

Critical Thinking at Universities in BIH: Are They on the Right Track?

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The disruptive nature of the global economy causes continuous and dynamic changes in the labor market by creating new jobs and transforming existing ones. Today's companies need highly educated employees who are capable of thinking critically, having creative ideas and solutions, and who are communicative and team players. Higher education institutions (HEIs) are under considerable pressure to educate their students for the dynamic labor market and for jobs that do not even exist yet. There are high expectations from universities in fostering critical thinking among their students. The authors were interested in finding if the public HEIs in BIH fostering critical thinking of their students. The goals of the research were to discover how BIH students understand critical thinking and how they evaluate their universities regarding the promotion and practice of critical thinking. The authors developed a questionnaire and conducted an online survey among students at public universities in Bosnia and Herzegovina. The findings show that the implementation of critical thinking at BIH universities is not neglected, but it is not present to the necessary extent. There is a lot of room for improvement, particularly in the teaching process, through using new learning methods and extensive support of information technology.

Key Words: critical thinking, higher education institutions, students

JEL Classification: I23, J24

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Introduction

The first two decades of the 21st century have shown the disruptive nature of the global economy and society that is fostered by the continuous and rapid advancement of technologies such as artificial intelligence, data science, virtual reality, IoT (Internet of Things), robotics, and so on. On a daily base, new jobs are creating for wholly new occupations, while

existing occupations are fully transforming regarding job content and required skills. Although technological skills have become crucial for job-finding and job-saving, proficiency in new technologies is only one part of nowadays and future job equation. The dynamic and evolving labor markets need additional skills that span both technical and cross-functional skills. Most research on the theme of the future of jobs indicated critical thinking as one of the core skills for the new class of jobs that, among other things, imply collaboration between humans and intelligent machines (World Economic Forum 2018; 2020; OECD 2018; Bakhshi et al. 2017; Barbosa et al. 2017; Daheim and Wintermann 2016; Williams 2016).

Today's higher education institutions (HEIS) are faced with considerable pressure to educate their students for the highly volatile and dynamic labor market and for jobs that do not even exist yet. The HEIS are aware that their students need a high level of knowledge, especially knowledge of technology, but that it is not sufficient. Namely, IT created data and information overload. In that situation, it is not enough to know how and where to find data, but it is crucial to know critically distinguish fake from truthful information, to understand results of data analysis, to understand the technology, and to have critical attitudes towards it. All of the above have given critical thinking a new relevance (Bowell 2017; Frederiksen 2017; Peters 2017).

Many authors agree that critical thinking should be in the focus of higher education (Ascione 2019; Straková and Cimermanová 2018; Vero and Puka 2018; Connolly, 2017; Uribe-Enciso, Uribe-Enciso, and Vargas-Daza 2017; Živković 2016; Meyers 2012; Bensely 2011; Ahern et al., 2012; Moore 2013; Awayiga, Onumah, and Tsamenyi 2010). However, assessing and developing critical thinking in HEIS is suffering from a lack of consensus on the three major issues: definition of critical thinking, its assessment, and different approaches to foster its development (Tiruneh, Verburch, and Elen 2014).

Lai (2011) distinguished three ways in defining term critical thinking: definitions with roots in philosophical tradition focused on how people think; definitions with roots in the cognitive psychological approach define critical thinking through the types of actions or behaviours critical thinkers can do (Sternberg 1986) and definitions based on the educational approach, i.e., on classroom experience and observations of student learning (Sternberg 1986). Hence, the researchers are still searching for a useful and precise definition of critical thinking (Schmaltz, Jansen,

and Wenckowski 2017; Lai 2011; Black 2008; Beyer, Gillmore, and Fisher 2007; Haix and Reybold 2005; Donald 2002).

