

Diversity of didactic approaches in teaching Geography

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Abstract

This paper discusses different didactic approaches in teaching geography as viewed through the prism of Kolb's experiential learning theory and Kolb's learning styles inventory. The survey, based on Kolb's model of a four-stage cycle (concrete, experience, reflective observation, abstract conceptualization and active experimentation) and a four-type definition of learning styles (diverging, assimilating, converging and accommodating), was carried out in Slovenia. It aimed to define the main preferences and obstacles encountered by teachers and their students towards the process of acquiring information, concepts and skills through the experiential learning and highlight the importance of considering learning styles in the act of choosing teaching and learning methods in geographical education.

Key words: geographical education, learning styles, experiential learning, teaching and learning methods, Slovenia.

Introduction

“Today teaching in most cases serves as a medium for the teaching content on a more abstract level, in form of various theories, laws and concepts, with an intention of students using their knowledge in their future personal or professional life” (Resnik Planinc, 2001).

This manner of teaching, without the integration of abstract conceptualization and an everyday life experience, cannot transform geographic teaching content into permanent knowledge, just into a temporary one. Permanent comprehension is achieved only, if we put life experience in the centre of the teaching-learning process.

Experience is gained from the environment. The environment, more exactly the Earth's surface, is the centre of geographical study. The mentioned parallel shows a tight intertwining of learning based on experiences and of learning geography. With this reason we decided to put experiences in the centre when forming didactical approaches to teaching geography with the purpose of improving the quality of lessons of geography and of achieving educational and pedagogic goals.

Learning Styles and Experiential Learning

Ways of gaining information, concepts and skills are known as learning styles.

“A learning style for an individual represents a characteristic combination of learning strategies (a specific combination of mental operations, which are used by a person regarding the demands of a concrete learning situation / task), in the majority of such situations. A part of a specific learning style, along with a combination of strategies, are also emotional and motivational elements (goals and intentions regarding learning) as well as various comprehensions about learning” (Marentič Požarnik, 1995).

A learning style is therefore a collection of learning strategies, which represent a sequence of operations used with learning, for example when learning a text. The student would start learning this text first just by skimming it, noting down some major points and then start linking them together. Another student would start learning the same text with detailed reading and underlining of the text and detailed memorizing of the text right from the start. David Kolb formed a model of learning styles based on his definition of the experiential learning process.

Kolb said that learning is a cyclic process, within which there is constant resolving of dialectic contrasts or better said the tension between two dimensions of perceiving: comprehension and understanding on the one side and active working and inner reflective observing on the other (Kolb, 1984).

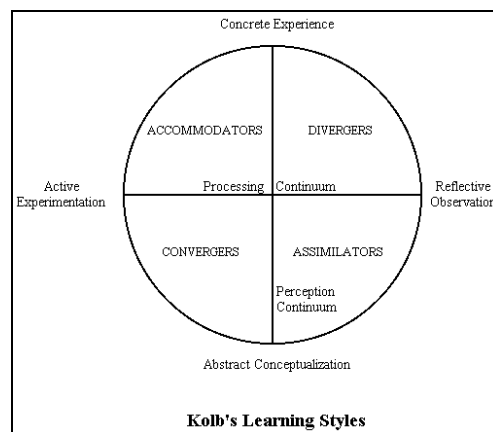


Figure 1: Kolb's model of learning styles (www2.plymouth.ac.uk/.../course/cognition3.htm)

With experiential learning everything starts with an experience, followed by observations and analyses and then supplementing the dictionary of abstract concepts and testing it within new circumstances. People give different emphasis on individual dimensions. Kolb formed four main learning styles on the basis of different poles of conception:

- the accommodative learning style puts emphasis on the concrete experience and active testing of ideas. People with this learning style are successful in carrying out plans in concrete situations, which demand constant adaptation to alternating circumstances. This also speaks in favour of the term accommodativity. Problems are solved on the principle of experiments and errors;
- the divergent learning style combines concrete experience and reflective observing. A person with this learning style is examining every situation from various points of view and can link various relationships together into a logical entity. These kind of people do well in completely new situations, which demand creativity in relation with still unknown / non-researched ideas;
- the convergent learning style is based on abstract thinking and active experimenting. People using this learning style are successful in solving closed problems or better said problems with only one single correct/best answer/solution. They always test their results;
- the assimilative learning style is based on abstract thinking and reflective observing. Its main distinction is inductive inference, which leads towards forming a theory or a model. People of the assimilative type are not interested in practical usage of their results. They judge their ideas only from the perspective of logic and accuracy (Sternberg, Grigorenko, 2001).

The potential of learning from experiences is in studying complex problems based on concrete experience.

“If we derive from the definition of geography: Geography is a science about the Earth's surface or even in more detail about the Earth's surface stratum. Geography should research the dispersion, influences and reciprocal interdependence of those natural and social factors, which are an important part of forming the Earth's surface stratum as a whole or just some of its spatial parts” (Vrišer, 1998).

