Do Higher Education Institutions Foster Critical Thinking? – Students' Perspective

Mirela Mabić
University of Mostar – Faculty of Economics, Bosnia and Herzegovina
Dražena Gašpar
University of Mostar – Faculty of Economics, Bosnia and Herzegovina

Abstract

The paper presents the results of research related to students' perception of enhancing their critical thinking during studies at higher education institutions (HEIs). The authors developed a questionnaire and conducted the research at the public universities in Bosnia and Herzegovina (BH) in order to investigate students' perception of enhancing their critical thinking during studies at the university. Namely, in a 21st century, the employability of fresh graduates highly depends on their soft skills, especially their ability to think critically in solving the problems. The aim of the presented research is to find if BH students are aware of the necessity to enhance their critical thinking abilities during their studies in order to be better prepared for their future jobs.

Keywords: critical thinking, higher education institutions, students
JEL classification: I23, J24

Introduction

The 21st century societies are globalized, constantly changing, complex, and faced with the continuous and rapid development of information-communication technologies (ICT). One of the consequences of rapid ICT development is the collection and storage of the enormous quantity of data, as never before in human history. Processing, evaluation, judgment about the relevance and reliability of data has made decision making more complex, both in business, and private life. Information technology offers different solutions (data warehouses, analytical tools, decision support systems, etc.) as support to decision makers. However, despite all IT support, the decision makers are still the key players who have to understand and apply the results of analytical tools in order to make appropriate decisions that will enable further existence and development of their companies. Therefore, it is not strange continuous accentuation that the 21st century employees, in addition to knowledge, have to be trained to critical thinking and how to be creative. The expectations are high especially of higher education that should prepare their students for the work in unknown and unpredictable situations, for lifelong learning, and critical thinking, not only of technology solutions and their implementation but also of overall social development. Many authors believe that developing critical thinking of students should be a primary goal of higher education (Ascione, 2019; Straková & Cimermanová, 2018; Vero & Puka, 2018; Connolly, 2017; Uribe-Enciso, Uribe-Enciso, & Vargas-Daza, 2017; Živković, 2016; Meyers, 2012; Bensely, 2011; Ahern, O'Connor, McRuairc, McNamara & O'Donnell, 2012; Moore, 2013).

Although there is awareness about the importance of critical thinking in modern societies, there is still no consensus about the definition of what critical thinking is.

Concerning critical thinking in education, John Dewey is credited as one who first stressed out the importance of critical thinking in education, although he used term *reflective thinking* instead of critical thinking. According to Dewey reflective thinking is an "active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the furthest conclusions to which it ends" (Dewey, 1910, p. 6). For the presented research, the authors adopted the definition of critical thinking published by the Foundation for Critical thinking: "Critical thinking is that mode of thinking — about any subject, content, or problem — in which the thinker improves the quality of his or her thinking by skilfully analysing, assessing, and reconstructing it. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities, as well as a commitment to overcome our native egocentrism and sociocentrism" (The Foundation for Critical Thinking, N/A).

Lloyd and Bahr (2010) have determined that the research on critical thinking in higher education falls into two broad categories:

- Looking for a consistent and precise definition of critical thinking (Schmaltz, Jansen & Wenckowski, 2017; Lai, 2011; Black, 2008; Halx & Reybold, 2005; Donald, 2002).
- Pedagogical approaches either described as standalone programs or incorporated into existing studies or activities. Integration of critical thinking into student activities, particularly assessment items, has also been investigated (Nold, 2017; Baylon Jr, 2014; Lattuca & Stark, 2009; Dawidowicz, 2008).

Despite the consensus about the importance of critical thinking in today complex world, different research showed that educational systems, particularly higher education have not been successful in fostering critical thinking among students (Hosler & Arend, 2012; Crenshaw, Hale & Harper, 2011). Namely, many higher education institutions instill students with scientific concepts and repetitive 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 & Nowrozi, 2015).

A number of studies were conducted to investigate the effects of university experience (in terms of coursework, tests and assignments, classroom learning and others) regarding critical thinking and problem solving skill (Bagheri & Nowrozi, 2015; Orszag, 2015; Reid & Anderson, 2012; Trounson, 2011; Ahern, O'Connor, McRuairc, McNamara & O'Donnell, 2012; Moore, 2013).

In higher education in Bosnia and Herzegovina (BH), the importance of critical thinking is recognized in the document Baseline of the Qualifications Framework in Bosnia and Herzegovina. In explanation of generic descriptors of qualifications levels based on learning outcomes for the level 6 (bachelors) is written "This person is able to apply acquired knowledge and *critical understanding* of the principles relating to the given field of study/discipline in a manner to demonstrate professional approach to their work or vocation, and has competences typically demonstrated through devising and sustaining arguments and solving problems within a given field of study" (QF Baseline, 2011, p. 205)

Today, it is clear that developing and fostering critical thinking skills in students is one of the main goals of higher education. However, the question is: are the higher education institutions in BH successful in fulfilment of that goal? The research presented in this paper tries to find an answer to this question. The research is focused on students' perception of enhancing their critical thinking during studies at public higher education institutions in Bosnia and Herzegovina.

