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CROSS CULTURAL CONFLICT RESOLUTION STYLES: DATA REVISITED

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Abstract

The way conflicts are solved is thought to be culturally learned (Hammer, 2005); therefore, this is reflected through language use. Conflicts, as inevitable parts of communication, naturally mirror cultural differences. Intercultural conflict styles have been studied so far by various researchers. How conflicts are initiated, maintained and escalated or terminated are all culture bound (Leung, 2002) and all the related stages vary from one culture to another. In the related literature, there have been attempts to describe different conflict handling classifications. Using Hammer's (2005) categorization that was found to be more refined and summative, conflict resolution styles of Turkish and American College students were explored using Discourse Completion Tests (DCT) with eight conflict situations where the respondents were required to write verbal solutions to overcome the conflicts described in the test. Those utterances were categorized according to Directness/Indirectness Scale modified from Hammer's (2005) "International Conflict Style Inventory (ICSI)" that classifies intercultural conflict resolution styles as high/low level of directness and high/low level of emotional expressiveness. It is believed that the study provides insight into intercultural communication as there are culturally generalizable (etic) and learned patterns of conflict resolution styles pertinent to different cultures (Hammer, 2009, p. 223; Ting-Toomey, 1994).

Keywords: conflict resolution styles, Turkish and American cultures

1. Introduction

In socio-cultural psychology, cultural differences have been questioned by a wide range of researchers. The most influential contribution to the field was made by Hofstede in the 1960s with his Cultural Dimensions Theory that indicate systematic cultural differences and grouped them under four primary dimensions along with individualism and collectivism, which are power distance, uncertainty avoidance, and masculinity. To his taxonomy, he later added long-term orientation and indulgence versus restraint dimensions to separate cultures from each other (Hofstede, Hofstede, & Minkov, 2010). "Individualism" and "Collectivism" are thought to be the major dimension of cultural variability (Gudykunst & Ting-Toomey, 1988, p. 40). In Collectivist cultures, rather than "I", "we- identity" is valued. In-group ties, loyalty and group benefits and collective behaviours and respect to the authorities prevail over the individual benefits. In Individual cultures, interests of independent individuals are central. Power distance dimension relates to the inequalities in the society due to the members who have varying degrees of powers. In a society where high power distance is appreciated, the result is a hierarchical order where every member has an unquestioning place or a social role while low power distance is linked to equal distribution of power and justified inequalities (Hofstede, 2017). The Masculinity dimension refers to the tendency in the society to validate either masculine characteristics such as the achievement, heroism, assertiveness and material rewards (competition) for success or to show feminine characteristics like a preference for cooperation (consensus-oriented), modesty, caring for the weak and quality of life. Such prevailing characteristics have impact on the roles of men and women in the society that creates gender stereotypes. Women in high masculinity score are subservient and expected to work in suitable

jobs for women. The fourth dimension - Uncertainty Avoidance dimension - is how the society approaches and perceives ambiguity and uncertainty. Cultures with High Uncertainty Avoidance support the value of determined codes of beliefs or orthodox behaviour. Low Uncertainty Avoidance cultures are more tolerant of the unknown as they rely on the idea that practice works better than principles.

One of the two newly added dimensions; Long Term Orientation versus Short Term Normative Orientation, can be verbalized with the degree of adherence to the past. Low degree on this dimension demonstrates a disposition to maintain traditions and view change as unfavourable state, whereas the high level on this dimension is characterised with the readiness to change and encourage change. As for Indulgence/Restraint parameter, it concerns the way members of a society view enjoying life and having fun as one society accepts free gratification of life whereas the other suppresses this with strict norms. Following Hofstede, Triandis and Gelfland's study (1998) is an eminent effort that measures four dimensions of collectivism and individualism to classify societies as vertical/horizontal collectivist/individualist to unveil social behavior based on which community "self" perceives her/himself as belonging to.

Intercultural differences in thinking styles was probably first expressed by Kaplan (1966), who asserted that different cultures have different thinking patterns that can be traced in the structures of their rhetoric. His theory of cultural thought patterns put forward that Germanic languages such as English, German, Dutch, Norwegian, Danish, and Swedish use direct and linear communication styles, whereas Oriental languages (of Asia) have a circular reasoning. In Semitic languages (Hebrew and Arabic), Romance languages (Latin languages) and Russian, communication is progressive, but digressive and indirect.

Initiated with Kaplan's pioneering perspective towards thinking modes of different cultures and its reflection in discourse produced Hall (1976) differentiated between "High and Low context communication styles" to categorize cultural differences in communication. Low Context communication is a direct verbal interaction style. Some cultures prefer open and explicit expressions that do not need inferences and predictions. They focus on the exchange of information. Theirs are labeled as Low Context Communication styles as described by Hall (1976). On the other hand, some cultures deliver information in a roundabout way. Messages are implicit and context-oriented, which is referred to as "High Context Communication" styles. "Low-context communication is used predominantly in individualistic cultures and reflects an analytical thinking style, where most of the attention is given to specific, focal objects independent of the surrounding environment; high-context communication is used predominantly in collectivistic cultures and reflects a holistic thinking style, where the larger context is taken into consideration when evaluating an action or event" (Liu, 2016, p. 1).

Hofstede's theory had strong implications on intercultural communication. In Intercultural Communication studies, the following styles of verbal communication have been identified (Gudykunst, 1998; Gudykunst & Ting-Toomey, 1988).

- direct/indirect communication style
- elaborate/succinct communication style
- personal, or person-centered/contextual communication style
- instrumental/affective communication style, all of which in a way relate to the distinction between individualist and collectivist communication styles.

Similarly, verbal conflict resolution styles are also thought to be culturally learned (Hammer 2005). Conflicts, as inevitable parts of communication, naturally mirror cultural differences. How conflicts are initiated, maintained and escalated or terminated are all culture

bound (Leung, 2002) and all the related stages vary from one culture to another. Within the cultures, however, they appear as recurrent or "etic" (culturally generalizable) patterns (Hammer, 2005). With the purpose to gain insights into the nature of conflict resolution styles of different communities, a wide range of academic studies were conducted. Vast majority of the studies assert that there is a great gap between conflict resolution styles of the Eastern and the Western World, which are thought to be collectivist and individualistic cultures. Among them, the most widespread taxonomy is based on Blake and Mouton's approach (1964). To them, differences in conflict styles emerge from an individual's concern for self-interest against the interest of the other. Constructed on this basis, several taxonomies appeared. A remarkable categorization was made by Rahim (1983) who developed an instrument testing five styles of conflict resolution: dominating style: high self/low other concern, obliging style: low self/high other concern, avoiding style: low self/other concern, integrating style: high self/other concern, and compromising style: moderate self/other concern (Ting-Toomey et al., 2000). In the same vein, the Thomas-Kilmann Conflict Mode Instrument assesses an individual's typical behavior in conflict situations and describes it along two dimensions: assertiveness and cooperativeness, two poles that can be easily connected to the individualism and collectivism. It provides detailed information about how that individual can effectively use five different conflict-handling modes, or styles: Accommodating, Competing, Compromising, Avoiding, Collaborating (Thomas & Kilmann, 1977, 2017).

Hammer (2005, 2009), in his Intercultural Conflict Style Model, adopts a conceptualization of conflict with a two-core communicative process containing two functions "report" (content) and "command" (how the message or content should be understood or how the contending parties feel about the content). In conflict interaction, he includes "emotion" as an integrative and determining socio-cultural behaviour in addition to disagreements. To him, the conflict dynamic has two contextual features: disagreements and emotions. To put it more clearly, a conflict style is "conceptualized as the manner in which contending parties communicate with one another around substantive disagreements and their emotional reaction to one another". It handles two basic dimensions of cultural differences in the identifying conflicts: The first are the behaviours that reflect more or less direct or indirect approaches to disagreements. The second are those that reflect more or less emotions in dealing with the disagreements.