We could say that in general geography is everything around us. An experience, which at first seems unimportant, can be through reflexion transformed into knowledge, which is a result of the transaction between social and personal knowledge within the process of learning. The more experiences a person has, the more flexible is his thinking and easier his searching and understanding of connections and interdependence between natural and social geographical occurrences and factors. The aforementioned capabilities of performing analysis, synthesis and evaluation are goals which are in Bloom's taxonomy the highest and the hardest to achieve, but are with such a strong science as is geography, inevitable.

“These complex goals cannot be achieved with learning, which would be based merely on gathering information but mostly with experiential learning, which is based on transforming every new idea, concept or theory in correlation with a personal experience, which means that new knowledge is a result of such reconstruction” (Marentič Požarnik, 1992).

Research Work

Purpose and methodology

The purpose of the first part of the research was to get to know different learning styles of students in the 2nd year of secondary school (gymnasium) in Slovenia and to try to find out whether teachers of geography use learning forms and methods adequate with various learning styles (research question). In the first part of the research we set the following:

- 1st hypothesis: The type of secondary school influences the learning style in geography lessons.

Within the research many methods were employed: the descriptive method, the causal-non-experimental method and the quantitative method. Techniques used were: questionnaires, quantitative analysis of data. The instruments used in the research were: Kolb's questionnaire about learning styles (adapted by Marentič Požarnik) and statistical data (the percentage of answers, χ^2 test).

A total of 293 Slovenian students of second year secondary school in a gymnasium programme were included in the first part of the research. At the time of the research, which took place between the 12th and 31st of March 2004, 1,5 % of students were 15 years old, 76,8 % 16 years old and 21,5 % 17 years old. The research included 51.9 % of girls and 48.1 % boys. 19.2 % of students included in the research were from the classical gymnasium, 9.6 % from the linguistic course gymnasium, 20.1 % from the technical-course gymnasium and 15.7 % from the secondary school for electronics and computer sciences.

In the second part of the research a didactical experiment was undertaken, in which we checked the usage of various ways of experiential learning within lessons of geography (a selection of learning methods and forms). In the second part of the research we set the following:

- 2nd hypothesis: students, who were working on the basis of experiential learning, will have better results than those students who were working on the basis of traditional learning
- 3rd hypothesis: students, who were working on the basis of experiential learning, will have better results regarding questions of a higher level than students who were learning on the basis of the traditional model of learning.

In the second part of the research the following methods were employed: the descriptive method, the causal-non-experimental method and the quantitative method. The technique employed was the quantitative analysis of data, with the use of following instruments: test, statistical calculations (t-test, average).

Two classes on the second year of Secondary School of Economics (gymnasium) took part in the experiment. The first class (27 students) discussed the topic (Mexico) on the basis of experiential learning, whereas the second class (23 students) dealt with the topic on the basis of classical, traditional learning. After both lessons were carried out a 10-minute testing about the discussed topic followed. The test was composed of six questions, with each question covering one level of cognitive area on the basis of Bloom's taxonomy.

Results and the interpretation of the first part of the research

In this section the interpretation of the 1st hypothesis and research question are presented.

- 1st hypothesis: the type of secondary school influences the learning style with geography as a school subject.

This hypothesis on the basis of all collected data is rejected ($\chi^2_{0.05} < \chi^2 (P=\alpha=0.05, g=15) 5.23$). The type of secondary school does not influence the learning style of the student with the subject geography. The predominant learning style of students in all schools was the divergent learning style, with the sole exception of the linguistic course gymnasium. The reason for the rejection of the correlation between the type of secondary school and the learning style could be caused by the inexpressive influence of school specialisation in the second year of secondary school.

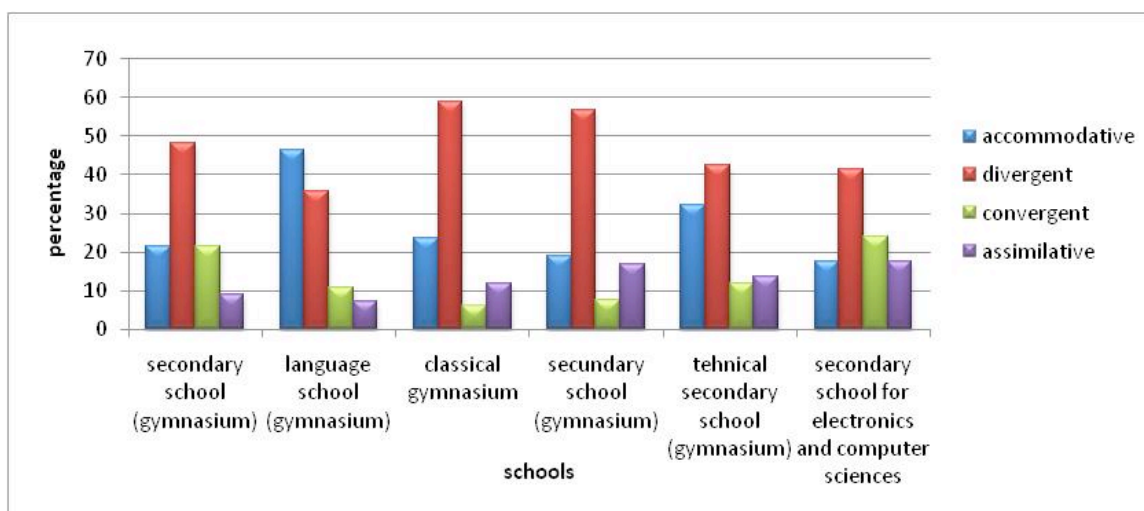


Figure 2: Learning styles regarding different types of school (Nemec, 2004).

Research question: Do geography teachers use the most suitable teaching forms and methods for different learning styles.

“Geography teachers in Slovenia in regards to structuring their lessons take into consideration mostly the teaching content and teaching aims. Students and their needs and interests are only in the third place” (Resnik Planinc, 2001).

A student is the one for whom lessons are organized, as written by Tomič (Tomič, 1997), which means that the ratio among the teaching content, teaching goals and learners' needs should be equal, if the goal is to establish an encouraging learning environment.

“Research results show that in 56,9 % of lessons in Slovenia teachers employ verbal and textual methods (the method of oral explaining of the subject, the method of discussion)” (Resnik Planinc, 2001).

For 48.1 % of all students the most adequate methods regarding their learning style would be methods of learning from experience (Nemec, 2004). Geography teachers in 54.9 % of cases used the frontal method of teaching (Resnik Planinc, 2000), whereas 73.4 % of students would, based on their learning style, gain most with group work or paired work (Nemec, 2004). The paired work/group work method was used by teachers only in 29.2 % cases (Resnik Planinc, 2000).

We can conclude that the choice of teaching methods and forms used by the teacher are not in accordance with learners' wishes and anticipations (Resnik Planinc, 2000; Resnik Planinc, 2006; Nemec, 2004). The success rate in teaching geography will rise only, if we will take the needs and interests of learners into consideration, when choosing teaching methods and forms. This can be done only with getting acquainted with various learning styles of learners.

Table 1: Learning methods and learning forms, which are most adequate for various learning styles (Nemec, 2004).

Learning style	%	Learning methods	Examples/ Characteristics of teaching methods	Teaching methods
Divergent	48,1	Methods of experiential learning	Brainstorming, group dynamics, sensitivity training, role play	Group work, pair work
Accommodative	25,3	Methods of experiential learning (Laboratory – experimental methods)	Stimulations, case studies	Group work, pair work
Convergent	13,7	Verbal and textual methods (the method of oral explaining)	Practical use of theoretical knowledge and process rules in regards to solving tasks with one single solution	Lockstep
Assimilative	13,0	Verbal and textual methods (exercises with texts)	A detailed study of literature and the comparison of starting points of various authors	Lockstep, individual work

Results and the interpretation of the second part of the research

In this section the interpretation of the 2nd and 3rd hypotheses are presented.

- 2nd hypothesis: Students, who will be learning on the basis of experiential learning, will achieve better results than those who will be learning on the basis of the old, traditional model.

Students, who were learning within the model of experiential learning, achieved better exam results (the average number of points achieved was 17,8) than those who were learning within the traditional model (the average number of points achieved was 14,9). Differences regarding the number of achieved points do exist, but are statistically not important ($t=0,890$; $t_{0.5(48)} = 2.05$). The hypothesis cannot be confirmed.

We should also stress that we made a one-time didactic experiment, for which we are sure, if for a greater sample, multiple repetitions and introduction of experiential learning to students, it would show that the aforementioned differences are actually statistically important.

- 3rd hypothesis: Students, who will be learning within the model of experiential learning, will achieve better results regarding questions of a higher level (analysis, synthesis, evaluation) than those students who will be learning within the traditional model.

Students, who were learning through experiences, achieved better results with questions of a higher level (average score 7,6) than those students who were learning in a traditional manner (average score 6.1). 70.9 % of students, who were included in the experiential learning, model, correctly answered all the higher level questions, whereas only 58.1% of students who were learning traditionally, managed the same. Differences in the score achieved do exist, but are statistically not significant (t-test). Reasons for such results have been mentioned before.

Conclusion

The summation of all research conclusions brings the following findings:

- The type of secondary school does not appear to affect the learning style of learners of geography;
- Geography teachers don't use teaching methods and forms which would be most adequate for certain learning styles;
- Students, who were learning on the basis of experiences, achieved better results than those who were learning in a more traditional manner, though differences between both are not statistically significant;
- Students, who were learning on the basis of experiences, achieved better results regarding questions of a higher level, than those students, who were learning within a more traditional model. Differences between both are not statistically significant.

Only with active research of learning styles will we be able to acknowledge their effects and their importance not only within the school, but also within our everyday lives. In the future it would be reasonable to continue with this sort of research work in the field of school geography in the following manner:

- “adapting” of textbooks to learning styles of students
- research of effects of experiential learning within the subject of geography
- introducing various learning styles to students.

From our everyday lives we gain experiences, which are the main factor of experiential learning, which is in a way the basis of all learning styles.

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