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## The Problems of Contemporary Education

### Critical Thinking Development in the Milieu of High School Education

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#### Abstract

The need for developing critical thinking (CT) has been broadly discussed and its importance acknowledged in a myriad of disciplines. This quantitative study attempts to investigate the level of critical thinking skills as well as the impact of grade level, gender, and nationality on the development of these skills among 279 Bosnian-Herzegovinian and Turkish high school students. The instrument used for this research is a survey questionnaire which consists of 17 items made up of four subscales: Convictions that inhibit critical thinking development (CICTD), Application of critical thinking (ACT), Class activities that prevent critical thinking (CAPCT), and Teacher support for critical thinking development (TSCTD). The findings reveal that students' nationality and grade level significantly impact critical thinking development, whereas students' gender does not have a significant effect on the development of CT skills. These findings are widely applicable as they can be used by language teachers and teachers of general courses to contribute to their students' critical thinking development by structuring their syllabi accordingly. The findings also point to an urgent need to revise the existing curricula and design more adequate ones which would include a greater number of activities fostering critical thinking skills.

**Keywords:** critical thinking, EFL classes, nationality, grade level, gender, effect, Turkey, Bosnia & Herzegovina.

#### 1. Introduction

The importance of critical thinking has been recognized since the earliest documentation of this concept around 2,500 years ago in the teachings of Socrates and it has been explained, researched, defined and approached from different academic perspectives ever since. Critical

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thinking entails “judging in a reflective way what to do or what to believe” (Facione, 2000: 61) and requires “the use of those cognitive skills or strategies that increase the probability of a desirable outcome” (Halpern, 1998: 450). Thus, it has been widely acknowledged as a common educational goal and researchers in the field of educational sciences have strived to create a good working model which will aid students in developing critical thinking skills and competencies needed in their future endeavors. Accordingly, different instructional approaches to critical thinking were proposed (Ennis, 1989), varying in terms of teaching critical thinking skills either as an independent course or incorporating them into a regular course, and clear evidence of the positive impact of instructional intervention in the domain of critical thinking emerged (Abrami et al., 2008; Halpern, 1998; Kennedy et al., 1991; etc.).

Still, some authors maintain that no dramatic improvements in critical thinking are expected to be produced as a result of formal instruction (Halpern, 1998) as typical school instruction is believed not to enhance the development of these skills (Paul, 1992) since it equates reproduction with knowledge. Thus, researchers started looking into possible connections between critical thinking skills and some other skills and linked critical thinking to metacognition (Kuhn, 1999; Flavell, 1979), creativity (Ennis, 1985; Paul, Elder, 2006) and motivation (Facione, 2000; Halpern, 1998; Paul, 1992) acting as supporting skills facilitating the development of critical thinking. In addition to that, the relationship between personality traits and critical thinking ability has also been found (Nosratinia, Sarabchian, 2013) and the impact of some other socio-demographic factors on the level of critical thinking has been assessed and found significant (Bataineh, Zghoul, 2006).

The current study is designed to compare the level of critical thinking in two traditional educational milieus, namely the Turkish and Bosnian milieu, in which such skills do not seem to be fostered through official curricula and formal instruction (see Alagözlüa, Süzer, 2010; Kaya, 1997; Vanci-Osam, 1998 and etc. for Turkey and Soldo et al., 2017 for Bosnia and Herzegovina). Education in Bosnia and Herzegovina is still ‘at a standstill’ (Initiative for Monitoring the European Integration of B&H, n.d.: 1) even so many years after the war and no evolvement of teaching methods has been observed (Initiative for Monitoring the European Integration of B&H). Teaching is conducted by means of students writing down basic facts and later on, reproducing them through written or oral expression whereby reproduction is equated with knowledge and grades are viewed as sole indicators of students’ performance (Initiative for Monitoring the European Integration of B&H). Curricula lack critical thinking components and as a consequence B&H students achieve rather low scores on problem-solving tasks which do not entail mere knowledge reproduction on some internationally recognized tests (Initiative for Monitoring the European Integration of B&H). Likewise, Turkish education system has not made much progress in the last few decades, and mere memorization and repetition of the content covered in the class have been prevalent (Kizilçelik, 2015). Learners are passive, lack thinking skills and consequently cannot produce or demonstrate knowledge (Çınar, 2012) and there have been multiple calls to the government to change the education policies (Kizilçelik, 2015). As the systematic analysis of the impact of different factors on critical thinking might establish a solid base for producing a sustainable model for the development of critical thinking skills and thus improving the quality of education, this research sets out to explore whether gender, grade level and nationality, independently or in interaction, contribute to a rise in the level of critical thinking in these two cultural contexts.

