What is Needed to Develop Critical Thinking in Schools?

Lidija Radulović*[1] and Milan Stančić[2]

∾ Starting with the fact that school education has failed to become education for critical thinking and that one of the reasons for that could be in how education for critical thinking is conceptualised, this paper presents: (1) an analysis of the predominant approach to education for critical thinking through the implementation of special programs and methods, and (2) an attempt to establish different approaches to education for critical thinking. The overview and analysis of understanding education for developing critical thinking as the implementation of special programs reveal that it is perceived as a decontextualised activity, reduced to practicing individual intellectual skills. Foundations for a different approach, which could be characterised as the 'education for critical competencies', are found in ideas of critical pedagogy and open curriculum theory. This approach differs from the predominant approach in terms of how the nature and purpose of critical thinking and education for critical thinking are understood. In the approach of education for critical competencies, it is not sufficient to introduce special programs and methods for the development of critical thinking to the existing educational system. This approach emphasises the need to question and reconstruct the status, role, and power of pupils and teachers in the teaching process, but also in the process of curriculum development.

Keywords: critical pedagogy, curriculum in context, education for critical thinking, programs for critical thinking

1   *Corresponding Author. University of Belgrade, Faculty of Philosophy, Teacher Education Center, Serbia; liradulo@f.bg.ac.rs.
2   University of Belgrade, Faculty of Philosophy, Department for Pedagogy and Adult Education, Serbia.

Kaj je potrebno za razvoj kritičnega mišljenja v šoli?

Lidija Radulović in Milan Stančić

Izhajajoč iz dejstva, da je šola neuspešna pri izobraževanju za kritično mišljenje in da je eden izmed vzrokov za to lahko način konceptualizacije kritičnega mišljenja, ta prispevek predstavlja: 1) analizo prevladujočih pristopov izobraževanja za kritično mišljenje prek uvajanja posebnih programov in metod; 2) poskus vzpostavitve drugačnih pristopov k izobraževanju za kritično mišljenje. Pregled in analiza razumevanja izobraževanja za razvoj kritičnega mišljenja z uporabo posebnih programov kažeta, da to pojmujejo kot aktivnost zunaj konteksta, ki je zožena na vadenje individualnih intelektualnih spretnosti. Temelje za drugačen pristop, ki bi ga lahko opredelili kot »izobraževanje za kritične kompetence«, je mogoče najti v kritični pedagogiki in teoriji odprtega kurikuluma. Ta pristop se razlikuje od prevladujočega pristopa v tem, kako razumemo naravo in cilje kritičnega mišljenja ter izobraževanje za kritično mišljenje. V pristopu za izobraževanje za kritične kompetence ni dovolj, da uvajamo posebne programe in metode za razvoj kritičnega mišljenja v okviru obstoječega vzgojno-izobraževalnega sistema, ampak se poudarja potrebo po ponovnem premisleku in preoblikovanju statusa, vloge in moči učencev in učiteljev v vzgojno-izobraževalnem procesu pa tudi v procesu razvoja kurikuluma.

Ključne besede: kritična pedagogika, kurikulum v kontekstu, izobraževanje za kritično mišljenje, programi za razvoj kritičnega mišljenja

Introduction

The development of critical thinking through education is frequently discussed as a significant and necessary goal, but also a goal that is implied and unquestionable. However, there are numerous reasons to doubt that critical thinking in contemporary education systems is an indisputable and accepted value. In public discourse, schools are still criticised for not teaching pupils how to think, which is supported by professional and scientific debates on the test results of pupils in international assessment studies (e.g. PISA in Serbia, see: Pavlović Babić & Baucal, 2013). Results from these studies show that pupils do not do well in answering the questions that demand more than the mere reproduction of knowledge. Our own experience as university teachers tells us that critical thinking is not the strongest side of students who enter university. We can also be dissatisfied with how much we manage to contribute to the development of critical thinking of our students during their studies. They perform the worst when they are faced with tasks demanding critical review, integration of various types of knowledge, or solving a problem in a new context. As Martin (2005) puts it, even though ideas on the significance of development of critical thinking had a strong impact on discourses in education and education policy, and progressed into a movement for the development of higher-order thinking skills, they did not lead to a real and sufficient change of school education – they did not win the battle with education understood as factual teaching.

