

Teachers' Attitudes on the Development of Critical Thinking by Experiential Learning

Luka Pongračić

University of Slavonski Brod,
Department of Social Sciences and Humanities, Croatia
lukapongracic2@gmail.com

Ana Maria Marinac

University of Slavonski Brod,
Department of Social Sciences and Humanities, Croatia
marinac.anamaria98@gmail.com

Summary. The content that is taught in school, but also outside it, needs to be connected with real (everyday) life. Teachers need to turn content into experience for their students, which is no easy task. The aim of this research is to determine the extent to which primary school teachers, secondary school teachers, and higher education teachers use this method in their work in order to develop critical thinking in their students and how much importance they attach to it during their work in teaching. A questionnaire on critical thinking and experiential learning ($N = 168$) was conducted, the results of which were analyzed with regard to gender, level of education, work experience, diluted to teach the work environment. The results show that the method of experiential learning with the aim of developing critical thinking is used to a greater extent in teaching (mean = 4.17, SD = 0.55). Differences were observed only with respect to work experience, where teachers with more work experience work statistically significantly more ($F = 0.027$; $t = 3.31$; $p < 0.01$) on developing critical thinking. On the other hand, the need for further awareness, especially of younger teachers, on how to apply experiential learning and what it is important for has been proven. This research has shown the already recognized importance and aspiration to develop critical thinking in students at all levels of education, which will ultimately result in both developed and self-aware individuals and society. It is worrying that about 40% of teachers still do not conduct interactive learning on a regular basis, but it is encouraging that most teachers still recognize how important it is and apply it on a daily basis.

Keywords: critical thinking, experience, learning, teacher, teaching methods

Mokytojų požiūris į kritinio mąstymo ugdymą patirtinio mokymosi būdu

Santrauka. Visa tai, ko mokoma mokykloje ir už jos ribų, turi būti siejama su realiu (kasdieniu) gyvenimu. Mokytojai turi padėti mokiniams paversti mokymosi turinį patirtimi, o tai nėra lengva. Šio tyrimo tikslas – nustatyti, kiek pradinių, vidurinių ir aukštųjų mokyklų mokytojai naudoja tokį metodą siekdami ugdyti kritinį mokinių mąstymą ir kokią reikšmę jie tam skiria mokydami. Tyrime naudota kritinio mąstymo ir patirtinio mokymosi anketa ($N = 168$), jos rezultatai buvo analizuojami pagal lytį, išsilavinimo lygmenį, darbo patirtį ir darbo aplinką. Rezultatai atskleidė, kad mokant dažnai naudojamas patirtinio mokymosi metodas, kuriuo siekiama ugdyti kritinį mąstymą ($M = 4,17$, $SD = 0,55$). Skirtumų nustatyta tik pagal darbo patirties kintamąjį – didesnę darbo patirtį turintys mokytojai statistiškai

Received: 07/03/2021. Accepted: 10/10/2021

Copyright © Luka Pongračić, Ana Maria Marinac, 2021. Published by Vilnius University Press. This is an Open Access article distributed under the terms of the Creative Commons Attribution Licence (CC BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

kai reikšmingai labiau ($F = 0,027$; $t = 3,31$; $p < 0,01$) stengiasi ugdyti mokinių kritinį mąstymą. Kita vertus, rezultatai atskleidė, kad ypač jaunesni mokytojai turėtų būti geriau informuoti, kaip pritaikyti patirtinį mokymąsi ir kodėl jis yra svarbus. Tyrimas parodė plačiai pripažįstamą mokinių kritinio mąstymo svarbą ir siekį jį ugdyti visais švietimo lygmenimis, nes tai padeda tobulėti ir ugdyti savivoką tiek individams, tiek visai visuomenei. Nerimą kelia tai, kad apie 40 proc. mokytojų vis dar nenaudoja interaktyvaus mokymosi metodų nuolat, tačiau džiugina, kad daugelis mokytojų pripažįsta tokio mokymosi svarbą ir naudoja jį kasdien.

Pagrindiniai žodžiai: kritinis mąstymas, patirtinis mokymasis, interaktyvus mokymasis, mokytojai.

Introduction

Until the middle of the 19th century, the education of students was reduced only to the development of basic competencies, such as reading, writing and arithmetic. Numerous scholars of the time recognized the need to introduce subjects that would allow students to observe and infer, that is, experiential learning. One of the first subjects to enable such an approach was mathematics, followed by other science subjects (Deboer, 2006). The emphasis in teaching science subjects was on the original reality, which means that, whenever possible, students are placed before the original reality, and knowledge is thus not transmitted to them only by the verbal word of the teacher (Huxley, 1893). Spencer (1861) emphasizes the foundations on which modern teaching is realized, and that is that teaching should be from experiential to rational, from practical work to generalization, and experience also arouses students' interest in a particular school subject, which can be most easily observed in adoption of any natural science field. In Croatia, the science subject was introduced in 1874 and the aim was to hold classes in the laboratory. By the end of the century, however, teaching was strictly focused on the transfer of knowledge from teachers to students. The next century was accompanied by numerous changes and ideas on how to carry out the educational process. The twenty-first century is a century of great turning points, and it is precisely from this that the need to modernize teaching arose, so the need for a research approach can be interpreted in two ways, both the development of the individual and the development of 21st century society (Perković Krijan, 2016). The need to create such a society stems from democratic values, which imply active citizens who think for themselves and are able to make informed decisions (Buchberger, 2012).

