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RESEARCH APPROACH IN TEACHING NATURE AND SOCIETY

Abstract: In recent decades, great importance has been attached to teaching that promotes an active role of students in the learning process, and therefore the development of critical and divergent thinking in the teaching process. The aim of the research approach is to encourage students to independently investigate, discover, conclude and thus arrive at knowledge with the appropriate instructions of the teacher. For this research, we aimed to examine the educational practice of teachers in the implementation of the research approach in teaching Nature and Society. The purpose was to find out how familiar the teachers are with the concept of research approach, as well as to provide insight into teachers' competences and motivation, the frequency of their implementation of the research approach in teaching Nature and Society, and the interaction patterns and teaching methods they use. The results show that The World Around Us and Nature and Society syllabuses sufficiently (60%) provide instructions for content study through research work, and that teachers acquired a solid amount of knowledge about the application of this way of working during their education (69.4%). More than 80% of teachers believe that they have the competence to plan and implement a research approach in teaching. The results also indicate that when implementing the research approach, teachers use interaction patterns and teaching methods that enable greater student activity. Despite the above said, this research approach is not sufficiently applied, and the explanation provided is the lack of time and resources needed for research.

Keywords: research approach, teaching of Nature and Society, competences, motivation, interaction patterns and teaching methods.

Introduction

The research approach is a modern approach in the teaching process where students learn by looking for answers to questions, and through which they come to appropriate knowledge. Using this approach, students independently discover problems, draw conclusions and come to certain solutions with the help of the teacher. In traditional, predominantly lecture-oriented classes, students are mostly offered solutions to different questions, which hinders them in developing their personal opinions, attitudes and values, and ultimately the knowledge itself and its applicability in the concrete situations. The school is expected to accomplish the set tasks efficiently, rationally and well (Banđur & Potkonjak, 2006). In order to succeed in this, the school in the age of the digital era (Nikolić, Banđur, & Martinović, 2020) must continuously review, analyze and study its work and the results it achieves, in order to be able to improve them. As the organizer and holder of the teaching work with students, the teacher should not only be innovatively oriented, but also didactically-methodologically qualified for research work in the teaching of Nature and Society. This means that they have acquired very specific competencies for planning and implementing a research approach in the Nature and Society class. Through

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research teaching, we can apply different interaction patterns in order to enable students to respect individual differences. This approach to learning uses cooperative forms of learning that encourage students to persevere towards achieving a common goal. Creative and logical thinking is developed, collaborative and communication skills are encouraged. By acquiring knowledge through group work, students have the opportunity to create positive interpersonal relationships, which contributes to better acquisition of both knowledge and skills development in different areas. In this form of work, students develop individual and group responsibility through work on group activities, thus satisfying personal needs and exploring themselves, which further motivates them for work and training for life.

In modern teaching, the teaching process is directed towards the student, according to their abilities and interests, their individual participation in creating and discovering knowledge, and appropriate rules, regulations and principles that were previously unknown to them. Research encourages students to better understand the teaching content, both theoretical and practical. With such an approach we introduce them to a scientific way of thinking – experiences are created through the direct study of natural phenomena and processes, and at the same time creativity is encouraged, interests spread, as well as motivation to further deepen knowledge in the field of natural sciences.

Development of the idea of learning by research

The very idea of learning by inquiry has a long history. Authors of this approach define it differently. By studying the literature, we come across the terms: research approach, research learning, research teaching, research-oriented teaching, etc. For the above reasons, this paper will focus only on the term research approach. Because of the positive impact on educational work, most developed countries have already included a research approach in their teaching process (Perković-Krijan, 2016). The idea of a research approach appeared as early as the 19th century with the German pedagogue Luben, while the inductive path of knowledge is explained by De Zan (2000) in his book Methodology of Nature and Society. He explains the inductive way of knowing as an approach in which students observe, describe, classify and generalize. Scientists talked about the need to come to a conclusion about natural phenomena on the basis of experimentation in laboratories. Learning and teaching should start from the empirical towards the rational, that is, in that process, it starts with practical work, which is used to gain experience and finally generalize the conclusions. This approach encourages excitement and interest in students (Spencer, 1893); and the awakening of interest in students is also a condition for retaining their knowledge (Milne, 2008). In the teaching of Nature and Society, excitement encourages student activity. This is the reason why students want to learn and learning gives them pleasure.

One of the supporters of the research approach was Joseph Swab, who believed that it was necessary to organize the current teaching of natural sciences as research teaching. In response to traditional education, at the beginning of the second half of the 20th century, IANAS[2] (2017) developed a research-based learning method. What is called inquiry-based science education is a process in which students answer personal questions based on their curiosity about the world around them through instruments. In that case, the research approach forms the basis of the students' scientific education from the beginning of their studies, throughout the teaching process, whereby they are motivated by personal interest to ask questions, and thus trying to find a personal answer.

Although the research approach has recently been mentioned as one of the requirements for improving teaching, it is known that this idea has existed for many years. Pedagogues talked

[2] Inter-American Network of Academies of Sciences

about the positive effects of the research approach in teaching two centures ago. In modern teaching, the research approach is insufficiently included, but the new curricula bring optimism and faith in improvement of the entire teaching process, where the emphasis is on students and the acquisition of lifelong knowledge and competences.

In the research approach, learning is based on research. With such an approach, we face students with various tasks that can provide an answer to a question, an explanation of a natural phenomenon, include observation, etc. While solving the task, the student reaches the goal, which enables learning (Prinz & Felder, 2007). With the application of the inductive method of teaching, the task is realized through research, instead of ready-made information being presented. The mentioned scientists believe that the information needed to fulfill a certain task should not be presented theoretically in advance, because the goal is for the student to come to a conclusion individually. In this way, the research approach is much more productive than traditional teaching, where students receive information in a ready-made form. The research approach affects the development of students' thinking and problem solving, increases their motivation for work, and leads to better achievements. Increased motivation and thinking activity through a research approach leads the student to better academic achievement, i.e. learning outcomes.

When organizing research activities, it is desirable to connect them with situations familiar to the students, and at the same time make them challenging enough to develop the students' skills (Colburn, 2006). Over time, a student who is faced with a task recognizes the basic problem that needs to be solved, collects data that will help them find a solution, test assumptions and draw conclusions by analyzing the data obtained (Domin, 1999). With such an approach, students take an active role in the process of arriving at appropriate solutions to the problems posed (Hodson, 1990).

There are various methods and forms of research in the teaching of Nature and Society that can be found in reference literature, such as: guided research, free research and modified free research (Sund & Trowbridge, 1973). According to the mentioned authors, in guided research, students research according to certain instructions given by the teacher, which are most often presented in the form of questions. In free research, according to them, students are like scientists who work on their research; at the same time, they are able to individually identify and define research problems. The modified research is similar to the previous one, with the difference that the teacher sets the research problem, and the students solve it through research procedures

Every scientific research contains precisely determined stages and begins with identifying and defining the problem, after which the plan and work methods are determined. After setting up hypotheses, and collecting and anaiyzing data, the obtained results are presented. This type of research should also be represented in student research because it enables the development of research skills and understanding, encourages the development of thinking that enables the student to search for knowledge during research. With this approach to teaching, we create knowledge in students by researching and searching for answers to questions that are more important than the conceptual content of learning. If we direct students only to the content, we limit their view and understanding of everything around it.

Thus, the author (Kostović-Vranješ, 2015) mentions three forms of research in research teaching and learning, namely: structured, guided and open research. In structured research, the teacher gives the students a problem to investigate. He/she gives them the necessary instructions for the examination and provides them with the appropriate material. Students should use research to gain results and based on them discover relationships and draw conclusions from the data obtained. In guided research, the teacher draws attention to the problem and provides the

material, but the students have to find the procedures to solve the problem themselves. Guided research requires greater student engagement, and the teacher's help is significantly reduced. According to the author, open research is the most complex research because the students perceive and define the problem themselves, and based on the questions and hypotheses, they choose the research procedure, and the teacher's help is reflected in this only if the student asks for it.

As can be concluded, there are differences in the research approaches proposed by Kostović-Vranješ (2015) and the authors Sund and Trowbridge (1973). While Kostović-Vranješ sees guided research as the second form in her work, the authors Sound and Trowbridge consider it as the first and simplest form of research. For Kostović-Vranješ, structured research is the first and simplest form. In their further research, the mentioned authors largely agree, except for a difference in the conceptual definition.

Interaction patterns and teaching methods in research teaching of Nature and Society

Educational work is constantly enriched with new interaction patterns and their combinations so that the teaching process is as flexible as possible, the student as active as possible, and the teacher's work based on modern didactic-methodological principles. Various interaction patterns, such as: frontal, individual, group, and pair work, find their place in the teaching of Nature and Society, but in their specificity and methodological adaptation depending on the nature of the teaching contents (Lazarević & Banđur, 2001). The effectiveness of interaction patterns is conditioned by their adequate selection, successful correlation, organized implementation, and proper preparation of teachers and students. In the research approach, all forms of interaction patterns can be used if they are aligned with the learning outcomes to be achieved in class. With the frontal form of work, due to the possible passivity of students, it is important to take into account the dynamics of changing student activities (Blagdanić & Banđur, 2018). Regarding frontal work as a form of classroom interaction, De Zan (2000) believes that the teacher is the mediator between the teaching content and the students, and that this form of work is the most suitable for use in the introductory part of the lesson. The aforementioned author also points out that the individual approach to teaching Nature and Society provides students with great opportunities, for example, by bringing them into a direct contact with the content, increasing their independence and self-confidence, and developing their creative abilities... Borić (2009) believes that the frontal form of work is most often used in teaching and that each form of interaction has its importance in the teaching process. On the other hand, Mattes (2007) believes that the choice of classroom interaction patterns depends on the content to be learned, and that each of them has its positive and negative sides. According to the above said, it can be concluded that all the mentioned forms of interaction have their advantages and, therefore, it is desirable to combine them in teaching.

Teaching methods represent procedures, ways of working aimed at achieving the goal and tasks of teaching in the teaching process (Blagdanić & Banđur, 2018). According to Bognar (2011), if we are guided by the ideas of the research approach, in a modern, efficient school, the focus is on the application of active learning methods such as collaborative learning, the method of practical work, heuristic learning, learning to solve problems. However, opposite to Mayer's (2002) findings, Bognar believes that teachers do not sufficiently use active methods and rather opt for lectures, citing lack of time and the inability to maintain discipline as the reason. In one of his studies, Bognar (2011) comes to the conclusion that teachers have made progress from traditional teaching towards teaching focused on students. These differences are reflected in goals, syllabuses and evaluation, including big differences in teaching methods. In the modern approach, the use of active learning methods is advocated for, which means that the student investigates and asks questions, with both their progress, work and development being evaluated. The focus

is on the development of students' understanding and correlation of content, which can be achieved by using active learning and teaching methods.

Advantages and disadvantages of the research approach in teaching

In their work, Duran & Dokme (2016) showed the use of a traditional and research approach in teaching. The mentioned authors point out visible differences both in the role of the teacher and student, as well as in areas of interest, learning environment, creative methods, expectations and motivation, purpose, and evaluation. They depict the teacher as a person who presents information, principles, generalizations and concepts. In that case, the student is a passive recipient of information. Contrary to that, in the research approach in teaching, the teacher becomes the moderator, he/she guides and instructs the student who, with their help, independently solves the concrete problem. Therefore, research-oriented teaching focuses on appropriate methods for solving assigned problems, as well as the way in which that method will be adopted.

Septi Andrini (2016) pays attention to the importance of the research approach to student achievement, where she states that the needs of this century require education that will provide generations of students with the skills needed for everyday life, and she formulates student achievements as skills that students acquire through the learning process, and recognize through learning outcomes. She also believes that students' cognitive, psychomotor and active abilities are developed through research activities in teaching.

It can be concluded that due to their activity and contribution to personal knowledge and skills development, students will eventually become confident in their knowledge and abilities to critically express their opinions, which will lead to the fulfilment of the learning outcomes and all student potentials.

There are numerous adavantages of the research approach, but regardless of that, it is still rarely implemented in everyday teaching due to demanding planning and the need to use more resources (Princ & Felder, 2007). The research approach often requires the use of teamwork in which certain difficulties may arise, as well as communication problems, and because of this, teachers often restrain from the implementation of research in the classroom. Teachers (Krsnik, 2003) also consider the insufficient amount of time to cover the planned content to be a problem. Curricula and syllabuses require the introduction of a large amount of content that needs to be covered, and time, on the other hand, is short. Also, the authors cite problems in assessing the individual achievement of students in teamwork and finally in evaluating students during the implementation of the research approach in teaching. It is better to consider the above as obstacles rather than disadvantages because the research approach does not bring negative consequences in teaching.

Methodological framework

The subject of the research relates to the knowledge of the research approach, the competence of teachers for planning and implementation of the research approach, the frequency of its implementation in the teaching of Nature and Society, as well as the interaction patterns and teaching methods that teachers use when applying the research approach.

The goal of the research was to examine the educational practice of teachers in the implementation of the research approach in the teaching of Nature and Society, as well as their knowledge of this approach, competencies for its implementation, as well as which interaction patterns and teaching methods teachers use when teaching.

The IBM SPSS 20.0 program was used for statistical data processing. The results are presented graphically and tabularly. Categorical data are represented by absolute and relative frequencies, as well as arithmetic mean and standard deviation for quantitative data. In order to determine the connection between the sociodemographic characteristics of the respondents and their assessment of The World Around Us and Nature and Society syllabuses, the χ^2 test was used for categorical data. The sample used for this study consists of 457 questionnaire forms filled out by teachers from all over Serbia. Graph 1 shows the distribution of respondents in relation to gender. It can be seen that ca. 90% of respondents are female, and only 10% are male.

Chart 1. *Structure of the sample by gender*

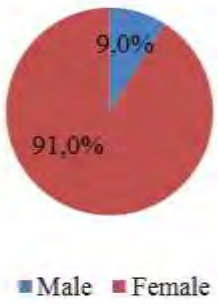
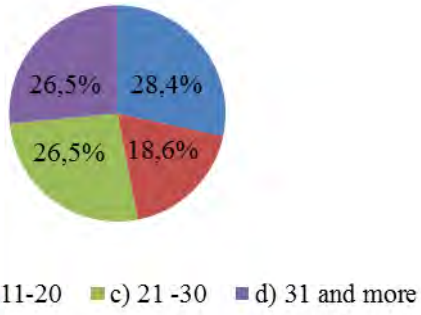


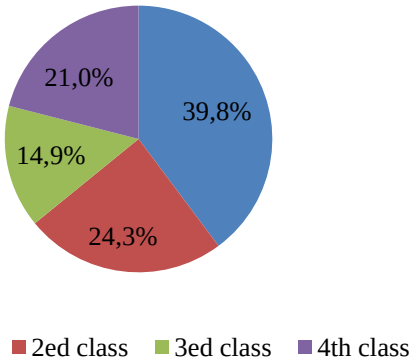
Chart 2 shows the structure of the sample according to the years of working experience in the teaching profession. The respondents were divided into 4 groups (group 1 – from 0 to 10 years; group 2 – from 11 to 20 years; group 3 – from 21 to 30 years; group 4 – from 31 and over). It can be determined that about 30% of respondents have up to 10 years of experience; 19% from 11 to 20 years old; a quarter is in the category of 21 to 30 years and the same number of respondents have 31 or more years of experience in the teaching profession.

Chart 2. *Structure of the sample by years of experience in teaching*



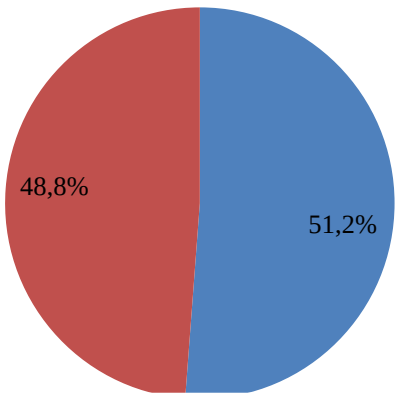
The largest number of respondents (40%) teach the first grade, a quarter works in the second grade, 15% in the third, while a fifth works in the fourth grade, as shown in Graph 3.

Chart 3. *Structure of the sample by the grade they teach*



Observed by the type of settlement, half of the respondents live in city settlements, and the other half in other settlements.

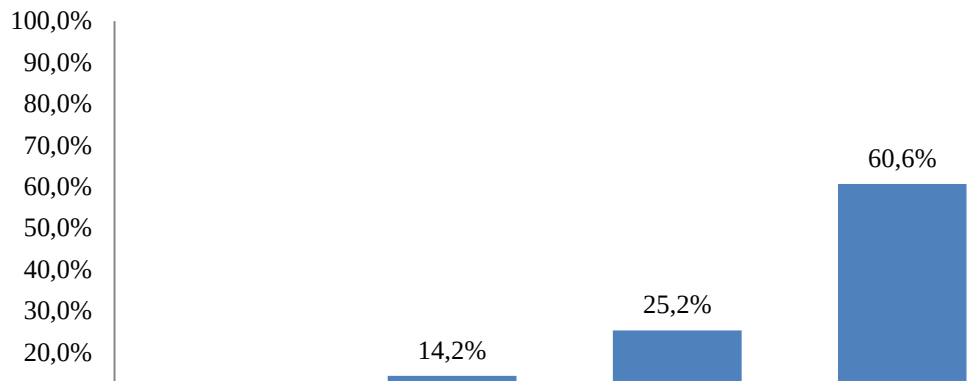
Chart 4. *Structure of the sample according to the type of settlement*



Presentation of research results

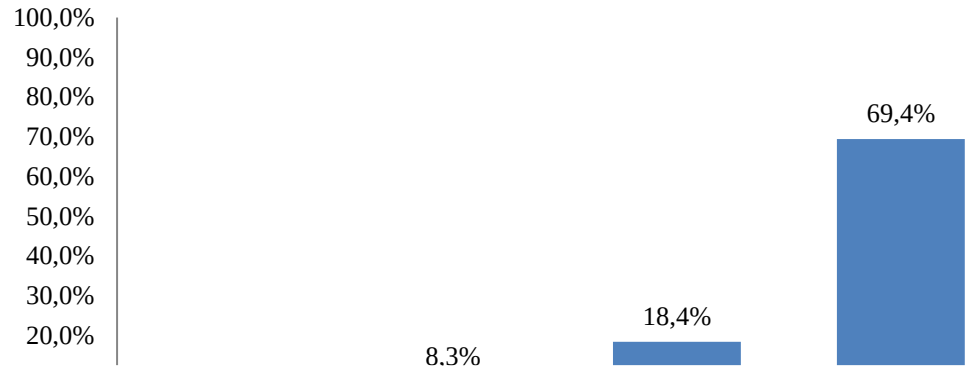
Knowledge of the research approach is the first step of analysis in the main segment of our study. Charts 5-7 present the distribution of the results of respondents' answers to questions in the questionnaire related to their knowledge of the research approach related to the teaching of Nature and Society. The participants responded by choosing one answer on a five-point scale (1 - I do not agree at all, 2 - I do not agree, 3 - I am undecided; 4 - I agree and 5 - I completely agree).

Chart 5. *Distribution of respondents' answers to the question: Do, in your opinion, the syllabuses of the teaching subjects The World Around Us and Nature and Society provide sufficient instructions for the introduction of the content through research work?*



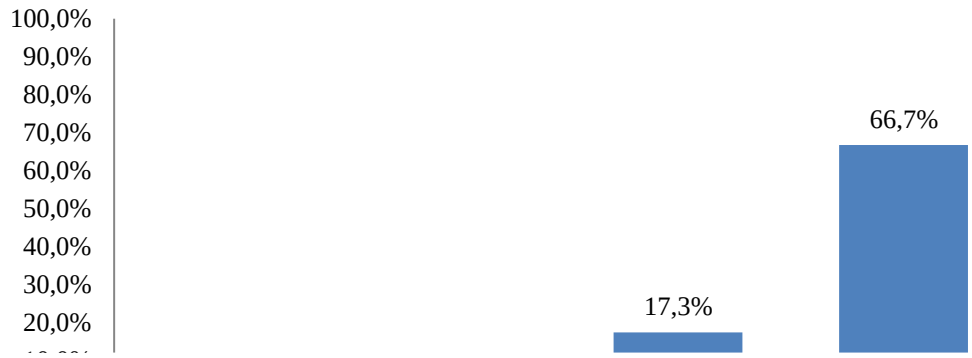
It can be stated that 60% of the respondents express their agreement with the statement that the syllabuses of the subjects The World Around Us and Nature and Society provide sufficient instructions for introducing the content through research work, while a quarter is undecided. The average score is 3.46, and the standard deviation is 0.73.

Chart 6. *Distribution of respondents' answers to the statement: During my academic education, I gained enough knowledge about the application of research work in introducing the contents within the subjects The World Around Us and Nature and Society.*



About three-quarters of respondents agree (I agree and I completely agree) with the statement that during their education they acquired sufficient knowledge about the application of research work in introducing the contents within the subjects The World Around Us and Nature and Society. Almost every fifth respondent is undecided, and 8% disagree. The average score is 3.69, and the standard deviation is 0.68.

Chart 7. *Distribution of respondents' answers to the statement: I consider myself competent for planning and implementing a research approach in Nature and Society classes*



Over 80% of respondents agree with the statement and consider themselves competent for planning and implementing a research approach in Nature and Society classes, while 17% are undecided. The average score is 3.99, and the standard deviation is 0.58.

Table 1. *Distribution of respondents' answers to the statement: I think that the following competencies are important for planning and implementing a research approach in the teaching of nature and society:*

	I do not agree at all	I do not agree	I am undecided	I agree	I strongly agree	AM	SD
			%				
Knowledge of the Profession	0	0	0	53.2	46.8	4.47	0.50
Possession of scientific knowledge	0	0	3.1	65.0	31.9	4.29	0.52
The ability to plan and prepare the educational process	0	0	0	59.5	40.5	0.40	0.49
Creating a positive atmosphere in the classroom	0	0	0	44.4	55.6	4.56	0.50
Ability to communicate and lead	0	0	1.5	40.5	58.0	4.56	0.53
Ability to monitor, check and evaluate	0	0	0	46.0	54.0	4.54	0.50
Digital competences	0	3.1	4.4	55.1	37.4	4.27	0.68

Note: AM - artmetic mean, SD – standard deviation

Looking at Table 1, it can be concluded that almost all respondents agree that the listed competencies are important for planning and implementing a research approach in the teaching of Nature and Society. The ability to communicate and lead is something that around 60% of respondents completely agree is important; while 55% strongly agree on the competencies: creating a positive atmosphere in the classroom and the ability to monitor, check and evaluate. On all statements, the average rating is around 4.50, which indicates a positive attitude.

Table 2. *Distribution of respondents' answers to the statement: I believe that some of the positive aspects of using a research approach from the teacher's point of view are:*

	I do not agree at all	I do not agree	I am undecided	I agree	I strongly agree	AM	SD
			%				
Increased student motivation for work and study	0	0	0	62.6	37.4	4.37	0.48
Increased creativity of teachers	0	0	3.7	61.9	34.4	4.31	0.54
Increased creativity of students	0	0	5.3	59.5	35.2	4.30	0.56
Development of students' skills of observation, comparison, classification, prediction, analysis, generalization and evaluation	0	0	1.3	58.4	40.3	4.39	0.51

Note: AM - artmetic mean, SD – standard deviation

Teachers are unanimous in their opinion (about 60% of respondents agree, and about 35% completely agree) that the positive aspects of using a research approach are: increased student motivation for work and learning, increased teacher creativity, increased student creativity, and the development of students'skills of observation, comparison, classification, prediction, analysis, generalization and evaluation. On all statements, the average rating is over 4, which indicates a positive attitude.

Table 3. *Distribution of respondents' answers to the statement: I believe that some of the negative sides of using a research approach from the teacher's point of view are:*

	I do not agree at all	I do not agree	I am undecided	I agree	I strongly agree	AM	SD
			%				
Lack of time to fully implement the research approach	0	4.6	12.3	70.9	12.3	3.91	0.65
Lack of teaching aids	0	17.1	12.5	40.9	29.5	3.83	1.04
Maintaining discipline during the application of the research approach	5.3	31.5	13.6	40.9	8.8	3.16	1.12

Note: AM - artmetic mean, SD – standard deviation

Slightly more than 80% of the respondents believe (summarized answer categories 'agree' and 'completely agree') that the negative side of using the research approach from the teacher's point of view is the lack of time for full implementation; 70% that it is the lack of teaching aids, and 50% the maintenance of discipline during the application of the research approach. On the first two statements, the average score is around 4 (positive attitude dominates), while on the third it is around 3 (I am undecided).

Table 4. *Distribution of respondents' answers to the statement: In the research type of teaching, I apply the following interaction patterns:*

	Never	Rarely (2-4 times a year)	Occasionally (1-2 times a month)	Often (once a week)	Very often (in every lesson)	AM	SD
			%				
Individual work	0	31.9	34.1	21.2	12.7	3.15	1.01
Pair work	1.8	12.9	44.2	37.6	3.5	3.28	0.80
Group work	1.3	11.6	40.7	42.0	4.4	3.37	0.79

Note: AM - artmetic mean, SD – standard deviation

With regard to classroom interaction patterns, in the research type of teaching, respondents apply individual work occasionally – 34%, 32% do it rarely, 20% often, and 12% very often. The largest number of respondents (44%) occasionally apply pair work, while 37% of them do it often (once a week). Group work is something that 42% of respondents often apply, and the same number do it occasionally. The average rating on all statements is slightly more than 3.

Table 5. *Distribution of respondents' answers to the question: To what extent during the implementation of the research approach in Nature and Society classes does the student independently:*

	Never	Rarely (2-4 times a year)	Occasionally (1-2 times a month)	often (once a week)	Very often (in every lesson)	AM	SD
			%				
Observe natural phenomena/processes	0	2.2	34.8	55.1	7.9	3.69	0.65
Describe natural phenomena/processes	0	3.5	37.4	47.3	11.8	3.67	0.73
Formulate hypotheses (in addition to asking research questions)	1.3	15.3	53.6	29.8	0	3.12	0.70
Conduct research	2.2	9.6	69.8	16.6	1.8	3.06	0.65
Present and analyze research results	2.2	8.5	73.1	16.2	0	3.03	0.58
Discusse the results obtained	2.2	7.2	58.0	26.5	6.1	3.27	0.77
Reveal new, possible problems	0	29.5	35.0	25.6	9.8	3.16	0.96
Draw conclusions	0	29.5	35.0	25.6	9.8	3.72	0.94

Note: AM - artmetic mean, SD – standard deviation

Based on the respondents' answers, it can be seen that about 60% of the respondents state that students often and very often independently observe and describe natural phenomena/processes. Respondents' opinions were divided regarding the students'ability to discover new, possible problems and draw conclusions (a third of respondents believe that students rarely achieve this independently; a third occasionally, and a third often and very often). On the other hand, conducting research, as well as presenting and analyzing research results, is something that students are able to do independently occasionally (1-2 times a month). The average rating on all statements is slightly more than 3.

Table 6. *Distribution of respondents' answers to the statement: In the research type of teaching, I put emphasis on the following content:*

	Never	Rarely (2-4 times a year)	Occasionally (1-2 times a month)	Often (once a week)	Very often (in every lesson)	AM	SD
%							
Biological	0	16.2	41.6	30.9	11.4	3.37	0.89
Geographical	0	14.4	48.6	23.9	13.1	3.36	0.88
Physical	0	16.4	42.0	22.1	19.5	3.45	0.98
Chemical	7.0	27.1	38.1	13.3	14.4	3.01	1.12
Historical	0	32.2	37.6	20.4	9.8	3.08	0.96

Note: AM - artmetic mean, SD – standard deviation

With regard to the contents on which the respondents put more emphasis in the research type of teaching, it can be observed that they do so most often with reference to biological and physical contents (around 42%); followed by geographical (37%), and historical and chemical (about 30%) contents. The most frequent answer of respondents, regardless of the type of content, is "occasionally". The average rating on all statements is slightly more than 3.

Tables 7-9 present the results of the χ^2 test of the correlation between the sociodemographic characteristics of the respondents and the evaluation of the syllabuses of the teaching subjects The World Around Us and Nature and Society.

Table 7. *χ^2 test of correlation between grades taught and syllabus evaluations of the subjects The World Around Us and Nature and Society:*

Grade	N	In your opinion, do the syllabuses of the teaching subjects The World Around Us and Nature and Society sufficiently provide instructions for the content introduction through research work?			χ^2	P
		I do not agree	I am undecided	I agree		
1	182	0	35	147	93.952	<.001
2	111	37	26	48		
3	68	18	25	25		
4	96	10	29	57		
Total	457	65	115	277		

Note: N – number of respondents, χ^2 - statistic, p – statistical significance

The χ^2 test of independence was applied to determine the association between the grade taught and the evaluation of The World Around Us and Nature and Society curriculum subjects: $\chi^2(6, N=457) = 93.952$, $p < .001$. It was established that there is a statistically significant relationship between the grade the respondents teach and the evaluation of the teaching subjects syllabuses. Namely, viewed relatively, among the teachers who teach the first grade, there is a statistically significantly higher frequency of those who agree with the above statement (80%) compared to the second and third grade teachers, where this percentage is significantly lower (around 40%). Among the second and third grade teachers, there are statistically significantly more people who disagree. The calculated value of the indicator Cramer`s V=.321 tells us that there is a moderately strong association between the variables.

Table 8. *χ^2 test of the correlation between the respondents' work experience in the teaching profession and their evaluation of the syllabuses of the teaching subjects The World Around Us and Nature and Society:*

Work experience	N	In your opinion, do the syllabuses of the teaching subjects The World Around Us and Nature and Society provide sufficient instructions for the content introduction through research work?			χ^2	P
		I do not agree	I am undecided	I agree		
0 - 10	130	23	28	79	50.449	<.001
11 - 20	85	10	35	40		
21 - 30	121	0	30	91		
31 and more	121	32	22	67		
Total	457	65	115	277		

Note: N – number of respondents, χ^2 - statistic, p – statistical significance

The χ^2 test of independence was applied to determine the association between the total length of service in the teaching profession and the evaluation of The World Around Us and Nature and Society syllabuses: $\chi^2(6, N=457) = 50.449$, $p < .001$. It was determined that there is a statistically significant relationship between the respondents'work experience in the teaching profession and their evaluation of the teaching subjects syllabuses. Namely, relatively speaking, among teachers with 11 to 20 years of experience, there is a statistically significantly higher frequency of undecided respondents; among those with 21 to 30 years of experience, there are none who express disagreement, while among teachers with the most years of experience, there are more who of those who do not agree. The greatest agreement is among teachers aged 21 to 30 (75%), followed by those with the least years of experience (60%), the most experienced ones (55%) and those aged 11 to 20 (47%). The calculated value of the indicator Cramer's V = .235 tells us that there is a moderately strong association between the variables.

Table 9. *χ^2 test of the association between the type of settlement and the evaluation of the syllabuses of the subjects The World Around Us and Nature and Society:*

Type of environment	N	In your opinion, do the syllabuses of the teaching subjects The World Around Us and Nature and Society provide sufficient instructions for the content introduction through research work?			χ^2	P
		I do not agree	I am undecided	I agree		
City	234	40	83	111	36.756	<.001
Other	223	25	32	166		
Total	457	65	115	277		

Note: N – number of respondents, χ^2 - statistic, p – statistical significance

The χ^2 test of independence was applied to determine the association between the type of settlement and the evaluation of The World Around Us and Nature and Society syllabuses: $\chi^2(2, N=457) = 36.756$, $p < .001$. It was determined that there is a statistically significant relationship between the type of settlement and the evaluation of the teaching subjects syllabuses. Namely, relatively speaking, there are statistically significantly more teachers from other types of settlements who agree (75%) than those from urban settlements (47%). In both subsamples, the percentage of respondents who are undecided is significantly high. The calculated value of the indicator Cramer's V = .284 tells us that there is a moderately strong association between the variables.

Conclusion

In the theoretical part of the paper, the uniqueness of teaching Nature and Society in modern conditions for its successful implementation is shown. Also, the concept of research approach and the development of the idea of learning through research are explained. Furthermore, the research approach related to the teaching of Nature and Society, as well as interaction patterns and taching methods applied in the research approach are presented. The next part of the paper presents the analysis of the advantages and disadvantages of this way of working in teaching The World Around Us and Nature and Society.

The research conducted by Vidas (2020) on the same topic, though through interviews, shows that teachers believe that they are competent to implement a research approach in teaching due to their years of experience in teaching as well as professional training programs.

The empirical part of the paper presents the results of quantitative research conducted with teachers in the first cycle of primary education from elementary schools from all over Serbia. We wanted to get information about the knowledge and extent of application of the research approach in the teaching of the subjects The World Around Us and Nature and Society.

In the first thematic unit, the teachers expressed their opinion to what extent the syllabuses of the subjects The World Around Us and Nature and Society provide instructions for research work in these subjects, and whether they are sufficiently qualified to work in this way. The teachers declared (60%) that the syllabuses of The World Around Us and Nature and Society provide enough instructions for content introduction through research work, while up to a quarter of teachers are undecided on this issue. Teachers are of the opinion (70%) that, during their studies, they acquired enough didactic-methodological knowledge that they need to implement research work in the mentioned areas. The teachers further evaluated the competencies necessary for the implementation of the research approach in teaching. Over 80% agree that they are competent to plan and implement this approach. The teachers highlighted the importance of the following competences: possession of scientific knowledge, ability to plan, digital competence, knowledge of the profession, ability to monitor, check and evaluate, and create a positive atmosphere in the classroom, as well as the ability to communicate and lead. On all statements, the average score is around 4.50, which indicates a positive attitude. As a positive side of the research approach, teachers consider the increase of students' motivation for work and learning. Teachers find that the negative side of this work approach is the lack of time for the full implementation of research work. In the research approach, the teachers declared that working in pairs and groups is the most common type of class interaction. Among the areas in which the teachers mostly apply the research form of teaching, the contents of biology and physics make about 42%, geography about 37% and history and chemistry about 30%. This research opens the possibilities for additional similar studies. It is expected that future research will show positive results in terms of more frequent application of the research approach in the teaching of Nature and Society. The research approach as a concept is relatively recent. Thus, it will take some time for this modern approach to be fully implemented in the teaching of Nature and Society and to be acceptable for work by a much larger number of teachers.

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ISTRAŽIVAČKI PRISTUP U NASTAVI PRIRODE I DRUŠTVA

Rezime: Poslednjih decenija veliki značaj pridaje se nastavi koja promoviše aktivnu ulogu učenika u procesu učenja, a samim tim i razvoj kritičkog i divergentnog mišljenja u nastavnom procesu. Cilj istraživačkog pristupa je da podstakne učenike da samostalno istražuju, otkrivaju, zaključuju i na taj način dolaze do znanja uz odgovarajuća uputstva nastavnika. Za ovo istraživanje smo imali za cilj da ispitamo obrazovno-vaspitnu praksu nastavnika u realizaciji istraživačkog pristupa u nastavi Prirode i društva. Cilj je bio da se sazna koliko su nastavnici upoznati sa pojmom istraživačkog pristupa, kao i da se stekne uvid u kompetencije i motivaciju učitelja, učestalost realizovanja istraživačkog pristupa u nastavi Prirode i društva, te nastavne oblike i metode rada koje pri tom koriste. Rezultati pokazuju da nastavni planovi i programi Svet oko nas i Priroda i društvo u dovoljnoj meri (60%) pružaju uputstva za proučavanje sadržaja kroz istraživački rad, a da su učitelji stekli solidnu količinu znanja o primeni ovog načina rada tokom školovanja (69,4%). Preko 80% učitelja smatra da poseduju kompetencije za planiranje i realizaciju istraživačkog pristupa u nastavi. Rezultati takođe ukazuju da pri realizaciji istraživačkog pristupa učitelji koriste nastavne oblike I metode rada koje omogućavaju veću aktivnos učenika. I pored navedenog, ovaj istraživački pristup nije dovoljno primenjen, a objašnjenje je nedostatak vremena i resursa potrebnih za istraživanje.

Ključne reči: istraživački pristup, nastava prirode i društva, kompetencije, motivacija, oblici i metode rada.

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