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Teaching and Assessing Critical Thinking Skills at Tertiary Level: Students' Perceptions

Abstract: Through the implementation of structured interviews, this study design sought to investigate the students' perceptions about the critical thinking skills infusion at English as a foreign language classroom. The purpose of this analysis is to focus on the underlying logical dimensions and perceptions of high and low critical thinking test scorers, and to discover how and why they differ. This research problem has been investigated qualitatively. Students were divided into two groups: the high and the low critical thinking test achievers. The results indicated the lack of differences in students' answers about the quality of teaching processes and assessment methods that promote critical thinking in English language classroom. To ensure better validity of the results, a larger number of participants should be included.

Key words: critical thinking, foreign language learners, tertiary education, teaching for critical thinking, critical thinking assessment.

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Introduction

The concept of critical thinking (CT), which is the focus of this research, is as challenging as it is compelling. The notion of CT has been repeatedly recognized in the past 2.500 years as it has been studied, defined, and taught through various perspectives. The critical thinking theory has its origins in three academic disciplines: philosophy, psychology, and education (Lewis and Smith 1993; Sternberg 1986). As Sternberg (1986: 7) states, educational theories concerning critical thinking are a mixture of philosophical and psychological theories. As philosophical theories tend to specify what people are able to do, and psychological theories try to specify what people actually do, educational theories are often a mixture of the two, with the nature and proportions of the mix less than clearly specified.

Relevant data indicates that 89 percent of surveyed educators would agree that teaching CT skills is one of the most important aims of education. The problem is that only 19 percent of educators could actually define CT and only nine percent of them are, in some way, teaching critical reasoning (Paul et al. 1997).

CT is a complex and unique process that requires intention, practice, and an environment which supports this practice. Placed in the context of language development, this phenomenon is stripped bare in all its complexity, and furthermore in its significance, and applicability. A supportive classroom climate, and adequate, effective language instruction is powerful in activating students' strengths and developing their higher-order thinking skills.

In our attempts to understand the essence of the examined research problems, we realized that the concept of CT has been defined differently across a variety of approaches. What is similar to all those approaches is the wish to capture all the categories or components that explain the concept of CT in the best possible way, or to define the profile of a person who possesses all the features and abilities of a profound thinker.

One of the first modern critical thinking theorists, John Dewey, described critical thinking as an "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends" (1910: 2).

Critical thinking was the main topic of a great interdisciplinary panel of 46 scholars from which emerges the well known "The Delphi Report" (Facione 1990: 2). Facione's panel of experts agreed on six crucial cognitive skills which describe critical thinking: analysis, interpretation, inference, evaluation, explanation, and self-regulation. Critical thinking was defined as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based.

Sternberg (1986: 3) defined critical thinking "as mental processes, strategies and representations people use to solve problems, make decisions, and learn new concepts". Lipman (1988: 39) believed that ordinary thinking and critical thinking should be distinguished as ordinary thinking is plain, simple, and without created standards, yet critical thinking is much more complex. This complex mode of thinking is based on standards of objectivity, utility, or consistency, and it involves "skillful, responsible thinking that facilitates good judgment because it relies upon criteria, is self-correcting, and is sensitive to context". According to Paul and Elder (2003: 4) critical thinking is "the art of analyzing and evaluating thinking with a view to improving it".

The conception of CT provided by Robert Ennis: "reasonable and reflective thinking focused on deciding what to believe or do" (1991: 6), has served as a theoretical framework for this study. Ennis notes that decisions about beliefs or actions generally occur in the context of certain problems and, as such, require a certain basis. Ennis claims that the basis is composed of observations, statements made by a certain source, and/or propositions that have been already recognized. In this way, an inference (inductive, deductive, or value judging) which leads to decision making concerning a belief or an action, is created.

The act of CT requires human mind that utilizes numerous cognitive and metacognitive processes. Critical thinkers use their prior knowledge, and with the ability of making combinations, comparisons, and analyzes, they create new understandings of concepts, relations, and systems. To have a critical thinker in the classroom means to have a mind to which teachers present basic information, and after that provoke and challenge them to question the logic behind the provided information.

Apparent differences in the definitions of critical thinking are also reflected in its teaching. Although most of the authors consider CT as a skill and that it can be developed, there is a certain disagreement between authors if CT should be taught as a general skill with a spontaneous transfer of CT skills in different areas, or it should be practiced specifically for each area (Grozđanić 2009). Some authors (Norris and Ennis 1989, as cited in Grozđanić 2009) consider that developed general critical thinking skill can be spontaneously applied to different areas. Still, they recommend teaching in a specific context, preferably in several different contexts.

Research shows that teachers play a key role in encouraging students' critical thinking skills through the application of active learning and teaching methods as well as other teaching activities such as asking challenging questions and supporting students' thinking styles (Buchberger, Bolčević and Kovač 2017).

Two very important human features - the possibility of production of language and of thinking at higher levels - have long preoccupied scientists. Specifically, researchers sought to determine possible connections between these two very complex processes.

The first one considers language as the determiner of our way of thinking. This first view is related to the well-known linguistic relativity hypothesis (LRH), also known as the Sapir-Whorf hypothesis, which has its 'strong' and 'weak' version. This hypothesis assumes that language is the dominant factor in relation to thought, and that it influences the way people think. The language we use will largely influence how we see the world. That would mean that people speaking the Chinese language understand certain language concepts differently than German language speakers (Lund 2003).

The second approach, related to the work of Piaget (1959), interprets our thinking as a determining factor in our use of language. Piaget provides the widely known conception of Cognitive Development, consisting of four stages: the sensorimotor stage (age 0-2 years), the preoperational stage (age 2-7), the concrete operational stage (age 7-11), and the formal operational stage (adolescence - adulthood). According to Piaget, at each stage a child acquires or improves a new set of cognitive skills, and language is a product of this cognitive development. He suggests that thought regulates language, explaining how a child can repeat a certain word after hearing it from their parents, but he/she will not be able to use that word in communication until he/she acquires the concept.

The third understanding of the connection between language and thought implies initial complete autonomy of the two concepts which, however, later weakens as the child grows up and becomes more mature. Vygotsky (1967) discusses the nature of the relationship between thought and language, explaining it as an ongoing process or as two complex and continuous mechanisms that mutually affect each other. This would mean that strengthening critical thinking skills contributes to a better learning of a foreign language, and vice versa.

In the last approach, language and thought are understood as the two separate entities. Chomsky is one of the most influential proponents of this view. He argues (1980) that human beings possess an innate capacity for language acquisition called the language acquisition device. In this way, children are capable of learning grammar and a language as a whole.

The aim of secondary/foreign language teaching should go beyond narrow skill-based language learning. It should equip students with logic that can help them understand information on a higher level. We can deduce that the process of CT is certainly an active and dynamic mental category linked to language development. In other words, it is a process which needs to be practiced.

Even if we have clarified what the concept of CT is, there is still the open question of CT assessment. Which categories should be measured? What are the characteristics of CT assessment tool? What type of CT test is the most appropriate (multiple choice test, essay test, etc.)?

A significant number of tertiary education institutions still believe that CT is hardly assessed as they lack appropriate methods for doing so (Aviles 1999; Beyer 1984; Cromwell 1992 as cited by Bissell and Lemons 2006). Many faculties want their students to think critically but are hard-pressed to provide evidence that they understand CT or that their students have learned how to do it (Gojkov et al. 2015).

We may find numerous available CT assessment tools, but not all of them measure CT in the first place (Ennis 1993). The essay test is more comprehensive than other types of tests (multiple-choice test). A good option for multiple-choice testing is to additionally require from participants a short-written defense of each answered item in the test. Lai (2011: 2) presents a similar understanding of appropriate CT assessment. Lai states that effective CT assessment should provide open-ended tasks, "authentic" problem contexts, and problems that are

not only focused on recalling information but on providing evidence or logical arguments. Lai mentions the authentic aspect of CT assessment, which refers to real-life problems and concerns. This is important because traditional schools and their assessment methods are very often preoccupied with content that is only important for the understanding of certain lessons or topics, thus memorization and minimum understanding are required from students. Students are not engaged and provoked enough, which is why students' cognitive capacities and CT skills are not employed.

According to Ku (2009), open-ended assessment methods serve as adequate CT assessment techniques because of the possibility to measure CT dispositions. At the same time, multiple-choice questions, according to the author, measure CT cognitive domains. In this sense, the mixed item assessment format is recommended as it provides a full picture of CT achievement.

1. Research Questions and Hypothesis

In the previous study (Pušina and Osmanović 2018), we examined if the relationship between CT skills and academic achievement exists in a wider context of relationships with different socio-demographic characteristics of the respondents. Therefore, we have tested students' level of critical thinking using standardized the Ennis-Weir Critical Thinking Essay Test (EWCT) (Ennis and Weir 1985: 1).

The goal of this paper was to expand the study qualitatively, and to further examine the students' perceptions about the CT skills infusion at English as a foreign language classroom. We are interested in the following:

1. Differences in perceptions between high and low EWCT test achievers about academic staffs' ability to recognize and adequately assess elements of critical thinking skills.
2. Differences in perceptions between high and low EWCT test achievers about academic staffs' ability to recognize and adequately assess logical fallacies (the lack of critical thinking skills).
3. Differences in perceptions of high and low EWCT test achievers about academic staffs' use of teaching methods that promote and assess critical thinking skills in tertiary education.

Three hypotheses have been formulated:

- H1: There are differences in the perception of students with different levels of disposition for critical thinking about academic staffs' ability to recognize and adequately assess elements of critical thinking skills.
- H2: There are differences in the perception of students with different levels of disposition for critical thinking about academic staffs' ability to recognize and adequately assess logical fallacies (the lack of critical thinking skills).
- H3: There are differences in the perception of students with different levels of disposition for critical thinking about academic staffs' use of adequate methods to promote and assess critical thinking skills in tertiary education.

2. Method

2.1. Participants

As explained earlier, this paper is a part of the broader study that has sampled 171 English language and literature department students from the four different universities in Bosnia and Herzegovina (three public: University of Sarajevo, University of Tuzla, and University of Zenica, as well as International Burch University as a private tertiary education institution). For the purpose of this study, ten students (five high and five low CT test achievers) out of the 171 tested students were interviewed and asked 13 open-ended questions related to the infusion of CT skills at their department.

2.2. Measures

2.2.1. Structured Interview for Low and High CT Test Achievers

The structured interview was designed by the researcher. The interview questions were created by referring to Ennis (1985) and the logical dimensions of CT he proposed in the Test Manual for the EWCT Test (Ennis and Weir 1985: 1). We asked high and low CT test achievers how academic authorities at their faculties

evaluate and grade components of CT defined by Ennis: cases of equivocation, circular reasoning, credibility problems, overgeneralization, and reversal of if-then relationships, as well as use of emotive language to persuade. Furthermore, through the set of open-ended questions, students were asked about their professors' evaluation of skills such as recognizing reasons and assumptions, stating one's point and getting to the point, offering good reasons, seeing other possibilities, and responding appropriately.

The questions in the structured interview are divided by whether they relate to the type of questions or assessment methods ("Do you think that at your faculty, tests are very often based on multiple choice questions?" or "Do you consider essay type questions too demanding as an assessment method?"), or whether they relate to the logical dimensions important for CT and the way professors "treat" them in the examination context ("Do you receive negative points for equivocation and circularity written answers on your exams?", or in the second example: "Are overgeneralization and excessive skepticism considered as logical fallacies for which professors may take points from your test results?").

At the end of the interview, students were given the chance to provide a general statement about the academic staff's CT assessment methods: "Do you think that the assessment methods of your faculty accurately measure your CT skills?". This interview has helped us to delve deeper into the potential reasons behind high and low CT test scores of our participants.

2.2.2. Structured Interview for High and Low CT Test Achievers Data Collection Procedures

We explained to the interviewed students that their participation is voluntary, and that they can stop the interview at any moment. We guaranteed them full discretion of the data (none of the staff members from their department will be informed of the answers) and reminded them that there are no incorrect answers. The students were told that they were selected for the interview because they achieved "significant" results. The presented students' answers are authentic and have been transcribed from the original response sheets.

3. Results

3.1. Qualitative Analysis of Students' Interviews

As explained in the previous study (Pušina and Osmanović 2018) the majority of students underperformed on the EWCT Test ($M = 8.632$, $SD = 5.924$). We further examined the differences in the perceptions of the quality of the teaching process and assessment methods of students with different levels of disposition for CT. The implementation of structured interviews helped us determine whether English language students in tertiary education also consider themselves CT skills learners. Furthermore, we explored whether the English language education process supports CT through instruction and the assessment methods. In this section of the research, we gathered significant amounts of qualitative data.

Students' interview firstly concerned the infusion of subscales of CT. When questioned about the academic staff members' use of logical questions that challenge students to get the point, make assumptions on their own, and recognize and offer good reasons, students responded by saying that some professors at their faculty stimulate students to reach conclusions and answers on their own, instead of giving answers right away. Again, the answers across the two groups of students did not differ significantly. One student from the group of high test achievers declared that educational tasks at their Department challenge their beliefs and offer a variety of perspectives, so students obtain a better understanding of different people and life itself. Almost all students claimed that stating ones' own points of view and seeing other possibilities and points of view is promoted enough in their class (only one student claimed the opposite). Another student from the group of high test achievers explained that professors want students to state their opinions as long as students have valid arguments to support them. They are allowed to engage in discussions with their professors, and they have never prevented anyone from sharing their own points of view. Majority of the professors ask students to share their ideas if they are different and unique, so that the class could make comparisons and reach new conclusions. This approach fits into the vision of the university proposed by prominent tertiary education critics (Crawford 2005; Barnett 1997). The main idea promoted in their work is that, in order to be equipped with CT skills, students take the responsibility over

their learning and thus acquire the necessary autonomy in a world of different opinions (very often aggressive and manipulative in nature). Our first hypothesis that tested expected differences in the perception of students about academic staffs' ability to recognize and adequately assess elements of critical thinking skills was rejected.

Students' answers about the use of negative points for logical fallacies such as equivocation, circularity, overgeneralization, and excessive skepticism do not differ significantly across the sample. We asked students if the test questions at their faculty are sensitive to irrelevance and credibility problems, but we again found no discrepancies in the answers among the two groups of students. In this sense, our second hypothesis that assumed differences in the perception of students about academic staffs' ability to recognize and adequately assess logical fallacies was also rejected.

The collected data provided evidence indicating that students have a positive understanding of the concept of CT and all its subscales as proposed by Ennis and Weir (1985). Some of the students believe that their teachers regularly integrate CT into the English study program, while some advocate for better CT skills integration. None of the students had negative attitudes towards the teaching of CT in a regular study program. Similar findings were presented in the study of Smetanova, Drbalova, and Vitakova (2015). The researchers examined teachers' and future teachers' perceptions of the concept of CT and their notion of a critically thinking child. The results demonstrated participants understand the concept of CT and present it using a variety of ideas and concepts and have positive opinions about the appropriateness of integrating CT into the school setting.

Students' subjective attitudes to multiple choice questions were negative (eight out of ten students responded that they do not prefer multiple-choice questions), most of the students responded that questions of this type are not frequent among the assessment methods at their departments (only one student from the group of high test achievers stated that most of the tests were based on multiple-choice questions). Results indicated here the lack of significant differences in answers among high and low test achievers. This could be explained by the evident and proved cognitive maturity of critical-thinkers. If found in a situation where they have to adjust their learning approaches, they would do

this by engaging their learning management skills in the new learning contexts. The critical thinkers' "reasonable and reflective" thinking equipment helps them decide and recognize certain tasks as important for completing, and with some effort they achieve and finally complete that task (Ennis 1985). This is the case with the task of learning facts needed for accurately answering multiple-choice questions, as explained by Facione (1990), where critical thinkers' skills for "purposeful, self-regulatory judgement" help them recognize the new assessment context (e.g. multiple-answers approach) as necessary and valuable for the achievement of educational goals.

Students were asked about essay types of questions, as well. We examined whether they consider essay questions too demanding and challenging, and if it is a very common assessment method at their Department. The answers of the ten participants did not again differ significantly regardless of the group they belonged to (low or high CT scores). The prevailing factor, again, is the critical thinkers' ability to use an appropriate cognitive strategy in order to overcome the assessment situation they are facing. All the respondents answered that this is a common method at their English departments.

As the closing question, we asked students for a general statement about the integration of CT at their faculty. The question was whether assessment methods accurately measure students' CT skills. Not surprisingly, low and high test achievers' answers did not differ, as we have positive and negative answers in the both groups. One student from the group of high test achievers answered that there are only a few professors who value students' CT skills, and organize their assessment accordingly. One of the students with the lowest scores in the CT test also gave a negative response by explaining that students do not express their CT skills because of the fear of failing or leaving a bad impression in the classroom. The given answer is very significant and indicates a classroom environment which is exactly the opposite of the environment required for CT skills development and support. Several researchers claimed that the most supportive classrooms for CT skills development are those that motivate students to think on their own (Halpern 1996; Kurland 1995; Unrau 1997, as cited by Crawford, 2005). Also, the last, H3 was rejected because projected differences between students (found in our previous study) were not parallel to their perceptions (when asked about the use of adequate methods to promote and assess critical thinking skills in tertiary education).

Throughout the process of the interview, none of the students disclosed precisely how the academic staff at their faculty teaches CT. Students' responses rather revealed that the academic staff, in most of the cases, had the intention to teach CT. Three out of ten students declared that they do not find that CT is supported enough in their academic environment. The rest of the students believed that CT is promoted enough at their departments. These discrepancies in the results tell us that the students' understanding of what CT is, how it is defined and taught, differ significantly.

The reason for the evident similarity in the answers between high and low EWCT test scores could be found in the fact that students with high levels of CT skills may recognize a certain method of assessment or a method of instruction as more appropriate for getting better grades (in spite of the fact that it does not engage in higher-level thinking skills), and thus prioritize them in their answers. Furthermore, the fact that students do not have a general course on CT could result in students not being familiar with the methods and concepts that promote their CT skills. In our education system, non-critical practice (Soldo 2017: 93) may result in that students habituate to some methods that do not engage their higher-order thinking skills (Sternberg 2004), and value them as appropriate for teaching thinking.

4. Conclusion

Based on the results, we conclude that students have a positive understanding of the concept of CT and all its relevant subscales. The interviewed students did not perceive teaching and assessment methods adequate for integration of CT into the English study program and advocate for better CT skills integration, while others claim that CT is integrated well enough. We may conclude that there are obvious disagreements in answers of the two groups of students (low and high achievers).

None of the students displayed negative attitudes towards teaching of CT in a regular study program. Therefore, we may conclude that students would be interested and engaged in studying their subject area through the CT prism if the education system would provide such an approach. Education policy makers, curriculum designers and academic staff should consider engaging more in CT area, as students have already recognized the importance and greatness of this skill.

The answers from the two groups of students did not differ meaningfully regarding the academic staff members' use of logical questions that challenge students to get the point, make assumptions on their own, and recognize and offer good reasons, the students responded by stating that some professors at their faculty stimulate students to reach conclusions and search for answers themselves. This could be understood as the lack of knowledge in CT skills terminology. Students do not have a course that may teach them the necessary knowledge and terms for better understanding of the CT.

Almost all students claimed that stating ones' own point of view and seeing other possibilities and points of view is promoted enough in their class (only one student claimed the opposite). Students' answers in terms of receiving negative points for logical fallacies, such as equivocation, circularity, overgeneralization, excessive skepticism, irrelevance, and credibility problems, do not differ significantly across the sample. We conclude that low and high test achievers do not perceive differently the efficacy of the assessment methods in an accurate measurement of students' CT skills. The calculated Chi-Square Coefficient is consistent with qualitative data and indicated that there are no statistically significant differences in the answers between low and high CT test achievers.

Despite the fact that students' subjective attitudes to multiple choice questions were negative, most of the students responded that there are not many questions of this type among the assessment methods at their department. Also, the answers of the ten participants did not differ significantly regarding essay types of questions. We conclude that students' assessment type preferences do not differ in terms of their CT skills levels.

To ensure better validity of the results, we need a larger number of participants. The quality of the research would be increased, and the CT phenomenon would be investigated more deeply, if the academic staff, university management staff, and education policy makers were to participate in the research as well. We also recommend investigating the CT of students in high-school, elementary school, and kindergarten. Together with the results of tertiary education students, a clearer picture of the integration of CT into the school system would be thus obtained.

Even though we have a clear picture of a critical thinker from the conceptions proposed above, as educationalists, we must be aware that we lack clear guidelines for teaching and assessment of critical thinking. This research design shows that if we want adequate integration of CT in the study program, we have to focus on the promotion of elements of CT through a wide range of activities and also appropriately react to logical fallacies of students. It was obvious from the interview answers that students make differences and support teaching methods that are capable of CT skills development.

Percepcije studenata o podučavanju i vrednovanju kritičkog mišljenja u univerzitetskoj nastavi

Sažetak: Ovaj istraživački nacrt imao je za cilj ispitati percepciju studenata Anglistike u vezi sa integracijom metoda podučavanja vještinama kritičkog mišljenja u nastavi stranog jezika. Cilj ove analize je propitati stav studenata sa najboljim i najlošijim postignućima na testu kritičkog mišljenja, te nadalje, istražiti da li se i na koji način njihove percepcije razlikuju. Ovaj istraživački problem istražen je kvalitativno. Rezultati ukazuju da ne postoje razlike u odgovorima studenata o kvaliteti nastavnog procesa i metodama vrednovanja koji promiču kritičko mišljenje u nastavi engleskog jezika. Kako bi se osigurala bolja valjanost rezultata, u istraživanje je potrebno uključiti veći broj ispitanika.

Ključne riječi: kritičko mišljenje, studenti stranih jezika, tercijarno obrazovanje, poučavanje kritičkog mišljenja, vrednovanje kritičkog mišljenja.

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