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## НАДАРЕНИТЕ И ТАЛЕНТИРАНИТЕ КРЕАТОРИ НА ПРОГРЕСОТ



ЗБОРНИК  
НА

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ST KLIMENT OHRIDSKI UNIVERSITY – BITOLA  
FACULTY OF EDUCATION - BITOLA



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Македонска Асоцијација за надарени и талентирани (МАНТ)

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St. Kliment Ohridski University, Faculty of Education - Bitola, North Macedonia

Preschool Teacher Training College "Mihailo Palov" from Vrsac, Serbia

The University of Novo Mesto, Slovenia

Teacher Education Faculty, University of Belgrade, Serbia

Faculty of Teacher Education, University of Zagreb, Croatia

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Lidija Kondinska, PhD  
Bureau for development of the education, Department in Bitola

## **DIFFERENTIATION IN TEACHING – INTERVENTION FOR GIFTED AND TALENTED STUDENTS IN THE REPUBLIC OF NORTH MACEDONIA’S SCHOOLS**

**Abstract:** Changes in the educational process worldwide and the need of acceptance the differences among students demand from teachers, regardless the teaching subject, to satisfy students’ needs and to show a higher level of responsibility during the process. The educational policy in the Republic of North Macedonia, among other things, stresses the inclusion of students with various educational needs into the regular teaching, therefore it is expected that teachers should take into consideration the needs of the talented and gifted. These students are entitled to learn according to their individual needs, strengths and weaknesses, aims and interests, and there are various methods that offer a differentiated approach to teach and encourage them to make use of their capabilities. One of the methods is the differentiation in classroom, as a way of thinking for learning. Differentiation means that curricula are the same for all students, but the level of their realization with the gifted and talented is different, regarding the content (what they learn) and the process (how they learn).

The paper points out the reasons for differentiation implementation in classes, its strategies, advantages and disadvantages. The research has a qualitative paradigm (descriptive design), i.e. it analyses observed teaching classes in the primary and secondary schools in the Republic of North Macedonia concerning the differentiation. At the same time, the research has a quantitative paradigm, i.e. it analyses teachers’ attitudes regarding the differentiated work with the gifted and talented. The results from the research indicate that differentiation should be recommended because it leads to a socio-emotional growth and development of gifted and talented students, their participation in regular teaching in activities that are different from those planned for other students, as well as to a connection of their interests with the teaching subject curricula they show interest and motivation for.

**Keywords:** gifted and talented, differentiation.

**1. Introduction.** Nowadays schools are faced with the challenge to develop educational programs that will satisfy students’ different educational needs. Talented and gifted are group of students that have complex educational needs. Thus, individualized programs for them are one of the approaches that enable schools to adjust and to take in account the identified needs. In these programs goals and activities are planned and so the schools and extracurricular activities are adapted to these students’ educational needs.

The researches show that gifted and talented students spend their school day in regular teaching classes. Unfortunately, the regular teaching programs are not modified to address these students’ needs (Archambault, 1993; Cox, Daniel, & Boston, 1985; Westberg, Archambault, Dobyns & Salvin, 1993, cited in Parke, 2003). Therefore, these students are in danger of not achieving their real potentiality.

Given that Europe is oriented towards the education of gifted and talented, it can be said that these students can be a part of the regular classes by using methods and forms of teaching and learning which enable forms of differentiation, and individualization as well as



enriched programs, primarily because these students need a personalized approach (Upatstva za politika za vključevanje vo obrazovanieto – Guidance on politics for inclusion in the education, 2009). The complexity of the differentiated teaching within the regular teaching can be a challenge in regard to the lack of consciousness, advanced knowledge of the subject content and pedagogy as well as of skills for managing the classroom. Thus, it is of utmost importance to facilitate the use of the differentiation in the classrooms and, in this sense, the diagnostic assessment, modifying teaching and learning expectations, curricula's flexibility and teachers' belief in students' learning are very relevant starting points.

**1.1. Differentiated teaching.** Each student has his own individual learning style. This means that students do not understand the teaching subjects' content in a same way or that they have not the same level of competencies. Though the relevance of the differentiated teaching has already been perceived, the classes observation within this research show that it is absent from or inconsistent in the Macedonian schools. There are several factors that influence this, such as: lack of knowledge to extend the content; lack of time to modify the teaching curriculum to the needs of talented and gifted students; teachers' difficulties to locate and use effectively the appropriate resources; teachers' perception that students differ in regard the way they should be taught and learn.

The Macedonian schools do not teach the students to think, and this is something that can be done constantly by using strategies for critical thinking and solving problems, which are different from the standard way of teaching and learning. For example, by using the strategy think – solve – share, there is no need to look for the reasons of content incomprehension in the teaching curricula.

Bearing in mind that students spend most of their time in regular classes, the differentiated teaching has a great significance because the teaching is tailored to the needs of talented and gifted. This approach enables these students to give their maximum and to find themselves.

**1.1.1. Differentiated teaching – what is it?** The differentiated teaching is a way to teach and learn according to the various students' learning styles and involves an adjustment in order to satisfy their different needs. The differentiated teaching aims to look at the appropriate levels of students' skills and think what can be undertaken in order to enlarge the teacher curricula deepness and to extend and improve students' knowledge and skills, regardless their intuitive knowledge. Teachers who use the differentiation adjust their approach towards teaching in order to satisfy the learning styles of their students.

The researches on effectiveness of the differentiation indicate that this method contributes to various students, i.e. from those who experience difficulties in learning to those which are considered to have great abilities. This teaching should be used together with effective teaching methods based on evidence in order to reduce the learning failures. Using these methods in a skilled way, in fact, diminishes the need of large differentiation.

The differentiated teaching differs from the individualized teaching. As Tomlinson (2002) state, 40 years ago the individualized teaching was stressed out. However, teachers find out that creating an individual plan for each student everyday is not real. On the other side, the differentiated teaching uses several approaches towards learning, but this teaching does not ask for individual approach towards each student. Each student can approach the teaching curriculum in a different way, and this makes the whole learning experiences more efficient. Further, Tomlinson (2002) points out that the differentiated teaching shakes the traditional classroom and that students have more options to find information and ideas to express what they learn.

The critiques say that the differentiated teaching does not work in each classroom. If there are too many students in one classroom and if the teachers have no experience with this approach then the classroom can become chaotic. Thus, in order to bridge over these difficulties, each teacher should dedicate more time to plan the regular teaching classes. In this way, teachers gain skills for differentiated teaching, and this will enable teaching to be

more efficient for students with great abilities as well as for those with difficulties; students to have more option to learn the teaching content; students to take bigger responsibility toward their own learning; students to dedicate themselves to the learning which will reduce the problems with the students' discipline; students to learn one from another in the classroom; and students with differences to be involved in learning and thinking.

**1.2. Development of the differentiated teaching.** The differentiated teaching is connected with the period when there were many students from all ages in one classroom. When the educational system transfers into schools, it was assumed that the children of the same age have the same knowledge and learn in a similar way. In 1912 tests for assessment of students' achievements were introduced and they had leveled the differences among students' competencies in a class.

In 1975 on a congress the Law for persons with special needs – IDEA (Zakon za licata so posebni potrebi) was launched. According to it, the students with special needs need to have an equal approach to the public education. Then, the text “No Child Left Behind” (2000) followed, which additionally encourages the differentiated teaching and gives directions for gaining skills in regard to its planning and realization.

**2. The learning content, process, product and environment – ways of differentiated teaching.** The differentiated teaching appears when teachers plan the teaching classes: with adjusted content that will be discussed; with adjusted process used for learning; in regard of the way students will show what they know; in regard of the learning environment.

**2.1. Differentiation with teaching content adjustment.** The chosen content for the each class should involve the learning standards. Some students in the class can be completely familiar with the concept and procedures from the teaching content, some may have partial knowledge and some may not be familiar with the teaching content before the class starts.

The teacher can realize the teaching content with designing activities for group of students which refer to different levels of the Bloom's taxonomy. For those students which are not familiar with the teaching contents, activities from lower levels of this taxonomy (remembering and understanding) can be planned. Students who have certain knowledge may be asked to implement and analyze the content and students with high level of the teaching content knowledge may be asked to accomplish activities that refer to assessment and synthesis. That means that with adaptation of the teaching content, various parts of the teaching curricula are adjusted to various students depending on their starting level of knowledge and on the expectation of what they should learn for that particular part of the teaching curriculum. For talented and gifted this means a support towards the teaching curriculum's extension or deepening. This can be achieved with: various provocative materials; focus on the overall trends, models and topics instead of on small details and facts; posing problems which have no clear answers; realization of topics that are interesting for students, complex and valuable and that reflect the way the world functions.

**2.2. Differentiation with teaching process adjustment.** When the teaching process is adjusted, the methods are changed according to what students are expected to learn. In other words, this means that students with high level of knowledge should learn together with the students with lower level of knowledge or that adapted ways of learning should be used.

The adjustment of the teaching process enables teaching that supports students to achieve the learning criteria individually in regard to their specific needs. Students do not have a need for the same support from the teacher, and each student can work individually, in pairs or in small groups. Some students may have a need for interaction with other students or with teachers, while others will make progress on their own. Students' learning can improve if teachers support their individual needs. This means that activities on various levels should be used and through them all students work on understanding and skills, but go ahead with different level of support, challenge or complexity. During the differentiation with adjustment of the process, difference can be made regarding the time each student needs to

complete the task. Teachers can provide additional support to students who accomplish the goals from the teaching curriculum in a more difficult way or to encourage advanced students to keep on achieving the topic's goal in more depth.

**2.3. Differentiation with product adjustment.** The product is that what student creates at the end of the class in order to demonstrate that he achieves the goals within the appropriately chosen content. This can take a form of tests, presentations, projects, reports etc. Some students can be asked to undertake an activity which indicates knowledge of the concept, based on their individual learning style. When there is an adjustment of the activity's product, the specific criteria for students' success can be changed too.

**2.4. Differentiation with learning environment adjustment.** The learning conditions involve physical and psychological elements. a) The physical space refers to flexibility in the classroom and contains different pieces of furniture and their position to support individual and group work. In the classroom there should be space in which students will work independently and quietly as well as space in which students cooperate among themselves. Materials that refer to various cultures should also be supplied. While teacher plans the class, he should constantly think of whether students can move freely in the classroom and of who has control on the materials. b) Psychologically, teachers should use techniques for classroom management which support safe learning environment. Teachers should establish clear directions for independent work which suits students' individual needs. Teacher should think: Are the humor and creativity taken into consideration? Is the atmosphere welcomed? Is there an encouragement for discovering? Is the teacher dedicated to the differentiation? Are the students showing curiosity and enthusiasm? Do students want to quit their control over the learning? Do gifted and talented have the opportunity to work with other students like them?

The classroom in which teacher enables environment for effective adjustment towards students' learning will have the following features: high level of students' engagement; students independency; students' belief in their own capabilities; students' mature in behaving and development of mutual respect; building students' and teachers' effective teaching and learning.

**3. Methods of differentiation within the regular teaching in the classroom.** Teacher should take care of students with different capabilities, thus he can use various methods in his work, meaning he adjusts the differentiation to the process.

The differentiated teaching in the classroom can be realized differently in two separate classrooms as well as in two separate schools. Still, the main characteristic of this approach are: small groups in which the students rotate inside and outside. This gives students the opportunity to be part of various groups. A group can involve two or more students. This is meaningful because students learn one from another; reciprocal learning which means that sometimes student becomes a teacher, sharing what he has learned and posing questions to his peers; and continuous assessment for which teachers have to follow the students' strengths and weaknesses in order for them to be sure that they are doing well in achieving the planned goals for each teaching class.

**3.1. Flexible time in fulfilling the assignments.** In traditional teaching, the chosen assignments usually adhere to slower students. In this case, gifted and talented that are faster in doing their assignments are in position to follow the pace of their peers, and slower one are under pressure to fulfill tasks faster, feeling incompetent to learn with the needed pace. Therefore, it is recommended that teachers should have a flexible approach in regard of the time needed to complete the tasks. Doing so, teachers provide talented and gifted with the opportunity to work on assignments which will enlarge and deepen their knowledge, and slower students with the opportunity to complete the assignments with appropriate speed.

**3.2. Collaborative learning.** This learning provides students with the opportunity to participate more in the planned activities. In this sense, forming the groups is very relevant. The groups should be heterogeneous and this enables gifted and talented to express their capabilities and students with lower achievements to cooperate and learn from their peers. Therefore, each student in the group should have separate role (or the students assign the roles in the group) and

this will contribute the organization in the groups in regard to the students' capabilities and skills. Assignment of roles is very important for students with lower achievements because this way they can increase their self-esteem.

The work in heterogeneous groups provides solutions of problems that are not part from the teaching curriculum. Talented and gifted will build and improve their communicative skills and team work. The social growth of the talented and gifted strengthens within the group of peers (Devlin et al., 1996). On the other side, their academic needs and interests are sacrificed because the teaching curriculum is limited in regard to the content and the pace. The real differentiation does not exist and this can lead to unmotivated students. Therefore, we have to be in line with Devlin et al.'s attitude that the complete inclusion or the work in heterogeneous groups is justified only if the social situation in class is taking into account.

In homogeneous groups, gifted and talented gain communicative skills, they practice relevant social skills with other students that have similar capabilities. The researches indicate that working in homogeneous groups is a great opportunity for gifted and talented to improve their knowledge and skills and to practice deeper understanding. First, students that have higher potentiality feel more comfortable in groups with students that have similar competencies. Second, the working environment is not the only high achiever; several other students join and work on more challenging tasks. Third, the real differentiation is expected.

**3.3. Progressive assignments.** Teachers can assign different activities or tasks to different students based on their competencies. However, this can cause problems, such as: public exposure of students' capabilities, potentially negative social implications as well as teachers' more administrative work.

**3.4. Different working time.** Students get assigned with tasks which are more complex. This will enable students with learning lower pace to work according their own pace and students with higher achievement to work on more challenging questions.

**3.5. Digital sources.** The use of interactive and digital applications in classes provides students with different capabilities to approach a subject or topic from a different point of view. This method of differentiation enables the use of various materials, platforms and tools which ensure the same learning outcomes and gives students the necessary belief in their digital skills. In the regular classroom, upside down classroom can be used especially when the learning occurs via internet as well as instead of homework. Students can approach the teaching content (videos prepared by teachers) in any time. This way, the use of digital sources is a valuable tool for differentiation because it allows teachers to spend more time working with students, for example when providing feedback and solving group or individual needs. Students can learn to self-regulate themselves and to make progress or to use the recorded materials in order to revise the content which needs to be revised or explained.

**3.6. Support during discussion.** The encouragement of a teacher – student, student – teacher and student – student communication is of utmost importance for the differentiation. In this sense, teachers can identify the various students' competencies to learn and modify their explanations to satisfy the various levels of cognitive needs. The directed questioning can lead to different answers from students that have different learning styles. Teacher can involve students in simple or complex discussion according to their learning needs.

The discussion helps gifted and talented to understand how learning occurs and what can they do in order to get the maximum from the learning opportunity. This includes: establishing a culture in which the wrong answers are considered as learning opportunities and not as a failure; modeling the speaking process on how the learning goes on and not only on what has been learnt; encouraging students for discussion on what is helping them to learn effectively and on explanation of the answers; helping students in becoming more consciousness of their own learning styles; providing learning styles that are less available.

**3.7. Changeable outcomes.** Posing an authentic problem enables students to achieve outcomes on a different level. Students with different capabilities will achieve those outcomes

that are suitable to their level of understanding and learning. However, if clear direction and sum of rules are given when posing a task, the demands for students with low competencies can go too low.

**3.8. Formative assessment.** Continuous assessment and feedback give teachers the opportunity to modify their methods according to students' needs and to the learning conditions. The assessment of students' achievements during the school year as well as at the end of a topic or topics provides information on students' achievement. During the class, teachers can use various assessment methods which will give them information on the level of understanding, interpreting and learning in that particular moment. The flexibility in using assessment methods enables students to estimate which are the learning styles that ensure their higher achievements. In the assessment process, feedback is very relevant. Timely and constructive feedback gives students the opportunity to identify the steps they should take in order to go further in their learning. Feedback can help students to think deeply about the criteria for success and about what can their peers do in order to improve their outcomes.

**4. Differentiation as a factor of interaction among teachers and gifted and talented in the regular teaching.** Teachers' knowledge of differentiated teaching and of the available strategies for gifted and talented is very significant factor that affects the interaction between teachers and these students and contributes on the promotion of students' learning and development in class. Thus, there is a need of teachers' trainings that will improve the learning of these students in regular class. Often, teachers in regular classes ignore gifted and talented and give them to fulfill the same tasks and problems as regular students because they are the minority in the class.

There are many reasons for why teachers do not spend enough time with gifted and talented in their classrooms. Many international researches have been conducted in order to examine teachers' perception and practice towards the differentiated teaching in their classroom. These studies reveal that teachers have positive attitudes towards differentiation. However, they reveal that inappropriate conditions for its practicing occur and this involves: teachers' preparation and teachers being overloaded as well as the lack of time for classes' preparation.

Teachers' preparation to practice the differentiated teaching in their classrooms is of a great significance for teachers' decisions regarding: teaching curricula, planning of the teaching, organization etc. However, the differentiation is still absent in the classrooms primarily because teachers are not well prepared with process knowledge as well as with pedagogical knowledge.

**4.1. Teachers' competencies for implementation of the differentiated teaching.** In order to implement the differentiated teaching in their classrooms, teachers should be motivated. The motivation is defined as a component of the professional teachers' competencies and it should be seen in two aspects: believing in self-efficacy and enthusiasm.

Self-efficacy refers to teachers' belief in their competencies, i.e. how capable are they in teaching and learning processes in their classrooms. Besides, self-efficacy initiates some teachers' activities and affects the quality and the time for the effort. Teachers' enthusiasm is defined in relation to their high quality learning and to their influence on students' achievements, encouraging students' interest, learning and motivation.

Professional teachers should have: knowledge and competencies to recognize and identify gifted and talented and their needs; knowledge and understanding of the cognitive, social and emotional characteristics and needs and of any difficulties these students may encounter; knowledge and capability to find and implement more advanced content, information and ideas; competency and skills to plan and realize the differentiated teaching in order to satisfy gifted and talented interests, intellectual and emotional needs as well as their competency for independency; competence of creating learning environment for talented and gifted in order for them to show their uniqueness; competence for encouragement of their progress and of achieving better results in the learning process, effective question posing and implementing the critical and creative thinking.

## **5. Methodological approach towards this research**

**5.1. Research problem.** This research is directed towards the needs of talented and gifted students. These students should: work in an environment that will stimulate them and provide them with approach to high quality resources; know that they are allowed to pose questions for improvement and that their answers will be taken into account; get appropriate encouragement; be recognized as persons with strengths and weaknesses and maintain the discussion with teachers, other students and adults. These conditions will be achieved when teachers will directly address gifted and talented strengths and weaknesses as well as when they personalize the way teaching is organized and the way of learning.

**5.2. Research subject.** The differentiation in the classroom offers an appropriate environment to students and they can fulfill their academic needs. This type of teaching looks for minimum intervention when working with talented and gifted. The subject of this research is to examine what determines how often teachers from primary and secondary education in RNM are implementing the differentiated teaching in their everyday practice in regard to the regular classroom when working with gifted and talented students.

**5.3. Research type.** This research is: a) developmental – it refers to activities that will improve the everyday teaching practice in order to gain teachers' reflection on implementation of the differentiation in the classroom as an intervention when working with gifted and talented. The research examines how much are teachers familiar with the concept differentiated teaching and how often they implement this intervention in the regular teaching as well as whether the implementation depends on teachers' age and working experience; b) empirical – the data are collected directly from the teaching practice; c) quantitative – through survey the number of teachers (in the primary and secondary education) who are familiar with the differentiated teaching and who implement this intervention in relation to their age and working experiences will be determined.

**5.4. Research aim.** The aim is to examine teachers' knowledge and implementation of the differentiation in the regular teaching as a way of supporting gifted and talented students.

### **5.5. Research tasks**

**5.5.1. General task:** The general task is to collect and process data that refer to how often the differentiated teaching is used from teachers in the regular teaching in the primary and secondary schools in RNM.

**5.5.2. Particular tasks:** The research has the following particular tasks: to collect and process data regarding teachers' knowledge of the differentiated teaching in the primary and secondary schools; to collect and process data regarding the frequency of teachers' implementation of the differentiated teaching in the regular teaching in the primary and secondary schools; to collect and process data regarding the segments of the classes in the regular teaching in which teachers in primary and secondary schools implement the differentiated teaching, the most in order to support gifted and talented students.

**5.6. Research justification.** This research is justified because talented and gifted students spend most of the day in a regular teaching class. Unfortunately, the regular teaching, in general, is not adjusted to satisfy their needs, thus these students are on risk not to achieve their full potentialities.

**5.7. Research variables:** Independent variables: age and working experience (primary or secondary school); Dependent variable: the differentiated teaching.

### **5.8. Hypothetical frame**

**Main hypothesis:** Teachers' knowledge and implementation of the differentiated teaching in the regular teaching in primary and secondary school in the region Bitola – Resen – Demir Hisar do not depend on teachers' age and working experience.

**Special hypothesis:** 1. Teachers' knowledge of the differentiated teaching in the regular teaching in primary and secondary school in the region Bitola – Resen – Demir Hisar does not depend on teachers' age and working experience; 2. The frequency of implementation of

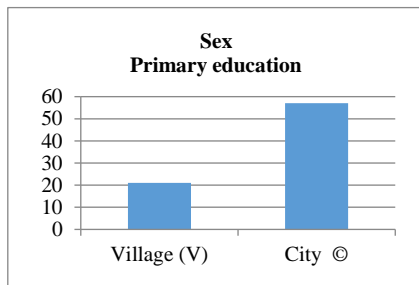
the differentiated teaching in the regular teaching in primary and secondary school in the region Bitola – Resen – Demir Hisar as an intervention to support gifted and talented does not depend on teachers' age and working experience

**Particular hypothesis:** Within each special hypothesis, particular hypotheses are formulated and they refer to concrete questions and answers.

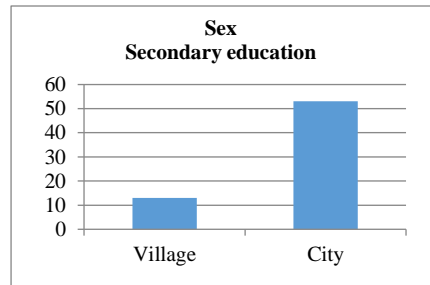
**5.9. Research sample:** In determining the sample, methodological standards of representativeness and adequacy are taken into consideration. Thus, the sample consists of 80 teachers from 8 primary and 70 teachers from 7 secondary schools in the region Bitola – Resen – Demir Hisar. The quantitative indicators are given in the tables below:

**Table 1 Primary education  
Secondary education**

Sex		Total
M	F	
21 (26,9%)	57 (73%)	78 (100%)

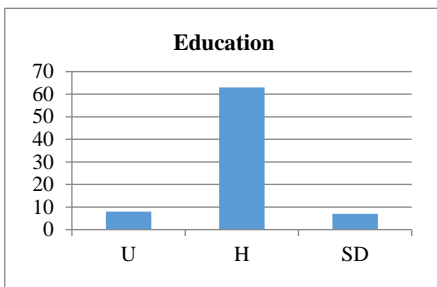


Sex		Total
M	F	
13 (19,6%)	53 (80,3%)	66 (100%)



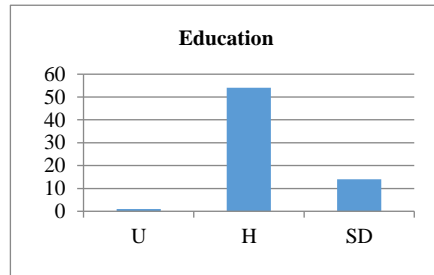
**Table 2 Primary education**

Education			Total
Upper (U)	Higher (H)	Scientific degree (SD)	
8 (10,2%)	63 (80,7%)	7 (8,9%)	78 (100%)



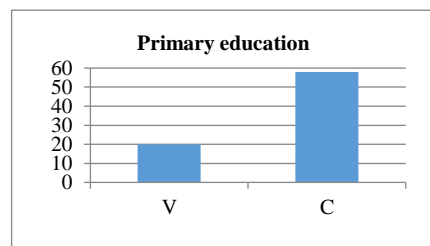
**Secondary education**

Education			Total
Upper (U)	Higher (H)	Scientific degree (SD)	
1 (1,5%)	51 (77,2%)	14 (21,2%)	66 (100%)



**Table 3 Primary education**

Primary education		Total
V	C	
20 (25,6%)	58 (74,3%)	78 (100%)



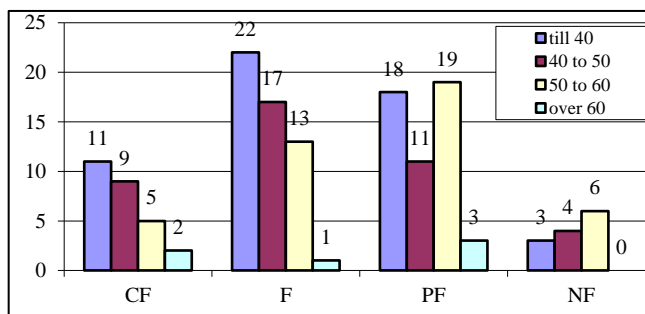
**5.10. Research methods and instruments:** In this research the method of theoretical analysis and analysis of the practice are used, mostly because the theory and the practice are connected and they cannot be analyzed separately. Data are collected through survey for teachers, analysis of teaching plans and observation of teaching classes. The survey for teachers in primary and secondary education has two parts. The first part contains six statements that refer to some general information for teachers – independent variables. The second part refers to teachers’ opinion on the differentiated teaching and its implementation within the regular teaching.

**6. Research results – interpretation.** Special hypothesis 1 – The teachers’ knowledge of the differentiated teaching in the regular teaching in primary and secondary school in the region Bitola – Resen – Demir Hisar does not depend on the teachers’ age and working experience.

**Table 1:** Are you familiar with the way of realization of the differentiation within the regular teaching?

Age	Completely familiar (CF)	Familiar (F)	Partially familiar (PF)	Not familiar (NF)	Total
40 or under	11 (7.6%)	22 (15.2%)	18 (12.5%)	3 (2%)	54 (37.5%)
40 to 50	9 (6.2%)	17 (11.8%)	11 (7.6%)	4 (2.7%)	41 (28.4%)
50 to 60	5 (3.4%)	13 (9%)	19 (13.1%)	6 (4.1%)	43 (29.8%)
over 60	2 (1.3%)	1 (0.6%)	3 (2%)	0 (0%)	6 (4.1%)
Total	27 (18.7%)	53 (36.8%)	51 (35.4%)	13 (9%)	144 (100%)

df = 9    p = 0.49100  $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 8,43$



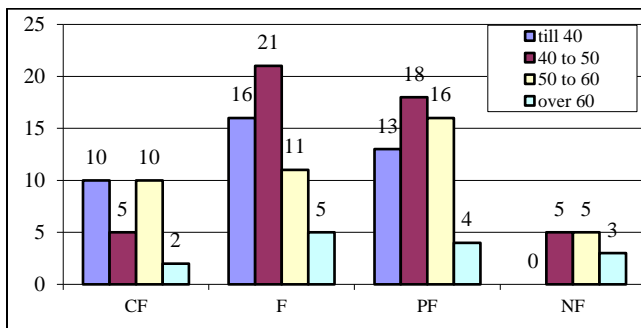
Working experience	Completely familiar (CF)	Familiar (F)	Partially familiar (PF)	Not familiar (NF)	Total
10 and under	10 (6,9%)	16 (11,1%)	13 (9%)	0 (0%)	39 (27%)
10 to 20	5 (3,4%)	21 (14,5%)	18 (12,5%)	5 (3,4%)	49 (34%)
20 to 30	10 (6,9%)	11 (7,6%)	16 (11,1%)	5 (3,4%)	42 (29,1%)
over 30	2 (1,3%)	5 (3,4%)	4 (2,7%)	3 (2%)	14 (9,7%)
Total	27 (18,7%)	53 (36,8%)	51 (35,4%)	13 (9%)	144 (100%)

df = 9    p = 0,19729     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 12,29$

Regarding teachers’ age and working experiences, 64 (44,4%) teachers are partially or not familiar with the differentiated teaching. Most teachers, 22 (15,2%), that are familiar with this intervention have 40 or less years. In relation to teachers’ working experience, most teachers that are familiar with the differentiated teaching have working experience from 10 to 20 years. The analysis of teachers’ lesson plans and teaching classes’ observation indicate that students work in heterogeneous groups or in pairs on the same assignments. Special activity is planned only for students with difficulties if the class contains such students.

Because the value of  $\chi^2 = 8,43$  and this value is smaller than the tabular value of  $\chi^2$ , for a chosen level of significance 0, 01, it can be concluded that under 99% of probability, the two variables are independent. Thus, teachers’ knowledge of differentiated teaching does not depend on their age.

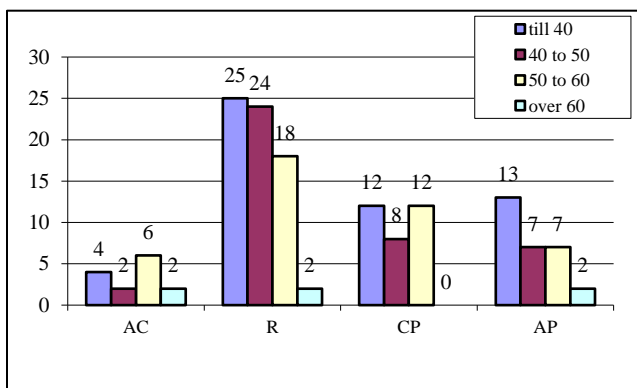




**Table 2:** Which of the statements do not refer to way in which the teaching can be distinguished in order to satisfy the need of all students?

Age	Adjustment of the teaching curriculum content (AC)	Rejecting the teaching plan and program (R)	Students are offered to choose products (CP)	Adjustment to the learning process (AP)	Total
40 or under	4 (2.7%)	25 (17.3%)	12 (8.3%)	13 (9%)	54 (37.5%)
40 to 50	2 (1.3%)	24 (16.6%)	8 (5.5%)	7 (4.8%)	41 (28.4%)
50 to 60	6 (4.1%)	18 (12.5%)	12 (8.3%)	7 (4.8%)	43 (29.8%)
over 60	2 (1.3%)	2 (1.3%)	0 (0%)	2 (1.3%)	6 (4.1%)
Total	14 (9.7%)	69 (47.9%)	32 (22.2%)	29 (20.1%)	144 (100%)

df = 9 p = 0.30067  $\chi^2_{(0,05)} = 16.92$   $\chi^2_{(0,01)} = 21.67$   $\chi^2 = 10.65$



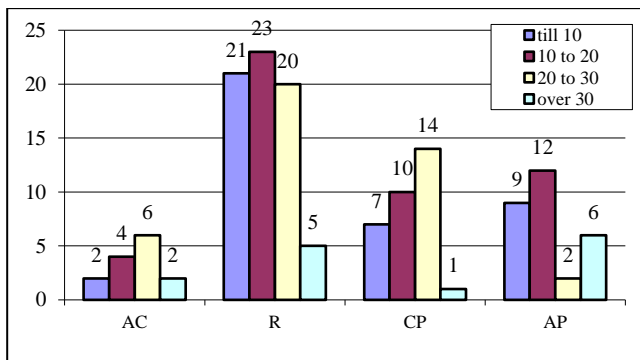
Working experience	Adjustment of the teaching curriculum content (AC)	Rejecting the teaching plan and program (R)	Student are offered to choose products (CP)	Adjustment to the learning process (AP)	Total
10 or under	2 (1,3%)	21 (14,5%)	7 (4,8%)	9 (6,2%)	39 (27%)
10 to 20	4 (2,7%)	23 (15,9%)	10 (6,9%)	12 (8,3%)	49 (34%)
20 to 30	6 (4,1%)	20 (13,8%)	14 (9,7%)	2 (1,3%)	42 (29,1%)
over 30	2 (1,3%)	5 (3,4%)	1 (0,6%)	6 (4,1%)	14 (9,7%)
Total	14 (9,7%)	69 (47,9%)	32 (22,2%)	29 (20,1%)	144 (100%)

df = 9 p = 0,06270  $\chi^2_{(0,05)} = 16,92$   $\chi^2_{(0,01)} = 21,67$   $\chi^2 = 21,67$

In relation to teachers' working experience in teaching, the value of  $\chi^2=12,29$  is smaller than the tabular value, for a chosen level of significance 0,01, and it can be said that under 99% of probability the two variables are independent. Therefore, teachers' knowledge of the differentiated teaching does not depend on their working experience in teaching.

In table 2, it is seen that 69 (47,9%) teachers think that rejecting the teaching plan and program in order to satisfy students' interests is a way that can distinguish the teaching to satisfy students' needs; however, this is not a way to conduct the differentiated teaching. This is not in correlation with the answers of the previous question in which 80 (55,6%) teachers stated that they are completely familiar or familiar with the differentiated teaching. For this question which has the function to confirm the first hypothesis, the value of  $\chi^2 = 10,65$  and is smaller than the tabular value of  $\chi^2$ , for chosen level of significance 0,01, thus, it can be claimed that under 99% of probability the two variables are independent. Thus, teachers' judgment on the way that teaching can be distinguished in order to satisfy the needs of all students does not depend on their age and work experience.

Teachers have attended trainings for using different techniques for students'

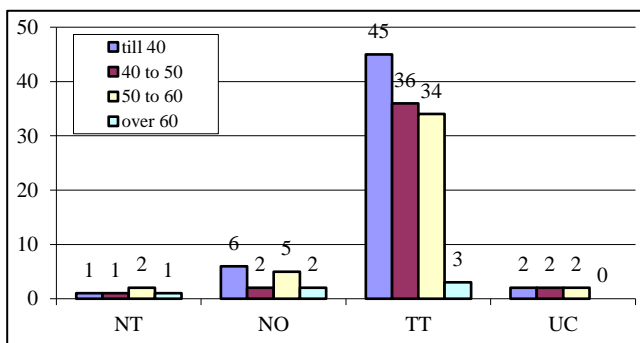


**Table 3:** Complement this sentence with the best answer.

Differentiation \_\_\_\_\_.

Age	There is no teaching with all students in class (NT)	Some students will never have an obligation to do things they do not want to do (NO)	Teachers teach the way the students learn the best in class (TT)	Teaching is realized in an upside down classroom (UC)	Total
40 or under	1 (0,6%)	6 (4,1%)	45 (31,2%)	2 (1,3%)	54 (37,5%)
40 to 50	1 (0,6%)	2 (1,3%)	36 (25%)	2 (1,3%)	41 (28,4%)
50 to 60	2 (1,3%)	5 (3,4%)	34 (23,6%)	2 (1,3%)	43 (29,8%)
over 60	1 (0,6%)	2 (1,3%)	3 (2%)	0 (0%)	6 (4,1%)
Total	5 (3,4%)	15 (10,4%)	118 (81,9%)	6 (4,1%)	144 (100%)

df = 9    p = 0,40475     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 9,36$

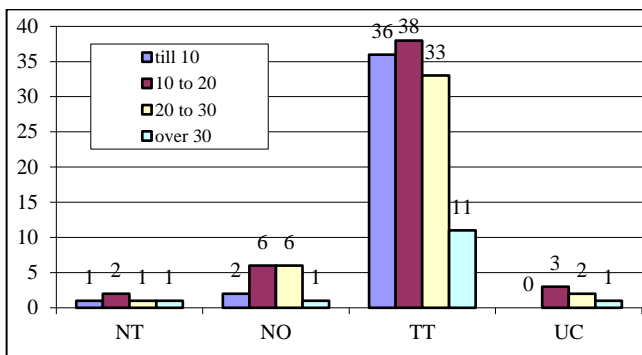


Working experience	There is no teaching with all students in class (NT)	Some students will never have an obligation to do things they do not want to do (NO)	Teachers teach the way the students learn the best in class (TT)	Teaching is realized in an upside down classroom (UC)	Total
10 or under	1 (0,6%)	2 (1,3%)	36 (25%)	0 (0%)	39 (27%)
10 to 20	2 (1,3%)	6 (4,1%)	38 (26,3%)	3 (2%)	49 (34%)
20 to 30	1 (0,6%)	6 (4,1%)	33 (22,9%)	2 (1,3%)	42 (29,1%)
over 30	1 (0,6%)	1 (0,6%)	11 (7,6%)	1 (0,6%)	14 (9,7%)
Total	5 (3,4%)	15 (10,4%)	118 (81,9%)	6 (4,1%)	144 (100%)

df = 9    p = 0,75020     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 5,90$

teaching and learning. Therefore, 118 (81,9%) of them (table 3) have chosen the answer: teachers teach the way students learn the best in class. The need of encouraging various strategies for problem solving indicates that there is not only one teaching approach to teach all the notions, concepts, content, skills, and processes. Some approaches are better for research, other for cooperative work, some demand explanation or demonstration and some necessary include practice. Hence, there is not only one way to teach all students.

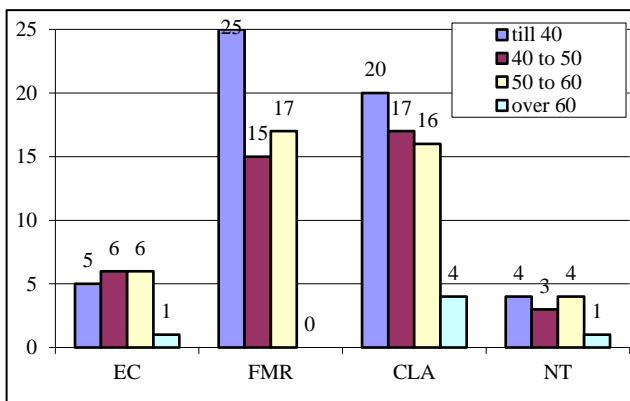
Students may achieve results when teachers use various approaches and techniques in class for various goals. However, when planning and realizing the regular teaching, only one approach for learning and teaching is used for all students. So, because the value of  $\chi^2 = 9,36$  and is smaller than the tabular value of  $\chi^2$  for chosen level of significance 0,01, it can be stated that under 99% of probability, the two variables are independent. This means that teachers' definition of the concept differentiated teaching does not depend on their age.



**Tables 4:** When implementing a differentiation within the regular teaching, I stress out the:

Age	extent of the content (EC)	forms, methods and resources for work (FMR)	cognitive level of the assignments (CLA)	the needed time for work (NT)	Total
t 40 or under	5 (3,4%)	25 (17,3%)	20 (13,8%)	4 (2,7%)	54 (37,5%)
o 40 to 50	6 (4,1%)	15 (10,4%)	17 (11,8%)	3 (2%)	41 (28,4%)
o 50 to 60	6 (4,1%)	17 (11,8%)	16 (11,1%)	4 (2,7%)	43 (29,8%)
over 60	1 (0,6%)	0 (0%)	4 (2,7%)	1 (0,6%)	6 (4,1%)
Total	18 (12,5%)	57 (39,5%)	57 (39,5%)	12 (8,3%)	144 (100%)

df = 9    p = 0,76025     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 5,79$

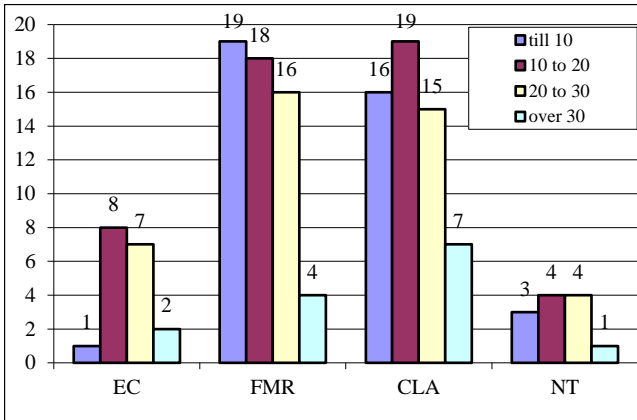


Working experience	extent of the content (EC)	forms, methods and resources for work (FMR)	cognitive level of the assignments (CLA)	the needed time for work (NT)	Total
10 or under	1 (0,6%)	19 (13,1%)	16 (11,1%)	3 (2%)	39 (27%)
10 to 20	8 (5,5%)	18 (12,5%)	19 (13,1%)	4 (2,7%)	49 (34%)
20 to 30	7 (4,8%)	16 (11,1%)	15 (10,4%)	4 (2,7%)	42 (29,1%)
over 30	2 (1,3%)	4 (2,7%)	7 (4,8%)	1 (0,6%)	14 (9,7%)
Total	18 (12,5%)	57 (39,5%)	57 (39,5%)	12 (8,3%)	144 (100%)

df = 9    p = 0,70593     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 6,34$

Also, teachers' definition on differentiated teaching does not depend on their work experiences as teachers, because the value of  $\chi^2 = 5,90$  which is bigger than the tabular value of  $\chi^2$  for chosen level of significance 0,01.

When implementing the differentiated teaching within the regular teaching, teachers stress out the following: the forms, methods and resources for work as well as the cognitive level of the assignments. However, it is very important to take into account the extent of the content and the needed time for work. The analysis of teachers' answers to this question show that they have given only one answer which in an indication of the lack of knowledge of this intervention. Because the value of  $\chi^2 = 5,79$  and it is smaller than the tabular value of  $\chi^2$ , for chosen level of significance 0,01, it can be concluded that under 99% of probability the two variables are independent. This means that teachers' understanding on what to accentuate when implementing the differentiated teaching does not depend on their age. The same conclusion stands for data from the table that refers to the teachers' working experience.



Therefore, the hypothesis that teachers' knowledge for the differentiated teaching does not depend on their age is confirmed.

**Special hypothesis 2:** The frequency of using the differentiated teaching within the regular teaching as support of gifted and talented students provided by teachers from primary and secondary schools in the region Bitola – Resen – Demir Hisar does not depend

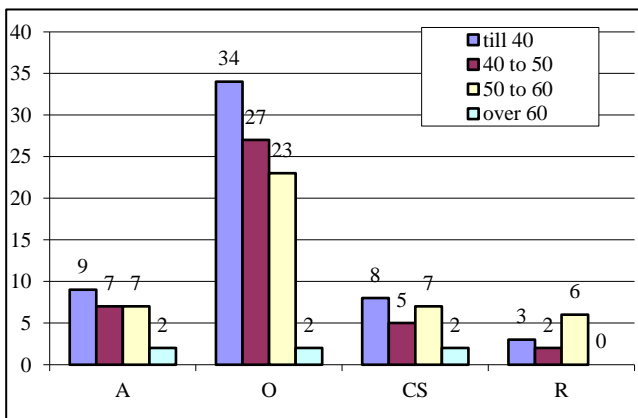
on teachers' age and work experience in teaching.

**Table 1:** Differentiation as a way of work with talented and gifted students in the regular teaching should be implemented:

Age	always (A)	often (O)	cannot say (CS)	rarely (R)	Total
	40 or under	9 (6,2%)	34 (23,6%)	8 (5,5%)	
40 to 50	7 (4,8%)	27 (18,7%)	5 (3,4%)	2 (1,3%)	41 (28,4%)
50 to 60	7 (4,8%)	23 (15,9%)	7 (4,8%)	6 (4,1%)	43 (29,8%)
over 60	2 (1,3%)	2 (1,3%)	2 (1,3%)	0 (0%)	6 (4,1%)
Total	25 (17,3%)	86 (59,7%)	22 (15,2%)	11 (7,6%)	144 (100%)

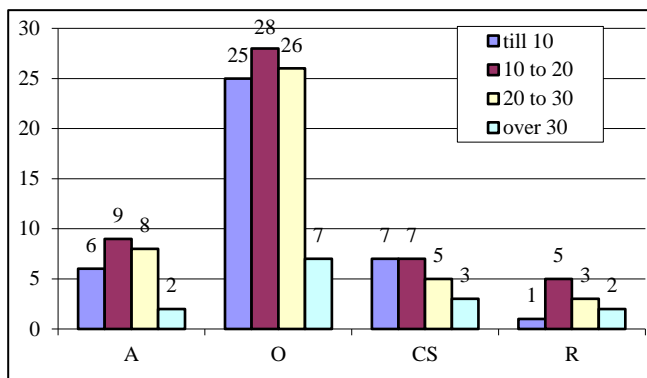
df = 9       $p = 0,61111\chi^2_{(0,05)} = 16,92\chi^2_{(0,01)} = 21,67$        $\chi^2 = 7,25$

25 (17,3%) teachers, in relation to their age and working experiences, think that the differentiated teaching should be used in teaching always, and 86 (59,7%) that it should be used often. The teachers that have 40 or less, 9 (6,2%), think that they should use this kind of intervention always and 34 (23,6%) state that they should use it often. In regard to the working experience, 6 (4,1%) teachers aged 40 or less believe that they should use this intervention always and 28 (19,4%) teachers with working experience from 10 to 20 years assume that they should use it often. However, the analysis of the lesson plans and the observation of the classes



Working experience	always (A)	often (O)	cannot say (CS)	rarely (R)	Total
10 or under	6 (4,1%)	25 (17,3%)	7 (4,8%)	1 (0,6%)	39 (27%)
10 to 20	9 (6,2%)	28 (19,4%)	7 (4,8%)	5 (3,4%)	49 (34%)
20 to 30	8 (5,5%)	26 (18%)	5 (3,4%)	3 (2%)	42 (29,1%)
over 30	2 (1,3%)	7 (4,8%)	3 (2%)	2 (1,3%)	14 (9,7%)
Total	25 (17,3%)	86 (59,7%)	22 (15,2%)	11 (7,6%)	144 (100%)

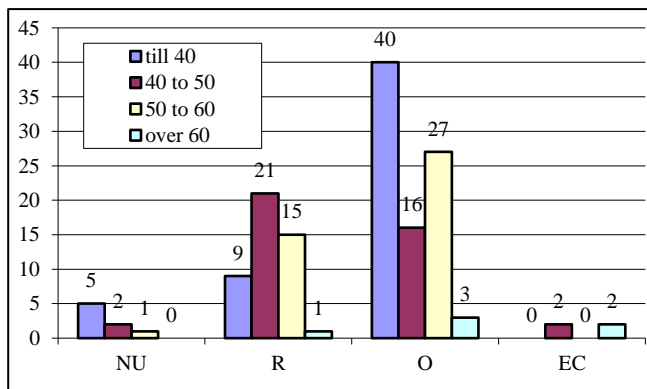
df = 9    p = 0,90267     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 4,13$



**Tables 2:** How often do you use the differentiated teaching?

Age	Do not use (NU)	Rarely (R)	Often (O)	On every class (EC)	Total
40 or under	5 (3,4%)	9 (6,2%)	40 (27,7%)	0 (0%)	54 (37,5%)
40 to 50	2 (1,3%)	21 (14,5%)	16 (11,1%)	2 (1,3%)	41 (28,4%)
50 to 60	1 (0,6%)	15 (10,4%)	27 (18,7%)	0 (0%)	43 (29,8%)
over 60	0 (0%)	1 (0,6%)	3 (2%)	2 (1,3%)	6 (4,1%)
Total	8 (5,5%)	46 (31,9%)	86 (59,7%)	4 (2,7%)	144 (100%)

df = 9    p = 0,00001     $\chi^2_{(0,05)} = 16,92$      $\chi^2_{(0,01)} = 21,67$      $\chi^2 = 40,26$   
c = 0,467



suggest that the differentiated teaching is not used for talented and gifted students within the regular teaching.

The frequency of using the differentiated teaching within the regular teaching as support of the gifted and talented students provided by teachers from primary and secondary schools does not depend on teachers' age and experience in teaching because the values of  $\chi^2 = 7,25$  и  $\chi^2 = 4,13$  are smaller than tabular values of  $\chi^2$  for chosen level of significance 0,01.

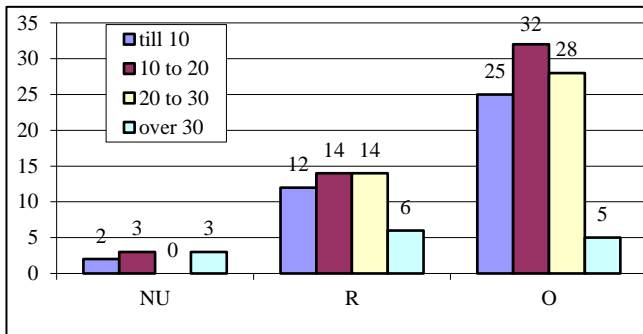
Teachers aged 40 or less (86 or 59,7%) with work experience from 10 to 20 years (90 or 62,5%) esteem that they use the differentiated teaching. This arises from their thoughts that the differentiated teaching means stressing out the forms, methods and resources for work as well as the cognitive level of the assignments.

In relation to the school, primary or secondary, the analysis shows that 54 teachers in primary schools and 32 in secondary schools claim that they use the differentiated teaching. This difference in implementation of the differentiated teaching comes as a result of the trainings in mathematics and nature sciences. These trainings have a separate session dedicated to the differentiated teaching.

Still, the three years continuous monitoring from the counselors from the Biro of development of the education and foreign experts shows that the differentiated teaching is

Working experience				Total
	Do not use (NU)	Rarely (R)	Often (O)	
10 or under	2 (1,3%)	12 (8,3%)	25 (17,3%)	39 (27%)
10 to 20	3 (2%)	14 (9,7%)	32 (22,2%)	49 (34%)
20 to 30	0 (0%)	14 (9,7%)	28 (19,4%)	42 (29,1%)
over 30	3 (2%)	6 (4,1%)	5 (3,4%)	14 (9,7%)
Total	8 (5,5%)	46 (31,9%)	90 (62,5%)	144 (100%)

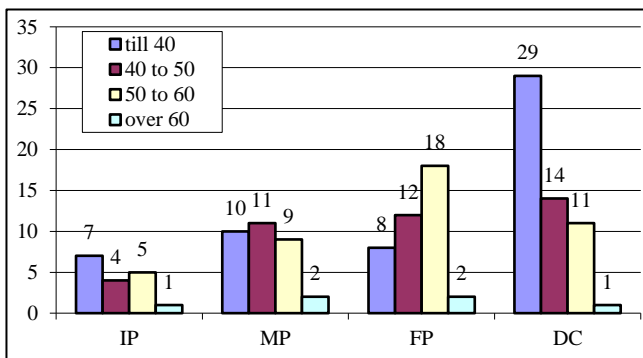
df = 6       $\chi^2_{(0,05)} = 12,59$        $\chi^2_{(0,01)} = 16,81$        $\chi^2 = 11,26$



**Table 3:** In which segment of the class do you use the differentiation?

Age	Introductory part (IP)	Main part (MP)	Finishing part (FP)	During class (DC)	Total
40 or under	7(4,8%)	10 (6,9%)	8(5,5%)	29 (20,1%)	54 (37,5%)
40 to 50	4(2,7%)	11 (7,6%)	12 (8,3%)	14 (9,7%)	41 (28,4%)
50 to 60	5(3,4%)	9(6,2%)	18 (12,5%)	11 (7,6%)	43 (29,8%)
over 60	1(0,6%)	2(1,3%)	2(1,3%)	1(0,6%)	6 (4,1%)
Total	17 (11,8%)	32 (22,2%)	40 (27,7%)	55 (38,1%)	144 (100%)

df = 9      p = 0,12408       $\chi^2_{(0,05)} = 16,92$        $\chi^2_{(0,01)} = 21,67$        $\chi^2 = 13,95$



implementation of the differentiation within the regular teaching as a support of gifted and

absent from the regular teaching.

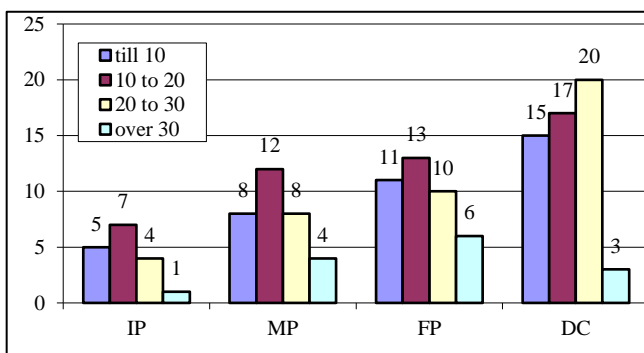
Because the value of  $\chi^2 = 40,26$  and this is smaller than the tabular value of  $\chi^2$ , for a chosen level of significance 0,01, it is concluded that under 99% of probability the two variables are dependent. This means that teachers' opinion for using the differentiated teaching in the regular classes depends on their age. The level of connection is 0,467. The frequency of implementation of the differentiated teaching in the regular teaching does not depend on the teachers' working experience in teaching.

As for the segments of the class in which teachers use the differentiated teaching, it can be seen that 7 (4,8%) teachers aged 40 or less and 12 teachers (8,3%) with working experience from 10 to 20 years use this intervention in the introductory part. Further, 11 (7,6%) teachers aged 40 to 50 and 12 (8,3%) teachers with working experience from 10 to 20 years use the differentiation in the main part of the class. 18 (12,5%) teacher aged 50 to 60 and 13 (9%) with working experience from 10 to 20 years use this intervention in the finishing part of the classes. 55 (38,1%) teachers use the differentiation during the class, but this is not in accordance with the results from the analysis of the lesson plans and the classes' observation. Therefore, it can be said that the

Working experience	Introductory part (IP)	Main part (MP)	Finishing part (FP)	During class (DC)	Total
10 or under	5 (3,4%)	8 (5,5%)	11 (7,6%)	15 (10,4%)	39 (27%)
10 to 20	7 (4,8%)	12 (8,3%)	13 (9%)	17 (11,8%)	49 (34%)
20 to 30	4 (2,7%)	8 (5,5%)	10 (6,9%)	20 (13,8%)	42 (29,1%)
over 30	1 (0,6%)	4 (2,7%)	5 (4,1%)	3 (2%)	14 (9,7%)
Total	17 (11,8%)	32 (22,2%)	40 (27,7%)	55 (38,1%)	144 (100%)

df = 9   p = 0,84117    $\chi^2_{(0,05)} = 16,92$     $\chi^2_{(0,01)} = 21,67$     $\chi^2 = 4,92$

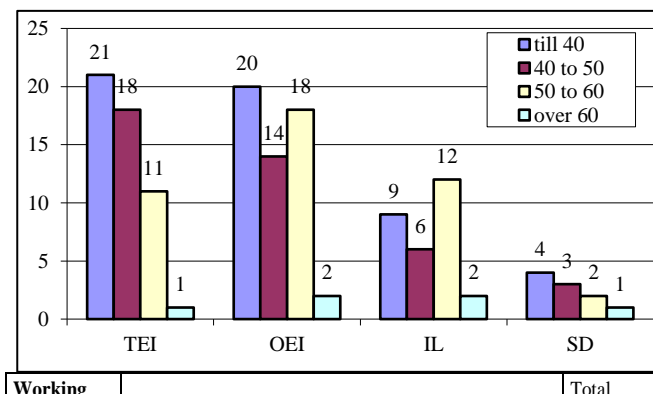
talented does not depend on teachers' age and work experience because the values of  $\chi^2 = 13,95$  и  $\chi^2 = 4,92$  and they are smaller than tabular values of  $\chi^2$ , for the chosen level of significance 0,01.



**Tables 1:** In which way do you prefer gain knowledge and skills for implementation of the differentiation of the regular teaching?

Age	Training from an educational institution (TEI)	Online training from an educational institution (OEI)	Independent research (informal learning) (IL)	Scientific degree (II cycle, III cycle) (SD)	Total
40 or under.	21 (14,5%)	20 (13,8%)	9 (6,2%)	4 (2,7%)	54 (37,5%)
40 to 50	18 (12,5%)	14 (9,7%)	6 (4,1%)	3 (2%)	41 (28,4%)
50 to 60	11 (7,6%)	18 (12,5%)	12 (8,3%)	2 (1,3%)	43 (29,8%)
over 60	1 (0,6%)	2 (1,3%)	2 (1,3%)	1 (0,6%)	6 (4,1%)
Total	51 (35,4%)	54 (37,5%)	29 (20,1%)	10 (6,9%)	144 (100%)

df = 9p = 0,62944    $\chi^2_{(0,05)} = 16,92$     $\chi^2_{(0,01)} = 21,67$     $\chi^2 = 7,07$

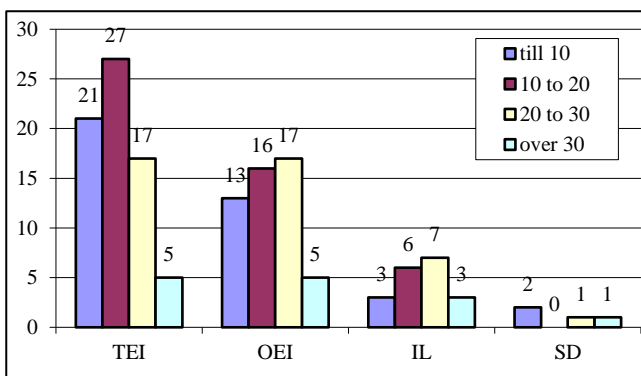


Thus, the hypothesis that the frequency of using the differentiated teaching within the regular teaching as a support of talented and gifted does not depend on teachers' age and work experience (primary and secondary education) is confirmed.

Teachers show interest for gaining deeper knowledge and skills in regard to implementation of the differentiation of the regular teaching. This is the simplest way to support talented and gifted. 51 (35,4%) teachers regarding the age ask for training conducted from an educational institution and 54 (37,5%) teachers like online training conducted

experience	Training from an educational institution (TEI)	Online training from an educational institution (OEI)	Independent research (informal learning) (IL)	Scientific degree (II cycle, III cycle) (SD)	
10 or under	21 (14,5%)	13 (9%)	3 (2%)	2 (1,3%)	39 (27%)
10 to 20	27 (18,7%)	16 (11,1%)	6 (4,1%)	0 (0%)	49 (34%)
20 to 30	17 (11,8%)	17 (11,8%)	7 (4,8%)	1 (0,6%)	42 (29,1%)
over 30	5 (3,4%)	5 (3,4%)	3 (2%)	1 (0,6%)	14 (9,7%)
Total	70 (48,6%)	51 (35,4%)	19 (13,1%)	4 (2,7%)	144 (100%)

df = 9 p = 0,60539  $\chi^2_{(0,05)} = 16,92$   $\chi^2_{(0,01)} = 21,67$   $\chi^2 = 7,31$



from an educational institution.

In relation to their work experience, 70 (48,6%) teachers ask for training conducted from an educational institution and 51 (35,4%) want online training from an educational institution.

Thus, 18 (12,5%) teachers aged 50 to 60 show interest for online training conducted from an educational institution, and 17 (11,8%) teachers with working experience from 20 to 30 years show the same interest. However, it should be pointed out that the trainings should offer quality and not only quantity which is often the case.

Because the value of  $\chi^2 = 7,07$  and this is smaller than the tabular value of  $\chi^2$  for chosen level of significance

0,01, it is concluded that under 99% of probability the two variables are independent. This means that the choice of training does not depend on teachers' age and working experience.

## CONCLUSIONS AND RECOMMENDATIONS

Regarding the three ways of analysis (lesson plans, classes' observation and teachers' survey) the following key points can be presented: teachers' self-assessment on being familiar with the differentiated teaching is high, but is not in correlation with the practice; teachers' self-assessment on the implementation of the differentiated teaching is also high, but again is not in line with the practice and the analyzed lesson plans; teachers show interest and need of further education and trainings connected with the implementation of the differentiated teaching.

The teachers that are involved in teaching with the talented and gifted students should have appropriate trainings for working with these students; other wise they can constrain their development, interests and potentialities. In fact, the trainings for the differentiated teaching should provide not only knowledge of it, but skills for its implementation in the classroom as well. It is in teachers' nature to explore and to practice and therefore they should be supplied with knowledge and skills to work with gifted and talented within the regular teaching. Teachers should comprehend that working with these students imply knowledge to manage the techniques for teaching and learning in the classroom. If they can



work with students that have difficulties, they should also pay attention to gifted and talented that move ahead faster.

The differentiation of the regular teaching should: enable gifted and talented to move forward through the curriculum and to understand it in order to address the learning deepness and pace; use the real life experiences; engage these students in the process of providing decisions in the curriculum, thus giving them the opportunity to take responsibility for their own learning; allow these students to conduct independent projects based on their individual interests; enable these students to take property of their own learning through forwarding the teaching curriculum; teach them to interaction, work together, teach one another and participate in the teaching their peers actively; make them think of team teaching, cooperation and consultations with other teachers; help them to create their own goals which will be specific, measurable, real and reasonable regarding the time frame; support them according their needs; keep in mind that these students are maybe not excellent in all areas, meaning that teachers should be aware of their strengths and weaknesses; allow these students to work on independent projects if they finish certain assignment earlier; enrich their work with resources; give them opportunities to be involved in social activities; establish non rival, individualized and open classroom which will enable all students to go ahead according to their competencies.

Therefore, if these strategies are implemented, the differentiation of the regular teaching can be of great use for talented and gifted students.

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