Hammer's approach is centered on three eminent dimensions of cultural variability: Individualism, collectivism; high-low context communication and emotionally expressive restraint conflict solving styles. In search for an assessment tool of "patterned behaviours of conflict resolution" on those three dimensions, he develops a scale of high/low level of directness and high/low level of emotional expressiveness. In the model he proposes the following four styles comprised of verbal directness and emotions: 1- discussion style (direct and emotionally restrained) 2- engagement style (direct and emotionally expressive), 3- accommodation style (indirect and emotionally restrained), and 4- dynamic style (indirect and emotionally expressive). Discussion style prescribes the motto "say what mean, mean what say". The users of this style are verbally direct, but cautious of displaying emotions that are thought to be dangerous for the interaction. The major principle of the "engagement style" is associated with more verbal directness and confronting the disagreement more bravely. In this style, emotions are more clearly expressed and infused in the conflict situation Accommodation style is an indirect approach to conflict resolution. The conflicting parties are hesitant and reserved in showing their feelings. Instead, they employ implicit messages, indirect language and the intermediaries to solve conflicts. As for dynamic style, it is another indirect approach to conflicts intensified with emotions. Through ambiguity, hyperbole and the use of intermediaries, conflicts are resolved. Here, indirectness may seem irrelevant to emotional expressiveness. Emotions are made visible via body language, laughing, gesturing, body

posture, or facial expressions along with high volume voice or communication (Hammer 2005 p.16).

2. Aim

Following Hammer (2005), considering such theories of cultural variability in conflict resolution process as individualism/collectivism; high-low context communication and emotionally expressive/restraint interaction, we hypothesize that Turkish speakers will be indirect in their communication probably because Turkey is seen to be a part of the oriental world, we aim to compare and contrast conflict resolution styles of Turkish and American university students. This study probes into the language used to solve conflicts as performed by two groups of participants of Turkish and American cultures. The aim of this study is two-fold: First it attempts to describe language used to solve conflicts and identify whether they are direct or indirect in conflict resolution. Secondly, it purports to explore the interface between cultural thought patterns and conflict resolution styles Turkish and American speakers.

Our research questions are as follows:

- Are Turkish and American speakers direct or indirect in solving conflicts?
- Are Turkish and American speakers emotionally expressive or restraint in solving conflicts?
- Are there any differences between Turkish and American speakers in terms of directness/indirectness and emotionally expressiveness in their resolving styles?

Opting for a quantitative approach, the data for the study were collected from Queens College, New York and a Turkish State University. 228 college students participated in the study. Of them, 101 were American citizens (59 of whom were the native speakers of American English) and 130 Turkish citizens (127 of whom were Turkish speakers of English as a foreign language).

3. Methodology

3.1. Participants

The demographic information gathered in the questionnaires included age, gender, and mother tongue (Table 1-2). Aged between 18-22, 101 American university students from different departments at Queens College and Graduate Center of CUNY like Linguistics, Linguistic Antropology, Law, Educational Sciences and 125 English Language Teaching (ELT) students at a Turkish state university in Ankara were involved in the study. As the University in New York where the study was conducted has a very rich ethnic population, this urged us to analyse the DCTs after we categorize the respondents according to their mother tongues to achieve homogeneity.

3.2. Data Collection

Data collection was made using a Discourse Completion Tests (DCTs) with eight conflict situations where the respondents were required to write their verbal solutions to manage the conflicts described in the test (see Alagözlü & Makihara, 2015 for more details). Discourse Completion Tests (DCTs) in which conflict situations at schools are presented to the participants and responses are elicited. Situations are structured to test power status. First three situations were for the discovery of the conflict resolution styles with the respondents' peers. Next five checked how they solve conflicts with higher status people: the instructors and the administrators. DCTs were first prepared in Turkish, later translated into English, English

version is proof-read and revised in language and compatibility to culture by a professor at Queens College.

Rather than asking questions directly to the respondents, the utterances elicited from the DCTs were categorized according to Directness/Indirectness Scale modified from Hammer's (2005) "International Conflict Style Inventory (ICSI)" that classifies intercultural conflict resolution styles as high/low level of directness and high/low level of emotional expressiveness. The inventory is originally 36 item measure of intercultural conflict resolution style based on direct and indirect approaches, which are chosen out of 106 items after a factor analysis.

In American setting, contacts were made through the instructors to collect data in the classrooms. In both Turkish and American settings, the instructor distributed and collected the DCTs. This did not take more than 30 minutes. Consent from IRB (Institutional Review Board) and approval by the Queens College were obtained for research involving human subjects conducted by any individual affiliated with the college. Individual consents are taken on site in both settings.

3.3. Data Analysis

Data were analysed using a modified scale from Hammer's (2005) scale of directness or indirectness considering the constructs nested under four aspects: Directness/Indirectness and Emotionally Expressive /Restraint as detailed below: The utterances of the respondents are manually one by one evaluated according to the descriptive information given in Hammers' inventory (Hammer, 2005, p. 8) by two raters after a consensus is reached final decision is made. Sample representative items of directness/indirectness were

1) Candidly express your disagreements to the other party (Direct)

2) Verbally confront differences of opinion directly with the other party. (Direct)

3) Be comfortable with the other party fully expressing their convictions (Direct)

4) Offer indirect suggestions rather than explicit recommendations (Indirect)

5) Express your complaints indirectly (Indirect)

6) Accommodate and go along with the statements made by the other party even though you disagree (Indirect)

Representative items of emotion used as criteria in the evaluation of the utterances were

1) Allow your emotions to come out when interacting with the other party (Emotionally Expressive)
2) Passionately express your disagreements (Emotionally Expressive)
3) Express your deeper emotions like fear and anger (Emotionally Expressive)
4) Avoid expressing strong emotions (Emotionally Restraint)
5) Keep strong emotions like fear and anger hidden from the other party (Emotionally Restraint)
6) Avoid imposing your feeling s to the other party (Emotionally Restraint)

First, utterances were evaluated based on whether they are direct or indirect and emotionally expressive or restraint before they were counted. Despite subjectivity problem in judging the utterances as direct or indirect, while evaluating two raters reached a consensus though no interrater reliability was statistically measured. In deciding indirect responses, implications,

sarcasm, questions, silence, compromises, one word responses like affirmations (yes, OK or as you like it etc.) were all deemed to be indirect. Additionally, metaphors, ambiguous and analogous expressions, the use of third party intermediaries, and relying on the receiver to clarify misunderstanding were taken as indirect styles. Direct styles were identified with the use of precise and explicit language by following the maxim of clarity "say what you mean, mean what you say" (Hammer, 2005, p. 4). Comparing the number of each type of response with the total number of the respondents, percentages are found.

In addition, a directness score for each respondent is calculated giving 2 points to "direct and emotionally expressive" responses and 1 point to "Indirect and emotionally restraint" responses. **Thus, the upper limit for directness is 32** when all the responses are direct and emotionally expressive. When all the responses are indirect and emotionally restraint, **the score is 16.** To see if the scores are significantly different from each other, the scores of American and Turkish participants are tested with a parametric Independent Group T-Test after the determination of normality of distribution via Kolmogorov-Smirnov Test shows that the data are normally distributed. ($p=0.006$ and $p<0.01$).

4. Results

To support homogeneity, out of 130 Turkish respondents 127 were included into the analysis as their mother tongue is different from Turkish. 8 of 127 did not complete the DCTs fully. For statistical analysis we had 119 respondents. Among 101 American respondents, the responses of 59 participants were analyzed due to the variety of their mother tongues as seen in Table 1 and 2. Non-native speakers of both languages were excluded.

Table 1. *Demographic information about respondents in American setting*

Mother tongue	Number	Gender	Mean Age
American English	59	27 m/32f	22.92
Spanish (Hispanic)	6	3 m/5 f	27.12
Hindi/Bengali/ Urdu	9	2m/7f	23.33
(4+2+3)			
Russian	3	2m/1f	
Chinese	6	6f	22.66
(Mandarin/Cantonese)			22.66
Korean	4	2m/2f	25.25
Hebrew	4	2m/2f	20.75
Dutch	1	f	20
Montenegran	1	m	24
French	2	1m/1f	28
Greek	1	f	53
Arabic	2	1m/1f	30.5
Turkish	1	f	30
Persian	1	f	18
Polish	1	f	19
Total	101		

Table 2. *Demographic information about respondents in Turkish setting*

Mother tongue	Number	Gender	Mean Age
Turkish	127	37m/90f	19.8/19,53
Arabic	1	f	19
Kurdish	1	f	19
Indonesian	1	f	21

4.1. Directness and Emotions Expressed in Solving Conflicts

Percentages of overall directness levels and the levels of the subgroups: peers and higher status people were quite close to each other in both groups. In terms of emotions, there were remarkable differences. Turkish respondents seemed to hesitate expressing their emotions to higher status people as only 28% were emotionally expressive to the authorities while this rate was 53% for American respondents, which means that American participants were more direct to the higher status people than Turkish. Similarly, Turkish speakers were less emotionally expressive to peers when compared to American respondents (45% vs. 57%) (Figure 1.).