## **2. Literature review**

Despite the fact that the literature on critical thinking is grounded in three distinct academic disciplines, namely philosophy, psychology and education (Lewis, Smith, 1993; Sternberg, 1986), these three approaches have similar underlying goals, i.e. to name and classify all the components of critical thinking focusing on the activities a critical thinker can perform (Lewis, Smith, 1993) and identify behavioral traits and characteristics a critical thinker ought to possess (Facione, 200; Sternberg, 1986). While the researchers working in the domain of philosophical approach focus on the qualities of pure thought and personal characteristics of critical thinkers and thus believe that critical thinking is “disciplined, self-directed thinking that exemplifies the perfections of thinking appropriate to a particular mode or domain of thought” (Paul, 1992: 9) and “skillful, responsible thinking that facilitates good judgment because it 1) relies upon criteria, 2) is self-correcting, and 3) is sensitive to context” (Lipman, 1988: 39), the researchers in the field of psychology, cognitive

psychology in particular, tend to formulate their definitions based on the types of actions critical thinkers can perform and thus state that critical thinking encompasses “the mental processes, strategies, and representations people use to solve problems, make decisions, and learn new concepts” (Sternberg, 1986: 3), which is often viewed as being reductionist in nature by the researchers across the philosophical approach (Sternberg, 1986). As for the educational approach, critical thinking is believed to be a principal concept in education and a fundamental goal of learning (Moon, 2008). Thus, the aim of that approach is setting out clear guidelines on how to teach and assess critical thinking.

However, researchers across the disciplines agree upon the importance of possessing critical thinking skills as through that mode of thinking, the thinker “improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them” (Scriven, Paul, 2004, paragraph 10). Critical thinking is not necessarily synonymous with good thinking, but it is a “pervasive and self-rectifying human phenomenon” (Facione, 1998: 26) and to enhance the quality of thinking and to learn successfully the thinker ought to pause to reflect on the content being studied rather than just read the content from the top to the bottom of the page without deep reflection (Facione, 1998). Whether such skills are acquired through individual exploration and social interaction or through formal instruction has been a point of wider debate (Choy, Cheah, 2009) and two different stances have been taken. Thus, some researchers maintain that critical thinking need not be taught as it is a natural process everyone undergoes (Sternberg, Williams, 2002), whereas some others maintain that students can be taught critical thinking terms and strategies and thus taught how to think more creatively and critically which will eventually contribute to the improvement of their thinking skills (Black, 2005; Nickerson, 1994). Thus, Tottier (2009) firmly believes that learning critical thinking skills is imperative for students and their lifelong learning as well as for their profound and proper understanding of the world. As these skills are believed to be transferable from the classroom to the workplace (Murawski, 2014), by acquiring them, students will be able to compete in the global job market (Tottier, 2009). These skills ought to be part of the official curricula, taught from an early age and practiced a lot (Tottier, 2009) and students’ curiosity and their inquisitiveness need to be aroused and encouraged (Knodt, 2009). Thus, some studies strived to come up with the best teaching strategies for the promotion of critical thinking (Halpern, 1998; Tsui, 2002).

The importance of the presence and promotion of critical thinking skills in foreign language teaching has also been highlighted (Brown, 2004; Chamot, 1995; Thadphoothon, 2002) and it is claimed that the objectives of English language program curricula ought to be directed at developing critical thinking skills besides language skills (Brown, 2004). Students who develop good critical thinking skills are believed to be more likely to become self-directed, autonomous language learners and thus succeed both academically and professionally (Qing, 2013). Shirkhani and Fahim (2011) explain the importance of critical thinking in foreign language learning by stating that if foreign language learners monitor their own thinking, they will be able to successfully evaluate their own learning. These authors also assign critical thinking a core role in expanding learners’ foreign language learning experience and emphasize that critical thinking correlates with learners’ language achievement and as such ought to be part of FL curricula (Shirkhani, Fahim, 2011). The correlation between critical thinking and learners’ language achievement has been highlighted in other studies as well. Renner (1996), Liaw (2007) and others maintain and their results confirm that these skills contribute to students’ overall language proficiency, while Rafi’s findings (2011) indicate that reasoning skills can be significantly improved by incorporating critical thinking in teaching English essay writing. Thus, all the aforementioned indicates that language competence and criticality as gradual, continuous and never-ending processes can be refined through the use of thought-provoking, stimulating materials (Báez, 2004; Rizvić, Bećirović, 2017). Through the use of such materials, teachers can contribute to the students’ development of their critical thinking skills along with their language skills, which points to the pivotal roles they have in students’ overall language and thinking development (Lipman, 2003). Teachers’ preparation of well-structured, interactive, stimulative critical thinking based activities will help students to correctly understand the learning process and improve their communicative competence (Harizaj, Hajrulla, 2017). Though the incorporation of critical thinking in teaching has been strongly advocated in literature, it still seems to be considered peripheral (Pica, 2000) in practice and language learning and thinking skills are commonly viewed independently.

