



The Correlation between Critical Thinking Skills and Argumentative Writing Skills in Moroccan Higher Education: The Case of the Faculty of Languages, Letters and Arts Ibn Tofail University, Kenitra

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Abstract

The aim of this study is to examine the correlation between two major variables which are critical thinking skills and argumentative writing skills in Moroccan higher education. The participants were Semester 4 and Semester 6 students (English department, Faculty of Languages, Letters and Arts Ibn Tofail University, Kenitra). 100 students participated in the study. 50 students from semester 4 and 50 students from semester 6. The study resorted to the correlation design for measuring the degree of association between two variables adopting the statistical method of correlation analysis. Hence, a critical thinking test (AssessmentDay Practice Test Experts, 2018) was displayed to test students' critical thinking skills. Then, the students wrote an argumentative essay about social media and everyday communication. In the analysis of the collected data, the research used SPSS software program (Statistical Package for the Social Sciences, version 23) to analyse the collected data. Pearson's correlation coefficient was applied to examine the significant correlation between critical thinking skills and argumentative writing. The study result showed that correlation coefficient of critical thinking test and argumentative essay of S4 students is 0.683 and of S6 is 0.781 which implies that the two tests are positively correlated and the correlation between critical thinking and argumentative writing is positive and very significant.

1. INTRODUCTION

Training students to think critically is a real challenge in the learning process. Rote learning, the characteristic of traditional learning, is no longer cherished in 21st-century education. For Einstein, "The value of an education in a liberal arts college is not the learning of many facts, but the training of the mind to think something that cannot be learned from textbooks." (Frank, 1948, p.185). In this regard, 21st-century education is based on communication, collaboration, questioning, analyzing, problem-solving and decision-making in different contexts.

Argumentative skills have become crucial for learners in their academic and workplace contexts. They are highly required to conduct research studies, score high in tests, and write argumentative essays. Corporations nowadays recruit people depending on their skills and

dispositions, and even impose a critical thinking skills test. Hence, preparing students to be critical beings is to prepare them for academic, workplace and everyday life success. (Beniche, Larouz, & Anasse, 2021, p.122).

1.1.Statement of the problem

The ultimate goal of education is to prepare well-educated citizens responsible and engaged in their society. Such a goal is a long process that needs scaffolding from primary to higher education. Training students in an educational context to develop skills enables them to be proactive and agents of change in their own surroundings. Engaging students civically is a real challenge in 21st century educational paradigm. They have to take the initiative, interact and participate positively in social dynamism. "A society mainly evolves through interaction and communication among participating entities. Within a society, people argue to solve problems, reduce conflicts, exchange information, or inform each other of some pertinent facts". (Olivia, McBurney, & Omicini, 2007, pp.1-2)

Mastering critical thinking skills is crucial for students in our society. We live in a world of uncertainties and vagueness, as people tend to be more sceptical and secretive. They lose trust in individuals, communities and institutions, and it is hard to persuade them. Hence, logical argumentation is highly required to bring back trust, hope and real communication. "Argumentation is an important feature of human intelligence: the ability to understand and manipulate arguments is fundamental to understand a new problem, to reason about actions, and to perform scientific research". (Oliva et al., 2007, pp.1-2).

Argumentation in society involves students debating local and global issues democratically. Social engagement pushes students to have a say about local policies that concern them and suggest possible alternatives. "Debate can also be used to help young democracies heal from the injuries caused by previous oppressive dictatorships and ethnic violence, through the provision of a forum (or a free press) where issues and problems can be openly discussed". (Gardineron, 2017, p.4). Democracy building passes through debating that paves the way for different voices and opinions to participate actively in social issues and provide logical solutions that respect all individuals regardless of race, class, gender and religion.

1.2.Research Objectives

This study has three major objectives:

First, it tends to investigate the impact of critical thinking skills on the quality of students' argumentative essay writing.

Second, it tends to investigate how critical thinking skills in argumentative essay writing are applied by Moroccan university students.

Third, it tends to scrutinize the major problems Moroccan university students encounter in critical thinking skills and argumentative essay writing and provide practical solutions.

1.3. Research questions

- A- What is the output of S4 and S6 students in critical thinking tests and argumentative essay writing?
- B- Is there a relation between critical thinking skills and argumentative essay writing skills among S4 and S6 students?

1.4. Research hypotheses

- A- S4 and S6 students can apply higher-order thinking skills in a critical thinking test and can use sound arguments in their argumentative essay production.
- B- S4 and S6 students with high critical thinking skills score well in their argumentative essay writing.

