Geoadria	Volumen 5	121-128	Zadar, 2000.

TOWARDS SOME NEW METHODS IN TEACHING GEOGRAPHY

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UDK: 91
Review
Pregledni članak

Primljeno: 2000-20-09
Received:

The paper deals with the possibilities of applying the existing international projects in which many students and teachers could participate. It was taken into consideration as a pottentially new method of teaching geography suitable for all ages and grades. The presentation of such two programmes is trying to assure participants and non-participants of the value of such attempts in the new way of education.

Key words: education, Globe, SEMEP, investigation, knowledge

U članku se razmatraju mogućnosti primjene već postojećih međunarodnih projekata u svakodnevnoj nastavi geografije, pogodni za sve uzraste i vrste škola. Dajući primjere dvaju već uhodanih projekata želi se ukazati na njihov nov pristup u procesu stjecanja cjeloživotnog obrazovanja kojeg obilježavaju promatranja, istraživanja, suradnja, primjena i razmjena stečenih saznanja.

Ključne riječi: obrazovanje, Globe, SEMEP, istraživanje, znanja

Introduction

Each new period with technological changes brings new knowledge, and new ways of gaining it. There is a large number of information hard to remember, and new information technology is giving total new stimulation towards learning. Therefore the relation between those who are teaching and those who are learning is necessarily changing. Nowadays theories highlight the need of a new way of learning instead of the traditional ones. It is possible to make one step ahead and use new methods in everyday teaching.

The use of projects

Geography as a subject, should give the knowledge explaining the functional - spatial relations and the physiognomic characteristics of the earth surface on the basis of interactions between nature and population (CURIĆ, 2000.). In many educational systems this subject has found its place as the base of general culture, it represents the path of students entrance into the world around us, but it has big educational value because it gives knowledge to the world - today, and it also anticipates the possible

situations and problems of the global world in which they will find themselves in few years from now.

Quality changes in daily teaching are very possible on the assumption of a new role of the teacher among the students - that teacher is not only the lecturer, transmitter of information, or sometimes questioner of facts learned in a passive way. On the contrary, the effective way of learning is based on the activity of the students, on their work on specific theme or problem, on group work, on the work under the guidance of the teacher, on the work using new technologies. The results of this kind of learning are: positive attitude toward learning, individual researches, making conclusions, the need for communication on different levels, the ability to express their own opinions, the willingness for learning that will last for lifetime (MATAS, 1996.). These are the priorities of contemporary education. That is why the teacher is very important, he is *spiritus movens* of these changes. That is also confirmed in "Fundation of organization of school system in Croatia", where the teachers' role in coming changes are clearly explained.

Some projects have already been offered. Motivated teachers and students are expected to take part in them. One of those projects is "South Eastern Mediterranean Sea Environmental Project" - SEMEP, founded on the initiative for saving the east Mediterranean coast (in ecological, economical, cultural sense). Each secondary school willing to educate its students for an active approach in the benefit for environment, can participate.

That is a "new pedagogical paradigm" of researching projects based on learning, on students orientated interdisciplinary efforts, which will observe the major problems of local community and enable students researches as well as their attempts to their solutions (ŠERMAN, RUDENJAK, PERKOVIĆ, 2000.).

The project is interdisciplinary - involving and using the knowledge of biology, geography, chemistry, physics, history, ethnology, English language, art, etc., so it requires previous knowledge offering a specific work methodology .

Croatia has been involved in this programme since 1994, and the first pilot programme was realized in 1996. As education is one of the aims, the idea of the programme is extending, which means: to connect schools that are in the project, to enable students to meet each other and to present their work, to communicate (in English) and discuss problems in a democrative way.

In 1997 the first international SEMEP - school was organised in Thessaloniki, Greece, in which students and teachers from several countries (including Croatia) participated. Next step forward was "National Summer school of SEMEP", on the island of Vis, held in 1999, in which Croatian schools participated, too.

As an example, there is a work of students titled "The problems of lying aside the waste on the Ugljan island". The theme was chosen by students (most of them live on that island), they noticed the main problem and with the assistance of their teachers they went around the most important places and took pictures of the most drastic examples of waste. In presenting their work, they used board with the chosen pictures (each picture had an appropriate comment), gave specific data about the amount and places of waste, they also presented opinions of questioned people from that area, and finally gave some conclusions about the problem as well as

possible solutions of this problem. The bravery and maturity in students approach is the best motive for the teacher, who was in this case the co-ordinator of the research.