With the aim of promoting critical thinking skills development, different studies set out to explore how this development is impacted by different socio-demographic factors. Thus, several studies researched the development of critical thinking in the course of students' university education and found that the level of critical thinking increases during study years with the greatest progress observed in the first two study years (Arum, Roksa, 2011; Bers et al., 1996; Burris, Garton, 2006; Hagedorn et al., 1999; Miller, 1992 and etc.). Still, that growth in CT is rather small (Evens et al., 2013; Giancarlo, Facione, 2001; Hagedorn et al., 1999; Lehmann, 1963; Miller, 1992; etc.) and some authors (Arum, Roksa, 2011; Pascarella et al., 2011) admit that there were a number of students who did not demonstrate any increase in CT. Study field has also proved to be a factor impacting the level of critical thinking (Arum, Roksa, 2011; Evens et al., 2013). Thus, Arum and Roksa's findings (2011) clearly indicate that the students majoring in humanities/social sciences as well as students majoring in mathematics/science achieved higher scores on CLA (Collegiate Learning Assessment, which assesses critical thinking, analytical reasoning, problem solving and writing) than the students majoring in business, education work/social work, engineering/computer science, communications, health and other. The lowest results were obtained by the students in the field of business and education/social work. Evens, Verburch and Elen, (2013) explored how study field in secondary education impacts the higher education entrance performance in CT. The findings indicate that students majoring in classical languages, mathematics, and human sciences achieved significantly larger results than students from the technical/artistic field. However, no conclusive results as to which study field majors have or acquire the best CT results can be obtained from the literature. The results related to gender also vary. Thus, Wilson (1989), using the Watson-Glaser test and ACT College Reports, indicated that gender was a significant predictor of critical thinking skills. In addition to that, Giancarlo and Facione's findings (2001) found statistically significant gender differences in the overall California Critical Thinking Disposition Inventory (CCTDI) as well as on two subscales, namely the Open-mindedness and Maturity of Judgment subscales, with females scoring significantly higher than males. Using the same instrument, Rudd, Baker, and Hoover (2000) also measured whether gender is a significant variable in critical thinking disposition of 174 students enrolled in the College of Agriculture and Life Sciences and they found that females achieved a significantly better score overall and on three subscales, namely Open-mindedness, Maturity of Judgment and Truth-seeking. On the contrary, in some other studies gender did not prove to be a significant factor impacting critical thinking (Browne et al., 1989; Salahshoor, Rafiee, 2016; etc.). Thus, Browne et al. (1989) revealed insignificant differences between males and females in applying critical thinking skills, which was also confirmed in the Iranian context through Salahshoor and Rafiee's findings (2016), which indicated that differences between females and males in critical thinking scores were insignificant. The difference in critical thinking development among various nationalities, races, etc. have also been researched and the findings indicate that the level of critical thinking differs based on those variables (Rear, 2017; Roksa et al., 2017; etc.). Thus, Rear (2017) examined the differences in critical thinking among Asian and Western students and pointed to the lack of critical thinking skills among international Asian university students. Asian students tend to act as uncritical and passive learners in the classes when compared to their Western classmates, since they come from large class sizes and teacher-centered modes of learning, and are also known to be disciplined, silent, which is quite the opposite of their Western classmates. Still, Rear (2017) argues that Asian students possess good thinking abilities and are willing to engage critically and creatively with academic content in different fields. He claims that the lack of critical thinking skills amongst international Asian students can be assigned to the fact that they study in a foreign language, which has been shown to have a significantly negative impact on their academic performance. Moreover, following African American, Hispanic, Asian and White students in a longitudinal study, Roksa et al. (2017) found considerable inequality in the development of critical thinking skills over four college study years between African American and White students, which was assigned to their experience with diversity. The differences in critical thinking assessment were also found between Hispanic and White students, but much smaller in magnitude than the differences between African American and White students. On the other hand, the difference between Asian and White students was almost non-existent and was found to be statistically insignificant.

### 3. The current study

The current study is particularly important for two reasons. Firstly, its importance arises from the fact that critical thinking skills and foreign language knowledge are of great significance for academic and post-academic achievements and secondly, no similar studies which simultaneously measure the level of secondary students' critical thinking skills in two different EFL contexts, namely Bosnia and Turkey, and analyze the impacting factors have been conducted. Hence, the purpose of this research was to evaluate the extent to which variables such as, gender, grade level, and nationality affect the critical thinking development of students in Bosnian-Herzegovinian and Turkish secondary education. Therefore, the following hypotheses were tested:

1. There will be a significant interaction effect of gender X grade level on critical thinking development in the EFL classroom.
2. Furthermore, combined dependent variables of critical thinking development in the EFL classroom will significantly differ based on gender and grade level.
3. Combined dependent variables of critical thinking development in the EFL classroom will significantly differ by nationality with age influence being controlled.

#### 3.1. Participants

The research sample consisted of 279 high school students. The random stratified method of participant selection was employed and the participants were randomly selected from different grade levels. Students from six high schools located in Sarajevo Canton, Bosnia and Herzegovina and six high schools located in Istanbul, Turkey participated in the survey. The sample comprised 166 female (59.5 %) and 113 male (40.5 %) participants, with the age span from 14 to 20 ( $M = 16.4$ ,  $SD = 1.10$ ). 147 (52.7 %) participants were Bosnian students, 124 (44 %) were Turkish students and 9 students of other nationalities (3.53 %). As for the participants' grade level, the most represented were juniors ( $n = 108$ , 38.7 %), followed by freshmen ( $n = 86$ , 30.8 %), sophomores ( $n = 50$ , 17.9 %), and seniors ( $n = 35$ , 12.5 %). The demographic information of the research sample is displayed in [Table 1](#).

**Table 1.** Descriptive analysis of the research sample

		N	Percent
Nationality	Bosnian	147	52.7
	Turkish	123	44
Gender	Female	166	59.5
	Male	113	40.5
Grade Level	Freshman	86	30.8
	Sophomore	50	17.9
	Junior	108	38.7
	Senior	35	12.5
<b>Total</b>		<b>279</b>	<b>100</b>

#### 3.2. Measures and procedures

The data for this research were collected by administering a survey as a measurement tool. The questionnaire used in the survey was developed and validated by the authors of this research and it includes 17 items, each of which uses a five-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). The questionnaire is composed of four subscales including: TSCTD (Teacher support for critical thinking development), e.g. "The teacher allows students to make personal connections to the lesson", ACT (Application of critical thinking), e.g. "I enjoy

learning new vocabulary and practicing it in class or some real situations”, CICTD (Convictions that inhibit critical thinking development) all items are reverse coded, e.g. “I usually blindly accept what is written in a textbook”, and CAPCT (Class activities that prevent critical thinking) all items are reverse coded, e.g. “The English language is based mainly on the rote memorization method”. Cronbach’s alpha reliability analysis was performed for all items ( $\alpha = 0.87$ ). This study’s instrument comprises two sections, section I containing items related to demographic variables, and section II items related to critical thinking development.

Having obtained informed consent for surveying high school students in Bosnia and Herzegovina and Turkey from the corresponding ministries of education, the researchers distributed the survey among randomly selected students and properly explained the procedure for its completion to the students. The students were politely asked to read each statement carefully and mark the number they find most appropriate on the scale from one to five. The average time needed for completing the survey was 25 minutes. The survey was distributed in the class in the school milieu with the permission of lecturers.

### 3.3. Data analysis

Statistical Package for the Social Sciences (SPSS), version 23.0 and AMOS 23.0, was used for the analysis of the data gathered from the participants. Exploratory factor analysis (EFA) was performed to examine the underlying factor structure. Confirmatory factor analysis (CFA) was employed to examine the factor structure extracted in the EFA. The hypotheses were tested by applying inferential tests. Since all the assumptions were met, a two-way MANOVA was performed to determine the effect of gender and grade level on critical thinking development in EFL classrooms. According to Stevens (2001), there are many advantages of using MANOVA as opposed to repeating many simple analyses of variance and any important treatment will affect participants in more than one way. Thus, the inclusion of more than one dependent variable will yield a more holistic picture (Stevens, 2001). A one-way MANCOVA was employed to determine the effect of nationality on the combined variables of critical thinking development with the variable of the participants’ age being controlled.

### 3.5. Factor analysis

The underlying factor structure of Critical Thinking Development in EFL classrooms was firstly examined by the Exploratory Factor Analysis (EFA) on 55 Critical thinking items. Bartlett’s test of sphericity revealed that the data were multivariate normally distributed and acceptable for factor analysis ( $\chi^2(1485) = 6197.82, p < .001$ ). The KaiserMeyer-Olkin indicated that it was appropriate to proceed with factor analysis (KMO = .86). Based on this presumption, four factors were extracted with principal components analysis (with varimax rotation) accounting for 46.7 % of the total variance in the data. The items that failed to load .50 or higher were deleted, as well as the items that significantly loaded on two or more factors. A four-factor model was obtained with 17 items. As a follow-up, Confirmatory factor analysis was employed (CFA). After inspecting the modification index, few covariances were suggested to be freely estimated and we adopted these suggestions and modified the model which was then improved. Finally, a good model fit was obtained with following values:  $\chi^2(113) = 164.270 (p = .001)$ , RMSEA = 0.044, CFI = 0.960, TLI = 0.952, and AGFI = 0.899, PCLOSE 0.758. Table 2 displays constructs reliability and validity.

**Table 2.** Construct reliability and validity

	CR	AVE	MSV	MaxR (H)	CICTD	ACT	CAPCT	TSCTD
<b>CICT</b>	0.725	0.397	0.295	0.726	<b>0.630</b>			
<b>ACT</b>	0.817	0.473	0.408	0.821	0.308	<b>0.688</b>		
<b>CAPCT</b>	0.794	0.491	0.295	0.798	0.543	0.098	<b>0.701</b>	
<b>TSCTD</b>	0.816	0.528	0.408	0.824	0.242	0.639	0.272	<b>0.727</b>

*Note:* CICTD = Convictions that inhibit critical thinking development; ACT = Application of critical thinking; CAPCT = Class activities preventing critical thinking; TSCTD = Teacher support for critical thinking development.

**4. Results**

**4.1. The effect of gender and grade level on critical thinking development in EFL classroom**

A two-way MANOVA was performed to determine the effect of gender and grade level on critical thinking development in the EFL classroom. The results of MANOVA indicated that there is no statistically significant interaction effect between gender and grade level on the combined dependent variables of critical thinking development Wilks' Lambda  $\lambda = 0.925$ ,  $F(12, 550.6) = 1.38$ ,  $p = .173$ ,  $\eta^2 = .026$ . However, the multivariate MANOVA test showed a significant main effect of grade level Wilks' Lambda  $\lambda = 0.850$ ,  $F(12, 550.6) = 2.90$ ,  $p = .001$ , with an almost medium effect size  $\eta^2 = .053$  and an insignificant main effect of gender Wilks' Lambda  $\lambda = 0.959$ ,  $F(4, 208) = 2.20$ ,  $p = .070$ ,  $\eta^2 = .041$  on the combined dependent variables of critical thinking.

ANOVA and Tukey HSD post hoc test were employed as follow-up tests and indicated that grade level significantly affects ACT  $F(3, 211) = 7.53$ ,  $p < .001$ . The effect size was moderate  $\eta^2 = .097$  and the differences between the second grade and all the other grades were observed. Likewise, grade level significantly affected TSCTD  $F(3, 211) = 6.62$ ,  $p < .001$  and the univariate effect size was again moderate  $\eta^2 = .086$ . A significant difference was found between the second grade and all the other grades. Grade level also had a significant effect on the total development of critical thinking  $F(3, 211) = 3.90$ ,  $p = .010$ . The effect size was small  $\eta^2 = .052$  again and the post hoc test showed differences between the second grade and all the other grades. On the other hand, grade level does not have a significant effect on CICTD  $F(3, 211) = 7.53$ ,  $p = .447$ ,  $\eta^2 = .012$ , and CAPCT  $F(3, 211) = .29$ ,  $p = .833$ ,  $\eta^2 = .004$ , whereas gender in interaction with grade level had a significant effect only on ACT  $F(3, 211) = 3.04$ ,  $p = .030$ . The Univariate effect size was small,  $\eta^2 = .041$ . The Univariate test did not measure a significant effect of gender on total critical thinking development or on any of its subscales.

**Table 3.** Adjusted and Unadjusted means of critical thinking development for grade level and gender

	CICTD		ACT		CAPCT		TSCTD		Total	
	Adj. M	Unad. M								
<b>Grade level</b>										
<b>Freshman</b>	2.24	2.25	2.63	2.59	2.48	2.47	2.58	2.56	2.49	2.46
<b>Sophomore</b>	2.33	2.38	3.56	3.51	2.29	2.33	3.40	3.34	2.89	2.89
<b>Junior</b>	2.40	2.41	2.61	2.61	2.44	2.45	2.34	2.33	2.44	2.45
<b>Senior</b>	2.04	2.11	2.22	2.36	2.39	2.34	2.10	2.07	2.19	2.22
<b>Gender</b>										
<b>Female</b>	2.41	2.40	2.78	2.63	2.43	2.48	2.42	2.38	2.51	2.47
<b>Male</b>	2.09	2.23	2.73	2.76	2.37	2.38	2.79	2.68	2.49	2.51

*Note:* CICTD = Convictions that inhibit critical thinking development; ACT = Application of critical thinking; CAPCT = Class activities preventing critical thinking; TSCTD = Teacher support for critical thinking development.

**4.2. The effect of nationality on the combined variables of critical thinking development with the participants' age controlled**

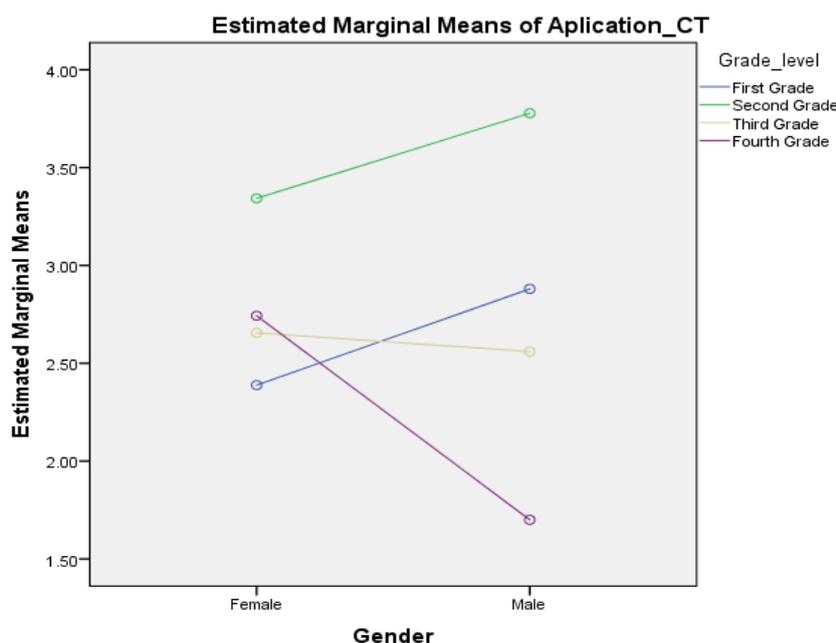
A one-way MANCOVA was employed to determine the effect of nationality on the combined variables of critical thinking development with the age of participants controlled. The main effect of nationality Wilks' Lambda  $\lambda = 0.882$ ,  $F(4, 213) = 7.15$ ,  $p < .001$ , on the combined variables of critical thinking development was significant. The multivariate effect size was moderate  $\eta^2 = .118$ . The main effect for years of age was insignificant Wilks' Lambda  $\lambda = 0.980$ ,  $F(4, 213) = 1.07$ ,  $p = .372$ ,  $\eta^2 = .020$ . Univariate ANOVA results indicated that nationality significantly affected all dependent variables, namely CICTD  $F(1, 216) = 17.9$ ,  $p < .001$ , with a moderate univariate effect

size  $\eta^2 = .076$ , ACT  $F(1, 216) = 10.4, p = .001$ , with a small effect size  $\eta^2 = .046$ , CAPCT  $F(1, 216) = 10.2, p = .002, \eta^2 = .045$ , TSCTD  $F(1, 216) = 9.07, p = .003$ , in both cases with a small effect size  $\eta^2 = .040$  and critical thinking development overall  $F(1, 216) = 26.7, p < .001$ . The univariate effect size was moderate  $\eta^2 = .110$ . The covariate of age did not significantly affect any of dependent variables of critical thinking.

**Table 4.** Adjusted and Unadjusted means of critical thinking development for Bosnian and Turkish students

	CICTD		ACT		CAPCT		TSCTD		Total	
	Adj. M	Unad. M								
<b>Bosnian students</b>	2.09	2.09	2.47	2.47	2.26	2.25	2.28	2.28	2.27	2.27
<b>Turkish students</b>	2.56	2.56	2.89	2.89	2.62	2.62	2.72	2.73	2.70	2.70

Note: CICTD = Convictions that inhibit critical thinking development; ACT = Application of critical thinking; CAPCT = Class activities preventing critical thinking; TSCTD = Teacher support for critical thinking development.



**Fig. 1.** Gender Differences between Grade Level Groups in Critical Thinking Development

### 5. Discussion

This study aimed at assessing critical thinking development of Bosnian-Herzegovinian and Turkish high school EFL students and exploring whether that development is impacted by different socio-demographic factors, such as gender, grade level, and nationality, individually or in interaction. Thus, the hypothesis predicting that there will be a significant interaction effect of gender X grade level on critical thinking development was refuted as no significant interaction effect of these two variables was measured on the combined dependent variables and three subscales, namely CICTD, CAPCT and TSCTD. The interaction effect of gender X grade level was significant only on the ACT subscale, which indicates that the effect of gender on the application of critical thinking depends on the students' grade level. Moreover, the results showed that grade level significantly affected the combined dependent variables of critical thinking, whereas the effect of

gender proved to be insignificant. As for grade level, the differences were mainly found between the second and all the other grades overall and on two subscales, i.e. ACT and TSCTD, as sophomores achieved the highest scores overall and on these two subscales. It is rather intriguing that senior students achieved the lowest score overall and on three subscales, namely CICTD, ACT and TSCTD, and that the common pattern which was observed was that the fourth-year students achieved the lowest score, followed by the third-year students, whereas the highest score was achieved by the second-year students, with the first-year students following. This indicates that the students' level of critical thinking skills is higher at the beginning of their secondary education than in the end and that the first two years seem to be crucial for critical thinking development as that process diminishes in two final study years, in the fourth year in particular. Such results are not fully aligned with some other studies that assess the critical thinking development of university students (Arum, Roksa, 2011; Bers et al., 1996; Burris, Garton, 2006; Hagedorn et al., 1999; Miller, 1992 and etc.), as they point to the gradual development of students' critical thinking ability in the course of their four-year studies. However, these authors also observed that the greatest development occurs in the first two years, which is in line with the conclusions we have drawn. Likewise, contrary to our findings, Burris and Garton (2006) also point to the increase in critical thinking among secondary-school students, since the upperclassmen participating in their study outperformed the lower classmen. The results of the current study were not fully aligned with the Ay and Akgöl's (2008) results as well. These authors conducted research among 1379 high school students from Düzce and indicated that the second grade students had the most limited critical thinking abilities when compared to the students from other grades and that the increase in grade level did not result in the increase in their critical thinking ability. However, close alignment can be established between our research findings and the findings of Zhou, Jiang & Yao (2015), who researched the critical thinking level of university-level freshmen and sophomore students taking College English and showed that the sophomores' critical thinking ability in English reading is significantly higher than the freshmen's. The fact that the first-year students in the current study achieved better scores overall and on all four subscales than the fourth-year students might be indicative of the teachers' ineptness to cope with the growing intellectual demands of young people, which might result in their not providing enough encouragement to students in the final years of their secondary education. This is clearly substantiated by the fact that the lowest results were achieved by the fourth-year students on the TSCTD subscale. Moreover, a possible reason could also be that instructors invest more efforts in working with freshman and senior students as they believe that junior and senior students are more independent learners and require less support than freshmen and sophomores. Furthermore, such regression of critical thinking during secondary education might also be attributed to the absence of activities promoting critical thinking in the official high-school curricula as well as to the lack of thought-provoking and stimulating materials arousing students' curiosity and inquisitiveness. Thus, this matter should be deeply analyzed and some measures ought to be taken as the development of critical thinking skills should be strongly and effectively stimulated at the end of secondary education in particular since some of the students finishing high schools enter the global job market. As for gender, its impact on critical thinking development is insignificant. Female students achieved a better score overall and on three subscales, namely the CICTD, ACT and CAPCT subscales, than male students. It is rather interesting that male students achieved a better score on the TSCTD subscale, which indicates that they believe that they receive more support from their teachers for critical thinking development. Such results are in line with some other findings (Browne et al., 1989; Salahshoor, Rafiee, 2016; etc.), which also point to the fact that gender does not play a significant role in critical thinking development. Thus, Browne et al. (1989) revealed that males and females do not significantly differ in applying critical thinking skills and Salahshoor and Rafiee (2016) also found that gender does not affect the learners' critical thinking level. Our research findings are not in accordance with the findings of Leach and Good (2011), who found out that the main effect for gender was significant with the mean for males significantly higher than the mean for females as well as with the results presented in Wilson (1989), who found gender to be a significant predictor of critical thinking skills.

Moreover, the hypothesis stating that the combined dependent variables of critical thinking development in EFL classrooms will significantly differ based on the participants' nationality when the age influence is controlled was supported, as the effect of nationality on the combined variables of critical thinking development was significant. The high school students from Turkey achieved a

significantly higher score overall and on all subscales of critical thinking development than the high school students from Bosnia. Rather low results of Bosnian students achieved overall and on all the subscales of critical thinking development point to the lack of representativeness of critical thinking in formal education in the Bosnian EFL context, which is in line with Soldo et al. (2017). Still, even the Turkish high school students' score in critical thinking development was not assessed as high, which indicates the lack of critical thinking skills in that context as well, which is in line with the results of Alagözliüa and Süzer (2010), Çınar (2012), Kizilçelik (2015), Kaya (1997), Vanci-Osam (1998) etc. It might be concluded that the results of the current study are to some extent aligned with the results of other studies researching the differences in critical thinking development based on nationality or race (Rear, 2017; Roksa et al., 2017; etc.), as all of these studies clearly indicate that people of different nationalities demonstrate different thinking abilities and have different thinking patterns and thus achieve different scores in measuring critical thinking skills. When the results of the current study are compared to the results of other studies conducted in the Bosnian context among Bosnian and Turkish participants studying at international universities in Bosnia and Herzegovina, some interesting conclusions can be drawn. Namely, investigating metacognitive strategy awareness of Bosnian university-level students of different nationalities, namely Bosnian, Turkish and others, both Bećirović, Brdarević Čeljo and Dubravac (2018) and Bećirović, Brdarević Čeljo and Sinanović (2017) found that the impact of nationality on the use of metacognitive strategies was insignificant. On the other hand, nationality proved to be a significant factor in cross-cultural sensitivity and intercultural effectiveness (Bećirović, Brdarević Čeljo, 2018; Bećirović et al., 2019). In these studies, Bosnian students achieved better results both in measuring metacognitive strategy awareness, on the one hand, and cultural sensitivity and intercultural effectiveness, on the other hand, than Turkish students (Bećirović et al., 2017, Bećirović et al., 2018, Bećirović, Brdarević Čeljo, 2018 and Bećirović et al., 2019), but the difference is significant only when their cross-cultural sensitivity and intercultural effectiveness are measured. The conclusions that can be drawn from the aforementioned and are not in concordance with some previous findings (Rear, 2017; Roksa et al., 2017; etc.), are that when students of different nationalities study in the same educational milieu the differences based on nationality do not seem to arise in their development and use of different cognitive processes, which is the case with Turkish students studying in Bosnia and Herzegovina, who, being treated equally as domestic students, and taking participation in the same EFL teaching and learning activities normally get adjusted to that learning context.

The current research investigating a few factors that influence the critical thinking development in EFL classes, such as gender, grade level, and nationality, is exposed to a few limitations. Firstly, additional investigation could be done to disclose other potential factors affecting critical thinking development, such as learning styles, self-efficacy, learning motivation, language proficiency, and participants' prior knowledge. Secondly, it would be very beneficial to conduct some more studies on critical thinking development in the Bosnian EFL context and in general, to include a much larger number of high school students to see whether the overall level of critical thinking among high school students is generally that low and whether Bosnian students are less productive critical thinkers than the students of other nationalities, in particular Turkish.

## **6. Conclusion**

The present study has some important practical implications and the results need careful further exploration. As they indicate that there exist some flaws in the educational systems of both countries, they might help raise awareness of them as well as of the pressing problems ensuing in the process. Thus, some changes corresponding to the problems observed might be made in the official curricula and, accordingly, teachers can modify their individualized syllabi by including a larger number of activities promoting critical thinking development. Since grade level proved to be a significant factor impacting students' critical thinking development in EFL classes, teachers are expected to carefully consider the potential obstacles that obstruct language learning and prevent students' progress in that respect. After examining the barriers, teachers ought to select the methods which would be appropriately used in each grade, in order for students to advance both in critical thinking development and EFL proficiency.

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