Table 3. *The overall score of directness of the groups and their descriptive statistics*

	American Respondents	%	Turkish Respondents	%
Indirect Responses to PEERS *	**47 out of 177**	**26,55**	**127 out of 381**	**33,33**
Direct Responses to PEERS*	130 out of 177	73,45	254 out of 381	66,67
ER Responses to PEERS*	**76 out of 177**	**42,93**	**211 out of 381**	**55,38**
EE Responses to PEERS*	100 out of 177	57,07	170 out of 381	44,61
Indirect Responses to HIGHER STATUS	**83 out of 295**	**28,13**	**181 out of 635**	**28,50**
Direct Responses to HIGHER STATUS	212 out of 295	71,87	454 out of 635	71,50
ER Responses to HIGHER STATUS	**143 out of 295**	**47,47**	**454 out of 635**	**71,50**
EE Responses to HIGHER STATUS	152 out of 295	52,53	181 out of 635	28,50

*First three situations in the DCTs are included. **Last five situations in the DCTs are evaluated. ER: Emotionally Restraint EE: Emotionally Expressive

Turkish Respondents

- 66.67% of Turkish respondents used direct expressions to solve the conflicts with their peers.
- 71.50% of them were again direct in their communication with higher status people.
- 44.61% were emotionally expressive to peers
- 28.50% were found emotionally expressive to higher status people.

American respondents

- 73.45% of American respondents preferred direct expressions for conflict resolution with their peers.
- 71.87% were direct in conflict resolution with higher status people.
- 57.07% of American respondents used emotionally expressive utterances in communication with peers.
- 52.53% were found to include emotionally expressive utterances when speaking to higher status people.

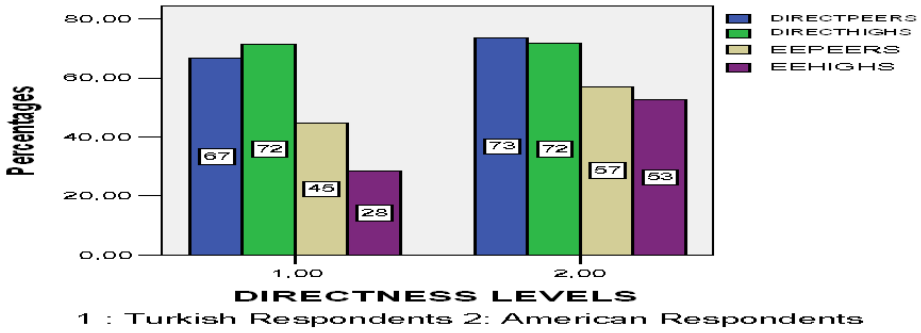

Figure 1. *Percentages of direct and emotionally expressive responses of Turkish and American respondents*

4.2. Any Differences between Turkish and American Speakers in Terms of Directness/Indirectness and Emotional Expressiveness in their Resolving Styles

Whether there was a statistical difference between the groups' overall directness levels is revealed using an Independent Samples Test as shown in the above tables. It was found that mean directness levels of 119 Turkish respondents was 25.7119 while American respondents' mean directness levels was 25.0420 out of 32. The Sig.(2-tailed) value (0.197) showed that the difference in their directness levels was not statistically significant as it was bigger than (0.05) (Tables 4-5).

Taking the two layers of the data; that is; responses to the peers and the school authorities, regarding directness, no statistical difference is intended to calculate in the styles used to peers and higher status people by both groups as the percentages are quite close to each other.

Table 4. *Group statistics*

Groups	Number	Mean	Std. Deviation	Std Error Mean
Turkish	119	25.7119	3.63911	.47377
American	59	25.0420	3.0420	.27897

Table 5. *Independent samples test for overall directness*

Sig.	t	df	sig (2-tailed)	Mean difference	STD Error Difference
.024	1.294	176	.197	.66985	.51774
	1.218	99.322	.226	.66985	.54980

Additionally, a second Independent Samples Test on the use of emotions expressed in solving the disputes was run, but a statistical difference is not found in terms of the use of emotions in solving conflicts ($p>0.05$) (Table 6.) although American respondents are seen to use more affective explanations than Turkish respondents when addressed to peers (57% vs. 28%) and the school authorities (28% vs. 53%). The percentages of the emotionally expressive responses to the authorities in the two groups are observed to display a noticeable difference (Figure 1.).

Table 6. *Independent samples test for emotional expressiveness in conflict resolution*

Sig.	t	df	sig (2-tailed)	Mean difference	STD Error Difference
.464	-,948	176	.344	.22290	.23514
	-,922	107.735	.359	.22290	.24173

According to the model of Hammer (2005), Turkish respondents are verbally direct, but emotionally restraint (use discussion style) and they are cautious of using intense emotional expressions, whereas American respondents are direct and more emotionally expressive (use engagement style) (28% vs. 53%) when involved in conflicts with higher status people. When addressing to peers Turkish respondents are direct and emotionally restraint (again discussion style) while the Americans are direct and more expressive (engagement style) (45% vs 57%).

5. Conclusion

Conflicts are inevitable in communication. In multicultural settings where many different cultures are face to face, this becomes more remarkable and indispensable due to social, cognitive, perceptual, and intellectual differences of different cultures. Cultural diversity can cause deflations in communication. Some cultures may try to solve conflicts getting to the root of the problem when exposed to conflicts, whereas the others may choose to disregard and simply skip it without admitting even the presence of a problem. Whatever the attitude is, people approach conflicts in a direction taught, permitted or governed by their culture. What causes and escalates conflicts is culture bound. Communities show different patterns of communicative behaviours in certain situations. Seeking and revealing those cultural patterns is imperative as a source of knowledge in intercultural communication, which may be used to support parties to better understand each other.

If cultural miscommunications are not managed or undefined well, they may become interpersonal conflicts (Ting-Toomey, 1994 p. 1). Understanding the nature of conflicts may help build and restore peace from a broad perspective. It also helps the management of the institutions where a multiplicity of cultures are in contact whether they be educational, social or political. From the lenses of the educators, conflicts in multicultural classrooms and in educational setting can be surmounted thanks to such knowledge. Therefore, knowledge of how different cultures resolve conflicts is crucial so that intercultural communication could be supported and maintained. Additionally, this sort of knowledge is equally invaluable for international relations in the field of politics.

The present study aimed to explore the directness levels of Turkish and American college students in oral conflict resolution styles in communication in two sub groups: students' directness attitudes to peers and to higher status people at school that is, instructors and administrators. Directness scale also covered the measurement of "emotionally expressiveness" in Hammer's (2005) scale. If the speakers prefer to reflect their feelings such as anger, opposition, reaction, affection, pity, sympathy that support their conflict resolution efforts, this is considered to be a direct and open expression. Roughly evaluating, it can be said that Turkish and American college students in the study had similarly high levels of directness, but American respondents were relatively more direct in conflict resolution when looked at the mean scores. Mean percentages of the direct responses were 69.085 (Turkish) and 72.66 (Americans), which were quite close to each other even though there were no statistically significant difference. Similarly, in terms of emotions expressed to solve conflicts, percentages displayed remarkable differences though not statistically significant again. Turkish respondents seemed to hesitate expressing their emotions to higher status people as only 28% were emotionally expressive to the authorities while this rate was 53% for American

respondents. Likewise, they were less emotionally expressive to peers when compared to American respondents.