2. REVIEW OF THE LITERATURE

2.1. Critical thinking and higher education

Higher education in the 21st century tends to create optimal conditions for learners to question, interact, and debate to enhance their thinking skills. Modern technological inventions have opened the horizons of knowledge in

varied disciplines, and learners have easy access to them. Higher education, then, is not providing knowledge to students but rather creating an environment context in which the professor's role is to facilitate, monitor and awake their latent skills through inquires, analysis, synthesis and evaluation.

Self-centred learning enhances students' abilities to be involved actively in the learning process. The needs of the learners are a priority to bring interest and motivation. Communicating ideas related to their concerns will open up more opportunities for thinking, reflecting and creating an output that would develop both their skills and knowledge. This is the goal of higher education in the 21st century as it has become a tribune to boost critical thinking skills among university students.

In higher education, critical thinking should involve these major dimensions: 1- Major skills in critical argumentation, 2- Judging critically, 3- Critical thinking dispositions, 4- Critical being, 5- Ideology critique, and 6- Critical creativity. (Barnett & Davies, 2015,p.8) . Argumentation in higher education boosts students' ability to be critical as they discuss and communicate ideas with reasoning and logic. Thinking critically is a prelude to living as a critical person who takes critical academic and everyday action. University students are supposed to be future leaders influencing their countries positively. They raise awareness about societal issues, work for the common good and participate in the development of their society. Such leadership and engagement are good education outcomes that develop students' knowledge and skills to encounter current vexing challenges.

2.2. Argumentative writing

In argumentative writing, students learn how to persuade through logic and facts. It is the power of arguments that matters. No room for emotions or logical fallacies that dupe the masses. Such a frame of thought trains students to question, reflect, analyse, synthesize, solve problems and take decisions. In higher education, argumentative writing is developed rationally through

facts, statistics, empirical research and concrete arguments cited in a certain context. The rationale is to support or refute a thesis through logos rather than pathos or ethos.

However, writing an argumentative essay is not an easy task. To Nippold and Ward-Lonergan (2010), "argumentative writing is a challenging communication task that needs sophisticated cognitive and linguistic abilities." (p.238). It requires high-order thinking skills and language proficiency to compose an argument.

In argumentative writing, the writer encounters many difficulties in form and content. The writing form should abide by academic standards, and the content should be backed by sound arguments and concrete examples. (Beniche, Larouz, & Anasse, 2021, p.120).

Students seek to argue for or against and back up their thesis statement through rational data. Such writing is difficult for students as they must recruit language and cognitive skills to produce a good argumentative essay. In this regard, students need sufficient guidance and practice to be familiar with such kinds of writing.

To produce well-structured argumentative writing, Seyler (2008) proposes five basic characteristics of an argument:

- Having a clear purpose
- Look for debatable issues
- Provide evidence
- Know your audience
- Knowing the complexity of the topic. (Cited in Lap & Truc,2014, p.68)

Such characteristics assist the learners to have a clear vision of how argumentative writing is constructed. Having a purpose motivates students to write for its achievement as they write about a debatable issue that generates views and opposing views backed by strong arguments. The rationale this is to persuade the targeted audience about a complex and thorny topic linguistically and cognitively through logic and reasoning. Recognising the complexity of an argument is of great importance to writers to deduce that the production of an argument may take more than one right position. (Lap &Truc,2014, p.68).

Through argumentation, students learn and sharpen their skills. They learn how to make a difference between strong and weak reasoning, question things taken for granted, avoid logical fallacies, and develop high-order thinking skills. Learning is not an accumulation of knowledge in a certain context but an ability to reflect, analyse, synthesize and evaluate what you study. Learning critically enables students to transfer the acquired input outside the classroom to solve social problems and take decisions in their daily practices.

2.3. The relation between critical thinking and argumentative writing

Writing proficiency goes beyond the mastery of structure and target thinking skills that are crucial in argumentative performance. For Nieker (2009), the writing process should train learners to be able to:

- Plan their points of argument well.
- Display writing techniques

- Reflect on and evaluate the targeted task. (p.41).

Developing argumentative skills has become imperative for learners in their academic context and workplace. It is highly required to conduct research studies, score high in tests and write essays. Some Corporations nowadays recruit people depending on their skills and dispositions, and they even impose a critical thinking skills test. Hence, preparing students to write argumentatively prepares them for academic and workplace success. There are high chance that the skills of argumentation acquired in classroom activities will be transferred to a professional context to solve problems and take decisions.

However, preparing learners to write argumentative production is a difficult task. It needs good planning, composition and critical thinking skills. It is a process that invests all the skills developed in language proficiency to develop a written input to defend a position and persuade the reader. In this regard, learners are involved in thinking critically and use logical reasoning to back up the displayed arguments and strengthen their viewpoints. Such training is the essence of 21st century education that aims to sharpen students' critical thinking skills in the classroom context and to transfer them later in everyday practices.