Methodology

The empirical research has been started at the end of February 2019, and it is still in progress. The population is made of the students from all 8 public universities in Bosnia and Herzegovina. However, the sample reached in the time of writing this paper was 315 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.

The research instrument is a questionnaire made by the authors. The questionnaire has two parts: (i) The first part contained 14 statements that evaluated the current practice at BH universities related to critical thinking; (ii) The second part contained 9 statements that evaluated students' attitude about critical thinking in the teaching process. Likert scale with grades from 1 (never/totally disagree) to 5 (always/strongly agree) is used in the assessment of all statements. The survey was conducted online. The tool Google Forms is used for the preparation of the questionnaire. Link to the questionnaire was distributed by mail. Data is analysed in SPSS for Windows, version 20.0, and following descriptive statistics were used: mean, standard deviation (M±SD), mode, absolute (f) and relative frequencies (%).

Results

The evaluation of the current practice of critical thinking at BH universities, according to students' perception, is presented in Table 1.

Table 1
Evaluation of Current Practice of Critical Thinking at Universities in BH (N = 315)

Lecturers (professors and assistants) during their lecture …	M	SD	D	Very rarely or never (%)	Very often or always (%)
Value critical thinking	3.49	1.07	3	18.41	46.35
Value critique of the ideas put forward during the lecture	3.52	1.10	3	17.14	49.84
Accept student's criticism if it is justified	3.75	1.11	5	14.01	58.92
Indulge in a more detailed conversation about the pros and cons of different ideas	3.51	1.17	4	22.22	52.38
Lead students to their (lecturer's) way of thinking	3.62	1.11	4	16.88	56.69
Allow students to express their critical thinking	3.77	1.10	5	13.38	58.60
Give real life examples	3.92	1.03	5	9.84	68.25
Explain theoretical assumptions through real-life examples	3.75	1.07	4	13.69	63.69
Show their critical thinking about the given subject	3.72	1.00	4	11.43	59.37
Encourage an argument based discussion about the subject between the students	3.13	1.22	3	31.75	37.78
Develop the student's self-confidence about their critical thinking	3.17	1.24	3	31.11	40.00
Create situations for learning in which there are no right or wrong answers	2.99	1.14	3	30.57	28.03
Are opened for different new solutions and accept opinions that differ from their own	3.46	1.10	3	19.37	46.03
Question everything that is already known in theory in order to develop critical thinking in their students	3.45	1.18	3	20.95	47.94

Note: M – mean; SD – standard deviation; D - mode;
Source: Authors' work

Grades for statements from Table 1 are suitable for factor analysis (Kaiser-Meyer-Olkin measure of sampling adequacy is 0.929; Bartlett's test of sphericity is significant, p<0.001). After factor analysis, it was found that the statements (Table 1) could be grouped into two factors:

- The first factor includes the following statements: 1, 2, 3, 4, 6, 11, 13; Cronbach's Alpha = 0.910; Mean = 3.515; Standard deviation =1,134.
- The second factor includes the following statements: 7, 8, 9, 10, 14; Cronbach's Alpha = 0.882; Mean = 3.594; Standard deviation =1.100.

The statements that belong to factor 1 refer to the investigation of students' perception of the teacher's attitude towards students' critical thinking and to what extent teachers encourage students to think critically. The statements that belong to factor 2 refer to the investigation of practical "implementation" of critical thinking in the teaching process.

The attitudes of students about critical thinking in teaching, expressed as average grades are presented in Table 2.

Table 2
The Attitude of Students About Critical Thinking in Higher Education (N = 315)

Statement	M	SD	D	Disagree (%)	Agree (%)
Students should be encouraged to think critically.	4.53	.75	5	1.27	89.21
Lecturers (professors and assistants) are the main instigators of the student's critical way of thinking.	3.94	1.01	5	7.62	67.30
The encouragement of a student's critical way of thinking is dependent on the characteristics of the lecturers (professors and assistants).	4.14	.97	5	4.76	74.29
All of the experiences/opinions of the students should be taken into account when solving a problem.	4.18	.94	5	4.44	77.14
It is more important to achieve good communication with the students than it is to give the lecture.	4.22	.94	5	4.76	78.73
Students can direct the course of the lecture.	3.80	.99	4	8.25	60.95
Students can have their own opinions that differ wildly from the lecturer's (professor's/assistant's).	4.27	.94	5	4.76	77.46
To think critically means to look at the issue from different perspectives.	4.21	.89	5	1.90	75.56
To think critically means to question everything.	3.62	1.19	5	16.83	53.33

Note: M – mean; SD – standard deviation; D - mode;
Source: Authors' work

Grades for statements from Table 2 are suitable for factor analysis (Kaiser-Meyer-Olkin measure of sampling adequacy is 0.772; Bartlett's test of sphericity is significant, p<0.001). After factor analysis, it was found that the statements (Table 2) could be grouped into three factors:

- The first factor includes the following statements: 1, 8, 9; Cronbach's Alpha = 0.712; Mean = 4.120; Standard deviation =0.943.
- The second factor includes the following statements: 2, 3; Cronbach's Alpha = 0.722; Mean = 4.040; Standard deviation =0.990.
- The third factor includes the following statements: 4, 5, 6, 7; Cronbach's Alpha = 0.734; Mean = 4.118; Standard deviation =0.953.

The first factor refers to students' attitude towards critical thinking and its importance. The second factor refers to teachers as major promoters of critical

thinking, while the third factor is related to the practical implementation of critical thinking in the teaching process.

Discussion

The results presented in Table 1 show that the implementation of critical thinking at BH universities (analysed in presented research) is not neglected, but it is hard to say that it is present to the necessary extent. The average grade for the factor used to investigate students' perception of the teacher's attitude towards students' critical thinking and to what extent teachers encourage students to think critically is 3.5. This result shows that teachers have partially respect for students' critics concerning lectures' content and ideas presented during lectures. Also, the teachers sometimes indulge in a more detailed conversation about the pros and cons of different ideas. The average grade for the factor used to investigate practical "implementation" of critical thinking in the teaching process is 3.6. The average grades for both factors showed that BH universities only partially fulfil one of the main goals of higher education – developing and fostering students' critical thinking. Although all average 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 1) show that teachers allow to 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 (Accept student's criticism if it is justified), 6 (Allow students to express their critical thinking) and 9 (Show their critical thinking about the given subject) – more than half of participants. The statements 7 (Give real-life examples) and 8 (Explain theoretical assumptions through real-life examples) got high grades what shows that teachers use real examples from everyday life to better explain the content of their lectures to students (the share of students that agree with this statement is higher than 60%). Thereby teachers encourage students in linking theory and practice and in developing necessary critical thinking. It is essential to consider the fact that maybe the teachers with whom participants deal are not representative examples concerning critical thinking and teaching realisation (because of the size of the research sample).

The results presented in Table 2 show that students think that teachers have to encourage them to critical thinking (statement 1, M=4.53). According to students, critical thinking primarily means to look at the issue from different perspectives (statement 8, M=4.21). Moreover, the students recognized that teachers have a crucial role in promoting critical thinking (statement 2, agree=67.30%). Namely, it depends on teachers to what extent they will allow students to express their critical thinking. Finally, the presented results show that the students are aware of the importance of developing their critical thinking in order to be better prepared for their future jobs.

Conclusion

As it is emphasized in methodology, the research is still ongoing, so conclusions are not final. Since the sample used for presented research does not include all public BH universities, the conclusions should take with reserve.

The findings show that the level of integration of critical thinking into the educational process is still low and that there is a lot of room for improvement of teaching by using new learning methods (research projects, role play, independent

study) and extensive support of information technology (augmented/virtual/mixed reality, artificial intelligence, gamification).

Findings of this research can be significant to students, teachers, and public universities in Bosnia and Herzegovina. The results of this research show the students' perception of fostering critical thinking at public BH universities. These results can inspire teachers to improve their teaching methods in order to facilitate the development of students' critical thinking. At the same time, public universities in BH can identify if there are any inadequacies within the integration of critical thinking in the teaching process at their institutions. The results should be the starting point for adoption of corrective plans and activities for fostering critical thinking, if not at the state level, then at least at the university level. Two essential premises for improvement of the teaching process and fostering critical thinking at universities are good will and positive attitude towards critical thinking from two main HE stakeholders – students and teachers. Presented findings show that students have a relatively positive attitude towards critical thinking at universities and that they expect that their teachers encourage them to think critically. However, further research should investigate the teachers' perception related to fostering critical thinking at universities. Additionally, the students from all public universities should be included in the research, and not only from the public but also from many private universities that operate in Bosnia and Herzegovina.

To further research should include the analysis according to scientific fields and sub-categories because they can be significant predictors of critical thinking in higher education.

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About the authors

Mirela Mabić works at the Faculty of Economics, University of Mostar, at the Department for Business Informatics. Her research interests include business information systems, the practical application of software and web technologies both in business and in education, quality of higher education and applied statistics. The author can be contacted at **mirela.mabic@ef.sum.ba.**

Dražena Gašpar is a full-time professor of Database Systems and Business Information Systems at the Faculty of Economics, University of Mostar. Her research interests include databases, data warehouse, business information systems and software application in business and education. She is a co-founder of a "Hera" software company in Mostar and has almost two decades of experience in developing and implementing business information systems. The author can be contacted at **drazena.gaspar@ef.sum.ba.**