Starting from the view that one of the reasons for the existing state could be in how education for critical thinking is conceptualised, in this paper, our aims are to (1) understand the characteristics of the approach to education for critical thinking which predominates in the relevant literature and educational practice; and (2) reflect on the possibilities of establishing a different approach to education for critical thinking. Therefore, as the starting point, we will take the overview of education for critical thinking through the implementation of special programs, analysing how critical thinking and education for critical thinking are understood in such an approach as well as what we know about results of such programs. We will then, starting from interpretation and critical review of these findings, try to outline the foundations for different approaches to education for critical thinking by relying on ideas of critical pedagogy and contemporary curriculum theories.

Education for Critical Thinking through the Implementation of Special Programs and Methods

In the 1960s, cognitive skills development in pupils started being given a special place in education in the USA (finding the incentive and theoretical foundation in the works of Bruner, but also in the administration of that period), and then, with different dynamics, it started spreading to all countries of the contemporary world. The implementation of adequate procedures, methods, and techniques of teaching is seen as the means of achieving that goal. Since the appropriate education and training of teachers is perceived as the way leading to that, special programs and projects for training teachers to use strategies for developing higher-order thinking skills (critical thinking) in their teaching started developing during the last decades of the twentieth century. These programs were aimed at training teachers in using adequate pupils' activities in teaching: the adequate teaching methods and techniques, adequate order of these methods and techniques, possibly, through specific reflection activities leading pupils to metacognitive insights on their thinking and learning strategies.

In the literature analysing programs aimed at encouraging critical thinking and their effects, three main types of the aforementioned programs are specified: (1) programs aimed at directly teaching cognitive and other skills considered significant for critical thinking, isolated from specific teaching content (*explicit instruction* or *general programs*); (2) programs in which teaching critical thinking is tied to specific learning content (*embedded instruction*), while some of them set their development of critical thinking as an explicit goal (*infusion* programs), and others do not (*immersion* programs); (3) *mixed* programs, in which development of critical thinking is treated as independent track within a specific subject content course (Ennis, 1989, as cited in: Abrami et al., 2008; Marin & Halpern, 2011). Yet another type of interventions, which emphasise *individual teaching methods and techniques* as particularly good for the development of critical thinking in pupils, can be added. For instance, the ARDESOS program at the University of Salamanca (Spain),[3] lasting for around 60 hours, is based on problem-based learning approach and consists of direct teaching of thinking skills which are relevant for critical thinking, i.e. reasoning, problem solving, and decision making (Saiz & Rivas, 2011). This could be regarded as a general and explicit type of program, aimed at practicing different skills that are considered crucial for critical thinking; and the expectation of the

---

3   Programs of this type are particularly present in higher education. Halpern states that, especially in the USA and Canada, there is a growing trend among colleges to require all students to fulfill a special course in critical thinking as part of their education program (Halpern, 1993).

program's author lies in the fact that such procedural knowledge can be used by pupils in different situations and contexts (*ibid.*).

As an example of an embedded program (of the infusion type) the international program Reading and Writing for Critical Thinking (RWCT), is noteworthy, since it is suggested that it can be used in all grades and subjects with existing curricula (Crawford, Saul, Mathews, & MaKinster, 2005). This program introduces research-based teaching/learning methods that are designed to help pupils think reflectively and take ownership for their learning, to understand the logic of arguments and debate confidently (*ibid.*).

In different publications and manuals, there are also endeavours for individual methods and techniques (which frequently are parts of the RWCT approach) to be accentuated as particularly appropriate for encouraging critical thinking in pupils in different subject areas or professional fields as well as at different levels of education (see Bonk & Smith, 1998; Brookfield, 2012; Duron, Limbach, & Waugh, 2006; Forneris & Peden-McAlpine, 2007; Kennison, 2006; Wilgis & McConnell, 2008). Some of the distinguished specific teaching methods and techniques include following: KWL (I <u>K</u>now, I <u>W</u>ant to know, I <u>L</u>earned), minute papers, reflection logs and double-entry journals, debates, graphic organisers (especially concept maps and mind maps), etc.

In recent times, the significance and possibilities, which the integration of digital technologies (most of all the internet, mobile phones, and tablets) in teaching brings to learning and teaching critical thinking, are increasingly emphasised (see Burgess, 2009; Cavus & Uzunboylu, 2009; Greenlaw & DeLoach, 2003; Maurino, 2007; Saadé, Morin, & Thomas, 2012; Yang, Newby, & Bill, 2005; Yang & Wu, 2012).

What are the results of such an education? – The perspective of research on programs' effects

The research examining the effects of the programs or individual methods and techniques aimed at the development of critical thinking in pupils are numerous, and their analysis exceeds the frameworks and purpose of this paper. Here, we provide an overview of the most frequently cited meta-analyses of different studies, which have encompassed examining effects of the programs encouraging critical thinking in pupils. It is noteworthy that the analysed studies conceptualise and measure critical thinking in different ways; thus, the meta-analyses were aimed at determining and comparing the effect size of such programs for developing critical thinking, relying on data provided in original studies.

