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# Issues on Education and Research

## Volume 1

Edited by

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# 14

# Mistakes in Thinking: Can Writing Serve the Needs of Developing Criticality in Thinking?

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Critical thinking has long been in agenda in the educational arena. However, its significance and importance has recently been understood more in this field. This is because we are faced with more and diversified information as a result of technological and scientific development. Therefore, today, the key issue is not to access information but to evaluate and assess the information we get (Gough 1991 cited in Cotton 2001). Moreover, learning occurs in the minds of the students when they create the logic of a discipline by making critical thought and judgment (Paul, 1999).

In terms of higher education and professional life, critical thinking is very crucial. According to Hirose (2001), modern work environment necessitates more thinking and problem solving in their jobs. Therefore, the expectation from higher education is to make students be prepared for this environment. Also, while they are studying at the university, students are expected to think critically in order to accomplish their academic education (Erkmen, 2003).

*Definition*

The word *critical thinking* is a complicated concept and so it has various definitions. The word *critical* in Greek, whose version is *krinein*, means 'to separate, or to choose'. Also, the word *kritikos* in Greek, which means to question, to make sense of, to be able to analyze (Barnet and Hugo cited in Alberquerque 2001; Chaffee, 1990, 37). Additionally, critical thinking has also been defined as a kind of reflective thinking what to believe or do (Ennis, 1991, Hughes, Jason, and Moore cited in Alberquerque 2001, King & Kitcher 1981, 1990, 1994 cited in Leming 1998, Bailin et.al., 1999). Besides, Chaffee (1991, 37) expressed that people use critical thinking to comprehend their

world by attentively examining the thinking process so that the comprehension is more obvious and well-structured.

Furthermore, according to Paul (cited in Alberquerque 2001), critical thinking is defined as a systematic way of forming and shaping ideas and "disciplined, self-directed *thinking* that exemplifies the perfection of *thinking* appropriate to a particular mode or domain of thought." However, Maclure (1989,167) identified critical thinking as knowing how to define problems or topics, using resources to solve them and revising one's work as well as its systematic way of forming and shaping ideas.

These definitions of critical thinking have common points as

- Systematic way of thinking
- Disciplined thinking
- Self-awareness of your own thinking
- Reflecting thinking ideas

*Critical Thinking and Language Education*

In terms of language education, foreign language education is one of the areas which highly require promoting critical thinking skills in learning owing to the fact that language learning is a thinking process. Moreover, it provides a natural setting for using critical thought to be analyzed and interpreted. (Özçınar, 1996, 11; Chaffee, 1985, Sacco, 1987; 58; and Flower, 1981, 3).

According to Suhor (1984), language is not only a pedagogical catchphrase but also a way of thinking and learning and language provides effective environment to be taught. Furthermore, critical thinking is crucial as it fosters analyzing, synthesizing and evaluating ability of the students which are classified as higher order thinking skills. Therefore, language learning environment provides an environment to teach and use critical thinking and critical thinking fosters learning language skills and items without memorization and rote-learning.

Writing is one of the most significant skills which have a strong relationship with the critical thinking skills. Suhor (1984) indicated that "the writing assignments call for exercise of students' generic thinking processes and those pertinent to the subject area" and added "prewriting" activities serve as mental organizers, leading towards a coherent writing product that demonstrates deep understanding of the subject".

Most of the writing instructions and curricula lack in critical thinking skills although writing facilitates critical thinking, in a way that it is not only a result of critical thinking but also a stimulus to a new thinking and new discoveries (Sheridan, 1992 cited Hirose 2001). However, when teaching writing , writing is predominantly dealt with in a "mechanical" way such as "fill in the blanks" or "short answer" despite the fact that an effective writing should include the concept "sequence", which means "moving from personal to analytical writing, from thesis to logical arguments" (Holbrook, 1984).