3. METHODOLOGY

"Research methodology is a way to solve the research problem systematically. It may be understood as a science of studying how research is done scientifically". (Kotari,2004, p.8). It explains the study objectives, the raised research questions and hypothesis, how the research is designed, the target population, the sample size of the population, the instruments used to gather data, and the used way to collect and analyze data. This study resorted to the correlation design to examine the link between students' critical thinking skills and argumentative writing skills. The statistical correlation test describes and measures the degree of correlation between two or more variables or sets of scores (Creswell,2012). A correlation design is a non-experimental design that tends to examine whether a link between variables happens or not through empirical evidence (McMillian and Schumacher,2006).

3.1. Population

"A population is a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria and to which we intend to generalize the results of the research". (McMillan,1996, p85). It is the group of interest for the researcher to conduct a study. The description of a population comes after reviewing literature , raising the research questions and framing the design of the study. The population of this study was Moroccan university students at the faculty of languages, letters and arts, English department Kenitra. Through this population, the study targets to find answers to the raised research questions.

3.2. Sample

"The sample is the group of elements, or a single element, from which data are obtained." (McMillan,1996, p.86). The aim of sampling is to select a group that will represent a large population well or display the specific data needed. (McMillan,1996, p86). 100 Moroccan university students from S4 and S6 were the selected sample for this study (50 students S4, 50 students S6 at the faculty of languages, letters and arts, English department

Kenitra). The research study applied the purposive sampling technique and was carried out in May 2020.

3.3. Instruments

Instruments are "the tools researchers use to collect data. In quantitative research, instruments usually include all types of tests, questionnaires, inventories, and any other tool that can be used to collect quantitative data." (Riazi,2016, p147). The instruments used for conducting this study are a test of critical thinking and an argumentative essay.

3.3.1. Critical thinking test

Testing students' critical thinking skills was done via the use of a critical thinking test (AssessmentDay Practice Aptitude Tests, 2018). The test adopts the model of Watson Glaser Critical Thinking Appraisal (WCCTA), Form S, including 40 items. (Watson & Glaser, 1994; Watson & Glaser, 2008). It is a multiple-option test which involves two to five options. The time allotted for the test: 30 minutes.

The Watson-Glaser Critical Thinking Appraisal includes the following five sub-tests

- 1- Inferencing
- 2- Recognizing assumptions
- 3- Deducing
- 4- Interpreting
- 5- Evaluating arguments

3.3.2. Argumentative writing

Testing students' writing proficiency through the use of an argumentative essay. The students wrote an argumentative essay about the following statement : ***Social networking has broken up our everyday communication.*** The allotted time to write the argumentative essay was 40 minutes.

4. DATA COLLECTION

The tasks to be taken were clearly explained, and the instructions were clarified. They included the nature of the texts, the way of answering questions, and the allowed time for the tasks. The test of critical thinking based on multiple-choices options was the first task , the argumentative essay was the second one and two tasks were taken simultaneously by the same students.

5. DATA ANALYSIS

The collected data were analysed through SPSS 23 software program (Statistical Package for the Social Science). Pearson's correlation coefficient was applied to examine the statistically significant correlation between critical thinking and argumentative writing skills .

6. RESULTS

6.1. Semester 4, students' performance in critical thinking test and argumentative essay

6.1.1. Critical thinking skill test

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The Histogram presents the result of the critical thinking test that 50 participants from the Faculty languages, Letters and Arts IbnTofail, kenitra Morocco sat for. It was a multiple choice test with 40 questions and the following are the correct answers :

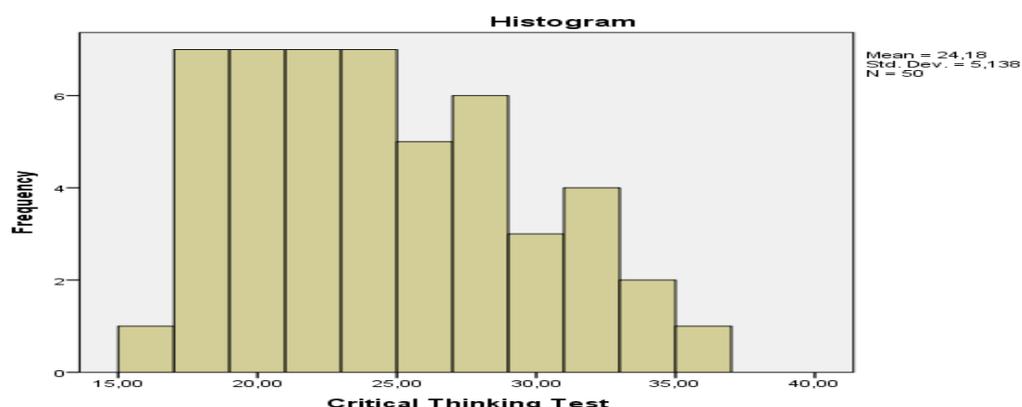


Figure 1 : S4 result of critical thinking test

The results display that the minimum score for S4 students was 16 out of 40 and the maximum score was 36 out of 40 . We can classify the results into three major categories. The first category which is 11 students who were below the average. The second category which is 32 students who scored between 20 and 30 and the third category which is 7 students who scored more than 30. Thus, concerning the first category only 11 students had difficulties in critical thinking but the majority which was 32 were quite good and the last category of 7 students who were very good. The alternative hypothesis was confirmed through the obtained results. In this regard, S4 University students in the Faculty of Languages, Letters and Arts, Kenitra use high order thinking and have the ability of inferring, deducing, recognizing assumption, interpreting and evaluating arguments.

6.1.2. Argumentative essay

The performance of Moroccan semester 4 university students at the Faculty of Languages, Letters and Arts concerning argumentative essay is depicted in the following diagram:

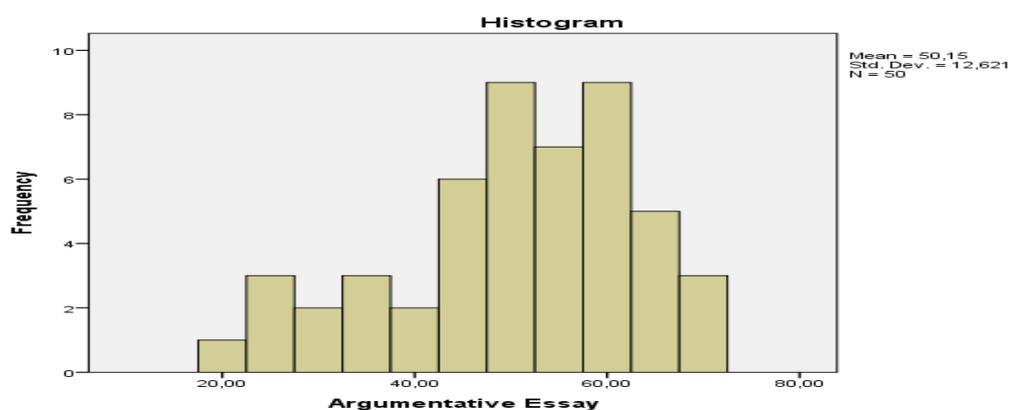


Figure 2 : S4 result of argumentative essay

50 participants wrote an argumentative essay about the following claim: "*Social networking has broken up our everyday communication*". The students argued for or against

following the academic structure of the argumentative essay writing. Students' essays were corrected by two university teachers and the scoring criteria adopted the Schwalm model (Schwalm, 2007).

Such analytic scoring presents a detailed investigation to assess the performance of learners unlike the holistic scoring that approaches the writing performance. The use of rubrics is meant to assess students' writings objectively following a clear and a detailed checklist. A rubric is a document that describes a certain assignment in detail. It is "a document that articulates the expectation for an assignment by listing the criteria, or what counts, and describing levels of quality from excellent to poor" (Herawati, 2011, p.446)

The score of S4 students in argumentative essay ranged between 20 and 70 out of 100. 17 participants scored below the average, 25 scored between 50 and 60, and 8 participants scored more than 60. According to the findings, most of participants (25) are quite good, 17 participants are below the average while 8 participants are good in argumentative essay writing. Thus, the alternative is accepted. The results show that S4 university students have good achievements in the argumentative essay as they use sound argumentations to back up their views and are aware of the argumentative essay writing structure.

6.1.3. Interrater Reliability

For the measurement of agreement of the two raters, the study resorted to **Cohen's Kappa coefficient** and here is the result :

Symmetric measures of agreement between the two raters

Symmetric Measures

	Value	Asymptotic Standardized Error ^a	Approximate T ^b	Approximate Significance
Measure of Agreement Kappa	,537	,079	10,147	,000
N of Valid Cases	50			

The value of the Cohen's Kappa index that is a statistic designed to account the agreement by chance between the two raters is presented through this table of symmetric measures. The Cohen's kappa (K) is **0.537** that is the proportion of agreement happening by chance. Cohen's kappa (κ) may range between -1 to +1. A Cohen's Kappa index of 0.537 shows **moderate agreement**. Thus, because $p = .000$ (that actually means $p < .0005$), this kappa coefficient (κ) is statistically significant as it is not the same as zero. Inter rater reliability presents the extent to which the obtained data in research studies are real representations of the measured variables.

6.1.4. Critical thinking and argumentative essay writing

The following table is a descriptive statistics of critical thinking test and argumentative essay that were taken by semester 4 students. In critical thinking test , the minimum score was 16 , the maximum score was 36, the mean was 24.1800, and the standard deviation was

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5.13766. For the second task which was the argumentative writing, the minimum score was 20, the maximum score was 70 , the mean was 50.1500, and the standard deviation was 12.62095.

Table 1: S4 descriptive statistics of critical thinking test and argumentative essay

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Critical Thinking Test	50	16,00	36,00	24,1800	5,13766
Argumentative Essay	50	20,00	70,00	50,1500	12,62095
Valid N (listwise)	50				

6.1.5. Correlation between critical thinking test and argumentative essay writing

In a correlational study, a correlation coefficient is a crucial value which implies whether the association between two variables is negative, positive or zero. The sign of a correlation coefficient is [r] and it ranges from -1.0 to +1.0. The coefficient of correlation attempts to describe the relation between two variables or more. Partial correlation tends to set up the degree of association between two variables while multiple correlation aims to indicate the relation between three or more variables. (Cohen, Manion, & Morrison , 2007, p.534).

Investigating the numerical value of correlation coefficient will clearly display the association between the variables. Near to +1or-1 indicates that the relationship is strong; however, Low or near zero indicates that the relationship is weak. (Cohen et al.,2007, p.535).

The Pearson's correlation was used in this study to examine the relation between critical thinking and argumentative writing. This table displays the correlation of critical thinking and argumentative writing :

Table 2 : S4 Correlation between critical thinking and argumentative essay

Correlations			
		Critical Thinking Test	Argumentative Essay
Critical Thinking Test	Pearson Correlation	1	,683**
	Sig. (2-tailed)		,000
	N	50	50
Argumentative Essay	Pearson Correlation	,683**	1
	Sig. (2-tailed)	,000	
	N	50	50

The coefficient of correlation presents **(0. 683)**, which implies that the two tests are positively correlated, and the correlation is very significant. The obtained result of such a correlation

illustrated clearly that critical thinking and argumentative writing have a positive relation. Students with high critical thinking skills score well in their argumentative essay writing. Hence, the alternative hypothesis was accepted.

6.2.Semester 6 students' performance in critical thinking test and argumentative essay writing

6.2.1. Critical thinking skill test

The Histogram presents the result of the critical thinking test that 50 participants from the Faculty of languages, Letters and Arts IbnTofail, Kenitra Morocco, sat for. It was a 40 questions test of multiple choice and the following are the correct answers :

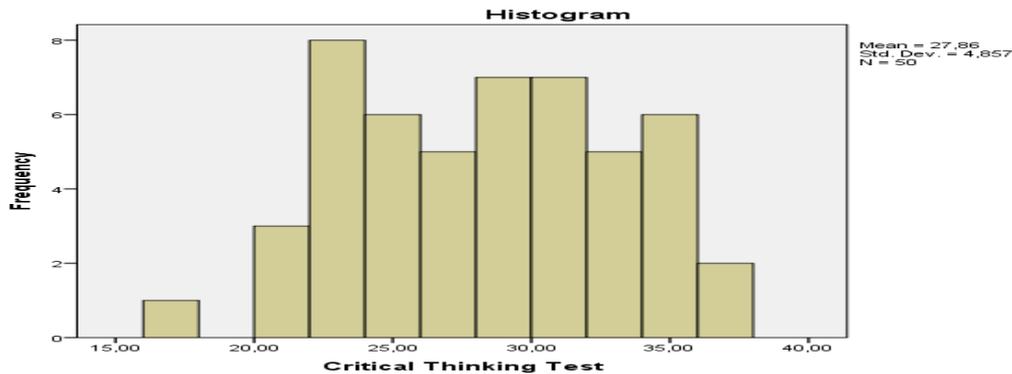


Figure 1: S6 result of the critical thinking test

The obtained findings show that the minimum score was 17 out of 40, and the maximum score was 37 out of 40. The findings are classified into three major categories. Category 1:1 the students were below the average. Category 2: 35 students scored between 20 and 30. Category 3: 14 students scored more than 30. Thus, concerning category 1, only one student had difficulties in critical thinking, while the majority, which was 35, were quite good, and the last category of 14 students were very good. The obtained results confirm the alternative hypothesis. S6 University students in the Faculty of Languages, Letters and Arts, Kenitra, use high-order thinking and can infer, deduce, recognise assumption, and interpret and evaluate arguments.

6.2.2. Argumentative essay

The obtained results of semester 6 university students at the Faculty of Languages, Letters and Arts concerning argumentative essay were depicted in the following diagram:

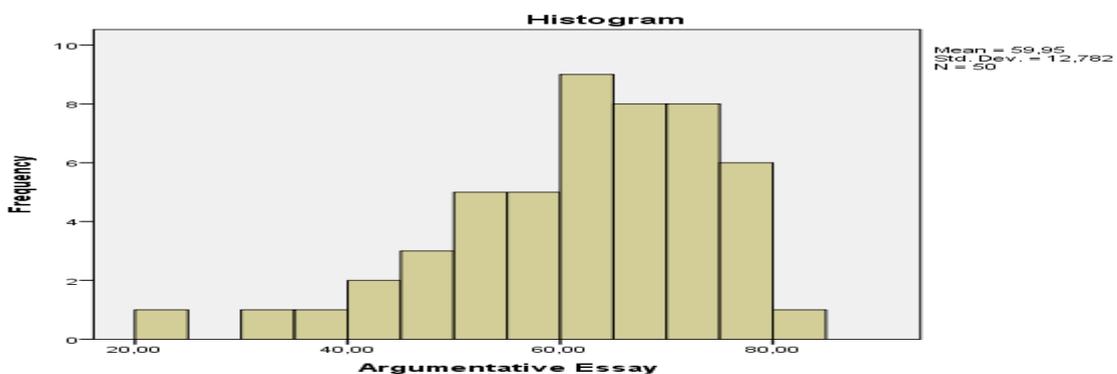


Figure 2: S6 result of the argumentative essay performance

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As S4 students, 50 participants from S6 wrote an argumentative essay about the same topic and their essays also were corrected by two university teachers, and the scoring criteria adopted the same model. (Schwalm,2007) .

The score of S6 students in argumentative essays ranged between 22,5 and 80 out of 100. 8 participants scored below the average, 17 scored between 50 and 60, and 25 participants scored more than 60. According to the findings, most participants (25) are good , 8 are below the average while 17 are quite good in argumentative essay writing. Thus, the alternative is accepted. The results show that S6 university students have good achievements in an argumentative essays as they use sound argumentations to support their views and are aware of the argumentative essay writing structure.

6.2.3. Interrater Reliability

To measure the agreement of the two raters, **Cohen's Kappa** was also implemented for S6 students, and the findings were the following :

Table 3: S6 Symmetric measures of agreement of the two raters

Symmetric Measures					
	Value	Asymptotic Standardized Error ^a	Approximate T ^b	Approximate Significance	
Measure of Agreement	Kappa	,569	,077	11,394	,000
N of Valid Cases		50			

. The Cohen's kappa (K) is **(0.569)**, the proportion of agreement happening by chance. Cohen's kappa (κ) may range between -1 to +1. A Cohen's Kappa index of **0.569** shows **moderate agreement**. Thus, because $p = .000$ (that actually means $p < .0005$), this kappa coefficient (κ) is statistically significant as it is not the same as zero.

6.2.4. Critical thinking test and argumentative essay writing

The following table is a descriptive statistic of critical thinking tests and argumentative tests that semester 6 students took. In the critical thinking test, the minimum score was 17, the maximum score was 37, the mean was 27.8600, and the standard deviation was 4.85718. For the second task, which was argumentative writing, the minimum score was 22,5, the maximum score was 80, the mean was 59.9500, and the standard deviation was 12.78242.

Table 1: S6 descriptive statistics of critical thinking test and argumentative essay

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Critical Thinking Test	50	17,00	37,00	27,8600	4,85718
Argumentative Essay	50	22,50	80,00	59,9500	12,78242
Valid N (listwise)	50				

6.2.5. The correlation between critical thinking skills and argumentative writing skills

Pearson's correlation was used to investigate the relation between critical thinking and argumentative writing. The following table displays the correlation of critical thinking and argumentative writing :

Table 2 : S6 Correlation between critical thinking and argumentative essay

		Critical Thinking Test	Argumentative Essay
Critical Thinking Test	Pearson Correlation	1	,781**
	Sig. (2-tailed)		,000
	N	50	50
Argumentative Essay	Pearson Correlation	,781**	1
	Sig. (2-tailed)	,000	
	N	50	50

The coefficient of correlation displays (**0.781**) which implies that the two tests are positively correlated, and the correlation is very significant. The obtained result of such correlation illustrated clearly that critical thinking and argumentative writing have a positive relation. Students with high critical thinking skills score well in their argumentative essay writing. Hence, the alternative hypothesis was accepted.

7. A COMPARISON OF RESULTS OF S4 AND S6 STUDENTS

7.1. Critical thinking tests of S4 and S6 students

The previous histogram of S4 displayed that the minimum score was 16 out of 40 and the maximum score was 36 out of 40. 11 students were below the average; 32 students scored between 20 and 30 and 7 students scored more than 30. The results of S4 were different from S6, as displayed in the previous histogram of S6 students. For S6, the minimum score was 17 out of 40, and the maximum score was 37 out of 40 . Only 1 student was below the average, 35 students scored between 20 and 30 while 14 students scored more than 30 . It is clearly deduced that the scores of S6 in critical thinking test are higher than S4. Hence, S6 students at the Faculty of Languages, Letters and Arts, Kenitra are more critical . They are able to infer, to deduce, to recognize assumption, to interpret and to evaluate arguments better than S4 students.

7.2. Argumentative essays of S4 and S6 students

The score of S4 students in an argumentative essays as presented in the previous histogram ranged between 20 and 70 out of 100. 17 participants scored below the average, 25 scored between 50 and 60, and 8 participants scored more than 60. However, the score of S6 students was not as those of S4. The previous histogram of S6 demonstrated that the score of students in argumentative essays ranged between 22,5 and 80 out of 100. 8 participants scored below the average, 17 scored between 50 and 60, and 25 participants scored more than 60. Such results express that there is a considerable difference between S4 and S6 students. S6

perform higher scores than S4 students. Thus, S6 students' argumentative essays are better than those of S4 students as they are more structured and argumentative.

7.3. The correlation coefficient of S4 and S6

The coefficient of correlation describes the relation between two or more variables. Partial correlation tends to set up the degree of association between two variables, while multiple correlations indicates the relation between three or more variables. (Cohen, Manion, & Morrison, 2007, p.534).

Investigating the numerical value of the correlation coefficient will clearly display the association between the variables. Near to +1 or -1 indicates the relationship is strong; however, low or near zero indicates the relationship is weak. (Cohen et al., 2007, p.535).

In this study, the correlation coefficient of S4 was **0.683** and S6 was **0.781**. It means that the two tests of critical thinking and argumentative essay of both S4 and S6 students are positively correlated. However, the correlation coefficient of S6 students is higher than S4 students, indicating that the difference in students' levels makes a difference in associations.

8. SUMMARY OF RESULTS

This study examined first the level of S4 and S6 students in critical thinking skills through a critical thinking test, and then it scrutinized the performance of S4 and S6 students in argumentative writing through an argumentative essay. Finally, the study scrutinised the correlation between critical thinking skills and argumentative writing skills in Moroccan higher education. The data were analyzed statistically using SPSS, and their results were displayed in different shapes. The two hypotheses of the study are:

A- S4 and S6 students can apply higher order thinking skills in a critical thinking test and can use sound arguments in their argumentative essay production.

B - S4 and S6 students with high critical thinking skills score well in their argumentative essay writing.

The first hypothesis was accepted according to the previous descriptive statistics illustrated in the two histograms of the critical thinking tests of both S4 and S6 . S4 and S6 students at the faculty of languages, letters, and arts, Kenitra apply high-order thinking and thus can infer, deduce, recognize assumptions, interpret and evaluate arguments.

The second hypothesis was accepted too as the Pearson's correlation coefficient of critical thinking test and argumentative essay of S4 students is **0.683** and of S6, which is **0.781**. The two tests are positively correlated, and the correlation is very significant. The result of such correlations demonstrates that critical thinking and argumentative writing have a positive relation. Hence, students who scored high on critical thinking tests are better at argumentative essay writing.

9. DISCUSSION

The present study aims to empirically scrutinise the correlation between critical thinking skills and argumentative writing skills. It tends first to investigate the level of students' critical thinking test; then it scrutinizes the performance of students' performance in argumentative writing and finally, a correlational study was carried out to investigate the association between the two variables. The results of this study are significant since recognizing students' level of critical thinking skills will help provide optimal solutions to overcome difficulties. In the same vein, scrutinizing students' performance in an argumentative essays is of great importance to know the perfection and imperfection of students in argumentative essay writing both in terms of form and content. Scrutinising the correlation between critical thinking skills and argumentative writing skills displayed clearly that critical thinking is intrinsically linked to good argumentation and reasoning in different contexts.

The findings of this study confirm results in previous research studies (Beniche, Larouz, & Anasse, 2021; Putri, 2018; Sugianto, 2014; Saputra, 2018). On the contrary, the studies of (Pei, Zheng, Zhang & Liu, 2017) and (Fahim & Nilforooshan, 2014) displayed dissimilar results.

Based on the obtained results from the such a correlational study, we can clearly deduce a positive correlation between critical thinking skills and argumentative writing skills. Writing and thinking are intrinsically related since the writers' vision of the world is expressed through writing. Thought of great thinkers has become eternal and transferred to generations due to their written archives. The written form is used to share ideas and communicate in different domains with readers. "Writers can use paper to extend their thinking and to create frameworks of cues that enable readers of a story to construct mental models they may enter empathetically". (Oatley & Djikic, 2008, p.9)

The learner's criticality is tested according to an argumentative production as they can defend their position and opinions through reason and strong arguments. Logical and concrete proofs are counter-discourse to refute weak arguments and logical fallacies. In argumentative writing, students express their views respecting both writing performance and thinking skills. They attempt to apply the acquired critical thinking skills that boost questioning, analyzing, and synthesizing to go beyond emotional and subjective writing.

The findings of the student's critical thinking test depict clearly the importance of assessing Higher-Order Thinking in higher education. Teaching and assessing higher-order thinking skills enables students to evaluate their thinking level and recognize their perfections and imperfections. Training and testing in different critical situations will sharpen their skills and boost them beyond rote learning. The rationale behind this is to reach deep learning and to be able to decode the implied discourses in different contexts. To Brookhart (2010), "Students learn by constructing meaning, incorporating new content into their existing mental representations; therefore, improving thinking skills should actually improve content knowledge and understanding as well."

Critical thinking assignments and assessments require from professors: competence, good planning, good mastery of the course subject, pedagogical equipment to reach course description goals. These crucial elements are of great importance to develop students' intellectual skills and increase their achievement to be promising critical beings in the future.

The results of the students' performance in argumentative writing illustrate that mastering argumentation techniques and defending a position with strong and logical arguments are skills highly required in academia, the workplace and everyday practices.

Training students in educational contexts to develop their argumentative skills enables them to be critical, proactive and agents of change in their own surroundings. The ultimate goal of education is to prepare a well-educated citizen, responsible and engaged in their society. Such goal is a long process that needs scaffolding from primary to higher education.

Engaging students in different realms is a real challenge in the 21ST century educational paradigm. They have to develop soft skills to take initiative, interact and participate positively in social dynamism. "A society mainly evolves through interaction and communication among participating entities. Within a society, people argue in order to solve problems, reduce conflicts, to exchange information, or to inform each other of some pertinent facts". (Olivia, McBurney, & Omicini, 2007, pp.1-2)

10. CONCLUSION

The purpose of this study was to investigate the correlation of CT and argumentative writing among Moroccan university students. The findings of the study revealed that university students had sound critical thinking skills and they were able to use a higher order thought process. Furthermore, students' production through the essay was good as they were aware of the techniques of argumentation and the use of logical reasoning to back up their position about the suggested topic. The research study resulted in a significant positive relation between critical thinking and argumentative writing among Moroccan university students, which means that learners who are aware of high order thinking skills perform well in their argumentative writing.

The findings generated from the study show obviously the importance of critical thinking skills in higher education. Learners with higher order thinking skills are independent learners and thinkers who can use their mental capacities to make differences and create new output in many contexts. They are not passive learners who consume certain data in guided contexts, but rather active learners who analyse, synthesize, evaluate, solve problems and take decisions in varied contexts. Training students to think critically empowers them in academic contexts, at work and in everyday life. They can perform good in language proficiency that includes: reading, speaking, listening and writing and transfer the acquired knowledge and skills to their work place and their daily practices.

11. LIMITATION OF THE STUDY

Though the efforts were invested in this study to abide by the rules of scientific research in the realm of humanities, it is not free of some limitations and shortcomings.

First, this study approached just one faculty, that of languages, letters, and arts. Including more faculties from the whole country would increase the sample size and help in generalizing the findings.

Second, it was limited to a quantitative design. Applying other designs and methods may have contributed better and provided deeper data and understanding of the research problems.

Thirdly, this study investigated only the correlation between critical thinking skills and argumentative writing skills. Examining critical thinking skills in relation to speaking, reading, and listening may have provided more data as it involved the whole language proficiency.

12. RECOMMENDATIONS

Based on the findings of this study, here are the following recommendations:

- A- Enhancing CT skills should be a priority in higher education and the whole educational system.
- B- Offering a good environment for learning should be urged to help professors do their work properly.
- C- In the 21st century education, the learner should be prepared to be an active member in the learning process not a mere consumer of a provided learning input.
- D- Institutions of higher education should organize regular national and international conferences about critical thinking skills. (discussing new issues by researchers, providing new alternatives and practical solutions and offering training about CT).
- E- The ministry of higher education should create partnerships with international academic institutions specialized in the field of soft skills to offer continuous training for the teaching staff.
- F- Great importance should be given to English in the Moroccan educational system. English is not just a language but rather a skill. It is a lingua franca and a language of business, politics, academic research studies, workplace and international relations. It is necessary for development and communication in a global world.
- G- Giving much focus to soft skills in higher education. They are crucial for personal growth, independent learning and success at workplace.

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