The meta-analysis of 20 (quasi-)experimental studies that examined an effect of the program of explicit instruction of critical thinking skills resulted

in an average effect size of 0.4, while programs that were intensive and continuously emphasised specific skills had an effect size of 0.5. (Bangert-Drowns & Bankert, 1990). The least effective programs were those focused on logic instruction and those that targeted performance on measures of intelligence, while more practical skill-oriented programs were found to be more effective (*ibid*.). More recently published was a methodologically rigorous meta-analysis of 117 (quasi-) experimental research studies with children older than six years of age, who were included in some form of intervention aimed at the development of critical thinking, lasting not less than three hours (Abrami et al., 2008). The analysis includes studies on the effects of the programs encouraging critical thinking, which were of different types (general, infusion, immersion and mixed). The analyses showed that mixed programs that combine specific contents of learning and teaching critical thinking are more effective compared to other types of programs. The least effective ones were immersion programs, in which critical thinking was treated as a by-product of teaching. The authors conclude that, regarding the programs' effectiveness, it is not that important if critical thinking is encouraged by being tied to some specific contents or not; it is much more important to emphasise teaching critical thinking as a goal and a part of a subject/course (Abrami et al., 2008). Learning skills significant for critical thinking and using them when encountered with specific problems proved to be the best strategy, while including pupils in critical-provocative activities in teaching without explicit instructions and indicating the significance of critical thinking represented the least effective strategy. Yet another significant finding of this meta-study shows that programs that included specialised training of teachers for organising teaching aimed at encouraging critical thinking in pupils were more effective. (Abrami et al., 2008).

Some of the authors of the previous study also took part in a similar study whose results were published in 2015. This meta-analysis encompassed 684 research studies, which reflects an increase of the research interest in issues of the development of critical thinking in teaching, especially in the previous dozen years (Abrami et al., 2015). In this case, no significant differences in effectiveness depending on the type of the program were determined (average effect size was 0.3) but it was determined that two types of methods were particularly appropriate for the development of critical thinking: providing environments for discussion (especially where the teacher poses questions, when there are both whole-class teacher-led discussions and teacher-led group discussions) and solving authentic life problems, especially through role plays (Abrami et al., 2015). Mentorship (which the authors described as implying one-on-one teacher-pupil coaching, peer-led dyads, internship, modelling) individually was not

shown to be a particularly good method, but it was determined that programs combining all three aforementioned methods achieve statistically significantly larger effects regarding the development of critical thinking in pupils in comparison to the programs with only one method or a combination of two *(ibid.)*

Other authors also have perceived that even though there are differences between results that different research studies achieve, a trend can be seen showing that pupils who had an opportunity to think systematically in teaching, using specific materials intended for that purpose and working with specially trained teachers, demonstrate improvement in those types of behaviour which demand thinking (Martin, 2005). The research also demonstrates the impact of programs for educating teachers to use strategies for critical thinking on teachers' behaviour in teaching and on their cognitive growth. Based on results of multiple research studies, Martin indicates that teachers who attended such programs not only use more open-ended questions and richer vocabulary but also solve problems in classroom more successfully, using strategies for problem-solving and logical thinking systematically; that is, they generally become better teachers (Martin, 2005).

In the end, what can be learned from examining the effects of the programs aimed at the development of critical thinking in pupils? Along with the insight that not all the programs and methods are equally appropriate for the development of critical thinking, we learn that certain common elements can be found in those programs which did prove effective, and they are: (1) connecting teaching/exercising critical thinking to specific content; (2) explicating learning goals and making the learning process visible to pupils – so that pupils think about what, how, and why they learn (Swartz, 2003); (3) combining several different methods and dynamic teaching; and (4) adequate education/training of teachers.

One more perspective on the scope of the approach to education for critical thinking through implementation of special programs and methods

In assessing the scope of this approach to education for critical thinking, apart from the research results themselves, critical views on it should be considered. Authors of previously demonstrated meta-analytical studies indicate numerous problems in attempts to 'measure' effects of the programs aimed at encouraging critical thinking. Above all, it is indicated that understanding what critical thinking is varies in different programs as well as in different instruments used for 'measuring' critical thinking abilities (Abrami et al., 2015; Bangert-Drowns & Bankert, 1990; Ten Dam & Volman, 2004; Halpern, 1993;

McMillan, 1987). Some of the programs are conceived so that they are aimed at learning individual cognitive skills (formal logics, arguing, predicting, etc.) or a set of these skills, or even the critical thinking itself is interpreted as an individual skill (typically as a problem-solving skill). What represents an additional problem is the fact that programs are often designed in relation to what instruments 'measure' or vice versa: the instruments are drafted to encompass what a program tends to develop in pupils (Abrami et al., 2015; Halpern, 1993). The situation is additionally complicated by the fact that conclusions on effects of the programs are derived from post-tests conducted immediately following an intervention, so the question is posed if the effects are the long-term ones and to what extent they are generic (Abrami et al., 2008; Abrami et al., 2015; Halpern, 1993; McMillan, 1987; Ten Dam & Volman, 2004). We can conclude that even though some research results indicate that programs for the development of critical thinking in the classroom contribute to the development of critical thinking skills in pupils, results of the research on the effects of these programs differ, and there are numerous problems of both theoretical and methodological nature relevant for assessment of the meaning of these research studies and their results.

Relying on socio-constructivist and sociocultural perspectives, to these limitations we would also add those which are of a wider theoretical nature and are concerning the fact which is (relatively) common in the way these programs understand critical thinking as well as regarding the purpose of education for critical thinking. What is common to such programs, explicitly or implicitly, is that: (1) they, above all, perceive critical thinking as a separate, individual cognitive ability/skill; (2) they perceive development of such abilities in pupils as one of the objectives of instruction; (3) they imply that pupils will develop these abilities through appropriate 'cognitive education' (a term used by Martin, 2005) meaning by practicing isolated activities in the classroom. Most of these programs, as Ten Dam and Volman state, are derived predominantly from a cognitivist perspective, which can be described as instrumental since it puts the development of rational, so called higher-order skills, as an unquestionable aim (Ten Dam & Volman, 2004). From this perspective, even the entire performance of teachers is perceived as a cognitive function: 'If we understand that successful teaching involves frequent (multiple times per day) decision making, carefully phrased verbal instructions and presentations, the ability to multitask, anticipation, organisation, categorisation, analysis, and synthesis, then we can easily see that teaching done well is clearly a higher-order cognitive function' (Martin, 2005, p. 216), so enormous importance is attached to the programs aimed at the development of critical thinking in teachers. By this fact alone, the

affective and ethical dimensions of any type of education including the education for critical thinking are neglected, and cognitive education are seen as a scientific way to critical thinking, independent from values and isolated from context. Therefore, what dominates is the rationalistic foundation of the epistemology of critical thinking (Ten Dam & Volman, 2004).

Accordingly, regarding the purpose of education for critical thinking – the question why it is necessary for pupils to develop this cognitive ability – the answer is different in different programs, or it is not in focus at all. However, the purpose can be rather different: it can range from enabling pupils to fit into the demands of the liberal market and contribute to preservation of the existing culture and existing social relationships, to enabling them to participate in the democratic society (the meaning of it varying in different societies and different periods) to education for changing the society. That is why, especially from the postmodern perspective and perspective of critical pedagogy, this type of education for critical thinking is objected to because it is instrumentalised and takes insufficient account of the social context (Ten Dam & Volman, 2004).

Based on the previous analysis, we find yet another kind of critique for the approach to education for critical thinking through the implementation of special programs and methods in an implicit underlying rationale that the development of critical thinking will come into effect when this type of education receives its own place in relevant documents (curriculum, achievement standards, professional standards for teachers) and when teachers have adequate education/training. The development of critical thinking is therefore exclusively associated with special teaching-of-thinking strategies, and it is perceived as possible within existing curriculums and the ways leading to them (i.e. within essentially unchanged educational and social systems). The consequence of this way of thinking lies in the fact that teachers (who possess insufficient knowledge and are not sufficiently dedicated) or their education (which has not taught them to use strategies for developing critical thinking) are to be blamed for the failure of education for critical thinking.

Education for Critical Thinking – Some Different Perspectives

Responses to criticism and limitations of the scope of education for critical thinking through special programs can be found in attempts to 'repair' some of the features of this approach or searched for in completely different perspectives, which enable a change in the way of approaching education for critical thinking. In the following text, we will try to find different perspective

by discussing the meaning of education for critical thinking within the critical approach to education and contemporary theories of curriculum. Even though these approaches share a common feature with the previously described approach to education for critical thinking (i.e. opposition to transmissive nature of education (Sibbett, 2016)), they differ in terms of how they conceptualise criticality, its purpose and a way of achieving it.

Education for critical thinking from the perspective of critical pedagogy

Thinkers of critical orientation are directed at the deconstruction of power relations in education and society as well as at building a more just education and more just social relations. From the perspective of critical pedagogy, critical thinking is a necessary competency so that oppressive power relations and social inequality could be recognised and overcome (McLaren, 1994). However, reducing education for a just society to the development of critical thinking as isolated and ideologically neutral rational reasoning is criticised (Burbules, 2016; Burbules & Berk, 1999), since the *nature of criticality* and its *purpose* are seen differently. From this perspective, criticality/critical thinking is not just a process of cognitive activities (comparison, analysis, synthesis, logical deduction, etc.) that can be performed outside specific contexts, interests of various actors of events, and values they accept. Therefore, Sibbett emphasises that emotions are intrinsic to criticality for critical pedagogues and many justice-oriented activists,: '[…] powerful emotions are an appropriate— indeed, a reasonable— response to inequality and injustice' (Sibbett, 2016, p. 3). Similar to that is a view of Burbules that emotionality presents a necessary dimension of 'political communication and political action' since 'political language, is spoken by people with feelings, hopes, and fears' (Burbules, 2016, p. 4). Thus, equating education for social justice with enabling young people to make decisions methodically, to make choices of values and behaviours they will acquire is also criticised, since such a standpoint implies that social problems derive from irrational, illogical decisions (i.e. the lack of critical thinking) and that they will be solved if higher-order cognitive abilities are developed in young people. In contrast to that, from the perspective of critical pedagogy, the development of criticality represents the development of critical awareness of unequal power distribution and covert inequalities in a specific context, and accepting the value of solidarity, ethics of care, participation, social activism with the aim of changing unjust social relations as well as developing dispositions for society to be criticised and changed from the perspective of advocating these values (Burbules, 2016; Sibbett, 2016; Ten Dam & Volman, 2004).

Before discussing the issue of *how to develop critical thinking,* it is necessary to emphasise that, from the perspective of critical pedagogy, it is a sociopolitical practice (McLaren, 1994), practical and social activity. This kind of activity Burbules refers to as *reasonableness* and determines it as 'the difficult, contingent social practice of pursuing the solutions to certain problems in a way that respects differences and critically acknowledges the forces of context and history, without giving in to them' (2016, p. 4). Neither from the perspective of the sociocultural theory can the teaching critical thinking be reduced to mere acquiring a skill; it is rather inherent (as any type of teaching/learning) social process of acquiring the competence to participate critically in social practices to which a person belongs, whereas this competence includes knowledge and skills and the willingness to use these (Ten Dam & Volman, 2004). The development of 'critical compentencies' comes into effect through participation in social practices meaningful to pupils, through the process of building the identity of a member of the community of learning/practice and, at the same time, through the process of building the community itself. As Burbules and Berk emphasise, 'the perspective of viewing criticality as a practice helps us to see that criticality is a way of being as well as a way of thinking, a relation to others as well as an intellectual capacity' (1999, p. 63). Critical competencies are developed not just through individual reasoning but, above all, through the exchange of ideas in order for reality to be perceived from different perspectives, to be revealed and, based on that, changed along with the others. From the perspective of critical pedagogy, it is not sufficient to reduce education for criticality to the process of searching for the truth through exchanges of different perspectives in the (existing) school context, since that context excludes in advance different perspectives and opinions of the different groups' members. Criticality demands recognising and hearing the groups that are made invisible within the hegemonic distribution of power in society and in schools, as well as hearing opinions of real people with authentic problems in an actual context (Burbules, 2016). It implies that criticality requires criticism of social relations in practice, criticism that includes both emotions and questioning values, and acting in the direction of the change, and not only rational critical thinking.

Open curriculum as an inspiration for reflecting on possibilities of education for critical thinking

Even though different curriculums are based on different conceptions of education, the perception of the curriculum as a concept is what they have in common: it is viewed as an assigned formal document, formed in advance, and originated outside the context of the specific educational reality. Its role is to

shape educational practice: it 'promises' that following the assigned parameters (goals, contents, methods, materials, etc.) leads to expected outcomes (Cornbleth, 1988). Therefore, the curriculum is viewed as closed and independent of context. Criticism of decontextualisation of curriculum is not new (Cornbleth, 1988); it is current today, and it can be relevant for perceiving the rationalist approach to education for critical thinking and for developing possible different approaches to this type of education. Cornbleth specified such perceiving of curriculum as technocratic, and she emphasised that, within it, curriculum is separated from context at two levels: conceptual (the process of developing curriculum as a document is separated from its use) and operational level (curriculum is treated as separate from the sociocultural context within which education is carried out).

Bearing in mind that the conceptualisation of the curriculum greatly reflects the way we think about education as well as what goals will be visible to pupils and teachers, it is also highly significant from the perspective of achieving goals referring to critical thinking and the process of its development. Proceeding from this fact, we can ask ourselves what the declarative emphasising of critical thinking as a goal means within the decontextualised approach to curriculum and whether it is possible to develop critical thinking through education that is managed 'top-down' and that is decontextualised: specifically, education in which teachers have just a technical role – the role of the curriculum executors, where pupils' role is to acquire the curriculum, while the curriculum itself is independent of pupils and their experiences, and it contains the knowledge that is not subject to reconsideration, and so on.

The approach to *curriculum in context* (Cornbleth, 1988) or *open curriculum/syllabus* (Matusov & Marjanovic-Shane, 2017), stands out as a different view of the curriculum.[4] Within this view, the curriculum is perceived as 'ongoing social activity shaped by various contextual influences' (Cornbleth, 1988, p. 89) (i.e. curriculum as praxis (Grundy, 1987)). Curriculum as a product (technocratic model) is perceived as just as one of the contextual elements taking part in shaping the curriculum in process (contextual model). The process of creating the curriculum 'in use' implies treating curriculum as a document in a critical way. It represents a social practice based on participation of different actors, multiperspectivity, and collaboration (Pavlović Breneselović, 2015; Radulović, 2016). Therefore, curriculum in the contextual approach does not refer to practice in a prescriptive way; it exists in practice and is inseparable from it (the change of practice implies the change of curriculum). Educational

---

4   One of the leading theoreticians of critical orientation describes this kind of curriculum as 'agreed school program' (Apple, 2012).

contents, methods, and work materials are developed and chosen so that they include personal knowledge and experiences of the actors, so that they are significant for those who learn, and so that they leave open the possibility of different ways of understanding the world and living in it, and they are open to criticism (Mac Naughton, 2003; Pavlović Breneselović, 2015; Radulović, 2016).

This way of perceiving curriculum and the manner of its development is relevant for our examination in multiple ways, some of which are consequences for formation of attitude to knowledge, and consequences for status, roles and expectations of actors in the educational process, above all of teachers and pupils. The way of understanding knowledge, greatly shaped by the curriculum development process, sends a message about meaning of knowledge and academic activities (Cornbleth, 1988, p. 90), that is, what those who learn should do. If it is implied that knowledge is part of a curriculum document, that is, if scientific knowledge specified by the curriculum is viewed as static and as an unquestionable, it will not send pupils a message about the meaningfulness of their critical questioning neither will it send a message about the significance of their experiences and their perspectives. However, if educational context sends a message on knowledge being a product of understanding experiences and exchanging meanings from various perspectives, thus being changeable, pupils will perceive them as complex, dynamic and problematic, that is, as a subject of constant critical questioning which they are also invited to participate in. The role of actors in educational process in creating the curriculum also sends a message about what is expected from them thus widening or narrowing the possibility of learning and development of critical thinking. If the pupils' role is to 'master' or 'acquire' a curriculum – then it sends a message that they are not expected to communicate their perspectives and to question critically. If a curriculum is assigned from outside of school even to teachers, it does not create a context where they will be able to implement and model critical thinking. Therefore, both perceiving knowledge and pupils' role in the process of creating a curriculum will influence the extent to which pupils will be encouraged to question critically, to create ideas, pose questions, and offer their own insights and observations. Such an essential implicit message of the curriculum cannot be substituted by isolated requests for 'critical thinking' in situations of the individual decontextualised tasks whose role is for pupils to (quasi-) discover knowledge already discovered by scientists long ago and stored in textbooks, and on top of that working, most frequently, on contents and topics that they did not choose and do not recognise as relevant.

What We Can Learn and Conclude?

Hereinafter we will attempt, based on the previous examination, to single out ideas which we believe deserve closer attention when education for critical thinking is discussed. Some of them derive directly from the previous analyses and represent their summary, while others present a product of interpretation of these analyses.

- We could characterise the predominant approach to education for critical thinking through the implementation of special programs and methods as cognitivist and rationalistic, individualistic, instrumentalist, and decontextualised.

- Different approaches to education for critical thinking in schools are possible and they differ from the predominant approach by how they understand the nature and purpose of critical thinking, the goal of education regarding the development of critical thinking, the ways for developing critical thinking, as well as the way of understanding the aspect of school life through which critical thinking develops (or which obstructs its development). While the predominant approach could be characterised as the 'approach to developing critical thinking skills', the approach we have attempted to affirm relying on ideas of critical pedagogy and open curriculum could be characterised as the 'approach of education for critical competencies'.

- In the approach of education for critical competencies it is not sufficient to change teaching methods and introduce special programs for the development of critical thinking to the existing system, as it requires questioning, deconstruction and reconstruction of status, role and power of pupils and teachers in the teaching process, but also in the process of curriculum development. Obstacles to the development of critical thinking through school education can derive not only from ignorance and the lack of dedication of teachers in schools, and from inadequate education of future teachers, but also from other features of the education system.

- The education and training of teachers should not only be aimed at enabling teachers to implement special programs, methods and techniques for the development of critical thinking in pupils, but also at enabling teachers to develop criticality and different perspectives on education, curriculum, pupils and distribution of power in education; they should also enable teachers to develop curriculum along with pupils.

We believe that questioning these findings and examining possibilities of their implementation in pedagogical practice can represent a challenge for both future research and changes in practice.

Aknowledgement

References

Abrami, P. C., Bernard, R. M., Borokhovski, E., Wade, A., Surkes, M. A., Tamim, R., & Zhang, D. (2008). Instructional Interventions Affecting Critical Thinking Skills and Dispositions: A Stage 1 Meta-Analysis. *Review of Educational Research, 78(4)*, 1102–1134. doi:10.3102/0034654308326084

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, A. C., & Persson, T. (2015). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research, 85(2)*, 275–314. doi:10.3102/0034654314551063

Apple, M. W. (2012). *Ideologija i kurikulum* [Ideology and Curriculum]. Beograd: Fabrika knjiga.

Bangert-Drowns R. L., & Bankert E. (1990). Meta-analysis of effects of explicit instruction for critical thinking. Paper presented at the annual meeting of the *American Educational Research Association*, Boston, MA. Retrieved from https://eric.ed.gov/?id=ED328614

Bonk, C. J., & Smith, G. S. (1998). Alternative instructional strategies for creative and critical thinking in the accounting curriculum. *Journal of Accounting Education*, *16(2)*, 261–293. doi: 10.1016/S0748-5751(98)00012-8

Brookfield, S. D. (2012). *Teaching for Critical Thinking: Tools and Techniques to Help Students Question Their Assumptions*. San Francisco: Jossey-Bass.

Burbules, N. C. (2016). Being Critical About Being Critical. A Response to "Toward a Transformative Criticality for Democratic Citizenship Education". *Democracy and Education*, *24(2)*, Article 7. Retrieved from http://democracyeducationjournal.org/home/vol24/iss2/7

Burbules, N., & Berk, R. (1999). Critical Thinking and Critical Pedagogy: Relations, Differences, and Limits. In T. Popkewitz & L. Fendler (Eds.), *Critical Theories in Education* (pp. 45–66). New York: Rutledge.

Burgess, M. L. (2009). Using WebCT as a Supplemental Tool to Enhance Critical Thinking and Engagement Among Developmental Reading Students. *Journal of College Reading and Learning, 39(2),* 9–33. doi: 10.1080/10790195.2009.10850316

Cavus, N., & Uzunboylu, H. (2009). Improving critical thinking skills in mobile learning. *Procedia - Social and Behavioral Sciences, 1(1)*, 434–438. doi:10.1016/j.sbspro.2009.01.078

Cornbleth, C. (1988). Curriculum in and out of context. *Journal of Curriculum and Supervision, 3(2)*, 85–96.

Crawford, A., Saul, W., Mathews, S., & MaKinster, J. (2005). *Teaching and Learning Strategies for the Thinking Classroom.* New York: International Debate Education Association.

Duron, R., Limbach, B., & Waugh, W. (2006). Critical Thinking Framework for Any Discipline. *International Journal of Teaching and Learning in Higher Education, 17(2)*, 160–166.

Forneris, S. G., & Peden-McAlpine, C. (2007). Evaluation of a reflective learning intervention to improve critical thinking in novice nurses. *Journal of Advanced Nursing, 57(4)*, 410–421. doi: 10.1111/j.1365-2648.2006.04120.x

Grundy, S. (1987). *Curriculum: product or praxis?.* London: The Falmer Press.

Greenlaw, S. A., & DeLoach, S. B. (2003). Teaching Critical Thinking with Electronic Discussion. *The Journal of Economic Education, 34(1)*, 36–52. doi:10.1080/00220480309595199

Halpern, D. F. (1993). Assessing the effectiveness of critical thinking instruction. *The Journal of General Education, 42(4)*, pp. 238-254. doi:10.1353/jge.2001.0024

Kennison, M. M. (2006). The Evaluation of Students' Reflective Writing for Evidence of Critical Thinking. *Nursing Education Perspectives, 27(5)*, 269–273.