For the research presented in this paper, the authors adopted the definition of critical thinking as ‘purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as an explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based’ (Facione 1990, p. 3). Namely, that definition was used and validated by the project ‘Critical Thinking Across the European Higher Education Curricula – CRITHINKEDU’ funded by the European Commission (Elen et al. 2019).

The research on critical thinking in higher education can be classified into two groups: domain-general and domain-specific (Hathcoat et al. 2016; Dwyer 2017).

Domain-general research observes critical thinking as a standalone discipline with the focus on several skills that are practiced with different types of content (Elene et al. 2019).

Domain-specific research, also called the immersion approach, takes the position that critical thinking can only be taught in the context of a specific domain and that domain-specific knowledge is a precondition to the development of critical thinking (Willingham, 2008). It means that critical thinking is influenced by the culture of the discipline in which it is taught and/or practiced (Jones 2009; Grace and Orrock 2015; Sin, Jones, and Wang 2015).

In the case of the domain-general approach, transfer to domain-specific tasks is a major issue. In contrast, in the case of the domain-specific approach, critical thinking is wholly embedded in teaching the subject matter, meaning that subject-specific knowledge is a precondition for critical thinking (Stanovich, West, and Toplak 2016).

The combination of domain-general and domain-specific approaches is called a mixed approach. In the mixed approach, general principles of critical thinking are taught as a separate part of a course or as an independent course. Still, students are also involved in subject-specific critical thinking (Tiruneh, Verburch, and Elen 2014).

Although there is a consensus about the importance of critical thinking in today’s complex world, different research showed that HEIs have not been successful in fostering critical thinking among students (Hosler and Arend 2012; Crenshaw, Hale, and Harper 2011). Namely, many higher education institutions instill students with scientific concepts and repeti-

tive practices and thereby prevent them from effective thinking. However, pure data transfer is not sufficient for solving the problems in the current societies, and the students should be provided with thinking methods (Bagheri and Nowrozi 2015).

Taking into account the above research, the authors were interested in finding the answer to the question: Are the public HEIS in BIH fostering critical thinking of their students? The focus of research is on students' perception of enhancing their critical thinking during studies. The aims of the conducted research are the following:

- To explore students' understanding of critical thinking;
- To analyze to what extent the teachers promote and practice critical thinking at their classes;
- To find how the teachers encourage students to think critically;
- To explore the students' attitude towards critical thinking in the teaching process;
- To find what teaching methods and techniques students link with critical thinking;
- To investigate if the capability of critical thinking of examined students improves during the study.

Methodology

The authors, based on a literature review, developed questionnaire. The questionnaire is divided into few parts in line with the aims of the research. Offered statements were rated from 1 to 5 (Likert scale: 1 – never/totally disagree, 5 – always/strongly agree). Moreover, the students had to answer what they are studying and at what cycle (bachelor or master level), as well as what age and sex they are. The questionnaire was prepared on Google Forms, the link for it was emailed.

The empirical research was conducted during the 2019 year at public universities in Bosnia and Herzegovina, with respondents (students) from the following five universities: the University of Mostar, the University 'Džemal Bijedić' Mostar, the University of Zenica, the University of East Sarajevo and the University of Sarajevo. In total, 573 questionnaires were collected (link to the questionnaire was sent to 2500 e-mails, respond rate 22.92%). After the control of questionnaires carried out, 565 questionnaires remained for analysis. Students' distributions by characteristics are as follows:

- Gender: 377 (66.7%) women and 188 (33.3%) men,

- Cycle: 486 (86.0%) first cycle (bachelor) and 79 (14.0%) second cycle (master),
- Study: 274 (48.5%) faculties of social sciences, 142 (25.1%) technical faculties and 149 (26.4%) faculties of other fields of science.

The average age of students is 21.12 (± 2.9) years.

Data was analysed in IBM SPSS Statistic 25.0. Descriptive statistics were used: mean, standard deviation ($M \pm SD$), mode, absolute (f), and relative frequencies (%).

Results

In order to find how students understand critical thinking (what according to them critical thinking comprise of), it is offered to students to choose from the list whatever they think critical thinking stands for. The distributions of particular statements are presented in table 1.

In order to investigate the behavior of teachers regarding promotion, respect and practice of critical thinking, the students were asked to evaluate the current practice of critical thinking at BiH universities. Descriptive statistics by particular statements are presented in table 2.

In order to find to what extent the teachers during their classes encourage the students to think critically, the students were asked to evaluate the frequency of practicing the specific behavior. Descriptive statistics by particular behavior is presented in table 3.

In order to understand the student's attitude towards critical thinking in the teaching process, students were asked to evaluate a set of statements. Descriptive statistics by individual statements are presented in table 4.

In order to find out which activities (teaching methods and techniques) the student associates with critical thinking, the students were asked to evaluate how much (to what extent) certain activities encourage critical thinking. The descriptive statistics by activity are presented in table 5. In addition, students were asked to answer the question: 'Has your critical thinking ability improved during your studies?' The results are as follows: 281 (49.7%) students answered yes, 72 (12.7%) gave a negative answer, while 212 (37.5%) students were not sure (they answered: I'm not sure).

Discussion

The results of the research show that students have different opinions about the definition of critical thinking. Namely, critical thinking is

TABLE 1 Critical Thinking and Its Meanings

Critical thinking stands for . . .	<i>f</i> *	%
A more complex and challenging way of logical thinking	298	52.7
Articulation of ideas	153	27.1
Finding meaning	114	20.2
Considering different arguments and finding fact to evaluate the justification of each one of those arguments	315	55.8
Formulating a hypothesis	92	16.3
Affirmation of personal beliefs and arguments	112	19.8
Decision making	202	35.8
Problem solving	269	47.6
Observation and evaluation of personal cognitive abilities and actions	68	12.0
Elementary abilities of decomposition and synthesis of ideas/arguments and an ability to evaluate performances and products that are a result of personal activities during and after the process of critical thinking.	75	13.3
The usage of reliable sources and marking the used resources	101	17.9
Finding the cause	163	28.8
Taking into consideration the situation as a whole and observing the problem from different angles.	286	50.6
Taking into consideration differing opinions and evaluating the reasons for and against a certain decision	376	66.5
A cognitive ability to give meaning to dispersive ideas that prepare people for important dialogues with other people and enable a better adjustment to their environment.	93	16.5

NOTES * Multiple answers.

vaguely defined, often with a lack of clarity what exactly constitutes it (Lai 2011; Stassen, Herrington, and Henderson 2011). Because of that, it is not odd that there is diversity among students' answers related to the definition of critical thinking (table 1). The results show that 52.7% of participants think that critical thinking means 'A more complex and challenging way of logical thinking.' Their opinion is close to the definition of critical thinking as a more complex and significantly demanding logical form of higher-order reasoning (Brady 2008; Philley 2005).

However, more than half of students agree that critical thinking is 'Taking into consideration the situation as a whole and observing the problem from different angles' (50.6%), 'Taking into consideration differing opinions and evaluating the reasons for and against a certain de-

TABLE 2 The Current Practice of Critical Thinking at Universities in BIH

Lecturers during their lectures ...	(1)	(2)	(3)	(4)	(5)	(6)
Value critical thinking	565	16.8	46.7	3.5	1.0	3
Value critique of the ideas put forward during the lecture	564	19.3	48.4	3.4	1.1	3
Accept student's criticism if it is justified	562	14.8	60.3	3.7	1.1	4
Indulge in a more detailed conversation about the pros and cons of different ideas	563	22.4	48.1	3.4	1.2	3
Lead students to their (lecturer's) way of thinking	564	17.6	52.1	3.5	1.1	3
Allow students to express their critical thinking	564	13.5	59.9	3.7	1.1	4
Give real life examples	565	10.8	70.6	3.9	1.0	4
Explain theoretical assumptions through real-life examples	565	13.5	60.9	3.7	1.0	4
Show their critical thinking about the given subject	565	11.2	58.1	3.7	1.0	4
Encourage an argument based discussion about the subject between the students	565	34.0	33.8	3.0	1.2	3
Develop the student's self-confidence about their critical thinking	565	31.2	39.5	3.1	1.2	3
Create situations for learning in which there are no right or wrong answers	565	32.6	25.1	2.9	1.1	3
Are opened for different new solutions and accept opinions that differ from their own	565	19.6	45.3	3.4	1.1	3
Question everything that is already known in theory in order to develop critical thinking in their students	565	22.8	44.1	3.3	1.2	3

NOTES Column headings are as follows: (1) number, (2) very rarely or never (%), (3) very often or always (%), (4) mean, (5) standard deviation, (6) mode.

cision' (66.5%) and 'Considering different arguments and finding fact to evaluate the justification of each one of those arguments' (55.8%). It means that standpoints of more than half of students are close to the definition of critical thinking provided by Foundation for Critical thinking (<http://www.criticalthinking.org/pages/our-conception-of-critical-thinking/411>).

The results in table 2 show that grades of statements related to students' perception of the teacher's attitude towards students' critical thinking and to what extent teachers encourage students to think critically are between 3 and 4. The grades for practical 'implementation' of critical thinking in the teaching process are at the same range.

TABLE 3 The Teachers' Behavior in Encouraging Critical Thinking at Universities in BIH

Lecturers during their lectures . . .	(1)	(2)	(3)	(4)
Engage in a constructive discussion	564	23.0	38.1	38.8
Criticize the presented ideas and solutions	564	23.0	37.6	39.4
Express their own ideas	564	18.4	28.9	52.7
Give constructive suggestions	564	17.4	29.3	53.4
Suggest new solutions	564	19.1	29.8	51.1

NOTES Column headings are as follows: (1) number, (2) very rarely or never (%), (3) periodically (%) (4) very often or always (%).

Although all mean grades are less than 4, the highest grades for the set of statements related to the evaluation of the current practice of critical thinking (table 2) show that teachers allow students to express their opinion and accept students' criticism if it is justified. Additionally, teachers, through their lectures, demonstrate their critical thinking relating to the subject of the lecture. This is confirmed by the share of students who agree with statements 3, 6, 9. Results show that teachers use real examples from everyday life to better explain the content of their lectures to students. Thereby teachers encourage students in linking theory and practice and in developing necessary critical thinking.

Practicing critical thinking was researched through students' standpoints concerning the teachers' behavior in encouraging critical thinking of students. According to the results of research (table 3), the teachers, during the classes, mostly encourage students to 'Express their own ideas' (52.7%), to 'Give constructive suggestions' (53.4%) and to 'Suggest new solutions' (51.1%). On the other hand, students think (table 3) that they are less encouraged to 'Criticize the presented ideas and solutions' (60.6%) or to 'Engage in a constructive discussion' (61.1%). Those results support the former conclusion that critical thinking is practicing at BIH universities to a certain degree, but not fully.

The students' view of critical thinking in higher education are presented in table 4. The results show that students expect from their teachers both to encourage them in critical thinking and to use new teaching methods in order to motivate students to take active participation and to direct the course of the lecture. More than half of students think that the teachers are crucial in their encouragement to think critically. This opinion is in line with literature sources because the researches generally

TABLE 4 The Students' View of Critical Thinking in Higher Education

Statement	(1)	(2)	(3)	(4)	(5)	(6)
Students should be encouraged to think critically.	565	2.3	89.9	4.6	.8	5
Lectures should be based on new learning methods.	565	2.3	86.0	4.5	.8	5
Lecturers (professors and assistants) are the main instigators of the student's critical thinking.	564	6.7	67.2	3.9	1.0	5
The encouragement of a student's critical thinking is dependent on the characteristics of the lecturers (professors and assistants).	565	3.9	78.8	4.2	.9	5
All of the experiences/opinions of the students should be taken into account when solving a problem.	565	4.8	78.2	4.2	.9	5
It is more important to achieve good communication with the students than it is to give the lecture.	565	5.7	75.8	4.2	1.0	5
Students can direct the course of the lecture.	564	10.1	59.0	3.7	1.0	4
Every issue has only one solution.	565	53.1	21.8	2.4	1.4	1
Students must answer questions precisely as it is written in the literature if they want to pass their tests successfully.	565	65.8	15.4	2.1	1.3	1
Students can have their own opinions that differ wildly from the lecturer's (professor's/assistant's).	565	5.0	77.2	4.3	.9	5
To think critically means to look at the issue from different perspectives.	565	1.9	82.1	4.3	.8	5
To think critically means to base a decision on verified facts.	565	6.2	66.5	3.9	1.0	5
To think critically means to question everything.	565	14.7	54.3	3.6	1.1	3

NOTES Column headings are as follows: (1) number, (2) disagree (%), (3) agree (%), (4) mean, (5) standard deviation, (6) mode.

agree about the importance of a teacher's role and guidance in developing student's critical thinking (Brady 2008; Paul 2005). In general, the results presented in table 4 show that students have a positive attitude towards critical thinking. They recognized the importance of critical thinking as well as the role of the teachers in the encouragement of a student's critical thinking. This is supported by relatively high average grades and a relatively large portion of students that agree with offered statements. The exceptions are the statements that are opposite to critical thinking ('Every issue has only one solution,' 'Students must answer on questions exactly as it is written in the literature if they want to pass their tests successfully').

TABLE 5 Teaching Activities and Critical Thinking

Activity	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Working in groups to solve a certain problem	565	9.0	22.3	68.7	3.9	1.1	5
Writing a critical review on the given subject	565	14.3	32.7	52.9	3.5	1.1	3
Presenting a solution to a problem	563	11.9	24.7	63.4	3.8	1.1	4
Presenting a critical review on the given case study	564	9.6	31.9	58.5	3.7	1.0	4
Choosing your own subject/problem to research/resolve	565	5.3	24.2	70.4	4.0	1.0	5
Writing a seminar work	565	26.4	30.8	42.8	3.2	1.3	3
Role playing	564	24.1	31.7	44.1	3.2	1.3	3
Debates/groups presenting for and against a solution	565	10.3	17.7	72.0	4.0	1.1	5
Visiting lecturers	565	12.7	25.0	62.3	3.8	1.1	5
Student's presentation on a given subject	564	16.1	28.9	55.0	3.6	1.2	5

NOTES Column headings are as follows: (1) number, (2) not at all (%), (3) moderately (%), (4) considerably, (5) mean, (6) standard deviation, (7) mode.

The students are aware that for the problems presented and analyzed on classes, more solutions exist. They expect that the teachers will give them the chance to present their opinions and use their creativity in resolving those problems instead of insisting on only one solution and require that students answer on questions precisely as it is written in the literature if they want to pass their tests successfully.

Table 5 shows to what extent, according to students' opinion, particular teaching activities encourage critical thinking. The results show that students think that 'Debates/groups presenting for and against a solution' is an activity that has the highest influence on developing critical thinking. Follow closely the activities 'Choosing your own subject/problem to research/resolve' and 'Working in groups to solve a certain problem.' Follow 'Visiting lectures,' 'Presenting a solution to a problem,' and so on. The results show that students recognize the activities that can contribute to the development of critical thinking. Generally, the researches of critical thinking usually agree that those activities are encompassed by the definition of critical thinking (Lai 2011).

The students' answers on the direct question 'Have your critical thinking ability improved during your studies?' support the view that critical thinking is practicing at BIH universities to a certain degree, but not

in full capacity. Namely, only half of the participants gave a positive answer to the previous question, while more than one third do not know the answer. This implies that there is no systematic approach to developing critical thinking on BiH universities. It is conceded to each particular teacher. However, the presented research did not comprise all public universities, so the results cannot be generalized. Since students recognized the importance of the teacher in developing critical thinking, the more systematic approach in developing critical thinking at BiH universities should start with support to teachers. The support means empowering the teacher's capabilities in developing students' and their own critical thinking through specific workshops, training, and discussion of the best practices in that field.

Conclusion

In methodology is stressed out that the research is still ongoing, meaning that findings are not final and should be taken with caution.

The research shows that BiH public universities only partially foster critical thinking of their students. Consequently, there is a lot of room for improvement, particularly in the teaching process, through using new learning methods (research projects, role play, independent study) and extensive support of information technology (augmented/virtual/mixed reality, artificial intelligence, gamification). Students confirmed that most of the teachers encourage their critical thinking. However, because of the size of the research sample, teachers with whom participants deal are probably not representative examples concerning critical thinking.

The results show that students recognized the importance of critical thinking as well as the role of the teachers in both encouraging them in critical thinking and in using new teaching methods in motivating students to take active participation during the classes. However, only half of the students think that their critical ability improved during the study. That supports the view that critical thinking is practicing at BiH universities to a certain degree, but not in full capacity, implying that there is no systematic approach in developing critical thinking on BiH universities. It can be said, concerning the development of critical thinking, that BiH universities are on the right track, but the long journey is still ahead of them. Since the teachers have the leading role in encouraging the students in critical thinking, the first step in developing a more systematic approach to critical thinking at BiH universities should begin with empowering the teacher's capabilities in fostering students' critical thinking.

Further, the HEIS should continuously work on their organizational environment to encourage the development of critical thinking, as well as on improving courses' curricula by including content that should foster critical thinking or developing standalone critical thinking courses.

The results of this research can be useful for students, teachers, and the management of public universities in BiH. Understanding students' opinions regarding critical thinking can help teachers in introducing new teaching methods to facilitate the development of students' critical thinking. HEIS can use the results as a starting point in the development and adoption of adequate plans and activities for fostering critical thinking in their institutions.

The limitations of the research are the size and structure of the sample because the sample does not comprise all BiH public universities, private HEIS were not included in the research, and only students' perspective was explored.

Further research should include all BiH public and private HEIS, and it should investigate the teachers' perceptions related to fostering critical thinking at HEIS. In addition, the analysis according to scientific fields and sub-categories should be included in future research, because it can influence the development of critical thinking at HEIS.

References

- Ahern A., T. O'Connor, G. McRuairc, M. McNamara, and D. O'Donnell. 2012. 'Critical Thinking in the University Curriculum: The Impact on Engineering Education.' *European Journal of Engineering Education* 37 (2): 125–32.
- Ascione, L. (2019). 'Higher Ed Must Help Students Improve Critical-Thinking Skills.' *eSchoolMedia & eCampus News*, 30 January. <https://www.ecampusnews.com/2019/01/30/higher-ed-must-help-students-improve-critical-thinking-skills/>
- Awayiga, J., J. Onumah, and M. Tsamenyi. 2010. 'Knowledge and Skills Development of Accounting Graduates: The Perceptions of Graduates and Employers in Ghana,' *Accounting Education* 19 (1–2): 139–58.
- Bagheri, M., and R. A. Nowrozi. 2015. 'A Comparative Study of the Critical Thinking Skills among the Students of Accounting and Software in the Female Technical and Vocational University in the City of Borojerd.' *Journal of Education and Practice* 6 (13): 43–46.
- Bakhshi, H., J. Downing, M. Osborne, and P. Schneider. 2017. *The Future of Skills: Employment in 2030*. London: Pearson and Nesta.
- Barbosa, C. E., Y. Lima, E. Mioto, L. F. C. Costa, A. Carmo, J. A. da Silva, J.