In developing SEMEP, themes were changing. The first was "The sea and us", then "The water in our life", and "The water in our environment". In enclousure can see the working sheets assigned to the students for an analysis of the theme "The sea and us".

Description of the beach area

Describe the beach area. You may wish to draw a diagram of the area. Indicate length, width, type of land area, man-made structures present, facilities available, state of the sea, type of seabed, etc.

Why did you choose this particular site for your study?

IDENTIFYING FACTORS INFLUENCING CLEANLINESS OF THE SEAWATER

A. **TEMPERATURE AT VARIOUS DEPTHS (polluted water, added to the sea, may be at a different temperature to the sea)**

Sample the temperature of the water by taking thermometer readings.

Question: How many readings will you take before you are satisfied you have adequately sampled the water temperature at each depth?

Depth	metres	surface
Temperature	^{o}C	

B **VISIBILITY (adding materials to the sea reduced visibility)**

You will need to decide whether it is meaningful to record this information for the beach under investigation.

Visibility	depth in meters

C **OXIGEN CONTENT (adding materials to the sea can affect the oxygen content)**

Question: Why is the oxygen content considered an important factor in determining the cleanliness of seawater?

Oxygen content	(a) Colour of precipitate (b) mg dm^3 (if measured)

D **pH (waste water outlets or other additions to the sea can affect pH)**

Question: How many samples will you take to measure the pH?

Using indicator	pH value
Using pH metre	pH value

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Source: SEMEP Worksheets for students, WO2 1996-97

The second, very similar project in which 9500 schools from 92 countries participate (including Croatia), is "Global Learning and Observation to Benefit the Environment" - GLOBE, which was settled up in 1995 in USA. It consists of worldwide network of teachers, students and scientists. The GLOBE is both an international environmental science research and education programme which includes a tight coupling between scientists and educators. In distinction from SEMEP, GLOBE provides opportunities for students at all grade levels to be actively involved in the learning activities.

Through these activities, along with satellite images of the Earth and various measurements (of temperature, cloud cover, precipitation, etc.), it is meant to achieve better understanding of nature and phenomena in it, especially young students in such time which is characterized by becoming estranged to the nature.

The communication and the submission of data is done by GLOBE e-mail, some use it to create international teams in order to initiate researching projects in physical sciences. Daily work includes students measurements collections reporting of data (by e-mail) to National Geophysical Data Center, Colorado, USA. Each participant can use these data in their research, whatever it is.

In order to take part in the programme, additional training of educators is required. In Croatia that training is organised once or twice a year. Up to now, about 80 schools in Croatia have been involved in this project. It extends its researching so that students and teachers can try themselves out in more demanding and complex, sophistic methods of work. Once they accomplish the higher level of scientific knowledge and understanding, their challenges will be higher, their observation will pass from local to global perspective, from simple to multidisciplinary.

GLOBE environmental measurements are in four study areas: Atmosphere/ /Climate, Hydrology, Land Cover/Biology and Soils. The following pages summarize the current specifications for the instruments. The GLOBE measurements and instruments are differentiated by skill level.

Tab.1 Measurements and instruments in Globe research
Tab. 1 Mjerenja i instrumenti u Globe istraživanjima

Measurement	Instrument	Skill Level
Atmosphere/Climate		
Cloud Cover/Type	Cloud chart	All
Precipitation, Liquid	Rain gauge	All
Precipitation, Solid	Snow board, Rain gauge, Snow depth pole	All
Precipitation pH	pH indicator paper	Beginning
	pH pen, one pH buffer	Intermediate
	pH meter, three pH buffers	Advanced
Air Temperature Maximum/Minimum & Current	Maximum/Minimum thermometer, Calibration thermometer, Instrument shelter	All
Hydrology		
Transparency - Deep Water Sites Only	Secchi Disk, 5 m rope	All
Transparency - Surface Water	Turbidity tube	All
Water Temperature	Organic liquid-filled thermometer	All
Dissolved Oxygen	Dissolved oxygen kit	Intermediate Advanced
Water pH	pH indicator paper	Beginning
	pH pen, one pH buffer	Intermediate
	pH meter, three pH buffers	Advanced
Electrical Conductivity - Fresh Water Sites Only	Total dissolved solids (conductivity) tester, calibration solution	All
Salinity - Brackish and Salt Water Sites	Hydrometer, 500 mL clear plastic graduated cylinder, organic liquid-filled thermometer	All
Salinity Titration Method- Brackish and Salt Water Sites	Salinity kit	Optional Intermediate Advanced
Alkalinity	Water alkalinity kit	Intermediate Advanced
Nitrate	Water Nitrate kit	Intermediate Advanced