Maurino, P. S. (2007). Looking for critical thinking in online threaded discussions. *Journal of Educational Technology Systems, 35(3)*, 241–260. doi:10.2190/P4W3-8117-K32G-R34M

Marin, L. M., & Halpern, D. F. (2011). Pedagogy for developing critical thinking in adolescents: Explicit instruction produces greatest gains. *Thinking Skills and Creativity, 6(1)*, 1–13. doi: 10.1016/j.tsc.2010.08.002

Martin, D. S. (2005). Critical Thinking for Democracy and Social Justice. In N. M. Michelli & D. L. Keiser (Eds.), *Teacher Education for Democracy and Social Justice* (pp. 209–228), New York and London: Routledge.

Matusov, E., & Marjanovic-Shane, A. (2017). Promoting students' ownership of their own education through critical dialogue and democratic self-governance. *Dialogic Pedagogy: An International Online Journal, 5(1)*, E1–E29. doi:10.5195/dpj.2017.199

McLaren, P. (1994). Foreword: critical thinking as a political project. In S. Walters (Ed.), *Re-thinking reason. New perspectives in critical thinking* (pp. 9–15). Albany: State University of New York Press.

McMillan, J. H. (1987). Enhancing College Students' Critical Thinking: A Review of Studies. *Research in Higher Education, 26(1)*, 3–29.

Mac Naughton, G. (2003). *Shaping early childhood: Learners, curriculum & contexts.* Maidenhead: Open University Press.

Pavlović Babić, D., & Baucal, A. (2013). *PISA 2012 u Srbiji: prvi rezultati* [PISA 2012 in Serbia: The First Results]. Beograd: Institut za psihologiju Filozofskog fakulteta u Beogradu i Centar za primenjenu psihologiju.

Pavlović Breneselović, D. (2015). *Gde stanuje kvalitet, knjiga 2* [Where Quality Lives, Book 2].

Beograd: Institut za pedagogiju i andragogiju Filozofskog fakulteta.

Radulović, L. (2016). *Slike o nastavniku – između modern i postmoderne* [Images of a Teacher – From Modernism to Postmodernism]. Beograd: Institut za pedagogiju i andragogiju Filozofskog fakulteta.

Saadé, R. G., Morin, D., & Thomas, J. D. E. (2012). Critical thinking in E-learning environments. *Computers in Human Behavior, 28(5)*, 1608–1617. doi:10.1016/j.chb.2012.03.025

Saiz, C., & Rivas, S. F. (2011). Evaluation of the ARDESOS program: An initiative to improve critical thinking skills. *Journal of the Scholarship of Teaching and Learning, 11(2)*, 34–51. Retrieved from https://eric.ed.gov/?id=EJ932143

Sibbett, L. A. (2016). Toward a Transformative Criticality for Democratic Citizenship Education. *Democracy & Education, 24(2),* Article 1. Retrieved from http://democracyeducationjournal.org/home/vol24/iss2/1

Swartz, R. (2003). Infusing critical and creative thinking into instruction in high school classrooms. In D. Fasko (Ed.), *Critical thinking and reasoning: Current research, theory, and practice* (pp. 207–252). Cresskill, NJ: Hampton Press.

Ten Dam, G. T. M., & Volman, M. L. L. (2004). Critical thinking as a citizenship competence: teaching strategies. *Learning and Instruction, 14(4)*, 359–379. doi:10.1016/j.learninstruc.2004.01.005

Wilgis, M., & McConnell, J. (2008). Concept mapping: An educational strategy to improve graduate nurses' critical thinking skills during a hospital orientation program. *The Journal of Continuing Education in Nursing, 39(3)*, 119–126. doi:10.3928/00220124-20080301-12

Yang, C. Y., Newby, T. J., & Bill, R. L. (2005). Using Socratic Questioning to Promote Critical Thinking Skills Through Asynchronous Discussion Forums in Distance Learning Environments. *The American Journal of Distance Education, 19(3)*, 163–181. doi: 10.1207/s15389286ajde1903_4

Yang, Y. C., & Wu, W. I. (2012). Digital storytelling for enhancing student academic achievement, critical thinking, and learning motivation: A year-long experimental study. *Computers & Education, 59(2)*, 339–352. doi:10.1016/j.compedu.2011.12.012