According to Hammer's Model, this study found that Americans opt for the "engagement style" while Turkish respondents choose the discussion style when approaching conflicts in school environment. This means they are verbally direct and emotionally expressive. Turkish respondents were seen to have the discussion style by which they employ direct and emotionally restraint expressions. Looking in depth into the results, both research groups are found to be verbally direct, but in terms of the degree of emotions infused in conflict interaction, Americans are found to employ more intense feelings that are connected with the "sincerity" by Hammer (2005). In our research, in other words, it is the emotional level where cultural variability shows itself. In many studies, the emotional expressiveness/restraint is taken as the key dimension of cultural differences in solving conflicts. Individualistic cultures tend to display more emotions to "honestly" engage in conflict resolution. Yet, negative feelings in collectivist cultures are avoided as they insult the feeling of harmony (Ting-Toomey 1999, p. 215).

The results confirm the idea that Hammer (2005) was right in his model by taking emotions as one of the core dimensions that pinpoints cultural differences. How much emotion must be included in the communication is also culture specific and a powerful determinant in revealing cultural differences. As a follow-up study to Alagözlü and Makihara (2015), a part of which attempts to explore ways of terminating verbal conflicts in academic settings according to five solutions strategies of Kilmann (1977) that is; collaboration, compromise, avoidance, competition, and accommodation, results confirmed each other. Results of the former study showed that Turkish respondents compete, collaborate and compromise significantly more than American respondents to solve conflicts. These three strategies represent high level of assertiveness that requires directness, autonomy and competitiveness, which are generally observed in individualist cultures. The data revisited with Hammer's approach, emotions form an additional layer which gives clearer picture of the difference between two settings.

With the results showing quite similar levels and no statistical difference, the study appears to have refuted so called cultural difference between the two groups of respondents in contrast to the view that was widely backed up in the related cross cultural communication literature. Restricted to the universe investigated in this study, American culture accepted as a representative part of Western culture, did contradict the view that American way of resolving conflicts is not different from Turkish speakers' styles to a great extent. This may be associated with America's being a mixing plot and ethnic richness along with various multicultural backgrounds of the participants. Despite the situation that they are the second or third generations of the migrants from other cultures born in the US who were thought to be accommodated to American culture, they might still have shown a tendency to mirror their native thinking behaviours.

Turkish speakers' preference in favor of direct conflict resolutions in school environment as much as the American respondents may be associated with the amount of exposure to western culture via language study, literature, media, popular culture and the permeability of the boundaries across countries. In addition to the effect of higher education, the results may be related to several other factors including the content of the measurement and different perceptions of self-concept, obligations, identity or membership etc. that are questioned in the scales. These may affect the validity and measurement of the constructs as Fiske (2002) highlighted. Even, as Turkish students all major English language education, their pragma-linguistic failures may explain their directness in communication. If all those factors fall short in uncovering why the magnitude of the difference was not significant, convergent percentages

of directness of Turkish and American respondents in resolving conflicts in the educational settings may show two parties' analogous styles, which can be easily associated with globalization and the shrinking world.

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ON THE TEACHABILITY OF COMMUNICATION STRATEGIES TO JORDANIAN EFL BEGINNERS: EXPLORATION AND REFLECTION

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Abstract

This study examines the effect of communication strategy instruction on Jordanian EFL students' oral performance and strategy use. Following a thorough content analysis of units 10- 13 of the prescribed *Action Pack* textbook, the instructional material was designed and implemented over a duration of eight weeks. A three-task oral pre-/ post-test, a communication strategies-based observation checklist, and a 10-item scoring rubric were used to collect data from a purposeful sample of 24 sixth-grade students. The (predominantly interactional) communication strategies of *approximation, circumlocution, repetition, appeal for help, self-repair, appeal for confirmation, appeal for clarification,* and *guessing* were targeted. The data analysis, both quantitative and qualitative, suggests that the utilization of communication strategies in language instruction both improves oral performance and increases strategy use.

Keywords: communication strategies, EFL, oral performance, strategy instruction

1. Introduction

The core of communication resides in sending and receiving messages effectively and negotiating meaning either in written or spoken form (Rubin & Thompson, 1994). To communicate effectively, learners may attempt to overcome difficulties by modifying their messages through avoidance (Tarone, 1981) or reduction strategies (Dörnyei & Kormos, 1998; Færch & Kasper, 1983) whenever they lack for a word or expression needed to convey a particular meaning. For the same purpose, language learners may also resort to achievement (Færch & Kasper, 1983) or compensatory strategies (Poulisse, Bongaerts, & Kellerman, 1990) through which they use alternative means of expression.

Communication strategies, also known as *communicative strategies* (Corder, 1983), *communicational strategies* (Váradi, 1973), *compensation strategies* (Harding, 1983), and *compensatory strategies* (Poulisse et al., 1990), are quite distinct from *learning strategies*.

[1] This manuscript is an extension of the second author's doctoral dissertation per the regulations in force at Yarmouk University, Irbid, Jordan.

Whereas communication strategies are used to "meet a pressing communicative need", learning strategies are used to manage "a perceived gap in knowledge or skill" (Ellis, 2003, p.515).

Communication strategies (henceforth, CSs) were first introduced by Selinker (1972) as an interlanguage process, defined as potentially conscious problem-solving techniques used by language learners to avoid communication breakdowns whenever they encounter difficulty in L2 oral communication (Brown, 1994; Corder, 1983; Færch & Kasper, 1983; Mitchell & Myles, 1998; Stern, 1983). Gass and Selinker (1994) and Ellis (2003) further emphasized the utility of CSs whenever learners need to express themselves in the target language but lack the linguistic knowledge to do so. Mitchell and Myles (1998) also define CSs as tactics used by non-fluent learners to avoid eminent communicative breakdowns and sustain interaction during oral exchanges. Therefore, CSs are catalysts for communication and comprehension alike, which makes them a matter of significant concern for both EFL learners and teachers.

CSs have been the subject of a plethora of theoretical and empirical research in Second Language Acquisition (SLA), with two major theoretical orientations: the interactional and the psycholinguistic. The former views CSs as elements of discourse and, thus, concerns itself with their linguistic realization (Corder, 1983; Tarone, 1981; Váradi, 1973) whereas the latter addresses the cognitive processes of the learner as he/she encounters language difficulty and, thus, views CSs as individual mental plans (Bialystok, 1990; Færch & Kasper, 1983; Kellerman & Bialystok, 1997; Poulisse et al., 1990).

CSs gained further popularity with the advent of communicative competence (viz., the knowledge of the rules for understanding and producing both the referential and social meaning of language (Hymes, 1972)) and the shift of emphasis from language as an isolated linguistic phenomenon to language as communication. Strategic competence, of which CSs, are an essential component (Wood, 2012), entails "the mastery of verbal and non-verbal communication strategies that could be called into action to compensate for breakdowns in communication" (Canale & Swain, 1980, p.30). Hence, CSs are potential catalysts for communicative competence and negotiation ability in a foreign language (e.g., Dörnyei & Scott, 1995; Mitchell & Myles, 1998; Nakatani, 2010).

CSs are classified differently across research (e.g., Dörnyei & Scott, 1995; Færch & Kasper, 1983; Tarone, 1977). However, Tarone's (1977) taxonomy was probably the first to classify CSs as *paraphrase* (i.e., *approximation, word coinage* and *circumlocution*), *transfer* (i.e., *appeal for assistance, language switch, literal translation* and *mime*), and *avoidance* (i.e., *topic avoidance* and *message abandonment*) strategies.

Most previous CS research aims to identify types of CSs in a particular corpus (Dörnyei & Kormos, 1998; Færch & Kasper, 1983; Poulisse et al., 1990; Tarone, 1977; 1981), the factors which affect learners' CS use (viz., native language (e.g., Si-Qing, 1990), proficiency (e.g., Fernández Dobao, 2001, 2002), cognitive styles (e.g., Littlemore, 2001), task-demands (e.g., Fernández Dobao, 2001)), CS effectiveness (e.g., Poulisse et al., 1990), and the teachability of CSs (e.g., Jourdain & Scullen, 2002).

