Economic Research-Ekonomska Istraživanja

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rero20

Teachers' assessment of active learning in teaching *Nature and Society*

Marina Diković & Tatjana Gergorić

To cite this article: Marina Diković & Tatjana Gergorić (2020) Teachers' assessment of active learning in teaching *Nature and Society*, Economic Research-Ekonomska Istraživanja, 33:1, 1265-1279, DOI: 10.1080/1331677X.2020.1728563

To link to this article: https://doi.org/10.1080/1331677X.2020.1728563

Published online: 19 Feb 2020.

ECONOMIC RESEARCH-EKONOMSKA ISTRAŽIVANJA
2020, VOL. 33, NO. 1, 1265–1279
https://doi.org/10.1080/1331677X.2020.1728563

Teachers' assessment of active learning in teaching *Nature and Society*

Marina Diković and Tatjana Gergorić

Faculty of Educational Sciences, Juraj Dobrila University of Pula, Pula, Croatia

ABSTRACT

The basic role of contemporary education is to guide pupils towards active learning and make them contribute to all segments of the teaching process. Since active learning leads towards efficient education, and since it encourages and develops knowledge, skills and attitudes, teachers should promote this type of learning from the beginning of one's schooling. This paper's aim was to study to what extent teachers conduct various teaching strategies in active learning in teaching Nature and Society and if the environment stimulates the active acquisition of knowledge, skills and attitudes. The research was conducted on a sample of teachers ($N = 184$) from three counties in the Republic of Croatia. The research results show that active learning and various teaching strategies are to a great extent conducted in a stimulating environment at the beginning of education, but at the same time they point to the need of a higher encouragement of this learning form, for pupils to be able to learn actively and create learning communities at later levels of education.

ARTICLE HISTORY
Received 19 September 2019
Accepted 7 February 2020

KEYWORDS
Teachers' opinion; stimulating environment and teaching strategies in active learning; Nature and Society; learning communities; knowledge; skills and attitudes

JEL CLASSIFICATIONS
I20; I21; I29

1. Introduction

Education is important for the social and economic growth of any community, so its position in that community should be a priority for any society. A large number of scientific and technological discoveries, a fast development of information and communication technologies, globalisation and obsolescence of information change the traditional way of life, but also learning patterns. Today's society seeks for activity in all areas, and therefore educational institutions should also encourage each individual's activity. The curricula should change faster so that the acquired knowledge be contemporary and functional for the future. The educational practice in schools

CONTACT Marina Diković mdikovic@unipu.hr
Međunarodni znanstveni skup 18. dani Mate Demarina – International Scientific Conference 18th Mate Demarin Days.
"Novi izazovi u odgoju i obrazovanju" – 'New Challenges in Education', Pula, May 30 and 31, 2019.
Thematic Area: Učenje, poučavanje i istraživanje u odgoju i obrazovanju/Learning, Teaching and Research in Education.

should be conducted so that the actualization of pupils' optimal abilities gets to the forefront, and not only the fulfilment of programmes which should be prepared in advance to satisfy pupils' needs (Bognar & Matijević, 2005).

Quality lifelong learning should lead to personal development using the necessary knowledge and skills to solve problems encountered in everyday life. The aim of contemporary learning is the development of various individuals' potentials which is achieved by activity. While traditional teaching is based on remembering facts and their revision and rehearsal, active teaching leads to learning and understanding by pupils' active cognitive engagement where new concepts and ideas mingle with the pupils' acquisition of knowledge through direct interaction with problem situations by which pupils gain experience and skills they will have at their disposal in similar future situations (Letina, 2015a).

The basic characteristic of contemporary teaching is the common work done by teachers and pupils at school which becomes an interactive learning centre. Educational institutions should use active learning to develop autonomous, creative, free and successful individuals and responsible citizens. Schools should encourage how to use the old, but find, create and choose new information. So people will be able to function at a higher metacognitive level at which they will be able to creatively solve life problems (Matijević, 2011). Today's learning should be differed from the traditional one characterised by traditional teaching where the main role was acted by the teacher.

The question of whether active learning should be viewed as a theory of learning or pedagogy is also 'significant in terms of the drivers for its implementation' (Drew & Mackie, 2011, 462). Teachers experience can be very important for using active approaches in teaching process. Some researches show that younger teacher apply modern technology in the function of active learning (Letina, 2016), use more computer in teaching Nature and Society (Letina, 2015b), are less considered competent for research in teaching (Borić, Škugor, & Perković, 2010) and others (e.g., Gazibara, 2016) describe that there is no difference in use of active learning given the teachers experience. There is a need to improve educational systems and the learning process with different methods and learning styles, which has not been sufficiently explored in educational practice, especially in the context of active learning (Gazibara, 2016).

Teachers' opinions on active learning or on teaching Nature and Society from different parts of the Republic of Croatia were explored (e.g., Borić et al., 2010; Lukša, Vuk, Pongrac, & Bendelja, 2014), but there were no indications of statistically significant differences.

