executor of the process and the students didn't know in advance the whole process. All students manufactured the same product according to the prepared plans and acquired the theoretical and practical knowledge. At the end of the work students in both groups got the adequate questionnaire for measuring the classroom atmosphere.

Data Analysis

The dimensions *research* and *contribution* were intended to show the level of students' activity, the dimensions *personal relations* and *contribution* showed the quality of interpersonal relations in both of the compared groups. Both categories were analysed and so was the questionnaire as a whole in order to present the classroom's atmosphere in both of the compared groups. The goal was to discover possible differences between the class where traditional teaching methods are used and the class where innovative teaching methods are used.

The instrument and measurement methodologies developed enabled the optimisation of the learning process; different methods of work were assessed depending on the given objectives with a focus on students' working, student activity, interpersonal relationships and classroom climate.

The data were computer processed using the SPSS 20,0 program for statistical analysis, at the descriptive and inferential statistics levels. The following procedures were used:

- frequency distributions (f, f%) of descriptive variables (gender and the student activity, interpersonal relationships and atmosphere);
- χ^2 -test of the hypothesis of independence to test dependent associations between variables (according to gender and the student activity, interpersonal relationships and atmosphere);
- T-test for verifying hypotheses in smaller samples (progress dependent on gender and student activity, interpersonal relationships and atmosphere).

Results of Research

Presented results in table 3 showed that there is a statistically significant difference ($p < 0.05$) between the experimental and control group in categories relationships and atmosphere. However, there is no statistically significant difference ($p > 0.05$) in category activities.

Table 3. The results of the t-test for independent samples checking differences in experimental (EG) and control (CG) groups.

Category		Arithmetic mean	Standard deviation	Test of homogeneity of variances		Test arithmetic differences	
		\bar{X}	s	F	p	t	p
Relations	EG	3,728	0.588	2,064	0.167	2,570	0.019
	CG	2,879	0.846				
Atmosphere	EG	3,641	0.513	0,384	0.543	2,618	0.017
	CG	2,923	0.690				
Activity	EG	3,472	0.592	0,002	0.963	1,891	0.074
	CG	2,979	0.590				

The questionnaire was used as a uniform category to describe classroom’s atmosphere in the compared groups. The experimental group generally achieve higher score of the questionnaire (Table 2), which shows that the students were aware of their higher activity as well as the students’ awareness of higher levels of their teacher’s involvement in lessons.

The perception of classroom’s atmosphere connected with students’ achievement by gender in both groups, the experimental and the control group, was shown in Figure 2. Important differences in perception were shown by a more detailed analysis; higher values of classroom’s atmosphere in the experimental group were perceived by both, so slightly more by the male students, than the female students.

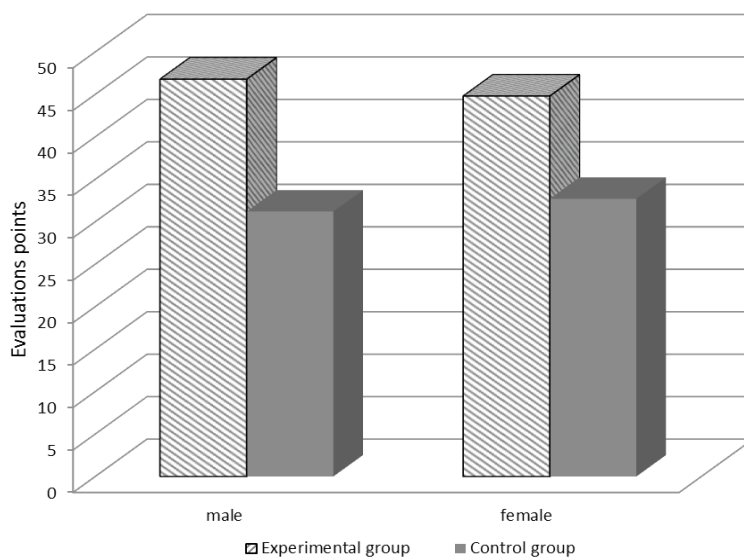


Figure 2: Students’ achievement according to the classroom atmosphere.

When comparing the categories, a higher perception of activity was noted by female students. There was no apparent difference between genders in the interpersonal relations category of the questionnaire.

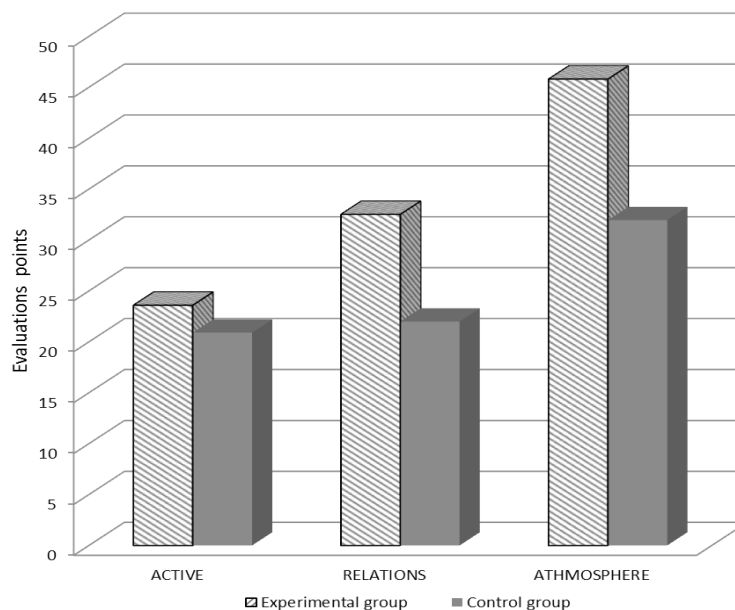


Figure 3: Students' achievement according to their activity, interpersonal relationships and classroom atmosphere.

Students' Activity and Interpersonal Relationships

The perception of students' activity, interpersonal relationships and classroom's atmosphere by both groups, was shown in Figure 3. The students' activity level in compared/comparing groups was researched in the dimensions of *research* and *contribution*, the quality of interpersonal relations was shown with the dimensions *interpersonal relations* and *contribution*. The comparison of activity perception of the experimental and the control group shows that statistically significant difference according to table 3 does not exist ($p > 0.05$). Students in the experimental group as students in the control group exhibited almost the same activities. The biggest difference was detected when the atmosphere in the classroom had been measured. Analysis of the results shows the biggest statistically significant difference ($p < 0.05$) between both groups in the category classroom atmosphere (Figure 3).

Discussion

Measuring of the classroom's atmosphere with complete survey *Learning Atmosphere* (Fraser and Rentoul, 1980; Zabukovec, 1998) describes a picture of a class dynamics that was changed by modifications of the didactic model. Class' climate was changed with different working methods, introduction of interesting facts, attainable goals and students' work evaluation that was known up front. The results show that teachers should (must) use different approach, for example encouraging students' activities and taking more personal approach as climate based education (CBE), research based and problem based education.

The result analysis shows that the students of the experimental group perceive classroom's atmosphere as more positive than the students of the control group.

The results are in line with studies of Westling (2002) and Ghaith (2003), which examined, similar as here presented study, the classroom atmosphere and the link between the climate on the one hand and the teaching strategies on the other - the positive climate, developing relationships, cooperation and responsibility, not just in school, but also in the wider community.

More personal approach, students' contribution and research were noted by students themselves. The most significant difference between genders was noticed in perceiving activity category in the experimental group. Male students are not as active in class as female ones, which could be contributed to the male students needing more time to adjust and accept to the changes. High score in interpersonal relations in the experimental group shows that the students are active, they contribute to class and the teacher has more personal approach.

The positive atmosphere is also reflected in better students' performance, as evidenced by the survey of the Fraser and Fisher (1984). Likewise, an international survey of the teaching and learning of TALIS (2008) stresses out the importance of the classroom atmosphere by teaching for achievements of the students' better results. The results coincide with this survey and our research confirms better atmosphere in the classroom, but we also must point out, that students are still not active enough.

It could be pointed out that positive climate promotes students' motivation to work, develops their internal motivation, reduces fear and increases the quality of students' skills and achievements, which is also confirmed by the survey Zabukovec (1998).

Conclusions

Contemporary didactical approaches in a contemporary school must satisfy at least two functions: to establish good condition (climate) for a teaching/learning process, and to offer suggestions for improvement of teaching and learning methods. According to these approaches contemporary school's task is to place the student in the most active role in contrast to traditional classes where the student is largely just a passive participant. The efficiency of the modern didactic approaches was proved by better interpersonal relations and slightly higher activity level of students which must be continuously improved. Different strategies need to be used in order to achieve such positive changes. Only diverse and creative lessons that guide individuals and are attentive to them, enable higher quality knowledge and better classroom atmosphere. Therefore, the changes in schools have sense only when the need to change is present, when there is sufficient time, the will to work and appropriate knowledge are existent.

In presented research the main aim has been to show, how can with appropriate didactical approaches better students skills and knowledge be reached. The subject of interest has been the analysis of classroom climate. The results show, how positive climate influences on the students' achievements. The investigated problem adopted the form of questions as How strong is the relationship between classroom climate and students' achievements and a question Can the climate based education (CBE) have positive influence on working atmosphere in the classroom and consequently on the students' achievement? The answers on both main research questions are positive. Presented research shows the strong relationship between classroom climate and students' achievement, and climate based education (CBE) has positive influence on working atmosphere in the classroom and consequently on the students' achievements.

Acknowledgment

The authors acknowledge the support of the Ministry of Education, Science and Sport of Republic of Slovenia and European Social Fund in the frame of the Project: "Innovative pedagogy 1: 1 in the light of competences of the 21st century" on Faculty of Natural Sciences of University of Maribor.



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Received: June 30, 2014

Accepted: August 22, 2014

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