Relevant to the scope of the current research, whether or not CSs are readily teachable and of utility to EFL learners is a matter of controversy, but the empirical evidence for or against CS instruction is inconclusive. Whereas a good number of scholars (e.g., Alibakhshi, 2011; Dewaele, 2005; Dörnyei, 1995; Lam, 2005; Nakatani, 2005; Yule & Tarone, 1997) advocate CS instruction, other scholars (Bialystok, 1990; Grenfell & Harris, 1999; Kellerman, 1991; Schmidt, 1983; Skehan, 1998) hold an opposing view on the grounds that CS instruction is redundant and its effect is marginal at best since EFL learners 'automatically' transfer the strategic competence already developed in their first language. Schmidt (1983), Bialystok

(1990) and Kellerman (1991), for example, claim that even though the learner's strategic competence may improve, teachers should concern themselves more with teaching the language itself as, to them, the linguistic competence takes precedence over teaching CS strategies. Skehan (1998) also claims that skilled learners' resort to CSs may slow down the development of their interlanguage knowledge resources.

However, the instructability of CSs, be it directly (viz., through the provision of specific language input to raise the learner's awareness, increase his/her willingness to take risks and use CSs, and provide opportunities for practicing strategy use (Dörnyei, 1995; Dörnyei & Thurrell, 1994) or indirectly (through engaging the learner in oral interaction (Richard cited in Skehan, 1998)) is a matter of considerable debate. Empirical research (e.g., Abdollahzadeh & Mesgarshahr, 2014; Benson, Fischer, Geluso & Von Joo, 2010; Chun, 2012; Ellis, 2003; Lam, 2005; Maleki, 2007; Nakatani, 2005; Rabab'ah & Bulut, 2007; Russell & Loschky, 1998; Yule & Tarone, 1997), albeit not prolific, seems to suggest that CS instruction is beneficial for EFL learners, as it potentially raises their awareness of the utility of these strategies and, eventually, improves their performance through allowing them opportunities to hear more input and produce new utterances. Furthermore, learners who receive CS instruction are reported to develop their strategic competence more than those who do not. Yule and Tarone (1997), for instance, maintain that CS instruction potentially leads to effective CS use.

Irrespective of the controversy surrounding CS instruction (Jidong, 2011), CSs have been hailed not only as catalysts for problem-solving (Tarone, 1980; Williams, Inscoe, & Tasker, 1997) but also as tools of pragmatic discourse functions (Nakatani, 2005), which has been the driving force behind the current research.

2. Purpose, Questions, Significance, and Limitations of the Study

The current study attempts to examine the potential effect of teaching eight achievement CSs on Jordanian EFL sixth-grade students' oral performance and strategy use. More specifically, it seeks answers for the following research questions:

1. To what extent, if any, does communication strategy instruction affect Jordanian EFL sixth-grade students' oral performance?
2. To what extent, if any, does instruction affect Jordanian EFL sixth-grade students' communication strategy use?

The findings of the current research may be significant due to the relative novelty of the topic in the Jordanian EFL context. They are hoped to add to the little existing literature on strategy instruction (viz., Al-Rabadi & Bataineh, 2015; Bataineh, Al-Rabadi & Smadi, 2013; Bataineh, Bataineh & Thabet, 2011; Bataineh, Thabet, & Bataineh, 2017; Rabab'ah & Bulut, 2007; Rababah, 2002, 2005). Furthermore, the findings may raise Jordanian EFL teachers' awareness of the potential utility of CSs in developing EFL learners' oral performance. The findings may also encourage further research encompassing variables which may affect CS use in the EFL classroom (e.g., gender, proficiency, task type).

This research is exploratory in nature; hence, the researchers do not make any claims as to the generalizability of the findings. The research is also limited by its scope as only eight *achievement* strategies are examined in a purposeful sample of 24 sixth-grade students. An additional limitation may relate to the researchers' deliberate exclusion of three CSs (viz., *mime, literal translation,* and *language switch*). These strategies, albeit instrumental for beginner learners such as the ones targeted in this research, have been excluded to encourage foreign language use which would have been negatively affected had these three strategies been targeted in the instruction.

3. Sampling, Instrumentation,[2] CS Instruction, and Data Collection and Analysis

A purposeful sample of one intact sixth-grade section of 24 male and female students was drawn from Atfal ArRamtha Al Namothajiah (Ramtha Model School), a private school in Ramtha Directorate for Education, Jordan. This particular school was targeted because the second researcher has been teaching there for the past fourteen years**.**

Eight CSs (viz., *approximation, circumlocution, repetition, appeal for help, self-repair, appeal for confirmation, appeal for clarification,* and *guessing*) are targeted in the treatment. An oral pre-/post-test, a scoring rubric and a CS-focused observation checklist were used for data collection.

The oral pre-/post-test was used to assess the students' oral performance before and after the treatment. It consisted of three tasks: *talk about your experience* (15 minutes), *discuss information* (10 minutes) and *ask and answer* (10 minutes). These tasks, carried out both individually and within pairs, asses the learners' ability to express themselves satisfactorily. Similarly, the five-point scoring rubric (*excellent, very good, good, fair,* and *poor* with the numerical values of *5, 4, 3, 2,* and *1*, respectively) was designed to assess the participants' overall oral performance during the activities according to a number of criteria (e.g. ability to ask and answer questions about abilities, name different objects found in different places, describe objects from the past, produce simple, error-free sentences, talk about familiar situations, participate in conversations about unfamiliar topics).

The CS-focused observation checklist, based on Dörnyei and Scott's (1995) and Færch and Kasper's (1983) taxonomies, was designed to assess the participants' CS use during classroom interactions. The 10-item checklist focuses mainly on interactional CSs (viz., *repetition, appeal for help, request for confirmation, guessing,* and *request for clarification*). Paraphrase strategies (viz., *approximation* and *circumlocution*) are also incorporated into the checklist in addition to *self-repair*. The CS checklist was used by an independent observer, a fellow teacher who was trained for this purpose, over the 16 sessions of the eight-week treatment to note the participants' use of the targeted CSs.

The validity of the instruments was established by a jury of nine language/language teaching professors and school supervisors. To establish the reliability of the pre-/post-test, it was piloted on twenty sixth-grade students from another section in the same school, with a two-week interval between the two administrations. Cronbach's Alpha coefficient amounted to .88, which is appropriate for the purposes of the current research.

The participants were taught through the integration of the eight CSs under study (viz., *repetition, guessing, approximation, circumlocution, self*-repair*, appeal for help, appeal for clarification,* and *appeal for confirmation*) which comprised the medium through which the instructional materials were taught/learned. Over the eight weeks of the treatment, the teacher/second researcher introduced the eight CSs, modeled their use, and encouraged her students to use them whenever they had difficulty expressing themselves or interacting orally with the teacher or their peers.

A minimum of two CSs were integrated in every period which included oral activities. For instance, students were taught to make use of *guessing* in *listen and answer* activities, through

[2] For a copy of the instruments used in the study, contact the corresponding author at rubab@yu.edu.jo.

resorting to expressions which denote *guessing* (e.g., *I guess, I think, it seems that*) before listening to the recording. Students also used various CSs during *ask and answer* activities. They made use of *appeal for help* expressions (e.g., *what do we say*, *how can I*) to elicit help from their teacher. In *talk about you* activities, the participants made use of *approximation, circumlocution*, or a combination of the two strategies whenever they were not able to remember a particular word/phrase (e.g., using *sewing on clothes* as an equivalent for *embroidery*). In the r*ead and say* activity, a number of CSs were used, but the participants especially *appealed for clarification* whenever they needed certain items explained or exemplified.

It is worth noting that as of the second week of the treatment, the participants began using a combination of CSs, usually two or three, during each period. As the treatment progressed, the participants essentially demonstrated efficient use of the target CSs, which reflected positively on their oral performance, especially from the fifth week on.

4. Findings and Discussion

The findings are presented and discussed according to the two questions of the research. The first question asks about potential improvement in Jordanian EFL sixth-grade students' oral performance, which may be attributed to the use the CSs under study, per the criteria of the scoring rubric, as shown in Table 1 below.