2. The concept of active learning

Learning is said to represent relatively permanent changes in a person's behaviour which appear as the consequence of an individual's experience (Vizek Vidović, Rijavec, Vlahović Štetić, & Miljković, 2014). Memory is a consequence of the learning process. Learning is a form of knowledge and skills attainment which are retained and reproduced in all areas of a person's psycho-physical development (Vizek Vidović et al., 2014). Learning means acquiring experience. According to Dryden and

Vos (2001) learning is based on revealing, finding sense, immersion and self-evaluation. Terhart (2001, 147) states that 'learning implies an increase in the possibilities of facing one's environment and the self'. According to Brown (in Desforges, 2001) learning includes the creation of associations, thinking and solving problems by information processing. The sole expression 'learning' automatically leads to the performance of a certain activity (Bonwell & Eison, 1991).

According to Gazibara (2018), pupils are by their nature curious, but also creative beings who develop best through activities which should constantly be advanced. By learning we understand the external world, while the value of the learnt is in applying the same in new or similar situations (Omerović & Džaferagić-Franca, 2012). The best way of learning is doing what should be learnt. Morgan and Streb (2001) talk about 'learning by experiential learning' or 'learning by doing' and they explain that such learning helps pupils to apply the content in everyday life. Certain research has shown that educational procedures which include speech, listening, watching and practical pupils' activities are the successful ones (Šustek, 2016).

Didactics literature from the beginning of the 21st century is full of phrases such as 'child centred learning', 'active learning', 'child centred curriculum', etc. (Matijević, 2008, 188–189). Therefore, the basic role of contemporary education is to direct the child towards active learning. Such teaching is directed towards the child. Children have to know how to do, they have to develop critical thinking, they need to be capable of solving problems, be tolerant, caring and responsible (Stoll & Fink, 2000). This can be achieved only by efficient teaching strategies, procedures, adequate teaching methods and forms (e.g., work in groups, *ex cathedra*, individual work, etc.) at the time they become active individuals. Delors, Al Mufti, Amagi, Corneiro, and Jakovlev (1998) put an emphasis on the pillars of education: *learning to know*, *learning to do*, *learning to live together (learning to live with others)* and *learning to be*. 'Learning to do' is especially important for this research because a question could be asked: Is it possible to learn without various pupils' activities during the teaching process? In the didactics of pupil centred teaching the aims which a pupil should achieve are pointed out, while emphasis is put on skills during teaching activities (Matijević, 2008). According to Gazibara (2013, 375) 'an imperative for the development of autonomous, creative, free, successful individuals and responsible citizens' is the sole active learning where self-determination, autonomous work, self-organisation and self-management are highlighted thus encouraging various models of active learning 'as a constructivist model of learning and teaching directed towards action (integrative learning), pupil centred learning, holistic learning, experiential and cooperative learning' for a more active acquisition of knowledge, development of skills and formation of attitudes.

Pešikan (2010) gives an overview of the contemporary aspect of the school learning and teaching nature. According to Peko and Varga (2014) active learning is the one where a pupil can achieve independence and self-regulation. This will lead to the application of various learning strategies, but also specific cognitive skills which leads to noticing the important, analysis of facts and their comparison and the correlation with the already acquired knowledge. An overall critical analysis and the formation of one's own attitudes enables long-term memory. Active learning includes activities

which seek that the pupils ask questions, learn from actual situations, do research, critically evaluate, cooperate, show mutual respect and build independence. Active learning is based on coping with new, unpredicted situations, on looking for answers, on research and on openness to changes (Gazibara, 2018). It incites cognitive and divergent thinking, metacognitive processes and higher levels of learning which means that, besides the information content, it is more important to teach pupils to efficiently communicate, use the sources of knowledge and critically analyse them, as well as to reflect upon consequences. Since the aim of today's learning is to develop individuals' different potentials, this will be achieved by their activity (Šustek, 2016).

'Education is not possible without pupils' active participation in all phases and aspects of the educational process' (Bognar & Matijević, 2005, 32). The current knowledge and skills have a shorter life span. 'The teaching curriculum emphasizes the following pupils' competences: learning to learn, communicate skilfully, think critically, set goals, clarify problems, work in teams, be computer literate, analyse and transform information and act responsibly' (Jurčić, 2012, 36). The aforementioned is achieved through active learning. By introducing creative and innovative activities into the educational process, the teacher guides pupils towards research, development of skills, acquisition of knowledge thus training them for life and lifelong learning (Jurčić, 2012). In many ways, active learning guarantees the active participation of pupils in all parts of the teaching process with the aim of developing pupil oriented teaching. Michael (2006) claims that it is very important to form an environment supporting such learning and use teaching strategies which will activate pupils in their knowledge, skills and attitudes acquisition. Pupils will thus become active members of the community promoting the community of learning (Pavlović Breneselović, 2010; Somolanji & Bognar, 2008).

3. Reasons for the promotion of active learning in teaching Nature and Society

Nature and Society is an interdisciplinary subject that integrates the scientific knowledge of natural science, socio-humanistic and technical-informatics fields. It is taught from first to fourth level (age 6–10) in primary school in Croatian educational system. The key competences important for learning and teaching the subject of Nature and Society are developed in interdisciplinarity due to the fact that the sole area of this subject is linked to many areas of science (De Zan, 2005). Primary school teachers organise and conduct six subjects individually which enables an interdisciplinary approach to teaching which is natural for pupils since a child experiences the world as a whole. In the subject of Nature and Society the classroom is the real world because education is efficient only when theory and practice are correlated. The teaching contents in Nature and Society in classroom teaching can be realised in and out of the classroom, so that outdoor and out-of-school homeland teaching of Nature and Society is a constituent part of work and should not be neglected (Anđić, 2007).

By applying contemporary methodological procedures in teaching Nature and Society experiential and research learning is introduced with the help of vivid teaching aids which will increase the pupils' interest for the study of Nature and Society

and consolidate the belief about the reality and truthfulness of the acquired knowledge (Ševanić Pavelić & Vlasac, 2006). The plasticity in teaching Nature and Society is achieved by the observation of nature, experiments and practical work.

The Nature and Society teaching should be based upon experiential learning which will encourage pupils to gain knowledge and develop pupils' skills and attitudes, i.e., autonomy, individuality and responsibility. Time spent outdoors implies verbal methods which develop pupils' critical thinking. In outdoor teaching pupils acquire knowledge by critical observation, understanding the interdependence of nature and people, understanding the narrower and wider surrounding. By spending time out of the classroom, pupils can correlate the acquired knowledge with nature and life circumstances. According to Anđić (2007), teaching Nature and Society out of the classroom helps understanding of people's dependence on nature, its exploitation, encourages pupils' creativity because teaching becomes learning through 'adventure' and 'play', enables correlation with other school subjects, and makes such learning multifunctional and interdisciplinary.

Active learning includes pupils' research-based teaching, project teaching, group or team work, pair work, experiential learning, problem teaching, simulations, trips, excursions, school in nature, productive and socially useful work. Research-based teaching can be organised as individual, group or project work. It encourages pupils for individual research and findings by which they reach certain cognitions and develop a critical relation towards facts, supports curiosity, creativity and active participation. Research-based learning makes pupils understand that truth is revealed by research, not only by the reception of information. Such teaching is interesting and makes possible experiential learning which leads to permanent knowledge (Borić, 2009), supports creative research, findings, autonomy, persistence and cooperation (Šustek, 2016).

Teachers are often bothered by pupils talking during active learning, but the children's natural need for speech could be solved by pair or group work. Pupils thus get in the position to cooperate, respect individual differences among each other, develop autonomy and the culture of dialogue. By cooperative learning pupils gain the ability of observing things from other pupils' perspective accepting various possibilities by which other pupils can contribute to the teaching situation. The knowledge acquired by cooperative learning is operative, applicable and permanent (Jurčić, 2012).

Group work is carried out by pupils who seek for and use information, organise work, develop communication, learn to work for the group, not for themselves. At the same time, this is a natural form of learning for children since they also tend to get into groups when playing (Omerović & Džaferagić-Franca, 2012). Group teaching reaches its full potential when it becomes a routine through habit and normalisation (Terhart, 2001).

By experiential learning pupils form their personal answers to a certain situation freely. Simulations are also a form of active learning and they are used when participation in real-life situations is not possible due to a certain reason. They prepare pupils for the participation in real-life situations by role play, games with rules, etc.

Today's children are children of the media and they lose contact with nature more commonly; a large number of them has never seen a domestic animal, they do not recognise a dandelion on a field, they do not know what a beech is. Why look at

domestic animals on pictures when we can go to see them? That is why active learning includes trips, excursions, outdoor schools, pupils' productive and socially useful work, as well as teaching activities at the school ground.

According to Bognar and Matijević (2005), trips and excursions are an excellent motivating medium to support activities linked to the learning content and to the advancement of social connections among pupils. When, due to various reasons, learning in a natural environment is impossible, a small piece of nature should be brought into the classroom: plant parts, earth samples, water, collections of insects, herbariums etc. Meaningful learning for children is the one which brings significance to their present life (Bognar & Matijević, 2005). The most efficient learning is learning with fun. According to Dryden and Vos (2001), playgrounds, forests, zoos and nature are the best school. An active pupil acquires knowledge actively, because children love to research, experiment, and create. When pupils are fully involved in learning, they easily acquire and remember even complex information (Dryden & Vos, 2001). Although classrooms are commonly not a natural learning environment, they should encourage active learning. That is why they need to be well lighted, with space for pupils' works, equipped with media and functional playing and reading corners, flowers, a functional arrangement of desks. A positive educational climate supports the development of social and emotional aspects of learning and relationships (Gazibara, 2018). The use of strategies promoting active learning changes the way of communication in the classroom to a great extent (Bonwell & Eison, 1991).

Applying active learning in teaching Nature and Society develops pupils' natural-scientific and communication competences, the civic competence, entrepreneurship and initiative, as well as digital competences, all being the foundations of learning this subject's contents (Letina, 2016).

4. The role of teachers in the promotion active learning

Although active learning has positive effects, teachers avoid this type of teaching due to the strong impact of the educational tradition, the time necessary to prepare this form of learning, the lack of material and equipment (Letina, 2016). The key to changes lies in initial education/teacher training. But it is not enough to learn new techniques; they should also be exercised as to be passed on to others. Therefore, teacher training faculties should introduce the integrative fast learning principles (Kronish, 1995, in Dryden & Vos, 2001) and train future teachers to be able to conduct active learning (O'Grady, Mooney Simmie, & Kennedy, 2014). Letina (2013, 353) claims that it is necessary to 'consider, reassess and define the teachers' key competences acquired by students during their formal education, both in the methodology of Nature and Society teaching, and in other courses necessary for a professional and specialist organisation of contemporary teaching'.

Besides training future teachers to apply active learning, it is also necessary to ensure the conditions for its organisation and conduction. To modernise teaching it is necessary to have the support of the whole educational policy in applying the active learning strategy. The educational process is thus based on the acquisition of applicable and operative knowledge, on the development of abilities and attainment of

democratic values, at the same time preparing pupils for after school life and work at the time of fast social and scientific changes and bitter market competition (Jurčić, 2014). It is possible to achieve that with highly competent teachers because they are the ones who should be at the centre of changes in the educational system.

The teacher is the main bearer of all changes in education (Cindrić, 2003), so the role of the teacher is extremely important. Teachers guide, direct, monitor, educate, they are organisers and creators, mentors and leaders, know that emotions have a great influence on behaviour so the creation of quality emotional and social climate in the classroom is fundamental for learning and good communication ensuring active work for all pupils (Omerović & Džaferagić-Franca, 2012). Teachers should let their pupils work actively so that they could acquire contents by doing, and later on apply it. By active learning they solve real problems using their own experience.

Stoll and Fink (2000, 37) explain that 'a good school does not appear as a frozen dinner ready to eat after one puts it in the microwave for fifteen minutes, but as a result of slowly cooking the carefully measured ingredients'. Therefore, active learning should gradually be introduced in the teaching process. Matijević (2008) describes that by active learning pupils become builders and creators of new learning and knowledge. According to Becker and Riel (1999 in Letina, 2015a, 158) 'the teachers' predominant philosophy of teaching is mostly constructivist, but the school bureaucratic culture and public expectations of measurable documentation of pupils' achievement are a serious threat to the possibility for most teachers to conduct constructivist teaching in everyday practice'.

5. Research methodology

5.1. Aim

The research aim was to explore teachers' use of active learning in teaching Nature and Society.

5.2. Research problems

1. Check if there is a correlation between the teachers' years of service in schools and their opinion about the stimulating environment.
2. Check if there is a correlation between the teachers' years of service in schools and teaching strategies that they implement in their work.
3. Check if there is a correlation between the teachers' opinion about the stimulating environment during active learning and teaching strategies used in teaching Nature and Society.
4. Check the correlation between the city teachers teach in and the use of various teaching strategies in active learning.

5.3. Hypotheses

H1 Teachers' years of service are positively correlated with their opinion about the stimulating environment for active learning. Teachers with more years of service

estimate the environment in their classroom/school as more stimulating than their colleagues with fewer years of service.

H2 Teachers' years of service are positively correlated with the use of teaching strategies. Teachers with more years of service use more different teaching strategies in active learning in teaching the subject Nature and Society.

H3 Teachers who think that there are more stimulating conditions for the active learning environment use in their teaching a larger number of various strategies.

H4 There is no correlation among teachers' opinions in relation to the city they teach in and the estimation of the stimulus of the environment for active learning.

H5 There is no correlation among teachers' opinions in relation to the city they teach in and the use of various teaching strategies.

5.4. Sample

As many as 184 teachers teaching grades 1–4 of primary school (6–10 years old) participated in the research, namely 183 female teachers and one male teacher. There were 41 teachers working in the first grade, 44 of them worked in the second, 41 in the third and 38 teachers taught in the fourth grade of primary school. There were 18 teachers working in the combined division or after school care.

The average amount of service years is 19 ($M = 18.70$; SD = 11.42) with a span from 1 to 43 years of service in school.

Teachers from five cities and three counties participated in the research. The largest number of teachers came from primary schools in Pula ($N = 68$; 37%), then Labin ($N = 33$; 17.9%) and Poreč ($N = 31$; 16.8%). There were 29 teachers from Karlovac schools (15.8%) and 23 of them were from primary schools in Slavonski Brod (12.5%). Most teachers participating in the research were from the County of Istria ($N = 132$; 71.7%), 29 of them were from the Karlovac County (15.8%) and 23 were from the Brod-Posavina County (12.5%).

5.5. Measuring instruments

For the needs of this research, upon the author's consent, a part of the *Questionnaire of Active Learning Didactic and Methodical Determinants* (Gazibara, 2018) was used. In her comprehensive study of active learning as the didactic and methodical paradigm of contemporary teaching from the pupils and teachers' perspective, the author tried to gain an insight into the pupils and teachers' estimations of the application and understanding of active learning in contemporary teaching.

Two scales considered to be appropriate to show results important for the promotion of active learning in teaching Nature and Society were taken over. The first scale in this research refers to the active learning environment. The five degree Likert scale was offered for the estimation of 14 statements about the environment, with 1 expressing 'I do not agree' and 5 being 'I agree'. Some of the statements from the first scale are: *the classroom looks like and has an atmosphere as a life environment (e.g., flower, aquarium, pictures/photographs, personal collections, carpets, armchairs, curtains, etc.)*; *the environment helps pupils to be reflexive/to think*; *multisensory*

experience is encouraged; *various senses (sight, hearing, touch, smell) are combined to words, pictures, sounds, gestures, movements (multimodality of the environment).* The second scale relates to teaching strategies, teaching methods, procedures and forms linked to active learning. There were 20 statements offered in the five-degree Likert scale on the estimation of the teaching strategies, teaching methods, procedures and forms frequency of use where 1 meant 'never' and 5 meant 'always'. Teachers were offered teaching strategies, teaching methods, procedures and forms of work important for the development of pupils' competences in Nature and Society, like, for example *creative learning techniques (e.g., brainstorming, expression through creative media: music, pictures)*; *practical methods (method of practical works, conduction of experiments)*; *method of exemplary learning (work upon a good example)*; *learning by movement (e.g., kinaesthetic learning stile, homeland dance)*; *outdoor, field teaching (teaching out of the classroom, trips, excursions).*

5.6. Procedure

Teachers participating in the research were from randomly chosen primary schools. Before the application of the questionnaires the school's head-teachers were asked to give their consent for this research to be conducted in their school. Data were collected at teachers' meetings in schools or at county teachers' meetings, and it took ten minutes to fill the questionnaire in. The teachers filled it in anonymously.

6. Results and discussion

6.1. Correlation between teachers' years of service and their opinion on the stimulating environment and teaching strategies

It was checked if there was a correlation between teachers' years of service in school and their opinion about the stimulating environment in school. It was also checked if there was a correlation between teachers' years of service in school and their teaching strategies.

The correlation between teachers' years of service with their opinion about a stimulating environment and teaching strategies was calculated by the Pearson correlation coefficient (r). Results show that no correlation was determined between teachers' years of service in school with either their estimation of the stimulating environment ($r = -0.03$; $p > 0.05$) or the use of teaching strategies ($r = 0.04$; $p > 0.05$). Therefore, hypotheses H1 and H2 have not been confirmed. This is explained by the fact that teachers, regardless of their years of service, estimate the environment in their classroom/school as stimulating ($M = 4.12$ of 5; SD = 0.71), and that they use more different teaching strategies in active learning in teaching the subject Nature and Society ($M = 3.94$ of 5; SD = 0.78). The reason for such findings can be in the presumption that teachers, both starters in the teaching profession and those with years of experience in education, are always highly motivated for the conduction of research teaching (also proven by Borić et al., 2010). However, Anđić (2007) determined in her research that teachers with more years of experience take more time to decorate the external part of the school with their pupils. The results of the research conducted by

Baranović, Štibrić, and Domović (2007) show that teachers with more years of service in schools participate more in school activities promoting the entrepreneurial competence. According to research (Vican, 2012, 75) 'the positive teachers' estimation of the entrepreneurial urge implies the existence of the entrepreneurial spirit in primary schools', and it is thus necessary to promote the entrepreneurial competence in education by active learning.

6.2. Correlation between the estimation about the active learning environment and the use of various strategies in the teaching process

It was checked if there was a correlation between the teachers' opinion on the stimulus of the environment during active learning and the teaching strategies used in teaching Nature and Society.

The results were firstly processed by descriptive statistics. Teachers are of the opinion that the environment which mostly promotes active learning in teaching Nature and Society is *the space enriched with pupils' works* ($M = 4.74$; SD = 0.62), while the least stimulating are *places anticipated for special forms of pupils' work* (e.g., work in groups, ex cathedra, individual work, etc.) ($M = 2.92$; SD = 1.33). In this research teachers estimated the environment in the classroom/school as stimulating because the mean values for individual statements have a span from $M = 2.92$ to $M = 4.74$, where only five statements were estimated with a grade lower than $M = 4.00$. In the research conducted by the author Gazibara (2018) the lowest teachers' estimation was given to the appearance and atmosphere of the classroom as a life space and the statement representation of anticipated spaces for pupils' special forms of work which was also estimated low in this research. The support and development of a warm and positive atmosphere ($M = 4.71$; SD = 0.53) and support of pupils' participation in learning ($M = 4.52$; SD = 0.69) was characterised as highly valuable in both the Gazibara research (2018) and the present one. The results obtained in this research indicate the real situation in schools. It is, namely, an assumption that pupils' works, always a sufficient number of them in schools because pupils express themselves that way, indicate the activity of pupils in learning. This can be an indicator of active learning. For active learning it is necessary to own additional special spaces, but that requires financial means which schools cannot ensure always and at any time. Therefore, Gazibara (2018, 194) also notices the emerging problem and points to the 'lack of financial support and conditions for the advancement of the environment'.

Teaching strategies and methods most commonly used as part of active learning are, according to teachers, *the moral education method: moral learning (acceptable and unacceptable behaviour)* ($M = 4.55$; SD = 0.71) and *the programmed learning/teaching method (gradual improvement in learning, from the easier to the more difficult level)* ($M = 4.41$; SD = 0.73). *Computer aided learning* is according to teachers a teaching strategy (approach) which is the least used ($M = 3.11$; SD = 1.12). It is assumed that this teaching strategy (approach) also indicates the real situation. Although the digital competence has been emphasized as important for pupils for a long time, some schools still do not have computers which could be used by pupils in active learning and teaching. Nature and Society needs some other strategies, for

example, outdoor homeland teaching (Anđić, 2007), the application of vivid teaching aids (Števanić Pavelić & Vlasac, 2006), autonomous research and findings (Borić, 2009), project learning (Šustek, 2006), etc. *Learning by movement* ($M = 3.56$; SD = 0.94) and *outdoor field teaching* ($M = 3.93$; SD = 0.87) was estimated as medium in this research, while both strategies obtained low grades in the research conducted by the author Gazibara (2018). The assumption for such a result is that in the research conducted by the author Gazibara the participating teachers were higher grades subject teachers and high school teachers, and that this strategy is more applied at the beginning of the pupils' education, i.e., in teaching Nature and Society.

Pair work ($M = 4.24$; SD = 0.69) and *group work* ($M = 4.19$; SD = 0.76) as social forms of work in active learning were highly evaluated in this research, which was also confirmed by the research conducted by the author Gazibara (2018). Teachers have a great role in the promotion of learning activities and their choice of environment and teaching strategies can improve pupils' success (Hui, Mai, Qian, & Kwok, 2018).

The *H3* hypothesis was checked, namely that those teachers who considered that there were more stimulating conditions for an environment in active learning in teaching Nature and Society also used more different strategies. There is a positive correlation ($r = 0.25$; $p = .001$) among teachers' opinions about the stimulating environment for active learning and the use of various teaching strategies in the teaching process. Although the correlation is weak,[1] it can be concluded that those teachers who think that it is important to stimulate a good environment use more different teaching strategies in active learning. This confirms the third hypothesis (*H3*). To create active learning conditions, the environment should be stimulating which is emphasized by authors who explain that in that sense different teaching strategies will also be used (Michael, 2006). Pupils will then be able to not only acquire knowledge, but also skills, form attitudes and participate in lifelong learning as to improve the actively acquired knowledge (Matijević, 2008).

6.3. Correlation between the city in which teachers teach and their opinion about the stimulating environment and teaching strategies

The correlation was checked between the city the teachers teach in and the stimulus offered by the environment for active learning, as well as the correlation between the city those teachers teach in and the use of various teaching strategies in active learning as part of the subject Nature and Society.

The contingency coefficient was calculated for two variables: cities and use of strategies in active learning. The average result was defined as $M \pm 1SD$. Three strategy categories were thus obtained: under average $< M - 1SD$, which is less than 70, average $= M \pm 1SD$, which is from 70 to 89 and above the average $> M + 1SD$, which is higher than 89. The three environment categories are: under the average $> M - 1SD$, which is less than 50, average $= M \pm 1SD$, which is from 50 to 64 and above the average $> M + 1SD$, which is higher than 64.

A statistically significant association was determined between the city teachers work in and the various teaching strategies (the contingency coefficient is 0.33;

$p < 0.05$). Although, for example, Bilač and Tavas (2011) research show that, when analysed by regions, there is no difference in teachers' continuing education provided by the Ministry and Teacher Training Agency, according to our research results it can be concluded that teachers from Labin schools use various teaching strategies above the average frequency (35.48% of teachers), as well as those from Pula schools (22.81% of teachers).

A statistically significant association was determined between the city teachers teach in and the estimation of the environment stimulus (the contingency coefficient is 0.47; $p < 0.05$). Karlovac teachers have the greatest consideration of their environment being stimulating in active learning in Nature and Society (48.28% teachers), while teachers from Poreč (44.83% of teachers) estimate their environment the least stimulating when compared to other teachers.

The fourth (H4) and fifth (H5) hypotheses are thus rejected. Pursuant to the obtained results it can be concluded that there is a correlation between the teachers' opinion regarding the stimulus of the environment for active learning, as well as a correlation between the teachers' opinion regarding the city they teach in and the use of various teaching strategies. Moreover, Nature and Society methodologists (De Zan, 2005) explain that Nature and Society is learnt and taught in interdisciplinarity because the area of this subject is connected to many areas of science. Experiential and research learning prevail (Ševanić Pavelić & Vlasac, 2006) so it is more likely that pupils will apply the knowledge and skills in everyday situations and in other subjects.

7. Conclusion

At the commencement of their educations pupils should be trained for active learning to be able to do team research and become active members of the learning community in the future. Some authors (Pavlović Breneselović, 2010; Somolanji & Bognar, 2008) describe the notion of the learning community which could be related to this research. Namely, to make possible a stimulating environment for active learning can in many ways guarantee pupil centred teaching, pupils' competences are developed in an efficient and quality manner and they acquire knowledge themselves, developing skills and forming attitudes in the end.

This research shows that even if there is a difference in the conduction of various strategies and evaluation of the environment stimulus in relation to the place of residence, teachers are highly motivated for the conduction of active learning, and the most common way they create a stimulating environment for active learning is by exhibiting pupils' works and by supporting a warm and positive atmosphere regardless of the number of service years. Learning is conducted from familiar contents to the unfamiliar, or from simpler contents to more difficult ones, and they support pupils' participation in learning. They also conduct outdoor teaching, pair and team work. As expected, they mostly teach pupils how to behave properly. However, the data are disastrous in respect to the fact that computer aided learning is still not available in many schools which leads to the conclusion that schools are still not ready to a fast adaptation to changes in everyday life.

Research results show that classrooms do not have spaces for pupils' special forms of work because schools were mostly designed for frontal forms of work. Classrooms should be modernised for teachers to be able to conduct active learning and prepare pupils for life. In the past people gained knowledge in nature and then complemented it by living and through generations. This leads to the conclusion that the primary sources of knowledge are the natural and social environment so it is expected that certain goals of Nature and Society teaching are realised in such an environment. Pupils will thus connect to nature, understand it and transfer knowledge, skills and attitudes in their everyday life. According to Gazibara (2018) active learning is not all the aforementioned but also the approach which sees pupils as persons with feelings, needs, rights and goals.

To conclude, teachers at schools conduct active learning in teaching Nature and Society as much as possible, but education does not keep up with the fast changes in the contemporary lifestyle. Schools and the educational system should be modernised, and teachers trained so that children could have the conditions to subsist in this world of fast and constant changes, to know and be able to achieve their goals and rights and thus build themselves up as whole beings.

Note

1. According to the source (Colton, 1974), the correlation is weak from $r = \pm 0.26$ to ± 0.50.

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

Anđić, D. (2007). Učenje i poučavanje prirode i društva na otvorenim prostorima. *Metodički Obzori: časopis za Odgojno-Obrazovnu Teoriju i Praksu*, *2*(3), 7–23.

Baranović, B., Štibrić, M., & Domović, V. (2007). Obrazovanje za poduzetnost: perspektiva osnovnoškolskih učitelja i nastavnika. *Sociologija i Prostor*, *45*(3–4), 339–360.

Bilač, S., & Tavas, D. (2011). Teachers'(dis) satisfaction with continuing education. *Metodički Obzori/Methodological Horizons*, *6*(1), 21–35. doi:10.32728/mo.06.1.2011.02

Bognar, L., & Matijević, M. (2005). *Didaktika*. Zagreb: Školska Knjiga.

Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom* (1991 ASHE-ERIC Higher Education Reports). ERIC Clearinghouse on Higher Education, the George Washington University, One Dupont Circle, Suite 630, Washington, DC 20036-1183.

Borić, E. (2009). *Istraživačka nastava prirode i društva – priručnik za nastavu*. Osijek: Učiteljski Fakultet.

Borić, E., Škugor, A., & Perković, I. (2010). Samoprocjena učitelja o izvanučioničkoj istraživačkoj nastavi prirode i društva. *Odgojne Znanosti*, *12*(2(20)), 361–371.

Cindrić, M. (2003). Re)afirmacija učiteljske obrazovne kompetencije. In H. Vrgoč (Ed.), *Odgoj, obrazovanje i pedagogija u razvitku hrvatskog društva: zbornik radova Sabora pedagoga Hrvatske* (pp. 84–92). Zagreb: Hrvatski Pedagoško-Književni Zbor.

Colton, T. (1974). Regression and correlation. *Statistics in Medicine*, *189*, 218.

De Zan, I. (2005). *Metodika nastave prirode i društva*. Zagreb: Školska Knjiga.

Delors, J., Al Mufti, I., Amagi, I., Corneiro, R., & Jakovlev, B. (1998). *Učenje: blago u nama* (Izvješće UNESCO-u Međunarodnog povjerenstva za razvoj obrazovanja za 21. stoljeće). Zagreb: Educa.

Desforges, C. (Ed.). (2001). *Uspješno učenje i poučavanje: psihologijski pristupi*. Zagreb: Educa.

Drew, V., & Mackie, L. (2011). Extending the constructs of active learning: implications for teachers' pedagogy and practice. *The Curriculum Journal*, *22*(4), 451–467. doi:10.1080/09585176.2011.627204

Dryden, G., & Vos, J. (2001). *Revolucija u učenju: kako promijeniti način na koji svijet uči*. Zagreb: Educa.

Gazibara, S. (2013). Aktivno učenje: put prema uspješnom odgoju i obrazovanju. *Školski Vjesnik: časopis za Pedagogijsku Teoriju i Praksu*, *62*(2–3), 375–389.

Gazibara, S. (2016). Aktivno učenje u multimodalnom okruženju. *Školski Vjesnik: časopis za Pedagogijsku Teoriju i Praksu*, *65*(Tematski broj), 323–334.

Gazibara, S. (2018). *Aktivno učenje kao didaktičko-metodička paradigma suvremene nastave* (Doctoral dissertation).

Hui, Y. K., Mai, B., Qian, S., & Kwok, L. F. (2018). Cultivating better learning attitudes: A preliminary longitudinal study. *Open Learning: The Journal of Open, Distance and e-Learning*, *33*(2), 155–170. doi:10.1080/02680513.2018.1454830

Jurčić, M. (2012). *Pedagoške kompetencije suvremenog učitelja*. Zagreb: RECEDO d.o.o.

Jurčić, M. (2014). Kompetentnost nastavnika–pedagoške i didaktičke dimenzije. *Pedagogijska Istraživanja*, *11*(1), 77–91.

Letina, A. (2013). Kompetencije učitelja primarnoga obrazovanja za djelotvornu organizaciju i izvođenje nastave prirode i društva. *Život i Škola: časopis za Teoriju i Praksu Odgoja i Obrazovanja*, *59*(29), 341–356.

Letina, A. (2015a). Učestalost primjene konstruktivističkih pristupa učenju u nastavi prirode i društva. *Život i Škola: časopis za Teoriju i Praksu Odgoja i Obrazovanja*, *61*(2), 157–168.

Letina, A. (2015b). Računalom podržana nastava prirode i društva. *Napredak: časopis za Pedagogijsku Teoriju i Praksu*, *156*(3), 297–317.

Letina, A. (2016). Strategije aktivnog učenja u nastavi prirode i društva. *Školski Vjesnik: časopis za Pedagogijsku Teoriju i Praksu*, *65*(1), 1–31.

Lukša, Ž., Vuk, S., Pongrac, N., & Bendelja, D. (2014). Tehnologija u nastavi prirode i društva u osnovnoj školi. *Educatio biologiae: časopis edukacije biologije*, 1(1), 27–35.

Matijević, M. (2008). Projektno učenje i nastava. In B. Drandić (Ed.), *Nastavnički suputnik* (pp. 188–225). Zagreb: Znamen.

Matijević, M. (2011). Škola i učenje za budućnost. In A. Jurčević Lozančić & S. Opić (Eds.), *Škola, odgoj i učenje za budućnost* (pp. 9–22). Zagreb: Učiteljski Fakultet u Zagrebu.

Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education*, *30*(4), 159–167. doi:10.1152/advan.00053.2006

Morgan, W., & Streb, M. (2001). Building citizenship: How student voice in service-learning develops civic values. *Social Science Quarterly*, *82*(1), 154–169. doi:10.1111/0038-4941.00014

O'Grady, A., Mooney Simmie, G., & Kennedy, T. (2014). Why change to active learning? Preservice and in-service science teachers' perceptions. *European Journal of Teacher Education*, *37*(1), 35–50. doi:10.1080/02619768.2013.845163

Omerović, M., & Džaferagić-Franca, A. (2012). Aktivno učenje u osnovnoj školi. *Metodički Obzori/Methodological Horizons*, *7*(1), 167–181. doi:10.32728/mo.07.1.2012.13

Pavlović Breneselović, D. (2010). Od tima do zajednice učenja. *Pedagogija*, *2*, 236–246.

Peko, A., & Varga, R. (2014). Aktivo učenje u razredu. *Život i Škola: časopis za Teoriju i Praksu Odgoja i Obrazovanja*, *60*(31), 59–73.

Pešikan, A. (2010). Savremeni pogled na prirodu školskog učenja i nastave: socio-konstruktivističko gledište i njegove praktične implikacije. *Psihološka Istraživanja*, *13*(2), 157–184.

Somolanji, I., & Bognar, L. (2008). Kreativnost u osnovnoškolskim uvjetima. *Život i Škola: časopis za Teoriju i Praksu Odgoja i Obrazovanja*, *54*(19), 87–94.

Ševanić Pavelić, M., & Vlasac, I. (2006). Postignuća učenika primjenom različitih metoda i oblika rada u nastavi prirode. *Život i Škola: časopis za Teoriju i Praksu Odgoja i Obrazovanja*, *52*(15–16), 155–165.

Stoll, L., & Fink, D. (2000). *Mijenjajmo naše škole: kako unaprijediti djelotvornost i kvalitetu škola*. Zagreb: Educa.

Šustek, I. (2016). Aktivno učenje u kontekstu odgoja i obrazovanja. *Život i Škola: časopis za Teoriju i Praksu Odgoja i Obrazovanja*, *62*(3), 99–108.

Terhart, E. (2001). *Metode poučavanja i učenja: uvod u probleme metodičke organizacije poučavanja i učenja*. Zagreb: Educa.

Vican, D. (2012). Samoprocjena nastavnika o poduzetničkom porivu–doprinos stvaranju poduzetničke kulture u osnovnoj školi. *Acta Iadertina*, *9*(1), 61–78. doi:10.15291/ai.1261

Vizek Vidović, V., Rijavec, M., Vlahović Štetić, V., & Miljković, M. (2014). *Psihologija obrazovanja – drugo, izmijenjeno i dopunjeno izdanje*. Zagreb: IER-Vern.