To avoid the mechanistic view towards writing, students should be encouraged to take the risk of coming up with innovative thought, to deal with the real life topics generated by students themselves in a series of brainstorming sessions, to motivate the students to implement the thinking-writing strategies in their assignments and to generate the criteria which is used to evaluate their writing (Sheridan, 1992 cited Hirose, 2001). These techniques can be listed as (a) Focused Freewrite, (b) Categorize Completely, (c)Prioritize Please, (d) Alternate Ways of Looking, (e) Advantages-Disadvantages, (f) Creative Alternative, (g) Compare-Contrast, (h) State Problem Specifically, (i) Mine for Metaphors, (j) Take the Next Step, (k) Essential to Consider Opposition, (l) Alternate Solution, (m) Consider Position, (n) Sequence Your Points, (o) Stand It on Its Head, (p) Write It in Pieces, (q) Close Strongly, (r) Disobey Directions Creatively

*Fallacy*

When writing in foreign language education has considered, it is frequently criticised that students have difficulties in supporting their ideas adequately, which most of teachers have been complaining about this issue. Diestler (1998) has defined this as *fallacy* which means "reasons that do not provide adequate support for conclusions" (p.224). The major categories of fallacies are categorized as faulty analogies, false cause, slippery slope, hasty conclusions and ad hominem.

*Faulty Analogies*

It has been defined as having the same issues in the compared two things. Diestler (1998) stated that "two things being compared are alike in all significant aspects" and added "if there are differences between the items being compared, then faulty analogies occur" (p.224). For instance, be a faulty analogy because their social and cultural systems are different.

*False Cause*

It is related to the causal relationship between one event and the other. Diestler (1998) indicated that "if there is no real proof that one event caused another event, false cause occurs" (p.228). In one of the essays given the topic as 'causes of learning a foreign language', it has stated that "we can learn a language in order to become qualified person". In this explanation the problem is learning a foreign language makes people follow different resources in a foreign language so this would help them to improve their qualifications. The causal relationship is between following different resources and broadening your horizons.

*Slippery Slope*

When there is a chain relationship among the events, they will follow each other logically. However, in slipper slope "when one event occurs, then others will follow, usually in an uncontrollable way" (Diestler 1998, p.233). In one of essays on 'problems that overpopulation all over the world may cause, it is stated that "when population increase, pollution increases, too because overpopulation means more rubbish." In this statement, according to this writer is emphasized that there is a chain relationship among population, amount of rubbish and pollution. However, there is a problem in that having more population does not always bring about pollution. Moreover, pollution consists of air, environment, and water.

*Hasty Conclusions*

Diestler (1998) defined *hasty conclusion* "when deductions or conclusions are made on the basis of insufficient information, hasty conclusions are made" (p.235). That means, the validity of information is determined by where the resource has been taken and who formed that information. For instance, one of the esays given on the topic of "the effects of unemployment on families, it was stated that "in the third world countries unemployment is the first reason of cold wars. If there is unemployment there are more unhappy people...". In this statement it was not clear that the relationship among unemployment, cold wars and unhappy people was related to each other. In other words, it is unseen which resource this statement is based on.

*Ad Hominem*

Ad hominem is an expression from Latin which means attacking the person. Diestler (1998) described it as attacking a person's quality which is irrelevant to the issue that is dealt with. For instance, judging a woman without considering her qualification for a position is prejudiced and biased. In other words, because the person is a woman it is not fair to say that she can not do a position properly. If someone attacks the character, appearance, personality or behaviour of another person, it is required to ask yourself, "Is this aspect of person an important part of the issue?" If not, you have an ad hominem fallacy (Diestler 1998, p.232).

## Method

*Purpose of the Study*

The present research is a descriptive study. According to Isaac and Michael (1981, p.46), the descriptive research is used "to describe systematically the facts and characteristic of a given population or area of interest, factually and

accurately". This study describes the critical thinking fallacies in the academic essays written by students at ENG 223, which aimed at improving the students' composition skills.

Since in essay writing it is essential to give valid and sound supports, idea development and supporting them are crucial. In this study, we try to identify the different fallacy categories in these essays according to four main fallacy categories in critical thinking as *faulty analogies*, *false cause*, *slippery slope*, and *hasty conclusions* (Diestler, 1998). *Ad hominem* fallacy is not analysed in the essays since the course content involves mainly the students' usage of appropriate examples, support and explanations in their essays and this fallacy type does not provide that.

In the present study the following research questions were investigated:

1) What is the distribution of fallacies in terms of gender?
2) Is there any significant difference between males and females according to fallacy types?
3) What is the distribution of fallacies in terms of the department of the students as science and social science?
4) Is there any significant difference between science students and social science students according to fallacy types?
5) What is the distribution of fallacies in terms of essay type as problem solution and cause-effect?
6) Is there any significant difference between cause effect essay type and problem solution essay type according to fallacy types?

*Participants*

The sample of the study (n=298) was university students in one of the state university in Turkey. They were the sophomore students at the different engineering departments, department of social services, department of statistics, department of physical education and department of information management. Their age differed from 18 to 21. They all were considered as proficient learners of English since they had attended one-year language preparation program before attending their classes and they had passed. Moreover, in their first year program they had taken reading skills course. The researchers have examined the essays of 298 students to see if there are any critical thinking fallacy categories. The essays were selected from students' mid-term and final examinations. It is found that 173 essays out of 298 (58.05%) have critical thinking fallacies. This high percentage shows that critical thinking fallacies are highly common problem in student essays.

*Data Analysis*

In this research, the descriptive statistics and inferential statistics were used. Specifically, frequencies, percentages and standart deviation were conducted as

descriptive statistics. For inferential one, chi-square analysis was calculated manually. Because of data feature, SPSS could not be processed.

## Findings

In the study the independent variables are gender, the field of the study and the essay type. The data were analyzed accordingly. As for the fallacy frequencies, we see that there are 43 faulty analogies, 60 false causes, 57 hasty conclusions, and 65 slippery slopes in 173 essays in which fallacies have been identified. The most frequent fallacy type is slippery slope within the essays. Also it is interestingly found that six slippery slope fallacies in an essay have been identified.

Regarding the demographic figures of participants it is seen that the number of female participants is 144 while the number of males is 131. 89 essays out of 165 (53.93%) written by female participants have involved at least one type of fallacies. Unlike them, 84 essays out of 133 (63.15%) written by male participants have involved at least one type of fallacies. The ratio of the essays written by males and females is nearly equal according to total number of the essays which have fallacies as can be seen from Table 1 and Figure 1.

Table 2 shows that in faulty analogy fallacies female students' ratio is higher than males (20.69%). On the other hand, in hasty conclusion the number of male students are more than females (28.44%). Considering slippery slope, the ratio of female students is again higher (31.03%). Nevertheless, through chi-square analysis ($\alpha = .05$), the percentages do not indicate any statistically significant difference ($\chi^2 (1) = 1.797$, $p > .05$)

According to the total number of the essays which have fallacies, 40.5% of the essays are written by the students who are in social science field, while 59.5 % of them are written by the students who are in science field as can be seen from Figure 2 and Table 3.

As it is seen from the Table 4, the ratio of fallacies made by social science students is higher than the one made by science students in *faulty analogy* (20.43%), *false cause* (33.34%). On the other hand, the ratio of fallacies made by science students is higher in *hasty conclusion* (28.79%) and *slippery slope* (31.06%). However, through chi-square analysis ($\alpha = .05$), the percentages do not indicate any statistically significant difference ($\chi^2 (1) = 4.786$, $p > .05$).

In terms of essay types (Table 6), the number of *faulty analogy* and *false cause* are quite more in the cause-effect type essays (22.52% for faulty analogy, 33.33% for false cause). On the other hand, *hasty conclusion* and *slippery slope* are more in problem solution type essays (31.58% for hasty conclusion, 32.46% for slippery slope). Through chi-square analysis ($\alpha = .05$), the percentages indicate a statistically significant difference ($\chi^2 (1) = 9.57$, $p < .05$). This shows that the fallacy type is directly linked to the nature of essay types. Since the casual relationship is more emphasized in cause and effect essay, it could be expected to have idea generation based on the causal relationship. Therefore, false cause could be more in that type of essay. With

regard to problem solution type of essays, it is expected to deal with the problems of an issue or propose the solutions for an issue. Hence, it could be natural to have more fallacies as *hasty conclusion* and *slippery slope* which are related with the relationship between the problem and the solution.

## Conclusion

In the study it was investigated how the distribution of fallacies was in the essays and whether there was any significance difference according to the gender, the field of study and the essay type. It is found that regarding gender and the field of study there was no significant difference. However, in the essay type there was a significant difference between the groups. As the nature of essay type requires some certain idea generation, the fallacy type in the cause-effect essay could be more in line with *false cause*. Unlike this, the fallacy type in the problem-solution essay could be more in *hasty conclusion.*

Regarding these findings, the further study on dealing with the fallacy types and academic writing can be conducted on identifying,

- whether there is any correlation between the fallacy types and essay types
- whether there is any correlation between the fallacy types and the field of study
- how fallacy types affect on essay writing
- whether fallacy types differ in essays written in the native language and foreign language

This study is unique in terms of analysing fallacy types in academic writing in the context of foreign language education. This issue still requires more researches.

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