Table 1. *Learners' oral performance on the pre- and post- tests*

No.	Task	Pre-Test			Post-Test		
	The student is able to	Mean	SD	Degree	Mean	SD	Degree
1	ask and answer questions about abilities.	3.84	1.19	High	4.08	1.00	
6	describe objects from the past.	3.81	1.18		3.87	1.09	
2	name different objects found in different places.	3.58	1.40		3.85	1.08	
3	produce simple, error-free sentences.	3.48	1.29		3.84	1.08	
5	participate in conversations about unfamiliar topics.	3.48	1.37		3.96	1.06	High
8	discuss information with classmates.	3.39	1.25	Moderate	3.77	1.25	
7	talk about past experiences.	3.27	1.42		3.85	1.16	
4	talk about familiar situations.	3.29	1.39		3.85	1.18	
9	present a simple (prepared) speech to the class.	3.10	1.48		3.77	1.11	
10	define, compare, and classify objects.	3.25	1.37		3.77	1.16	
Total		3.45	1.28	Moderate	3.86	1.07	High

Table 1 shows a marked improvement in students' oral performance after CS instruction. The participants' oral performance moved from being 'high' on two oral tasks (*asking and answering questions about past abilities* and *describing objects from the past*) on the pre-test to "high' on all the tasks in the post-test. This improvement is most probably the result of

teaching the CSs under study *(*viz., *approximation, circumlocution, appeal for help, appeal for clarification, appeal for confirmation, self-repair,* and *guessing).*

It is worth noting that the participants' performance on the pre-test varied according to the nature of the task. They scored high on tasks 1 and 6 (viz., *asking and answering questions* and *describing objects from the past*) which are both common in traditional instruction, hence familiar to the respondents. The participants were able not only to ask and answer questions but also to describe various objects (e.g., a ball) in simple sentences.

These essentially traditional tasks were incorporated into the treatment to encourage the participants to get involved and overcome hesitation. They have had ample experience with these tasks in this and previous grades. However, even though the other eight oral tasks (e.g., *presenting a simple (prepared) speech* and *defining, comparing, and classifying objects*) are fairly less familiar, the participants demonstrated moderate oral performance.

Teaching the CSs under study may have allowed the participants the opportunity to compensate for their language difficulties. For example, some resorted to *guessing* in *listen and answer*, using expressions, such as *I think* and *it seems*, to speculate on issues before listening to the recording. Some also used *appeal for help*, among other CSs, in *ask and answer*, using expressions like *how do we say* and *how can I say* to get help from the teacher.

The design of the treatment, in which the teacher explained, demonstrated and encouraged the use of the CSs under study, may also have been a catalyst for the improvement in the participants' oral performance. Individual differences among the participants were foremost in the researchers' mind during the design and implementation phases of the treatment. The activities were designed to be done either individually or in groups of two. Few activities depended on the learners' individual effort (e.g., *presenting a short (prepared) speech to the class*), but more activities involved pair work not only to encourage but also to enable less able learners to get involved, as more able partners served as scaffolds for their less able partners. The researchers witnessed first-hand the marked boost in the participants' self-confidence and willingness to get involved in the activities as the treatment went on.

The second research question addresses the potential effect of CS instruction on strategy use. Below are illustrations not only of the participants' overall CS use but also of their individual CS use before and after the treatment. Figure 1 shows the overall CS use before and after the treatment.

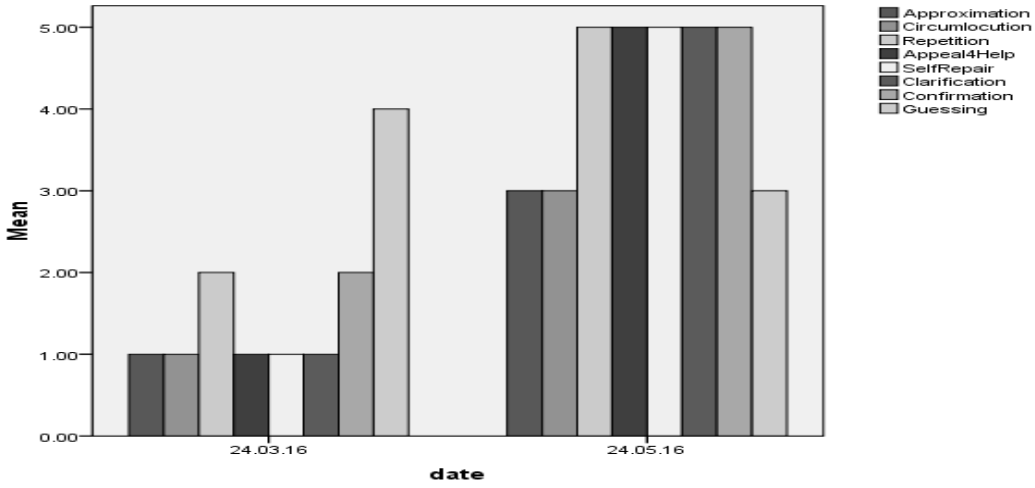

Figure 1. *Overall CS use before and after the treatment*

Figure 1 shows that among the eight CSs taught, all but one demonstrated substantial improvement. The use of *guessing* seems to have declined over the treatment, with means dropping from 4 before to 3 after the treatment. Figure 1 further shows that five (viz., *approximation, circumlocution, appeal for help, self-repair*, and *clarification*) out of the eight CSs under study started out with a mean of 1 and two (*repetition* and *confirmation*) with a mean of 2 to rise exponentially to means of 3 and 5.

The overall improvement in CS use, with the sole exception of *guessing*, is overwhelming, but the researchers are keen to highlight the improvement in individual CS use over the course of the treatment. Figures 2 through 9 below show the change in strategy use over time. To begin with, Figure 2 shows marked, albeit fluctuating, improvement in the use of *circumlocution* over the eight weeks of the treatment.

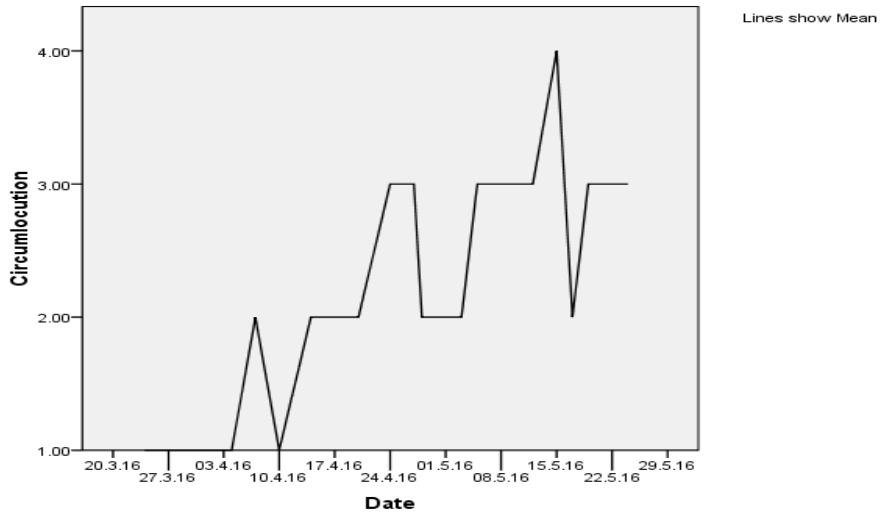

Figure 2. *Participants' use of circumlocution throughout the treatment*

Figure 2 shows that even though the participants' use of *circumlocution* started out low ($\bar{x}$ =1), gradual improvement is evident despite a few ups and downs over the course of the treatment. The highest mean score for *circumlocution* was 4, and the lowest was 1 (in which the participants reverted to their original position at the onset of the treatment). Figure 3 shows the use of *approximation* during the various phases of the treatment. Unlike that of *circumlocution*, the participants' use of *approximation* was relatively consistent.