- Kritz et al. 2017. *Working in 2050: A View of How Changes on the Work Will Affect Society*. Rio de Janeiro: Laboratório do Futuro.
- Bensely, D. A. 2011. 'Rules for Reasoning Revisited: Toward a Scientific Conception of Critical Thinking.' In *Critical Thinking: Education in a Competitive and Globalizing World*, edited by P. N. Christopher and M. F. James, 1–45. New York: Nova Science.
- Beyer, C. H., G. M. Gillmore, and A. T. Fisher. 2007. *Inside the Undergraduate Experience: The University of Washington's Study of Undergraduate Education*. San Francisco, CA: Jossey-Bass.
- Black, B. 2008. 'Critical Thinking – A Definition and Taxonomy for Cambridge Assessment: Supporting Validity Arguments about Critical Thinking Assessments Administered by Cambridge Assessment.' Paper presented at the 34th International Association of Educational Assessment Annual Conference, 9 September, Cambridge.
- Bowell, T. 2017. 'Response to the Editorial "Education in a post-truth world."' *Educational Philosophy and Theory* 49 (6): 582–85.
- Brady, M. 2008. 'Cover the Material: Or Teach Students to Think?' *Educational Leadership* 65 (5): 64–7.
- Connolly, F. 2017. 'Why Higher Ed Needs to Bridge the Critical Thinking Skills Gap.' *EdSurge*, 2 September. <https://www.edsurge.com/news/2017-09-02-why-higher-ed-needs-to-bridge-the-critical-thinking-skills-gap>
- Crenshaw, P., E. Hale, and S. L. Harper. 2011. 'Producing Intellectual Labor in the Classroom: The Utilization of a Critical Thinking Model to Help Students Take Command of Their Thinking.' *Journal of College Teaching and Learning* 8 (7): 13–26.
- Daheim, C., and O. Wintermann. 2016. *2050: The Future of Work. Findings of an International Delphi-Study of The Millennium Project*. Gütersloh: Bertelsmann.
- Donald, J. G. 2002. *Learning to Think: Disciplinary Perspectives*. San Francisco, CA: Jossey-Bass.
- Dwyer, C. P. 2017. *Critical Thinking: Conceptual Perspectives and Practical Guidelines*. Cambridge: Cambridge University Press.
- Elen, J., L. Jiang, A. Verburgh, D. E. Dumitru, D. Bigu, A. Poce, M. F. Morais et al. 2019. *Promoting Critical Thinking in European Higher Education Institutions: Towards an Educational Protocol*. Vila Real: UTAD.
- Facione, P. A. 1990. *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment & Instruction; The Delphi Report*. Millbrae, CA: The California Academic Press.
- Frederiksen, L. 2017. 'Fake News.' *Public Services Quarterly* 13 (2): 103–7.
- Grace, S., and P. J. Orrock. 2015. 'Criticality in Osteopathic Medicine: Exploring the Relationship between Critical Thinking and Clinical Reasoning.' In *The Palgrave Handbook of Critical Thinking in Higher Edu-*