Development of Critical Thinking

One of the basic competencies arising from experiential learning, and an important feature of today's individual, is critical thinking, which in this context can be interpreted as a mission and goal of the entire education system (Nikičević-Milković, 2004). Buchberger, Bolčević & Kovač (2017) cite important European and global documents in which critical thinking stands out as a crucial determinant in today's society. In the Paris Declaration (Council of the European Union, CEU, 2015), the creation of critical thinking is stated as one of the main goals of education, from which an individual and a society free of discrimination and indoctrination will emerge. The conclusion of the Council of the European Union on the development of media literacy and critical thinking (CEU, 2016) calls for reflection on critical thinking and its implementation in everyday work and teaching.

Since the Republic of Croatia is a member of the European Union, it follows the policy direction of European education policies. The product of this is an extremely important document of the Strategy of Education, Science and Technology (Ministry of Science, Education and Sports, MSES, 2015), which highlights the now almost implemented curricular reform aimed at developing core competencies of lifelong learning. Grozdanić (2009) considers the competence of critical thinking to be the most important and demanding outcome of modern and quality teaching. Critical thinking is determined by several fundamental determinants. John Dewey (2012) defines critical thinking as an active, persistent, and thorough questioning of a belief while considering the foundations and evidence on which that belief is based. Ennis (2011) defines critical thinking as the process of deciding what to believe or what to do. Some authors determine critical thinking through competencies, i.e., skills that are an integral part of critical review.

Characteristics of Critical Thinking

Facione (1990; Facione & Facione, 1993; 2007; 2013) highlights six critical thinking skills: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Given that the competencies listed in the Curricula have long been the subject of numerous studies and controversies, critical thinking research has shown how to use critical thinking skills in almost all spheres of life, throughout life (Anderson & Reid, 2013). In addition to being a truly lifelong skill, critical thinking helps the student to master and understand the material, helps him monitor their own progress, judge and evaluate their work, and encourages independence in making conclusions (Buchberger, Bolčević & Kovač, 2017). In addition to the large number of values that come with the development of this competence, the question arises of several components that it brings; it is important to consider whether critical thinking can be identified with criticism, how critical opinion can be assessed and measured, and how it can be adopted (Grozdanić, 2009). As already mentioned, critical thinking is very often mentioned in the context of modern society, however it has its beginnings in the beginnings of the development of society. We find the foundations of critical thinking in Socrates' teaching, on which he bases his teaching methods. In order to adopt such reasoning and be able to draw conclusions from such a process, it is necessary to develop a number of cognitive abilities: the ability to analyze concepts, information and views, the ability to distinguish relevant and irrelevant information within a given context, the ability to interpret information, the ability to combine prior knowledge and new or different information from different areas, the ability to synthesize information, the ability to organize content into a meaningful whole, the ability to distinguish between justified and unjustified claims, the ability to see the subject of discussion from different points of view, the ability to evaluate information and views, the ability to justify attitudes and points of view, the ability to take an active role in the learning process, the ability to imagine possible situations, the ability to monitor and assess their own understanding of information, and the ability to direct their own course to correctness (Buchberger, 2012). The development of critical thinking develops

clarity, relevance, depth, precision, consistency, coherence, logic, objectivity (Bošnjak, 2009; Buchberger, 2012), and is described in terms of independent thinking, information as a starting point and not an end point, asking questions and requiring argumentation (Kleitzen & Bekavac, 2005).