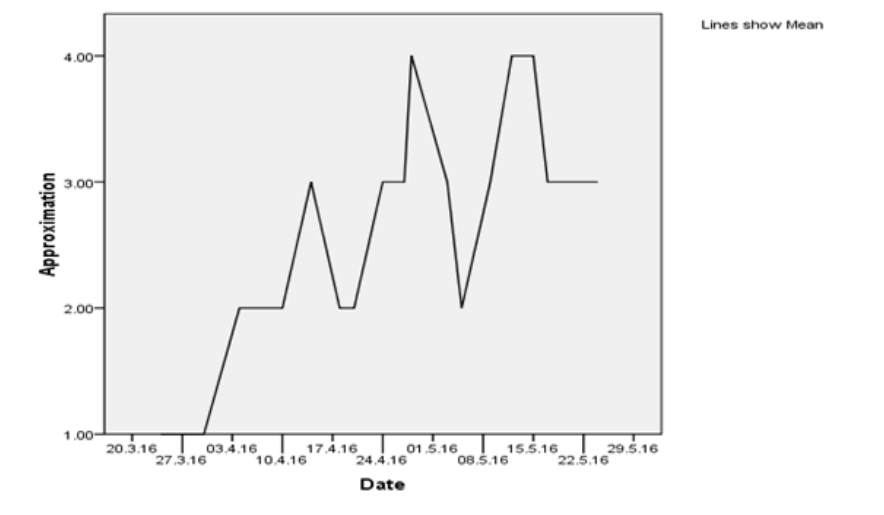

Figure 3. *Participants' use of approximation throughout the treatment*

Figure 3 shows improvement, albeit irregular, in the use of *approximation* over the treatment. Note how the strategy rose from a mean score of 1 at the beginning of the treatment to just below 4, but it seems to have hovered above 3 at various points in time. Figure 4 shows the participants' use of *repetition* during the treatment.

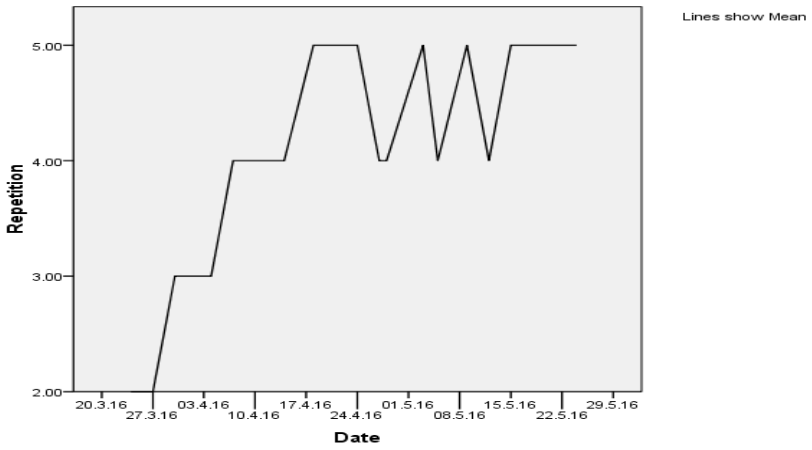

Figure 4. *Participants' use of repetition throughout the treatment*

Figure 4 indicates that the participants' use of *repetition* rose constantly during the first half of the treatment to reach the highest possible mean score of 5. Over the course of the treatment, *repetition* rose from a mean score of 2 at the onset to 5 to decline into a steady 4 to rise again to 5 towards the end of the treatment. Figure 5 shows the participants' use of *appeal for help*, which was similar to that of *repetition* over the treatment.

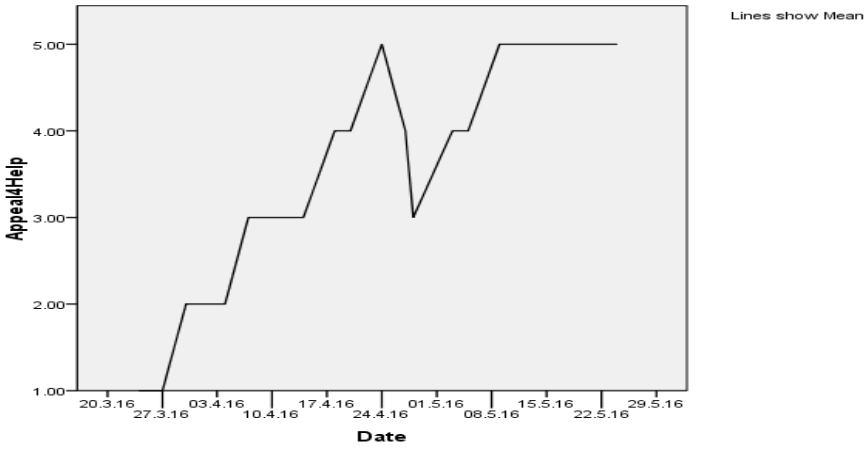

Figure 5. *Participants' use of appeal for help throughout the treatment*

Figure 5 shows relatively constant improvement in the participants' use of *appeal for help*, which rose from a mean score of 1 at the onset of the treatment to reach the highrst score of 5 at its conclusion. Similarly, *self-repair* rose early on in the treatment from a mean score of 1 to about 4 in the middle and 5 towards the end, as shown in Figure 6.

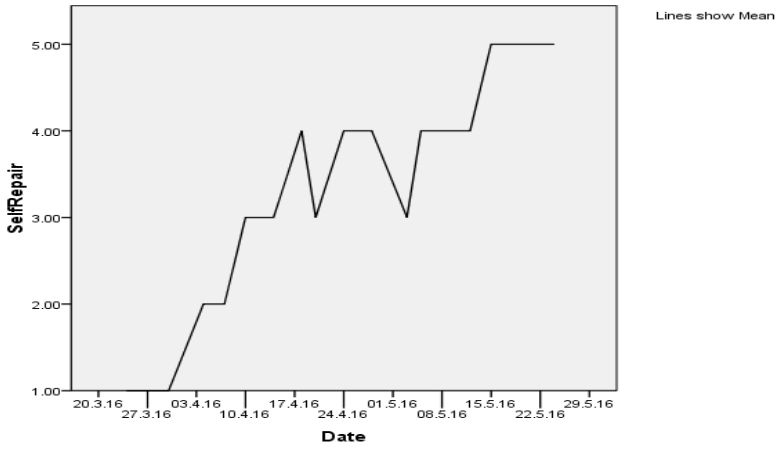

Figure 6. *Participants' use of self-repair throughout the treatment*

Figure 6 shows a marked improvement of the participants' use of *self-repair*. Figure 7 shows the use of *clarification* over the course of the treatment.

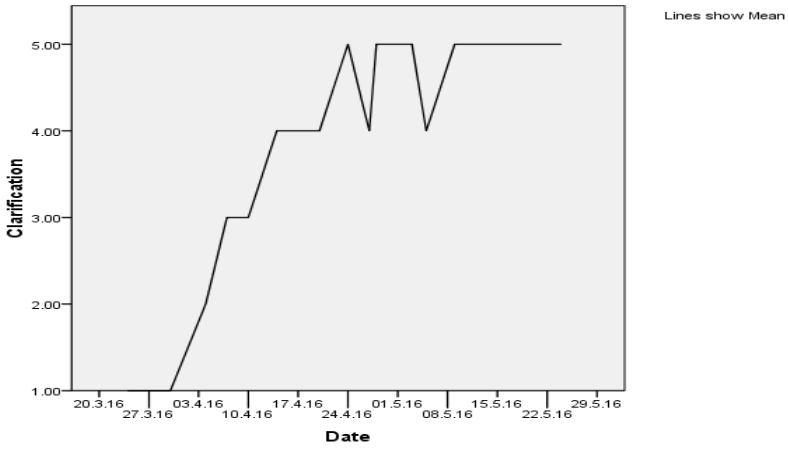

Figure 7. *Participants' use of clarification throughout the treatment*

Figure 7 demonstrates substantial improvement in the participants' use of *clarification*. Its use began with a mean score of 1 to reach a mean score of 5, with few ups and downs to 4, to stay steady at 5 towards the conclusion of the treatment. With a more pronounced series of ups and downs, the use of *confirmation* increases over the course of the treatment, as shown in Figure 8.

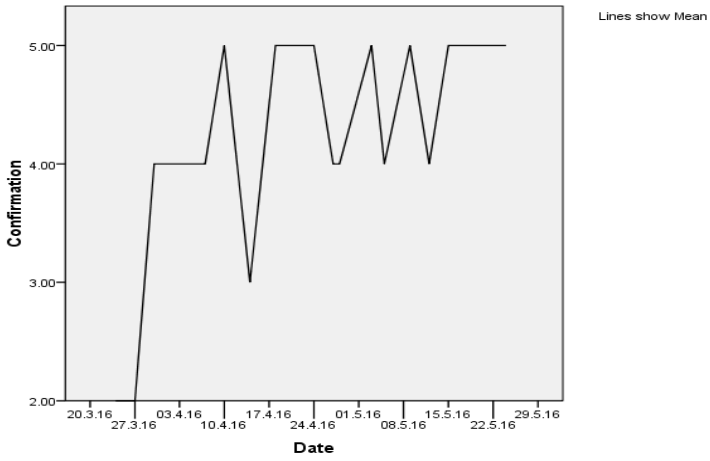

Figure 8. *Participants' use of confirmation throughout the treatment*

The use of *confirmation* started with a mean score of 2 to rise to about 4 and eventually to 5. The fluctuations were between 4 and 5.

