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RESEARCH ON THE FREQUENCY AND EFFECTIVENESS OF TEACHING METHODS IN GEOGRAPHY CLASSES: AN EXAMPLE OF SELF-OBSERVATION OF TEACHING PRACTICES

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Abstract: Since the school year (SY) 2019/2020, the curriculum of Geography has been gradually implemented in Croatia. The purpose of this survey is to gather information on the frequency and effectiveness of teaching methods in Geography teaching over two school years by means of direct participant observation method. In the SY 2020/2021, a study was carried out in two high schools in Osijek-Baranja County for three learning outcomes. Using a pre-made template for the self-observation of the teaching process, 12 lessons in the second and the third grade were observed and later interpreted using descriptive statistics methods. During the SY 2021/2022, the same method was carried out for eight lessons in six schools with a high-school program for three learning outcomes in the second grade, two in the third grade, and one in the fourth grade. Results show the domination of the discussion teaching method, followed by indirect graphic method, and then work-on-text method, while among the most common methods used, the rarest are oral presentation (done by pupils) and direct graphic method. The results found demonstrate a significant shift toward the use of more effective teaching methods compared to older papers in Croatia. The students reported a higher level of satisfaction with the lessons than the teachers did. The method of direct participant observation, complemented with a structured interview, can provide relevant information on the quality of teaching as a prerequisite for the achievement of the learning outcomes specified in the curriculum for Geography.

Keywords: curriculum; educational geography; self-observation of teaching process

1. Introduction

After Geography had been taught in high-school classrooms in Croatia for years according to the Teaching program of Geography from 1993, during 2018 the introduction of new curriculums in several phases began (Ministarstvo znanosti, obrazovanja i sporta, 2016). The students enrolled in the school year (SY) 2018/2019 in the first grade in 26 selected secondary schools and the fifth grade of 48 primary schools were taught according to the new, then still experimental, curriculum. Throughout the following years, the new curriculum has been introduced in stages into other grades of high-school programs, but also in primary schools.

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Since the SY 2021/2022, Geography is taught according to the new curriculum in all grades of high-school programs.

The educational outcomes in the new Geography curriculum are organized into four concepts: spatial identity, spatial organizations and processes, sustainability, and spatial coverage. All of them have a goal of developing basic values taught by Geography, which are the curiosity for the world and the environment, as well as the events within it, along with encouraging inspiration that a student as a member of that environment can build its better and more ordered present, as well as the future, taking into consideration both Croatia, but also Europe and the world (Narodne novine, 2019), hereinafter: Geography curriculum. The aforementioned novelties were introduced with the encouragement of the usage of contemporary teaching methods, but also tools, and with the aim of increasing students' problem-solving competences, increasing their satisfaction with school as well as influencing the motivation of teachers whose task is to transfer this knowledge (Ministarstvo znanosti i obrazovanja, 2021). Changes in learning and teaching can be initiated and created only by teachers who question and reflect on their daily practice. Such an approach is the basis of self-reflection. The reflexive practice of teachers is one of the factors for the positive changes in educational work, improvement of teaching skills, teaching quality, and professional learning and development of teachers (Bilač, 2015; Marić Jurišin & Malčić, 2021; Radulović, 2011; Šjaković, 2015). It is to be expected that, in time, there will be an evaluation of the new curriculums of all the subjects and inter-subject topics, Geography included. However, in order to determine whether there has been a shift in student knowledge and skills, we will have to wait for the end of SY 2021/2022 so that the generation of the students who attended the schools participating in the experiment finishes their high-school education. This will make it possible to determine the advancement (or regression) of students from the schools (17 of them with high-school programs) which took part in the experiment because the students of the generation 2018/2019 of only those schools were educated according to the new curriculum for all the four years. In the SY 2021/2022, high-school education will also be completed by the generation of students who were educated for the first two grades according to the Teaching program from 1993, finishing their third and fourth grades according to the Geography curriculum. The first following generation which will be educated for all the four years according to the new curriculums will have finished their high-school education in the SY 2022/2023. In the document on the preparation, tracking, and evaluation of the reform, it is concluded that the reform results will only be observed after several years, with the first reference year being 2021 and the PISA testing which was done that very same year. The following year is 2024 in which a new cycle of PISA testing is planned, the one which should provide far more reliable and realistic results (Divjak & Pažur Aničić, 2019). Sabatier (2007; as cited in Žiljak, 2013) also agrees with the statement that it takes multiple years to determine the positive changes made by the application of the curriculum, stating that it takes a "temporal perspective from one decade at the minimum, and more often it takes twenty years and more" (p. 8).

Even though we will have to wait a little longer for the data needed to determine the progress in students' achievements and skills as a consequence of the new curriculums, some observations have already been made. The first year of the experimental implementation of the curriculum in the selected schools was tracked in a relatively detailed fashion, by questioning students, teachers, associates, principals, and parents at the beginning and at the

end of the year. Apart from that, a test was performed to determine students' competences in experimental schools in May 2019. The aim of this was to determine "student problem-solving competences on integrated outcomes and appropriate content of the chosen experimental subject curriculums and inter-subject topics" (Ćurković et al., 2020, p. 8). The tested outcomes were chosen by the members of the Mentor group, whereby each of them made a choice for their own subject of the outcomes which related to the problem-solving competences which would not be achieved with subject-specific knowledge. The results showed that the majority of the students of the first grade in the experimental schools (86.5%) are at the basic level in the problem-solving competence. Only 0.8% of the students were at an advanced level, while there were a few more on the below-basic level (6.5%) in relation to those of the middle level (6.2%). The authors conclude that the lack of this research is the lack of other accompanying variables with which such data might be connected and then, consequently, better interpreted. It should be noted that the students of the first grade in secondary school which did not attend classes within the high-school program also took part in this research (Ćurković et al., 2020).

The aim of this paper is to observe the changes going on within the classroom of Geography, primarily focusing on the teaching methods applied and, to determine whether there are changes happening in these early years of introducing the new curriculum. The modern curriculums all over the world demand a new role of the teacher as a guide of the process of learning who puts students in the center of the teaching process. These changes are expected to occur with the application of the new curriculum in teaching Geography in Croatia. Therefore, it can be assumed that the "new" way of teaching differs from the "old" and that the way in which the process of learning and teaching Geography is organized and realized is changing in the classrooms.

The subject of the research presented in this paper are the teaching methods in Geography, observed through their frequency and the reactions of students to their application. According to Matas (1998), the teaching methods are ways of teaching and are divided into demonstrative and verbal. The demonstrative teaching methods in Geography are "more effective and useful for quality teaching because, by applying them, one increases the activity and individual work of students" (p. 130). However, as Vranković (2012) also states, there is no singular definition of teaching methods. Bognar and Matijević (2005) claim that they activate the participants of the teaching process in order to achieve educational tasks. Vizek Vidović et al. (2003) call them patterns which are systematically applied in various teaching areas with the goal of achieving learning outcomes more easily. Terhart (2001) states that learning can be done without teaching and methods for it, but he does not neglect the fact that they create better conditions for facilitating the learning process. From these definitions, we can conclude that teaching methods are used by teachers in classrooms in various ways to encourage and aid students in achieving the educational outcomes prescribed by the curriculums. Therefore, the importance of choosing relevant and effective teaching methods is also clear, whereby their efficacy depends on the outcome one is attempting to realize, but also on the class in question, considering the different individual characteristics of each student. In order to achieve the educational outcomes from the Geography curriculum, as well as the conceptual understanding, changes are necessary in the organization of learning Geography when compared to the state at the time of learning and teaching the subject in Croatia according to the Teaching program of Geography for high schools from 1993.

2. An overview of the selected research

Several authors researched the application of teaching methods in teaching Geography in Croatia (Glasnović & Horvat, 2003; Magaš & Marin, 2013; Vranković, 2012; Vuk et al., 2012). To select the research, the portal of Croatian scientific publications and articles (Hrčak) was used, as well as the paper by Ivić and Vuk (2021), who gave an overview of all the research in the young discipline of Geography—the methodology of Geography and educational Geography—during the previous fifty years in Croatia.

Glasnović et al. (2003) study the teaching of Geography in 24 different primary and secondary schools by applying the questionnaire method. Their focus is on the verbal methods in teaching Geography for which it is assumed that they are the most frequently used in classes, and they include the methods of oral presentation and discussion. In the results of their research, they compare the advantages and disadvantages of the two previously listed methods, graphically and textually. The authors conclude that verbal methods are truly dominant in Geography in the schools participating in the research as opposed to other teaching methods, which they do not find to be negative. They add that, considering the ascertained condition, there should be additional attention for these methods during the studying of faculty students in the Methodology of teaching Geography class in order for them to apply it properly in their future teaching.

The paper by Magaš and Marin (2013), according to its title, subject, and aims, does not deal primarily and only with teaching methods, but it touches upon them in the comprehensive survey performed. The survey, done in 2013, encompassed 352 Geographers from all the counties in Croatia, which was, at the time, 35% of the teachers of Geography in primary schools and around 40% of teachers in secondary schools. Among the three stated primary aims and subjects of research, the one relating to the “state of the methodology and didactical work of teachers of Geography in primary and secondary schools in the Republic of Croatia” is connected to theme of this paper (p. 166). As part of that aim, the authors researched which methods, forms, and strategies are applied in Geography classrooms in Croatia, for primary and secondary schools individually. The research results were presented individually for primary and secondary schools on the level of the whole country, but also on the level of two regions, Adriatic and Continental Croatia, with Zagreb being studied separately. The authors conclude that Geography teachers in primary and secondary schools mostly use the methods of oral presentation, discussion, and demonstration as the three frequent methods. On the other hand, both primary and secondary school teachers listed e-learning, mind maps, and the research method as the three least frequently used methods. The authors especially stress that it would be essential to increase the usage of graphical methods because, according to the research results of educational achievements of students on the state exam as well (Vuk et al., 2012), it is clear that the students’ skills in cartographic literacy and test-solving skills with tasks related to graphical materials are at an insufficiently high level.

By using a similar research method, Vranković (2012) also writes about teaching methods applied in Geography. The paper analyzes the achievements of students in tasks containing graphical materials. The data gathered by the survey method on a sample of 308 teachers of Geography in primary schools answer the question about which methods are the most frequent in Croatian classrooms in Geography. The results of this research also showed a greater frequency of verbal methods in relation to the demonstration methods, while the method of oral presentation and the graphical method, according to the estimations of

surveyed teachers, are similarly represented. According to this research, the least frequent methods are the method of programmed class and learning by using computers. In the second part of the research, in which the results of the independent audit performed in 2008 for students of the eighth grade (national exam) are interpreted, it was determined that it was precisely the tasks with graphical materials were not solved as well, which the author contributes to a lack of demonstrative teaching methods in the classroom.

Apart from the already mentioned papers which are more narrowly related to the topic and research methodology of this paper, several other scientific papers were highlighted dealing with the teaching methods from the point of view of reformative changes in the curriculums and educational systems. All the papers studying curriculum changes and teaching methods have the common conclusion that the paradigm of teaching is changing in which the student is transformed from a passive listener to an active participant in the teaching process i.e., the learning process (Oluwajana et al., 2019). The change in roles in the classroom results in changes in the chosen teaching methods. The necessity for change in other subjects as well, apart from Geography, is the topic for Braičić et al. (2015) who noticed the dominance of verbal methods in Science class (discussion method, oral presentation, etc.). In the selected papers which were analyzed, among the more successful and progressive teaching methods are programmed learning (Zahid et al., 2016), problem learning (Cox et al., 2018), field work (Schindler, 2013), reversed classrooms (Jego et al., 2017), and different teaching methods including information and communications technology (ICT) in class, such as the application of tablets in field classes (Goldup, 2013), WebGIS-a (Martin, 2014), or smart boards (Batdi, 2017).

3. Research methodology

During the SY 2020/2021, for the purpose of this research, teachers teaching Geography in schools with high-school programs in Osijek-Baranja County were gathered, with the aim of studying the changes brought by the new Geography curriculum. After an analysis of the school network, it has been determined that there are five high schools and three other schools which offer high-school programs in the area of Osijek-Baranja County. According to the number of students, schools with a general high-school program are dominant, followed by those with a science-mathematics program, then language, and lastly classical ones. Out of all these schools, two were not cooperative for this research so it covered 11 Geography teachers working in the First High School – Osijek, Third High School – Osijek, Jesuit Classical High School – Osijek, Đakovo High School, Valpovo Secondary School, Donji Miholjac Secondary School, and “Isidor Kršnjavi” Secondary School – Našice.

For the purpose of the research, a form was created which teachers followed in their classes with the method of immediate participatory observation. Prior to that, using the focus group method and Microsoft Teams (MST) application, teachers were familiarized with the form and were able to make their own suggestions for its updating. By using this form, teachers covered 32 classes and nine different learning outcomes over the course of two SYs. During the SY 2020/2021, the observation was performed by two teachers of the Third High School – Osijek and one teacher in the First High School – Osijek. Twelve lessons in the second grade were observed for two chosen outcomes and 12 classes were observed for one outcome in the third grade. Prior to the observation, it was arranged which units and outcomes would be observed. In the following SY, the teachers from the schools in the county which volunteered to participate were selected. During the SY 2021/2022, the teachers who

performed their observations in the previous year did not participate. Eight different teachers in eight different classes pertaining to three different learning outcomes in the second grade, two outcomes in the third grade, and one outcome in the fourth grade performed their observations in the SY 2021/2022. In the SY 2021/2022 the teaching units and learning outcomes which teachers were supposed to perform observations for were not agreed upon in advance, but the teachers did so according to their free choice. After the self-observation was performed, by using the focus group method, the opinions of teachers on the form, the experiences during their observation and possible problems they faced during the process were gathered for the purpose of further enhancement of the form.

The form for self-observation was created from the template made by Bezinović et al. (2012) and it was adapted to the aim and subject of this research. It can be divided into four parts: 1) information on the school and class; 2) observation content (concepts and planned educational outcomes); 3) table for notes (tracking the application of the teaching methods during a class); and 4) space for the evaluation of the observed class (by the students and the teacher). In the first part of the form, the teachers put in their name and the basic information on the school, grade and class, title of the unit, and the date. The information from the first part were used exclusively to enter the data gathered into the database and for coding. They were not used to show results on the level of teachers or schools included in the research.

In the second part of the form, the information on the concepts, main educational outcomes from the curriculum, and the specific learning outcomes during the observed class were gathered. The third part of the form is the most important for this research because it contains a table in which the teachers put in the agreed-upon information on the observed class. The table contained information on individual stages and substages of the class. According to the agreed-upon practice, Geography classes are planned in the preparation form for each class with the introduction, main part, and final part stages. For each stage and substage of the class, the teachers wrote down the teaching methods used during their self-observation. Along with each used teaching method, the teachers also noted the used tools, followed by the learning outcome achieved with the particular method, the duration of individual stages (approximate estimation of teacher during the class in minutes), as well as the number of students not participating in class. A student was noted as not participating in the process if, during the course of an individual stage, they show a lack of concentration or attention even slightly. This can, for instance, be a clear and loud distraction, talking to other students, entertainment using a phone or tablet, drawing or scribbling of any kind not designated by the teacher, napping during class, etc.

The fourth part of the form contains the evaluation of the performed and observed class by the students and the teacher. The students self-estimated the adoption of learning outcomes on exit cards and rated their satisfaction with the class on a Likert scale from one to four (one being the least satisfied and four being the most satisfied). The students filled in the exit cards by using various ICT tools or the classic paper-pencil method. Apart from the students, the rating using the same scale was done by the teachers as well. They could also write down their comments and an explanation for their ratings. The teachers also made comparisons with other classes where the same lesson was performed at the end of the form, along with other notes they considered to be important.

The form worked well in practice. At the end of the observation, the data gathered were processed using the descriptive statistic methods. For the purpose of determining the most

frequently used method in a class, the frequency of appearance for an individual teaching method in each substage of a class was numerated and then the methods were ranked. This way, it was determined how frequently individual teaching methods appear in 32 classes observed. The frequency of the teaching methods for each stage of a class (introduction, main part, final part) was determined in the same way.

Besides the frequency, the teaching methods were also estimated according to success rate i.e., according to the number of students who did not follow class during an individual method. Based on arithmetic mean, standard deviation, and the coefficient of variation, it was determined how many students were inactive during the application of an individual teaching method in all the observed classes on average. The described procedure enabled the ranking of methods from those with the lowest to those with the highest students' activity.

From the self-observation forms, the information on teaching tools most frequently used with a certain teaching method were also gathered. The coding of information was done so that all the teaching methods stated in the forms were written out and then for each observed class the teaching tools appearing at least once during that class and with that method were added (the sum of the results is shown in Figure 3).

For the purpose of the research, a structured interview was also performed after the self-observation was done in all of the schools. Three teachers, with the presence of the interviewers (authors of this paper), simultaneously answered 15 questions using MST application. The interviewees were specifically chosen so that one is from the school in which the self-observation was performed in the SY 2020/2021, and two were from the schools where self-observation was performed in 2021/2022. Out of those, one was from a school in the Osijek area, and another was from a school which is outside of the county center. The interview was recorded with the consent of the participants and the answers were noted at the same time. The data were coded from the notes and the recordings were then included in the interpretation. A structured interview with open questions enables a deeper insight into the issue. In this case, it was used to collect teachers' views and experiences about the frequency and effectiveness of teaching methods as well as about the conditions in which application of certain teaching methods were carried out in their classrooms. Similar methodology using non-participant observation and semi-structured interviews was used in Bernstein and Lysniak (2017) research on physical education classes.

4. Results

According to the frequency of application of the teaching methods, the dominance of the discussion method was the focus of attention in all the 32 teaching lessons observed (Figure 1). The discussion method is also the only method used in all these lessons. At 28 out of 32 lessons, it is the most common method (taking the first place) while in the remaining four cases it was ranked second in terms of frequency of application. In one of these four cases, the method of working on the text was more frequent than the method of discussion, while in the remaining three cases the indirect graphic method was more frequent than the method of discussion. The indirect graphic method was the second most common, recorded at 31 of the 32 observed lessons. In most of the observed lessons, the indirect graphic method was followed by the discussion method.

In lessons where the indirect graphic method was used, most often it was the second most frequent method, less often (four times) it was the most used method in a lesson and lastly it

took the third place in terms of frequency in five observed lessons. Out of all the identified and observed teaching methods, the method of working on the text is in third place. Teachers applied it in 29 out of the 32 observed lessons, and it could be found in all the four places when frequency during a single lesson is interpreted. However, it is most often ranked third in terms of frequency compared to other teaching methods used.

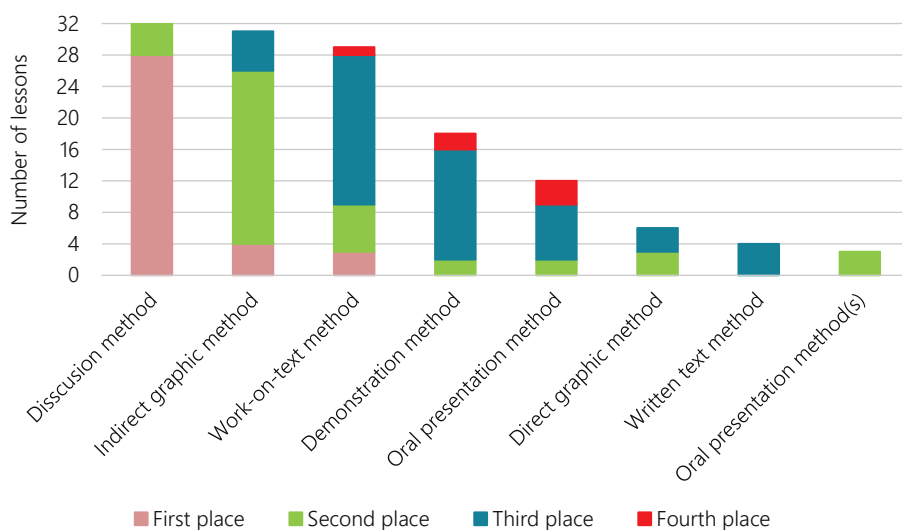


Figure 1. Frequency of application of teaching methods and their frequency within the observed lessons.

The method of demonstration, which is the fourth most frequently used, is also the last of those that appear in more than 50% of the observed lessons, most often in the third place according to the frequency within individual substages of the lesson. After the method of demonstration, this is the order of the following ones: method of oral presentation, direct graphic method, method of written work, and, finally, the method of oral presentation applied by students.

It can be concluded that only three teaching methods, the method of discussion, the indirect graphic method, and the method of working on the text actually dominated (took the first place) in the observed lessons. We can consider the observed changes as positive improvement in the teaching of Geography because all the three methods enable the active role of students in the process of learning and teaching. Instead of the dominance of the verbal method of oral presentation, there is more than twice the prevalence of the method of discussion which, if it is heuristic or conducted as a discussion or a storm of ideas (Bjedov, 2016), contributes more to the development of skills and competences in students. The aforementioned is the case with the indirect graphic method which, like the method of working on the text, encourages students' activity through the process analyzing the prepared materials. In the first case, it is about graphic attachments (animations, photographs, pictures, diagrams, videos, drawings, thematic maps), and in the second it is about textual materials with which the student solves pre-prepared tasks.

In order to notice the differences in individual stages of the lesson (introduction, main part, final part), the same methodology described in this work, was used to analyze the

frequency of methods in individual stages of the lesson. In all the observed stages of the lesson (Figure 2), the most common teaching method is discussion. More pronounced dominance of that method can be noticed in the final part of the lesson, in which only the indirect graphic method, the method of working on the text and the method of demonstration are present too, but they are significantly less frequent than the method of discussion. Given that the aims of the final stage of the lesson are checking the adoption of the planned outcomes and formative evaluation of students' knowledge, it is not surprising that there is a dominance of the method of discussion which can successfully achieve those aims. If the previously prepared source texts and graphic materials are used to check the adoption of learning outcomes, then the method of working on the text and the indirect graphic method are secondary methods that can be applied for achieving the same goals, in addition to the primary method of discussion.



Figure 2. Frequency of application of teaching methods and their frequency by stages of the lesson.

We can interpret the frequency of teaching methods in the introductory part of the lesson using a similar procedure as for the final part of the lesson. Since the goal of this stage of the lesson is to activate and motivate students for the upcoming work, to check the prior knowledge, and announce the goals of the lesson, this is best achieved by the method of discussion and the indirect graphic method. By showing photos, thematic maps, diagrams, tables, videos, cartoons, etc., and listening to audio recordings, students' attention is attracted through pictures and sound, after which the things they have seen or listened to can be commented on. The methodological potential for the mentioned combination of teaching tools and teaching methods is confirmed by the data collected by this research. In the introductory parts of 17 out of 32 observed lessons, the discussion method was paired with the indirect graphic method. Other methods in the introductory part of the lesson are

represented half the time when compared to the indirect graphic method, which is followed by the discussion method in terms of frequency. The use of the previously prepared starting texts and related tasks to encourage students' motivation or the demonstrations of visual materials that the teacher explains without involving students was observed in 15 out of 32 observed lessons. The direct graphic method is the least frequent. Further research on a larger sample could be done because it would be worthwhile to examine the extent to which the choice of teaching methods in the introductory part of the lesson is influenced by the age of students, the number of learning outcomes, the teaching resources available, and other factors. In the interview, all the participants emphasized the impact of pandemic schooling conditions on the choice of teaching methods, teaching tools, and the organization of the lesson.

In the research, the same trends were noticed for the main part of the lesson as for the whole teaching lesson (Figure 1). The only noticeable difference is in the three least frequently used methods. Instead of a declining trend from the direct graphic method through the method of written work to students' oral presentation, in the main part of the lesson the order is somewhat different. The method of written work is the most common of the three mentioned methods (in four of the observed 32 lessons) followed by the direct graphic method and the method of students' oral presentation with the same number of occurrences (in three out of 32). The main part of the lesson is characterized by the diversity in the frequency of individual methods compared to other stages of the lesson. Since this stage of the lesson lasts the longest, teachers apply different teaching methods to guide students toward adopting the planned outcomes.

The data on the connection between the most frequently used teaching methods and teaching tools were also collected from the forms for self-observation of teaching (Figure 3). The analysis of the data determined that, in addition to all the teaching methods, two teaching tools were most often used, namely the smart board and the textbook. These two teaching tools appear in all the 32 observed lessons at least once with each teaching method used except for the method of written work. At the same time, a smart board is a more frequently used teaching tool than textbooks. This discovery confirms the progress in the digitalization of teaching in Croatian schools, as well as the wide range of possibilities offered by smart boards. Among other things, they have the ability to display digital versions of textbooks that have been rewritten not just for the needs of the curricular reform, but they also been expanded with digital add-ons that can then be accessed via a smart board, computer, smartphone, or tablet.

By analyzing the connection between teaching methods and teaching aids (Figure 3), we notice that when using the method of discussion, indirect graphic methods, demonstration methods, and oral presentation, the most commonly used tool (and aid) is the smart board. It can be used to display presentations, as well as various cartographic, graphic, video, or textual materials. In the analysis of the mentioned teaching aids, which, among other things, implement the principle of visibility, teachers can lead their students to knowledge through the method of discussion. The smart board has a similar role in the application of the oral presentation method, followed by the demonstration methods and indirect graphic methods. These are visual demonstration teaching methods which require a visual teaching tool (cartographic, graphic, etc.) for their successful application. A smart board connected to the Internet does all that with ease.

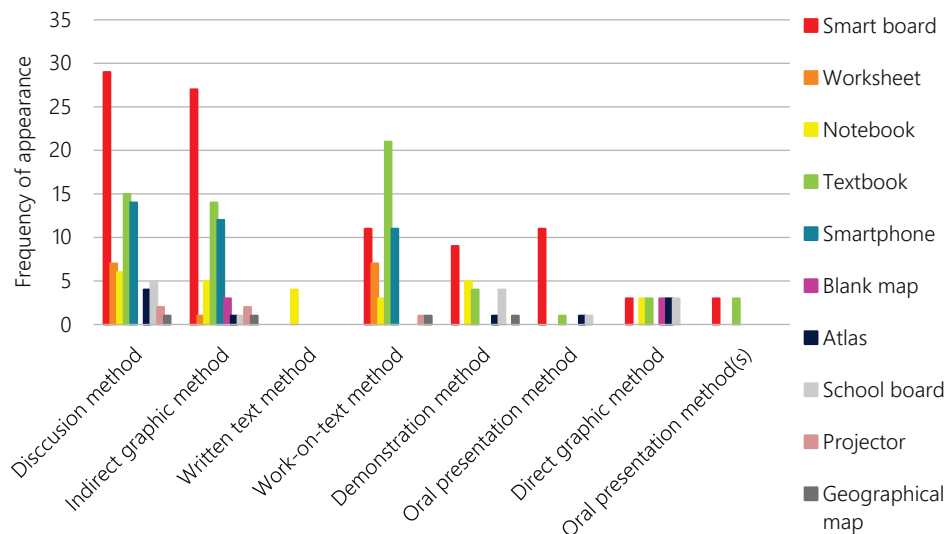


Figure 3. Relationship between teaching methods and teaching tools.

We can connect the identified use of smartphones with the application of ICT in teaching. In this observation, their more frequent application in combination with the method of discussion, indirect graphic method, and the method of working on the text was noticed. With the proper use of this ICT, students have the Internet access on the palm of their hand at any given time. The teacher can guide students to a reliable and useful content or encourage them to find information on the given topics. In connection with the previously prepared tasks (for the method of working on the text and the indirect graphic method), students can be guided to new knowledge, and largely come to it by themselves using tools with which they are in daily contact and without which it is increasingly difficult to imagine modern life. With the described digital learning and the application of ICT, a constructivist approach to learning can be realized (Chaudhary, 2018; Jukić, 2013; Matijević & Topolovčan, 2017; Matijević et al., 2016; Pongračić & Zečević, 2017; Rogošić et al., 2021) as well as self-regulated, independent, and collaborative learning (Topolovčan et al., 2017).

From all the information gathered through the self-observation form, the very low prevalence of the use of a geographical map in the classroom is surprising. Among the teaching tools used to develop cartographic literacy, in the form, teachers reported the usage of atlases, blank maps, and other geographical maps. The use of the atlas is mostly mentioned during the application of the discussion method, then during the application of the direct graphic method, and once during the indirect graphic method, demonstration method, and oral presentation. The blank map was listed three times with the indirect graphic method and three times with the direct graphic method. Other geographical maps were used once in combination with the indirect graphic method, the discussion method, the text work method, and the demonstration method.

One of the research questions for which the answers were obtained from the self-observation form is which teaching method occupies the least attention of the student (Figure 4). The results

indicate that, on average, the discussion method mobilizes the smallest share of students ($A = 3.78$), while students pay the most attention to the methods of written work and the direct graphic method ($A = 0.5$). The written method and the direct graphic method have a high coefficient of variation (written method = 173.21%; direct graphic method = 152%). Other values range from 1.5 to 2.5 students, and for all but the written method, demonstration method, and direct graphic method, the coefficient of variability is less than 100%. It can be assumed that students will pay less attention to the application of the method of discussion because the teacher can include only a few students in the conversation. In doing so, others may lose focus on the topic and engage in something else when they notice that they are not the teacher's interlocutor. The maximum amount of attention of the teacher in the application of the discussion method is on the students who participate in the conversation. Also, encouraged by an interesting topic, some students may exclude themselves from the frontal discussion and comment with each other on what is being discussed, thus not participating actively in the conversation.

In contrast, the method of written work belongs to the methods used to individualize schooling. Therefore, such a small number and share of students who did not participate in the application of this method of work is unsurprising. A similar conclusion is drawn for the direct graphical method. If it is applied as a part of individual students' work (as in the observed lessons) then it requires students' complete concentration when making the required sketches, drawings, diagrams, etc.

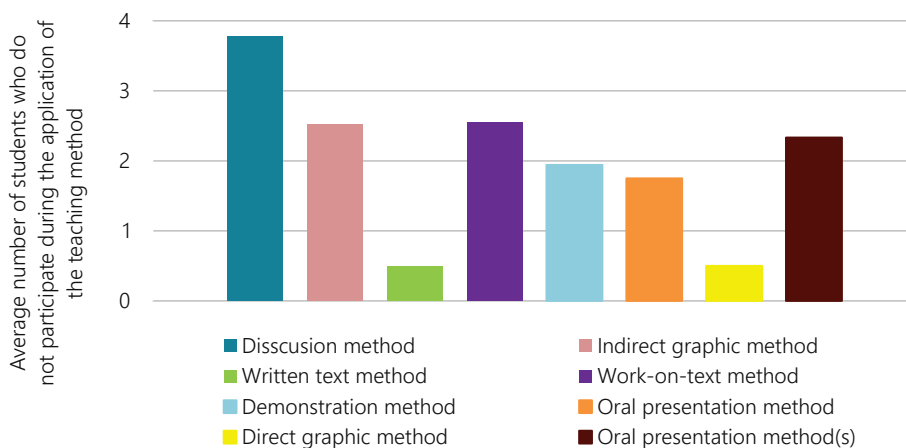


Figure 4. Relationship between teaching methods and student attention.

According to the calculated values, a satisfactory students' engagement can be stated because more than 80% of students participate in teaching when the methods identified in this research are applied. This is confirmed by the average grade of students for all the observed lessons. According to the Likert scale (one–four), students rated all the observed lessons with an average grade of 3.37. Comparing this with the grade by which teachers self-evaluated their lessons, we can conclude that it is very similar and amounts to an average of 3.41.

5. Discussion and conclusion

The goal of this research is not students' achievements, but it is to be expected that positive changes in the organization of learning and teaching will have a positive impact on the level of adoption of learning outcomes. The aim of this paper was to observe the changes taking place within the classroom, in the application of teaching methods in the teaching of Geography, and to determine whether there are changes in these early years of the introduction of the new curriculum. Bezinović et al. (2012) state that "in Croatia, there are no standardized criteria and instruments for evaluation (assessment, monitoring) of teaching" (p. 12) so a form for self-observation was created through which data were collected on the frequency of teaching methods and their frequency in the observed classes as a whole, as well as for individual stages of teaching lessons. In addition to the abovementioned, the data were collected on the engagement of students during the application of certain teaching methods, on the connection of certain teaching methods and teaching tools, and on the satisfaction of students and teachers with the lessons. The assumption was confirmed that the "new" teaching differs from the "old" one and that the way in which the process of learning and teaching Geography is organized and realized is changing in the classrooms.

The verbal methods were dominant during the observed lessons, but, unlike the situation found in the research of Glasnović Horvat and Curić (2003) and Magaš and Marin (2013), the method of discussion dominates, while the method of oral presentation is not among the four most frequent and most common teaching methods. Braičić et al. (2015), in their research, also established the dominance of the method of discussion, but it was followed by another verbal method, the method of oral presentation. This research found a higher prevalence of indirect graphic and work-on-text methods than the demonstration method, which differs significantly from the research of Magaš and Marin (2013). The conducted research correlates with the conclusions of Magaš and Marin (2013), Vuk et al. (2012), and Vranković (2012) on the necessity of greater frequency of graphic methods, especially direct graphic method. The identified situation demonstrates a significant shift toward the use of more effective teaching methods. Among the teaching tools used in combination with the discussion method, indirect graphic method, text method, and demonstration method, it is important to notice the prevalence of smart boards and other ICT devices, which is in line with the findings of Goldup (2013), Martin (2014), and Batdi (2017). Both students and teachers expressed a high level of satisfaction with the classes held.

The method of direct participatory observation, supplemented by the structured interviews applied in this research, provides relevant information on the organization of the learning and teaching process. Indirectly, from the collected information, conclusions can be made about the quality of teaching as a prerequisite for achieving the learning outcomes listed in the (new) Geography curriculum. The disadvantage of the applied methodology is that the examiner's presence can significantly influence the examination phenomenon (Vizek Vidović et al., 2003). Also, it is not possible to determine the causality or intensity of changes in teaching practice, but the conditional longitudinal nature of this research allows us to conclude on the direction of changes in teaching practice. According to the opinions expressed during the structured interview, the exchange of experiences between the respondents contributes to the questioning and improvement of teaching practice, as well as personal professional development. From the abovementioned, we can conclude that the primary goal of the research has been achieved—to check how the methodology which can

be applied in further systematic research works on the basis of which one can intervene in teaching practice. An attempt was made to reduce the shortcomings of the applied methods by using a clear plan of observations, a form the final design of which was created by the research participants, and the harmonized way of recording information.

The results of this research contribute to the development of methodology and deepening of the knowledge of educational Geography, one of the younger disciplines in the native field of Geography. Also, the research results contribute to the knowledge about the selected determinants of successful learning and teaching of Geography. The scope of knowledge of this research is limited by the fact that it was conducted in schools of one county and only in those schools where the consent of the Geography teacher was obtained. Also, research was conducted only in the selected lessons during two SYs. In further research, it would be worthwhile to test out the methodology used in this research on the other geography-related subject lessons. It would also be valuable to connect the results of this research with the level of adoption of the chosen learning outcomes (for which teaching observation was carried out) and extend the research to other counties and carry them out systematically during the four-year high-school education in order to assess the situation in the entire area where the new curriculum of the subject Geography has been applied.

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