Critical Thinking in Teaching

Given that evaluation is a special and very complex component of successful teaching, it is important to determine how to observe and evaluate the competence of critical thinking in students. Critical thinking evaluation techniques vary in scope and approach. Some techniques take into account all the components of critical thinking, while according to other techniques the view focuses on only one component. They can also vary according to the type of task. Task types correspond to daily teaching tasks, like multiple choice tasks, open-ended tasks, and self-assessment tasks. Multiple-choice tasks are often used in tests to assess critical thinking. Compared to other types of tasks, they are more time efficient, and thus enable a larger scope of the included material, and their great advantage is faster feedback, i.e. correction. For this type of task, the Watson-Glaser Critical Thinking Appraisal (WGCTA) test is best known (Norris & Ennis, 1989). It consists of eighty tasks for which a solution time of sixty minutes is provided, and in the abbreviated version, forty tasks are assigned in a time period of forty-five minutes. The test focuses on several aspects of critical thinking: inference, recognition of assumptions, deduction, interpretation, and evaluation of arguments. What builds on the shortcomings of closed-ended tasks are open-ended ones, and they appear in two forms: essay-type tasks in response to a specific question and writing an essay on a given topic (Grozđanić, 2009). Norris & Ennis (1989) state the reasons for their application, notwithstanding a number of shortcomings. Such tasks provide answers viewed from several sides as well as insight into the personality of the respondent and assess their ability to argue their opinions. There are problems with correcting and evaluating these types of answers; often different correctors evaluate the same answers differently, and such correction takes significantly longer than correcting closed-type tests. Given that developed critical thinking is one of the greatest mirrors of the success of educational institutions, the Centre for Teaching, Learning, and Technology at the University of Washington establishes and publishes a Guide to Assessing Critical and Integrative Thinking Based on an Analytical Approach (Condon & Kelly-Riley, 2004; Washington State University, WSU, 2006). The guide provides an assessment according to seven thinking skills, and these are assessed on a six-point scale. The Ennis-Weir Critical Thinking Essay is another well-known and available test for assessing critical thinking, with are similar tests also available (Grozđanić, 2009). During the self-assessment of critical thinking, students are introduced the measurement criteria and learn to evaluate their progress; the most well-known instrument for this type of task is the Critical Thinking Self-Reflection Tool (Grozđanić, 2009).

If the teacher is ready to conduct classes that develop critical thinking, the next step is up to the student. In order for a student to be able to think well, it is important that they

have mastered the material and acquired knowledge and experience. Apart from mastering the material, the personal predispositions of students are also important, such as self-confidence and an understanding of values, both of one's own and others' opinions, comprehension of class activity, and the ability to express one's own judgments (Bjelanović Dijanić, 2011). Although the development itself sounds very simple, many experts express dissatisfaction with the success of teaching on this issue, and here the question arises of why today's students are often unable to make and express their own judgments (Pešić, 2003). In addition to the expressed dissatisfaction, there are several items that can be highlighted as wrong features of teaching. One of the main causes of underdeveloped critical thinking in school is an insufficient mental activation of students in the classroom and the frequent formation of questions with the expectation of only one correct answer (Mušanović, 2001).

Experiential and Interactive Learning

Through experiential learning, the student learns by coming to knowledge through their own research, observation and experience (Kordina, 2019). Antić (2000) points out two ways in which a student acquires new knowledge and distinguishes between teacher teaching and independent learning. Bognar & Matijević (2002) point out that by applying this strategy, the teacher motivates and encourages students. In this way, hypotheses can be set in an interesting and appropriate way, successful research can be conducted, and thus the ability of inductive reasoning is developed. Lalović (2009) points out that according to Piaget, discovery learning is the foundation of active learning in which the student is presented with a problem whose solution will lead to new knowledge.

Experiential learning, or learning by discovery, can be divided into three methods: research, simulation, and project. The research method means learning using original reality. It is implemented in four stages:

1. Identifying and defining problems
2. Hypothesis formulation
3. Data collection, observation, and monitoring
4. Drawing a conclusion.

The simulation method is carried out in the same stages as the research method and is used when research in the original reality is not possible. Project is a method that involves conducting teaching work on research projects. Hypotheses are set at the beginning of the project, after which a problem-solving plan is developed (Bognar & Matijević, 2005). Teaching activity can be encouraged by various activities, such as role-playing or playing with rules and learning to solve problems (Matić, 2014). In a role play, students are placed in the place of another person, expressing themselves freely and creatively (Mattes, 2007). Rules games are very useful for students' cognitive development, where students participate in activities for which they know the rules in advance (Matić, 2014). For some authors, problem-solving in teaching is also a holistic approach to teaching, not just a method. This approach completely excludes traditional methods and develops

a number of competencies that are necessary for each individual to successfully develop and operate in modern society.

The teaching process can take place according to three models that represent the way of teaching, the role of teaching subjects, and the relationship between subjects; it can also be viewed in terms of three basic methods: passive methods, active methods, and interactive methods (Giorgdze & Dgebuadze, 2017). Interactive teaching signifies a two-way process of communication between students and teachers. Since modern teaching sets the activity of students as the foundation of the teaching process, the goal of interactive teaching is based on precisely that – the activities of students (Planinić, 2009). Active teaching, which also involves interactive learning, includes students and teachers alike. Students in such teaching are by no means passive listeners, but active researchers. Although interactive teaching includes and implies active teaching, the fundamental difference is that interactive teaching does not only imply a two-way communication between teachers and students, but also between students. Interactive teaching starts from the needs, abilities, and interests of students. The role of teachers in interactive teaching is reflected in the achievement of educational outcomes achieved by the student himself. The task of the teacher is to design and plan the teaching process, preparing various materials and organizing sociological forms of work. Exercises and tasks that students achieve through interaction in teaching are the main components of interactive teaching. Some of the interactive activities are realized in the form of creative tasks, games, excursions, student projects, etc. (Giorgdze & Dgebuadze, 2017).