Contrary to the other seven strategies, the participants' use of *guessing* declined over the course of the treatment from an initial mean of 4 (followed by a sharp rise and steady hold at 5) to a mean score of 1 (followed by a rise to just above 3), as shown in Figure 9.

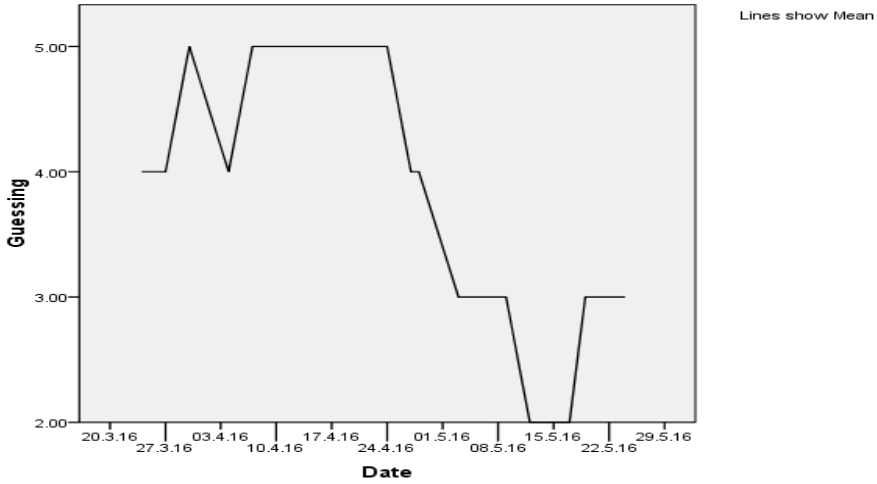

Figure 9. *Participants' use of guessing throughout the treatment*

Over the course of the treatment, substantial improvement was evident in the participants' use of the CSs under study, with the exception of *guessing*. The participants' use of *approximation* and *circumlocution* improved from a mean score of 1 to 3 whereas their use of *appeal for help, self-repair, clarification, repetition* and *confirmation* rose from mean scores of 1 or 2 to a sweeping 5.

The participants experienced the most improvement in the use of *appeal for help, self-repair, clarification, repetition,* and *confirmation* whereas their use of *guessing* declined over the course of the treatment. The decline in *guessing* is not altogether a negative phenomenon, as it may be taken as an indication of the participants' reliance on the other CSs in managing their communicative needs. The fact that the decline in the use of *guessing* was coupled with a marked increase in *appeal for help, self-repair, clarification, repetition, confirmation*, and, to a lesser extent, *approximation* and *circumlocution* may be seen as evidence of the systematic

and deliberate utilization of CSs by the participants, which may lend credence to the conclusion that CS use is readily teachable.

Even though it is not addressed in the questions of the research, it is worth noting that the participants demonstrated better utilization of *interactional* strategies (e.g., *repetition, appeal for help, appeal for confirmation, appeal for clarification*) than *paraphrase* strategies (e.g., *approximation, circumlocution*). This difference in CS use could be the result of the participants' limited lexical repertoire. Consequently, it may have been easier for them to use *interactional* CSs, which require relatively fewer words or simpler expressions, than *paraphrase* strategies, which require a lexical repertoire which may not yet be available to these sixth-grade learners.

5. Reflections, Implications and Suggestions for Further Research

This study examined the effect of CS instruction on Jordanian EFL sixth-grade students' oral performance and strategy use. The findings reveal that instruction improved not only the participants' oral performance but also their CS use over the course of the treatment. More specifically, even though CS use increased in all but one strategy (viz., *guessing*), some strategies (viz., *appeal for help, self-repair, appeal for clarification, repetition* and *appeal for confirmation*) were used more frequently than others (viz., *approximation, circumlocution* and *guessing*).

For considerations related to sampling and design, these findings are hardly generalizable beyond the current participants and, to a lesser extent, those in similar contexts. However, the fact that this study is exploratory in nature does not detract from the merit of its findings which may be readily taken as indications in favor of strategy instruction.

Thus, these researchers believe that EFL teachers should not only create situations which encourage students to engage in oral tasks but also introduce CSs and explicitly highlight their utility. These researchers share Færch and Kasper's (1983) conviction that, through learning CSs, learners are better able to reconcile formal and informal communicative situations and transfer learning to situations beyond the language classroom.

Raising teachers' awareness of the utility of CSs may be another catalyst for improving oral performance in the foreign language classroom and beyond. Previous reports (e.g., Rodríguez Cervantes & Roux Rodriguez, 2012) suggest that EFL teachers are generally either unaware of the utility of teaching communication strategies to their students or inactive models of strategy use, as they either abandon the message or switch to the first language to prevent communication problems in the classroom.

Even though CSs have been researched over the past four decades, they are still often surrounded by vagueness and controversy (Jidong, 2011). Thus, more research is needed to corroborate the findings of existing CS research from broader perspectives and on more diverse audiences. Further research is needed not only to examine other variables that may affect CS use (e.g., gender, class size, seating arrangement, task type) but also to encompass other grades and proficiency levels. As the current research examines the effect of CS instruction on beginners, future research may examine intermediate and advanced levels.

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THE EFFECT OF "ARGUMENT-BASED SCIENCE INQUIRY" APPROACH ON SCIENCE TEACHER CANDIDATES' ACADEMIC ACHIEVEMENTS

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Abstract

Science education, when it is dealt with in terms of subject, activities and target behaviours, is an open area to inquiry and development. However, this case is interpreted from a different point of view in a lot of educational institutions in our country (Turkey). The aim of this study is to evaluate the effect of "Argument-Based Science Inquiry (ABSI)" approach on the academic achievements of 3rd grade Science Education teacher candidates by applying this approach to the activities and establishing a suitable educational environment, and to reveal their thoughts about it. Mixed methods research has been used in this paper. In the quantitative dimension of the research, a pre-test post-test control group experimental design has been used. At the end of the implementation process, an achievement test has been applied to both groups, and results have been analyzed statistically. The results have shown that there is a statistically significant difference between the pre-test and post-test results of experimental group, and ABSI approach has a positive effect on student success. In the qualitative dimension of the study, semi-structured interviews have been used with the experimental group's teacher candidates. Data have been analyzed through content analysis method. In accordance with all findings, it is deduced that the ABSI activities affect the academic achievement of teacher candidates more positively than the classical laboratory practices in Laboratory Practices II class.

Keywords: argument-based science inquiry, science laboratory activities, science education, academic success.

1. Introduction

Today, the world order constantly changes and evolves, and this status brings an adaptation process along with it. As a result, the idea of bringing up individuals, who adapt to this process, gains importance. Also, in today's technological era, there is an increase in the number of innovations in many areas of our life, and there is a boost in scientific data. In line with this change, the contents of countries' targets and expectations also differ. Today, the target of education system is not to have individuals memorizing the knowledge, but to raise characters that have thinking skills and that can produce, construct, search and criticize the knowledge. Current education policies are prepared in line with these objectives (Brad, 1994). At this point, the effect of science and technology makes itself apparent, and the effort to increase the quality of science and technology gains importance day by day. Therefore, if the education programs of countries are investigated, it can be seen that in many, science education centered systems that are closely related to the technology, society and environment are preferred.

To be able to understand the progress of this change, we have to investigate the process briefly through time. In that perspective, we can see that the factors, which are like researchers' evaluation of the concept of learning with different perspectives, and their having different previous experiences, have caused different learning theories to emerge (Philips & Soltis, 2004). To research on the topics such as the use of scientific knowledge to solve problems, the investigation of the effect of science on human life, and the effort on what needs to be taught to students to make this knowledge useful in life, has formed the focal point of curriculum changes that have been implemented recently (Brickman, Gormally, Armstrong, & Hallar, 2009; