From traditional to modern concepts of teaching contents of the subjects the world around us and nature and society

Od tradycyjnych do nowoczesnych koncepcji nauczania przedmiotów dotyczących świata wokół nas, natury i społeczeństwa

The transformation of the traditional teaching of nature and society into a more modern form requires the following key transformations: the prevailing teacher’s lecturing should transform into the prevailing activity of students in discovering new knowledge; instead of the teachers solving problems there should be individual work of students; instead of single-mindedness there should be divergent, creative thinking and the like. Therefore, the way out of teaching nature and society that is regulated in such a manner could be if the teaching is organized so as to use active forms of learning that rely on modern educational systems, which develops students intellectually. The question is how to transform traditional into contemporary teaching of nature and society. One of the critical points is the problem of teaching content and the coordination of this content and the process of learning with the development of science.

**Keywords:** traditional teaching, modern concepts, nature and society, curricula, scientific knowledge, students

**Introduction**

Reforms, reforms, reforms... we all want them, but we are often not aware of what they bring along. Education theorists agree that all of the current school reforms have been largely restricted to external changes including reforms of the curricula, changing the length of schooling, changes in school organization,
changes of instructional goals and objectives and the like. No reform of education has been more deeply involved in reforming education so far, and it is our duty now to put this in the foreground. Changing the curriculum is the foundation from which a new basis of the teaching process further grows out that move the role of teachers and students and remove forever all the modes in which the student is passivized.

Our school is still dragging behind the remnants of earlier periods in which it was molded, confined and separated from real life, including the essential personality of their students. The current reform, which started in the year 2000, aims to revive the humanity of the school, to link it with real life, to prepare students for a life that is full of problems and needs courage, independence and ability to address them. Current ideas about improving education are grouped around several main areas of activity, including an important segment of the modernization strategy of teaching and learning and development strategy of accepting and applying new ideas in teaching practice.

Theoretical research, as always, precedes practice. The ability of our students to apply knowledge in practice, and the skills of our teachers to encourage application of knowledge of their students are at a low level. This statement is a call to all who are interested in the innovation process of learning in our schools to do something concrete for its modernization.

Difficulties in learning the curriculum of the subject Nature and society studies

Starting from teaching about the world around us, and in teaching about nature and society in that teaching subject the following problems can be noted:

- low representation of the number of weekly hours (generally two times smaller comparing to other countries in the region and in Europe),
- anachronisms and discontinuities of the innovation program content,
- factography overwork and lack of adaptation to the abilities of students,
- methodological difficulties in the transformation of content,
- lack of continuous professional development for teachers,
- low material base for schools and low motivation of teachers;
- arbitrary and improvised interpretation of nature and its laws in school textbooks,
- anthropocentrism and terminological-conceptual inadequacy.

The teaching contents of the subjects The world around us and Nature and society (contents about nature) are complex and very often they create difficulties to the teacher regarding adequate methodical transformation. Insufficient expertise,
or lack of knowledge of the teaching content on the part of the teacher, results in teacher’s decision to use the more traditional approach to the analysis of the teaching material, in which students passivization prevents deeper penetration into the explanation of complex natural phenomena or processes, as well as review or investigation on the part of the students.

Some experimental studies here provide a basis for the hypothesis that the current programs, as much as the teaching methods and other factors, cause the poor performance of students.

**Traditional concept of teaching Nature and society**

Traditional teaching about nature and society has its basis in the traditional theories of education, starting from Pestalozzi to Herbart, Dewey and Kerschensteiner. These ideas represent a unilaterally understood intellectualism because they observe education unilaterally. Therefore, traditional teaching of nature and society advocates intellectualism on the one hand (accumulation of knowledge and facts, verbosity, excessive student load, the inability to apply what is learnt because of misunderstanding) and lowering of the educational level on the other side. Also, traditional teaching of nature and society does not take into account equal respect and development of educational, correctional and functional tasks of teaching. Such teaching ignores the formation of attitudes and learning of positive human qualities, the formation of the scientific view of the world, and it pays the least attention to training students how to learn and how to think, so they are not prepared for continuing education.

The current teaching of nature and society is still largely traditional:

Traditional education is a combination of teacher presentations and demonstrations of teaching aids. In this form of teaching we can observe the dominance of the verbal method and the dominant status of teachers who provide ready-made information with a high degree of guiding the students’ cognitive processes and the lack of students’ activity.\(^2\)

The logic of the relationship between general and specific knowledge in the development of science is different from that in didactic settings, so the development of programs and the determination of the order of learning should start from the logic of the relationship between general and specific knowledge in the development of science from which the teaching content is taken. The given curriculum, which represents the traditional approach, is also called into question, because knowledge is no longer the goal of education. The modern approach to the curriculum promotes flexibility, adaptability, holistic approach, processes aimed at teachers and students, as well as their interactive-communicative relationship.

\(^2\) И. Де Зан, Методика природе и друштва. Школска књига, Загреб 2001.
So the basic elements of curriculum management are: content and scope of the curriculum, balance between different subjects, direction of curriculum, and integration of subjects and contents.

The curriculum development in the field in nature and society should therefore be oriented towards the determination of the contents of terms, rules and laws that students should learn, then towards the resources by means of which they could understand and learn them, towards the abilities needed to be developed at the same time, attitudes and other educational components of personality that should be emphasized during classes, while the program contents should be taken flexibly. This would imply that teachers do not blindly follow the contents of the textbooks and that they get rid of rigidities in planning and focus on the outcomes of teaching. It is extremely important to leave some room to students to influence the contents they learn and the way they learn. Through the program contents of teaching nature and society the teacher leads students in the learning process, providing assistance and support.

Educational needs of students today are different. In this aspect we can talk about changing the content of the concept of quality in education. The quality of education could be defined as a process of meeting the agreed standards. Among educational standards here, for us, the following are important: standards of quality of the teaching process, i.e. standards of educational content and teaching standards, as well as standards of quality effects, i.e. standards of educational achievement – knowledge, skills, abilities. To achieve the quality of the educational system it is necessary that it be defined, evaluated and monitored. Besides the defining of standards it is necessary to determine a set of indicators with which it will be possible to measure the degree of achievement of certain standards. School quality research has shown that the improved results of students’ outcomes are directly related to school factors, namely that the results in performance are not dependent only on the ability and the characteristics of students, but also on the processes taking place within the class.

As A.S. Sidenko says, in the teaching theory and practice today two pedagogies are shaped, two different conceptual paradigms of shaping the learning environment – the so-called pedagogy of knowledge and the pedagogy of skills, in the background of which are two schools – “school of memory” and
“school development”. Analogous to the table given by Sidenko, we are showing comparative characteristics of traditional teaching of nature and society oriented towards knowledge and innovative teaching of nature and society oriented towards abilities:

Table 1. Comparative characteristics of traditional and innovative developing teaching of nature and society

<table>
<thead>
<tr>
<th>Comparison parameters</th>
<th>Traditional teaching of nature and society</th>
<th>Innovative developing teaching of nature and society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Transfer of knowledge, skills and habits</td>
<td>Pupil's personality development</td>
</tr>
<tr>
<td>Motto</td>
<td>“Do as I do”, “I am above you”</td>
<td>“Do not harm”, “I am with you”</td>
</tr>
<tr>
<td>Basic characteristic</td>
<td>Teaching “memorizing”</td>
<td>Teaching developmental abilities</td>
</tr>
<tr>
<td>Character and style of mutual action</td>
<td>Subject – object, monologue, authoritarian</td>
<td>Subject – subject, poly-logical, democratic</td>
</tr>
<tr>
<td>Organization forms</td>
<td>Frontal, individual</td>
<td>Group work, pair work</td>
</tr>
<tr>
<td>Teaching methods</td>
<td>Informative, reproductive</td>
<td>Problem approach, reflexive</td>
</tr>
<tr>
<td>Learning formula</td>
<td>Knowledge – reproductive activity</td>
<td>activity – reproduction – knowledge, creation of the “success” situation</td>
</tr>
<tr>
<td>Learning styles</td>
<td>Learning by heart, reproduction, activity according to an algorithm</td>
<td>Explorative thinking activity</td>
</tr>
<tr>
<td>Basic teacher's functions</td>
<td>Information carrier, propagator of the subject-disciplinary knowledge, keeper of norms and traditions</td>
<td>Organizer of cooperation, consultant, manager, assistant</td>
</tr>
<tr>
<td>Pupil's status</td>
<td>Passivity, absence of interest</td>
<td>Activity, presence of motivation and interest</td>
</tr>
<tr>
<td>Guiding principle</td>
<td>&quot;deflection&quot; (under pressure)</td>
<td>“nurturing”</td>
</tr>
</tbody>
</table>

“Memory teaching” lies on the traditional basis: the class-lesson system of learning, the dominance of the illustrative-lecturing method, the frontal form of the teaching process organization, the control and examination of the reproductive type, etc. The purpose of this kind of teaching nature and society is the formation of knowledge, skills and habits. So, with this teaching style the student’s memory is what is developed most.

“Teaching development” focuses on the development of skills and personalities of students. Personality development is demonstrated through learning the reasoning operations, and as a criterion for learning these thinking operations we work with concepts as a necessary condition for their formation.
While doing this, attention is paid to the importance of the organization of students’ activities in class.