Methodology

Research Goals and Objects

The main goal of this research is to determine the extent to which teachers use the experiential learning strategy in their work to develop critical thinking in their students and how much importance they attach to it during their teaching work.

Individual goals of research are determined according to the special characteristics according to which the teachers were observed. It is necessary to determine the differences in teachers' attitudes with regard to their gender, work experience, level of education, and the environment in which they work. This also includes determining how often teachers conduct interactive learning in their classes.

Hypotheses

Based on the goal of the research, the following hypotheses arise:

H1 – Teachers will self-assess the frequency of experiential learning strategies for the development of critical thinking in their work as high.

H2 – There is a statistically significant difference in the frequency of using experiential learning strategies for the development of critical thinking in their students between male and female respondents.

H3 – Respondents with more work experience use more experiential learning strategies for developing critical thinking in their students.

H4 – Respondents with higher education use more experiential learning strategies for developing critical thinking in their students.

H5 – Respondents working in an urban environment use more experiential learning strategies for developing critical thinking in their students.

Participants

The sample of this research consists of primary school teachers, secondary school teachers and higher education teachers. A total of 168 people participated in the study, of which 152 (90.5%) were women and 16 (9.5%) were men. The structure of participants was determined by four categories:

The first category is work experience, in which participants are divided into two groups: those with less work experience, up to 23 years (N = 110), reaching 65.5% of the study sample, and those with more than 23 years of work experience (N = 58), comprising 34.5%.

The second category was determined according to the level of education, dividing the participants into three groups: the first group were those with a university degree (N = 24), 14.3%; the second group were holders of master's degrees (N = 128), 76.2%; and the third group are respondents with completed postgraduate studies (N = 16), 9.5%.

The third category was determined according to the classes they teach: the first group are elementary school teachers (N = 54) 32.1%; the second group are primary school teachers (N = 61) 36.3%; the third group are secondary school teachers (N = 45), 26.8% and the fourth group are teachers in higher education (N = 8), 4.8%.

The fourth category was determined according to the environment in which they work: the first group are teachers working in urban areas (N = 125), 74.4% and the second group those working in rural areas (N = 43), 25.6%.

Instrument

Data were collected by the Self-Assessment Scale on the use of experiential learning in the development of critical thinking constructed for the purposes of this research. The scale was available online on Google disc. The self-assessment of teachers' attitudes about critical learning and the frequency of using different strategies for the development of critical thinking using experimental learning was derived from the answers provided to questions. Respondents answered five questions about their sociodemographic characteristics by choosing one of the offered answers (gender, work experience, level of education, classes they teach, and the environment in which they work).

Respondents also answered 22 questions about the development of critical thinking according to the Likert five-point scale in steps (1 – does not apply to me at all, 2 – mostly does not apply to me, 3 – neither applies nor does not apply, 4 – mainly applies to me, and 5 – fully applies to me). The last question referred to the frequency of organ-

izing interactive learning to which participants responded to the three options offered (never, sometimes, almost every class). The reliability of the response expressed by the Cronbach's Alpha coefficient is 0.788 (78.8%).

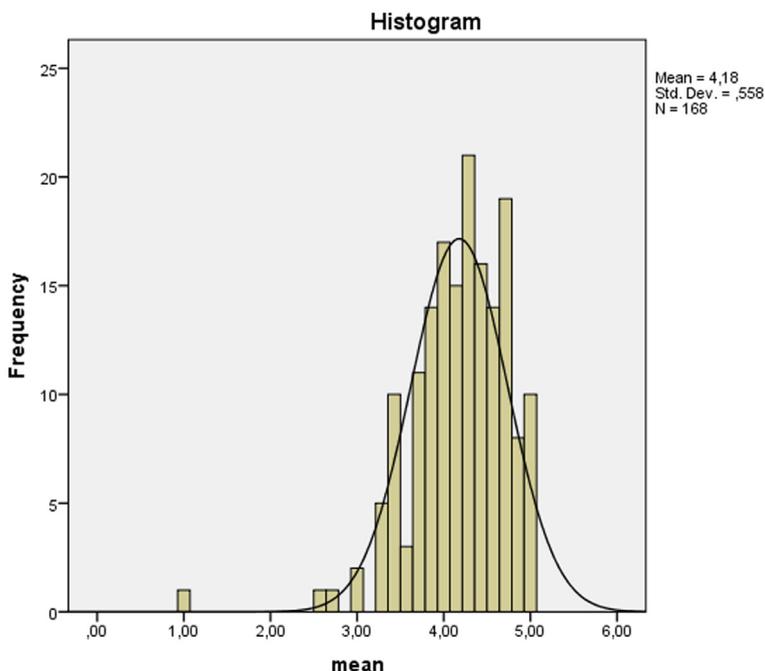
Procedure

The survey was conducted during the summer of 2020. The questionnaire was available online, publicly, and was conducted anonymously and transversely. Data were processed using SPSS Statistics v21 for Windows.

Results and Discussion

Results of the questionnaire on critical thinking and experiential learning

Descriptive results of the questionnaire show: $N = 168$; mean = 4.18; median = 4.28, $SD = 0.558$; skew. = +1.42; kurt. = 5.45, min = 1; max = 5 (graph 1.). The limit value of the mean equals 3.7, which according to Stančić, Kiš-Glavaš and Igrić (2001) is a medium low score on a scale of 1–5.



Graph 1. Scale of application of the experiential learning strategy for the development of critical thinking in teaching

The result of 4.18 is high and shows that teachers often work on the development of critical thinking of their students through the strategy of experiential learning in their teaching and that they know it well. This result confirms H1 that teachers often

work on developing students' critical thinking through experiential learning strategies. Nikičević-Milković (2004) calls critical thinking the mission of education and points out that research focused on critical thinking shows that it contributes to longer, more thorough, deeper, and even more valuable learning. Also, their research (Bassham et al., 2008; Da Silva Almeida & Rodrigues Franco, 2011; Paul, 2005; Phan, 2010; Schurtz, 2009; according to Bucherberg & Bolčević, 2017) confirms the results of the research presented in this paper, emphasizing that students deeply understand the content of the lessons, process information at the metacognitive level, are able to develop an independent mindset, promote self-regulated learning, and train their self-evaluation competence. Innabi (2003) conducted research that pointed to the worrying attitudes of teachers who did not consider critical thinking to be part of the educational goal and who were more focused on teaching the content. This research examined the impact of state documents governing education in schools and showed that even in the official documents, critical thinking is not recognized as one of the important segments of education. An analysis of the curricula prescribed by the Ministry of Science and Education in almost all subjects concludes that this education reform is a step towards a modernized form of teaching that places priority on the critical thinking of students during the whole process, while giving even more freedom in the choice of teaching content, with the goal of creating teaching methods that could adapt to the needs of each student. Likewise, it can be concluded that today's teaching generally adheres to the aspirations of modern science and society.

Differences in the frequency of using experiential learning strategies according to the gender of the participants

A one-way analysis of ANOVA variance was used to determine the differences between the gender variables and the results of the questionnaire expressed in the value of the arithmetic mean. The results ($F = 0.66$; $p > 0.05$) show that there is no correlation between gender and the achieved result on the questionnaire. These results reject H2, namely that there is a statistically significant difference in the frequency of use of experiential learning strategies for the development of critical thinking in students between male and female respondents.

Differences in the frequency of using the experiential learning strategy according to the years of work experience of the participants

A one-way analysis of ANOVA variance was used to determine the correlation between work experience variables and the questionnaire results. The results ($F = 10.98$; $p < 0.01$) show that there is a correlation between years of work experience and the achieved result on the questionnaire. A T-test was performed ($F = 0.027$; $t = 3.31$; $p < 0.01$), which showed a statistically significant difference between the observed groups. Respondents with more work experience ($N = 58$; mean = 4.36; SD = 0.6) statistically significantly estimate more that by applying experiential learning strategies they influence the development of stu-

dents' critical thinking compared to respondents with less work experience ($N = 110$; mean = 4.07; $SD = 0.5$). These results confirm H3, namely that respondents with more work experience make more use of experiential learning strategies in developing their students' critical thinking. This data raises the question of what needs to be done to change the situation in classes where the teaching process is led by teachers with less work experience and opens the need to study the causes behind and finally change and apply strategies for developing critical thinking in all classes and educational institutions.

Differences in the frequency of using the experiential learning strategy according to the level of education of the participants

A one-way analysis of ANOVA variance was used to determine the relationship between education level variables and the questionnaire results. The results ($F = 0.16$; $p > 0.05$) show that there is no correlation between the level of education and the achieved result on the questionnaire. This result rejects H4, which states that respondents with higher education use experiential learning strategies for developing critical thinking in their students. The Kruskal-Wallis test (chi-square = 0.59, $p > 0.05$) was performed, which confirms the results of the lack of correlation between the level of education and the results on the test and certainly confirms the rejection of H4. It is interesting to note that research in the Croatian area on critical thinking in education is not very common, and the authors Bošnjak (2009), Majdak & Ajduković (2003), and Miliša & Ćurko (2010) state that the development of critical thinking in students requires the knowledge of a number of additional strategies and methods required to be found in teacher education, and point out that such activities require a high activation and professionalism of the teachers. From the above results, a shift in upbringing and education is visible, where it can be concluded that the need for the application of critical thinking is growing in all areas of human activity.

Differences in the frequency of using experiential learning strategies by grades

A one-way analysis of ANOVA variance ($F = 0.82$; $p > 0.05$) shows no correlation between class variables and test scores. This data tells us that with the increase in the level of education, the level of work on the development of critical thinking does not rise, but it is equally high at all levels (Table 1). Previous research shows that research conducted so far with the aim of considering critical thinking in education is reflected mainly in higher education, while studies on the primary and secondary schooling of critical thinking are missing (Buchberger & Bolčević, 2017). Compared to previous research, it can be concluded that in the spheres of education in primary and secondary schools, awareness of critical thinking is increasingly raised and that critical thinking is increasingly developed by respecting and finding different teaching strategies and methods that encourage it, such as experiential learning strategy. Comparing the results, it is encouraging that critical thinking has entered into all levels of the education system.

Table 1. Class and test variables on the test

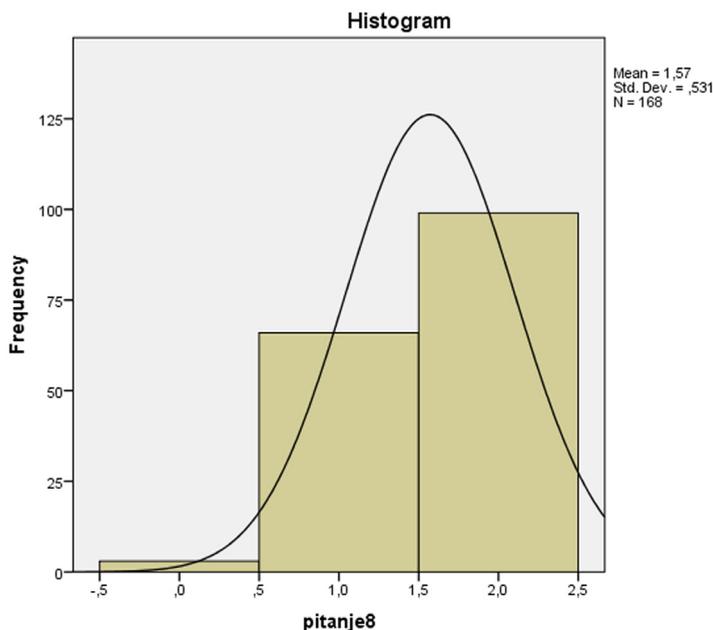
I teach in:	Mean	N	Std. Deviation
Classroom teaching	4,1614	54	,66547
Subject teaching (primary school)	4,1194	61	,45264
High school	4,2413	45	,57371
The rest	4,3929	8	,37213
Total	4,1786	168	,55796

Differences in the frequency of using experiential learning strategies according to the work environment

A one-way analysis of ANOVA variance ($F = 0.21$; $p > 0.05$) shows no correlation between work environment variables and test scores. A T-test ($F = 0.77$; $t = 0.46$; $p > 0.05$) was also performed, which shows that there is no statistically significant difference between respondents who teach in urban and rural areas. In addition, authors Anderson & Reid (2013) conducted research showing that critical thinking is open to all teaching content, regardless of the environment, class, or subject, and is ultimately most applied outside the classroom.

Frequency of Conducting Interactive Learning

A special part of the Scale was the question of how often teachers conduct interactive learning gave the following results: never $N = 3$ (1.8%), sometimes $N = 66$ (39.3%), and almost every class $N = 99$ (58.9%) (Graph 2). These results show that teachers conduct interactive learning with their students to a greater extent. A one-way analysis of ANOVA variance was performed, which showed the following correlations with the frequency of interactive learning: gender of participants ($F = 0.31$; $p > 0.05$), years of work experience ($F = 3.24$; $p > 0.05$), level of education ($F = 0.14$; $p > 0.05$), grades in which they work ($F = 0.89$; $p > 0.05$), work environment ($F = 0.03$; $p > 0.05$). According to the results of ANOVA, it is evident that there are no positive correlations of frequency with any of the observed factors. Regardless of the division groups, all participants equally often implement an interactive learning strategy in their classes. Warburton & Toff (2005) conduct research showing that teachers find that activities that encourage critical thinking are more effective in students with better school performance. Consequently, such activities are often absent from their classes for the same reason, and this often results in generally poorer school achievement. Wallace & Jefferson (2015) suggest that strategies that will develop critical thinking are highly desirable in the teaching process, emphasizing that it is desirable to teach students directly through these strategies. Given that many authors have concluded much earlier how important this development is, it is commendable that a certain percentage of teachers develop critical thinking during almost every class.



Graph 2. Application of interactive learning

Conclusion

Once the unquestionable importance of developing critical thinking in the classroom is established, it becomes important to think about how ways of developing and achieving it. In order for a teacher to be able to transfer knowledge to a student, it is necessary for them to adopt and perfect it. Accordingly, it is necessary for teachers to be responsive to all the needs of modern education and who will themselves function in such a way (Grozđanić, 2009).

A study was conducted in which 168 primary school, secondary school, and higher education teachers participated. The participants were divided and observed using four groups in terms of work experience, level of education, level of teaching, and according to the environment in which they work. Data were collected using the Critical Thinking and Experiential Learning Questionnaire, which was available online, and processed using SPSS Statistics v21 for Windows. Research has shown that teachers really work on developing students' critical thinking through experiential learning strategies and that they know these strategies well. There was no difference in the practices of experiential learning between teachers, but a large difference was shown between younger and older respondents, where it can be concluded that teachers with more work experience tend to develop the critical thinking of their students significantly more than teachers with less work experience. Such results are quite worrying in terms of looking at the younger generation of teachers, but they also posit the question of why this seems to be the case. Observing the differences in relation to the level of education among the respondents, it can be concluded that there are no differences and that it is not exclusive that the respondents with a higher level of edu-

cation work harder on the development of critical thinking. Likewise, research has shown that there is no statistically significant difference between respondents who teach in urban or rural schools. It is worrying that about 40% of teachers still do not conduct interactive learning on a regular basis, but it is encouraging that most teachers still recognize how important it is and apply it on a daily basis. It is important to emphasize that no differences can be observed with regard to gender, level of education, grades, or environments in which teachers work. This research has shown the already recognized importance of developing critical thinking in students at all levels of education, which will ultimately result in both developed and self-aware individuals and society. On the other hand, there was a need for further awareness, especially among younger teachers, about how to apply experiential learning and what it is important for. This introduces the question of what needs to be done to raise our education to a higher level as we consider the modern needs of the society and the perceived goals of education.

Literature

- Anderson, P. R. & Reid, J. R. (2013). The effect of critical thinking instruction on graduates of a college of business administration. *Journal of Higher Education Theory and Practice*, 13(3/4), 149–167.
- Antić, S. (2000). *Rječnik suvremenog obrazovanja*. Zagreb: HPKZ.
- Bjelanović Dijanić, Že (2011). Neke metode za razvoj kritičkog mišljenja učenika po eer sustavu. *Metodički ogledi*, 19(1), 163–179.
- Bognar, L. & Matijević, M. (2002). *Didaktika*. Školska knjiga. Zagreb.
- Bognar, L. & Matijević, M. (2005). *Didaktika*. Školska knjiga. Zagreb.
- Bošnjak, Z. (2009). Primjena konstruktivističkog poučavanja i kritičkog mišljenja u srednjoškolskoj nastavi sociologije. *Revija za sociologiju*, 39(3–4), 257–277.
- Buchberger, I. (2012). *Kritičko mišljenje: priručnik kritičkog mišljenja, slušanja, čitanja i pisanja*, Rijeka. Universitas.
- Buchberger, I., Bolčević, V. & Kovač, V. (2017). Kritičko mišljenje u obrazovanju: dosadašnji doprinosi i otvoreni smjerovi. *Metodički ogledi : časopis za filozofiju odgoja*, 24(1), 109–129.
- [CEU] Council of the European Union. (2015). *Declaration on promoting citizenship and the common values of freedom, tolerance and non-discrimination through education*. http://ec.europa.eu/dgs/education_culture/repository/education/news/2015/documents/citizenship-education-declaration_en.pdf
- [CEU] Council of the European Union. (2016). *Developing media literacy and critical thinking through education and training – Council conclusions*. <http://data.consilium.europa.eu/doc/document/ST-9641-2016-INIT/en/pdf>
- Condon, W. & Kelly-Riley, D. (2004). Assessing and teaching what we value: The relationship between college level writing and critical thinking abilities. *Assessing Writing*, 9(1), 56–75. DOI: 10.1016/j.asw.2004.01.003
- Deboer, G. E. (2006). Historical perspectives on inquiry teaching in school. In: Flick, Lawrence i Lederman, Norman (Ed.), *Scientific inquiry and nature of science: Implications for teaching, learning and teacher education*, Netherland. Springer. 17–35.
- Dewey, J. (2012). *How We Think?*. Boston, New York. Heath Publishers.
- Ennis, Robert H. (2011). *The Nature of Critical Thinking: An Outline of Critical Thinking Dispositions and Abilities*. http://faculty.education.illinois.edu/rhennis/documents/TheNatureofCriticalThinking_51711_000.Pdf
- Facione, P. (1990). *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*. Fullerton. APA Delphy Research Project.
- Facione, P. & Facione, N. (1993). Profiling critical thinking dispositions. *Assessment Update*, 5(2), 1–4. DOI: 10.1002/au.3650050202