Soil		
Soil Characterization - Field Slope, Horizon Depth, Structure, Color, Consistence, Texture, Carbonates	Clinometer, Camera, Meter stick, Color chart, Sample cans, Other containers, Shovel or Auger	All
Soil Characterization - Lab Bulk Density, Particle Size, Soil pH, Fertility	Drying oven, 100 mL Graduated cylinder, 500 mL clear plastic graduated cylinder, Hydrometer, Thermometer, Dispersing solution, pH paper, pen or meter and pH buffers, Soil NPK kit	All
Soil Moisture	Balance, Meter stick,Drying oven (soils), Sample Cans Other soil containers, Auger (depth sampling), 50 m tape measure (transect)	All
Gypsum Block Soil Moisture	Soil moisture meter, Gypsum blocks, PVC piping	Optional, Advanced
Infiltration	Dual ring infiltrometer	All
Soil Temperature	Soil thermometer	All
Land Cover/Biology		
Land Cover Mapping	Remote sensing image, MultiSpec software	All
Species Identification	Dichotomous keys	All
Biometry Tree Circumference Tree Height Canopy Cover Ground Cover	Clinometer and densiometer (both may be student-made), 50m tape measure	All
Biometry Grass Biomass	drying oven (plants)	All
Location		
Latitude and Longitude of study sites	Global Positioning System receiver	All

Source: www.glove.com.

What do these examples offer? They offer:

- a new approach to teaching instead of traditional ones, introducing innovation in teaching,
- the possibility of having classes outside the classroom - active learning
- the possibility of organizing the project classes (for one or few days)

The result of polling and interviewing teachers, who are attendants of additional education for the period 1987 - 1996, shows that the majority of them (more than 95 %) are still using traditional methods such as: oral lecturing, dictating accompanied by experiments in school lab. (ITKOVIĆ,1997). They want to change and adopt innovations in teaching process. They are positive about it, aware of better education goals. Still, they

are not using them for several reasons, as for example inadequate equipment in school, or inadequate didactic and methodical knowledge.

Sometimes the reason for rejection of new methods is that they require very good thorough preparation of teachers. Having in mind that the worst way of learning is by using oral method (it means only 5 %), through excercise 75 % and through presentation of knowledge 90 %, some of new methods could be used from time to time. There are also few other facts to keep in mind such as:

- teachers are aware of possibilities of using new technology in order to improve our intellectual level,
- this is the time that gives huge possibilities and demands quick changes,
- learning is getting out of the institutions (such as school is),
- learning itself is transforming into permanent process without limits in space or time,
- there are offered projects of cooperation worldwide, even in virtual communities.

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SUMMARY

Everyday teaching process is faced with the problem of a motivation. Introducing of new methods can be the solution of that problem. Detachment from traditional teaching, innovated teaching involving the work of teachers and students on definite topics, represent the method of expressing creativity, knowledge, encouraging training skills and strengthening motivation. here are already such international projects mainly relying on the previous knowledge of the students in such subjects as geography, physics, chemistry, biology, respectively the ones where individual work, training, experiments etc. has been required. Through their interactive and correlative qualitatively new way of learning.

SAŽETAK

Svakodnevni proces podučavanja susreće se s problemom motivacije. Primjena novih metoda može biti rješenje tog problema. Odmak od tradicionalne nastave, inovirana nastava, koja uključuje rad učitelja i učenika na definiranim zajedničkim temama predstavljaju metodu izražavanja kreativnosti, znanja, potiče uvježbavanje vještina, jača motivaciju. Već postojeći međunarodni projekti uglavnom se oslanjaju na predznanje učenika iz nastavnih predmeta kao što su: geografija, fizika, kemija, biologija, dakle onih kod kojih je poželjan samostalan rad, vježbe, eksperimenti, i sl. te međusobnim njihovim nadopunjavanjem, u korelaciji sa svim ostalim nastavnim predmetima, predstavljaju mogućnost kvalitativno novog načina učenja.