- cation, edited by M. Davies and R. Barnett, 475–90. New York: Palgrave Macmillan.
- Haix, M. D., and L. E. Reybold. 2005. 'A Pedagogy of Force: Faculty Perspectives of Critical Thinking Capacity in Undergraduate Students.' *The Journal of General Education* 54 (4): 293–315.
- Hathcoat, J. D., J. D. Penn, L. L. Barnes, and J. C. Comer. 2016. 'A Second Dystopia in Education: Validity Issues in Authentic Assessment Practices.' *Research in Higher Education* 57 (7): 892–912.
- Hosler, K. A., and B. D. Arend. 2012. 'The Importance of Course Design, Feedback, and Facilitation: Student Perceptions of the Relationship between Teaching Presence and Cognitive Presence.' *Educational Media International* 49 (3): 217–29.
- Jones, A. 2009. 'RedisCIPLining Generic Attributes: The Disciplinary Context in Focus.' *Studies in Higher Education* 34 (1): 85–100.
- Lai, E. R. 2011. 'Critical Thinking: A Literature Review.' Pearson's Research Report. <https://images.pearsonassessments.com/images/tmrs/CriticalThinkingReviewFINAL.pdf>
- Meyers, D. G. 2012. *Social Psychology* 11th ed. Columbus, OH: McGraw Hill.
- Moore, T. 2013. 'Critical Thinking: Seven Definitions in Search of a Concept.' *Studies in Higher Education* 38 (4): 506–22.
- OECD. 2018. *Skills for Jobs*. Paris: OECD Publishing.
- Paul, R. 2005. 'The State of Critical Thinking Today.' *New Directions for Community Colleges* 130:27–38.
- Peters, M. A. 2017. 'Education in a Post-Truth World.' *Educational Philosophy and Theory* 49 (6): 563–66.
- Philly, J. 2005. 'Critical Thinking Concepts.' *Professional Safety* 50 (30): 26–32.
- Schmaltz, R. M., E. Jansen, and N. Wenckowski. 2017. 'Redefining Critical Thinking: Teaching Students to Think like Scientists.' *Frontiers in Psychology* 8:459. <https://doi.org/10.3389/fpsyg.2017.00459>
- Sin, S., A. Jones, and Z. Wang. 2015. 'Critical Thinking in Professional Accounting Practice: Conceptions of Employers and Practitioners.' In *The Palgrave Handbook of Critical Thinking in Higher Education*, edited by M. Davies and R. Barnett, 431–56. New York: Palgrave Macmillan.
- Stanovich, K. E., R. F. West, and M. E. Toplak. 2016. *The Rationality Quotient: Toward a Test of Rational Thinking*. Cambridge, MA: MIT Press.
- Stassen, M. L. A., A. Herrington, and L. Henderson. 2011. 'Defining Critical Thinking in Higher Education – Determining Assessment Fit.' *Improve the Academy, Journal of Educational Development* 30 (1): 126–41.
- Sternberg, R. J. 1986. *Critical Thinking: Its Nature, Measurement, and Improvement*. Washington, DC: National Institute of Education.
- Straková, Z., and I. Cimermanová. 2018. 'Critical Thinking Development

- A Necessary Step in Higher Education Transformation towards Sustainability.' *Sustainability* 10 (10): 3366. <https://doi.org/10.3390/su10103366>
- Tiruneh, D. T., A. Verburgh, and J. Elen. 2014. 'Effectiveness of Critical Thinking Instruction in Higher Education: A Systematic Review of Intervention Studies.' *Higher Education Studies* 4 (1): 1–17.
- Uribe-Enciso, O. L., D. S. Uribe-Enciso, and M. P. Vargas-Daza. 2017. 'Critical Thinking and its Importance in Education: Some Reflections.' *Rostros Rostros* 19 (34): 78–88.
- Vero, E., and E. Puka. 2018. 'The Effectiveness of Critical Thinking in Higher Education.' *On-Line Journal Modelling the New Europe* 26:217–33.
- World Economic Forum. 2020. *Jobs of Tomorrow: Mapping Opportunity in the New Economy*. Geneva: World Economic Forum.
- World Economic Forum. 2018. *The Future of Jobs Report 2018*. Geneva: World Economic Forum.
- Williams, F. 2016. 'Critical Thinking in Social Policy: The Challenges of Past, Present and Future.' *Social Policy & Administration* 50 (6): 628–47.
- Živković, S. 2016. 'A Model of Critical Thinking as an Important Attribute for Success in the 21st Century.' Paper presented at the International Conference on Teaching and Learning English as an Additional Language, GlobELT 2016, 14–17 April, Antalya.