- Facione, P. & Facione, N. (2007). Talking Critical Thinking. *Change The Magazine of Higher Learning*, 39(2), 38–45. DOI: 10.3200/CHNG.39.2.38-45
- Facione, P. & Facione, N. (2013). Critical Thinking for Life. *Inquiry Critical Thinking Across the Disciplines*, 28(1), 5–25. DOI: 10.5840/inquiryct20132812
- Giorgdze, M. & Dgebuadze, M. (2017). Interactive teaching methods: Challenges and perspectives. *IJAEDU-International E-Journal of Advances in Education*, 3(9), 544–548.
- Grozđanić, V. (2009). Poučavanje i evaluacija kritičkog mišljenja. *Napredak*, 150 (3–4), 380–424.
- Hagevik, R. & Swartz (2007). Teaching Critical Thinking Skills and the Nature of Science through Problem-based Learning. https://www.researchgate.net/publication/253255328_Teaching_Critical_Thinking_Skills_and_the_Nature_of_Science_through_Problem-based_Learning/related
- Huxley, T. H. (1893). *Collected essays: Science and education. Vol. 1, Method and results*. London. UK.
- Innabi, H. (2003). *Aspects of critical thinking in classroom instruction of secondary school mathematics teachers in Jordan*. http://dipmat.math.unipa.it/~grim/21_project/21_brno03_Innabi.pdf
- Kleitzen, B. & Bekavac, C. (2005). *Čitanje, pisanje i rasprava za poticanje kritičkog mišljenja*. Zagreb. Forum za slobodu odgoja.
- Kordina, M. (2019). *Nastavne strategije i metode u nastavi primarnog obrazovanja*. Masters thesis. Sveučilište J. Dobrile u Puli. Fakultet za odgojne i obrazovne znanosti. Pula. <https://repositorij.unipu.hr/islandora/object/unipu%3A4110/datastream/PDF/view>
- Majdak, M. & Ajduković, M. (2003). Kako pripremiti studente socijalnog rada za kritičko mišljenje i djelovanje u području maloljetničke delinkvencije. *Ljetopis socijalnog rada*, 10(1), 71–88.
- Matić, T. (2014). *Metode aktivnog učenja u razrednoj nastavi*. Masters thesis. Sveučilište J. J. Strossmayera u Osijeku. Integrirani preddiplomski i diplomski sveučilišni učiteljski studij. Osijek. https://bib.irb.hr/datoteka/742801.Terezija_Mati_-_diplomski_rad.pdf
- Mattes, W. (2007). *Nastavne metode: 75 kompaktnih pregleda za nastavnike i učenike*. Zagreb: Naklada Ljevak
- Miliša, Z. & Ćurko, B. (2010). Odgoj za kritičko mišljenje i medijska manipulacija«. *MediAnali*, 4(7), 57–72. [MZOS] Ministarstvo znanosti, obrazovanja i sporta. (2015). *Strategija obrazovanja, znanosti i tehnologije*. Zagreb: Ministarstvo znanosti, obrazovanja i sporta.
- Mrdeža, A. (2017). *Razvoj kritičkoga mišljenja*. Split: Sveučilište u Splitu. Pomorski fakultet u Splitu.
- Mušanović, M. (2001). *Pedagogija profesionalnog obrazovanja*. Rijeka. Graftrade.
- Nikčević-Milković, A. (2004). Aktivno učenje na visokoškolskoj razini. *Život i škola*, 12(2), 47–54.
- Norris, S. P. i Ennis, R. H. (1989). *Evaluating Critical Thinking*. Pacific Grove. Midwest Publications, Critical Thinking Press.
- Perković Krijan, I. (2016). Povijesni pregled ideje i potrebe za istraživačkim pristupom u nastavi. *Život i škola*, 63(3), 77–85.
- Pešić, J. (2003). Kritičko mišljenje između pomodarstva i promišljanja: ka teorijskom utemeljenju koncepta. *Psihologija*, 36(4), 411–423.
- Planinić, M. (2009). Interaktivni načini poučavanja fizike. *Deveti hrvatski simpozij o nastavi fizike: Interaktivna nastava fizike*. Primošten. 17–23.
- Spencer, H. (1861). *Education: Intellectual, moral and psychical*. London. John Childs and son printers.
- Stančić, Z., Kiš-Glavaš, L. & Igrić, Lj. (2001). Stavovi učitelja prema poučavanju kao determinanta njihove spremnosti za dodatno stručno usavršavanje. *Hrvatska revija za rehabilitacijska istraživanja*, 37(2), 143–152.
- Wallace, E. D. & Jefferson, R. N. (2015). Developing critical thinking skills: assessing the effectiveness of workbook exercises. *Journal of College Teaching and Learning*, 12(2), 101–108. DOI: <https://doi.org/10.19030/tlc.v12i2.9187>
- Warburton, E. & Toff, B. (2005). The effect of perceived learner advantages on teachers' beliefs about critical-thinking activities. *Journal of Teacher Education*, 56(1), 24–33. DOI: <https://doi.org/10.1177%2F0022487104272056>
- [WSU] Washington State University. (2006). *Guide to Rating Critical Thinking*. <http://wsuctproject.wsu.edu>