**Modern concept of teaching Nature and society**

Modern teaching of nature and society is based on the need to enable student through the program contents to be an active individual the society of knowledge. In the late nineties of the 20th century learning has become a priority area in the development of education policies of European countries, including ours. At the end of the year 2000 the European Commission has adopted a Memorandum on Lifelong Learning which stresses that lifelong education can no longer be just one aspect of education and training, but needs to become a leading educational principle aiming to develop a coherent education policy for Europe. Contemporary concepts of lifelong learning are based on the belief that everyone is able to learn, that everyone must develop motivation for learning and that individuals need to be encouraged to practice lifelong learning. Philosophy of lifelong learning implies a shift from education to learning. The realization of lifelong learning depends largely on the ability and motivation to take care of one’s own learning.

The modern concept of teaching nature and society is based on the concept of teaching focused on action, i.e. on integrative learning. For such instruction it is necessary to understand the changing role of schools and education in the lives of children and young people. School should be seen as a comprehensive experience space, in which active treatment of the real things becomes a leading maxim of the organization of teaching and learning. In such a way, a “bad” reality outside school with its limited opportunities for experience is being opposed by definite educational endeavor.

The modern concept of teaching nature and society respects the foundations of the revolutionary model of learning:

1. Today everyone is both a teacher and a student;
2. For most people learning is most effective when it is fun;
3. If we ensure appropriate environment, most children will show a great amount of self-directed learning;
4. Good teachers today can make miracles by means of interactive electronic communications;
5. People learn best when they want to learn, and not in some period of life determined in advance;

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6 Ј. Милутиновић, **Транзиција ка друштву знања и филозофија доживотног учења**, Зборник радова са међународног интердисциплинарног научног скуп „европске димензије реформе система образовања и васпитања“, Одсек за педагогију и филозофског факултета у Новом Саду, 2006, с. 156-161.

7 G. Dryden, J. Vos, **Револуција у учењу: како променити начин на који свет учи**; Timgraf, Beograd 2004.
6. When students are completely involved in learning even the difficult information can easily be learned and memorized;

7. Brain research shows that intelligence in the right environment can be improved;

8. Each of us has the learning style that is as individual as our fingerprints, so the school should recognize it;

9. At each step it is necessary to use real world as your classroom, and in order to learn something you also need to do it.

In contemporary teaching of nature and society, when it comes to the modern approach to the choice of teaching content we should take into account the achievements of structuralist scholars – J. Schwab, J. Bruner, Gagné, Ausubel, and our J. Djordjevic. According to the theory of structuralism in the selection and classification of educational content the methodological structure of disciplines should be taken into account and care taken of linking the contents. It certainly requires teacher's good knowledge of the structure of a specific discipline, and, as we are speaking about an interdisciplinary school subject *Nature and society*, the teacher should be well acquainted with the structure of the corpus of natural and social scientific disciplines: biology, physics, chemistry, geography, and sociology. If a teacher is able to meaningfully connect a number of elements, he/she understands the structure of the teaching subject.

Programme contents of the subject *Nature and society* in contemporary teaching should not be treated only descriptively. It is necessary that the teacher insist on seeing the cause-effect relationships, on constructing lawful relationships between phenomena and on their analysis, which will result in operational thinking. Insisting on such a mode will lead to the formation of cognitive structures. If the content is not associated with the already gained knowledge, students will not understand the contents and will have to learn it by heart. Contents learned in such a manner do not last because they do not fit into cognitive structures. Program activities in teaching nature and society will not lead to the formation of educational and cognitive structures, if the complex natural and social phenomena and processes are learned in isolation and if they are learned by memorizing facts and concepts.

Another problem for teachers comes from the fact that in our country there is no taxonomy of teaching that would ensure standardization of goals and objectives classification. The goals and objectives in the curricula of nature and society are very general and do not help teachers in the organization of teaching. Some experimental studies indicate that our current curriculum as well as the teaching methods and other factors are the causes of poor success. The curriculum of the subject *Nature and society* in recent years underwent substantial changes. In thematic terms, there was a reduction of the program with specific program contents having been much minimized (such as historic contents in the third and fourth grade of primary school) or removed (such as contents from astronomy
and anatomy of the human body in the fourth grade of primary school). Apart from this, the curriculum of *Nature and society* is not so limiting for the teacher any more as it allows him/her broad autonomy in planning. The number of lessons planned for the realization of respective teaching topics, as well as individual teaching content is given as a frame, and so is the number of lessons. In the third and fourth grade this autonomy is even increased because the teacher is not given the framework number of lessons for the realization of the material within individual teaching themes.

This autonomy of teachers in planning in practice is mostly seen as an additional difficulty and a problem and not as an advantage. The reason for this is the fact that programs, besides contents, do not have essential characteristics of the organization of the teaching process in which they are realized, i.e. there is no unity of content and method.

Failing this, teachers often find a solution in planning by the textbooks, which can lead them into a trap. In this time of transition and reforms of teaching in which our country is still struggling in the field of education, textbooks do not completely follow the reform process. Textbooks still do not represent collections of various problems that activate students in the process of learning concepts. In the textbooks for the subject *Nature and society* there are still not enough places that require the students’ use of convergent or divergent thinking, formulating and asking questions, experimenting and inciting them to explore, prove and verify their conclusions and attitudes. Furthermore, textbook authors still pay very little attention to respecting individual difference among students. In most textbooks there are almost no additional and optional school or homework assignments that direct students to use additional reading, find additional information in encyclopedias and journals, independently perform an experiment, and do mini-projects and similar tasks. Beside this, authors of textbooks for *Nature and society* rarely make a connection between the content being learned with the previously processed content by directing students to previous chapters. All this is aggravated by the fact that teachers can choose among many books the one that best suits them. It is certain that the teaching content of the programs and textbooks is not the only factor in education, but with a rigid conception of these as the only sources of knowledge it can become an aggravating factor in the contemporary teaching of *Nature and society*.

Recent developmental psychology and psychology of learning believes that learning is an active process that emerges from the confrontation of the individual and his/her environment. The basic form of confrontation of man and the world is activity, action, and “work”. This active facing with issues produces the basis for the development of thought and imagination. Learning must propagate and instigate this active character of learning, and thus shape learning conditions. In this way school learning will pass its mechanical step and lose the forced character, and knowledge will become an integrated part of the student’s personality.
De Zan argues that the modern teaching of Nature and society should be based on constructivist learning and teaching directed to research, on learning by discovering that is here understood as guiding towards research, and afterwards as independent students’ research. Citing the research it can be ranked by weight and gradually it will be applied from the initial in nature and society (of teaching the world around us). Guiding towards research can be ordered according to difficulty and should be gradually applied from the initial teaching of nature and society (from teaching about the world around us).

The American researchers R. Marzano, R. Pickering, J. Pollock point out three basic elements of effective pedagogy: instructional strategies, management techniques and curriculum designing.

Consequently, we can talk about the basic elements of effective teaching of Nature and society:

![Graph 1. Elements of effective teaching of Nature and society](image)

Based on research Marzano, Pickering, and Pollock show nine strategies that have proved to be statistically significant in their application in raising students’ achievements at all levels of education:

- Identification of similarities and differences.
- Summarizing and keeping notes.
- Enticing commitment and providing acknowledgement.
- Homework and practice.
- Non-verbal presentation.
- Cooperative learning.
- Defining aims and implementation of feedback.
- Formulating and testing hypotheses.
- Questions and displaying organizers.

1. Teaching students to compare and contrast the important characteristics ensures that students understand and solve complex problems. This is, for example, possible by using the Venn diagram, T-diagram, using metaphors and analogies, etc.

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8 И. Де Зан, Методика природе и друштва…

2. Making short surveys enables students to better understand information, to isolate the material that is not essential, and this surely requires direct teaching of rules for making creative short surveys, explanation of unclear questions and using suppositions. Research also showed that keeping detailed notes was more productive than less detailed notes. Effective note keeping provides time for learning information. It is necessary to use the notes prepared by the teacher and to provide the presentation of students’ notes that were made from different sources.

3. Research also confirmed that symbolic recognition was more effective than a tangible reward. Students who believe that effort is a very important factor of success are able to use that as a motivational means to be applied in various situations. Students can learn how to direct their faith towards effort. Reward is most effective if it is founded on achievement standards, but it is important to give students specific suggestions for improvement, as well as a reward if they improve their achievements.

4. The volume of homework should be aligned with the class and should include a minimum of parents’ involvement.

5. Knowledge has two forms: verbal and visual. Most students use both systems. A study showed that using non-verbal representation stimulated brain activity. Therefore, in the course of teaching it is necessary to use graphic organizers, physical models, pictures, pictographs, kinesthetic activities to present information.

6. Research also showed that group cooperation had positive effects on learning. Groups should be small. Strategies of cooperative learning should be applied systematically, which implies five defined elements of cooperative learning: positive interactive face to face, individual and group responsibility, social skills, group presentation.

7. Goals direct the learning of students, but they should not be too specific so that they could be adapted to respective personalities. Specific but flexible goals should be defined for students. Backlinks should be prompt, corrective, and to direct to a specific level of knowledge or abilities. Students should also be able to monitor his/her progress (using self-evaluation and precise plans).

8. It is proved that deductive thinking is more efficient when student explain hypothesis and make conclusions.

9. Questions and previous organization of the material help students to activate their previous knowledge. These means should be directed to what is important and what will be useful for activating the highest reflective abilities (a pause after a question for improving the broadness of students’ answer, telling a story, creating graphic presentations of information, etc.).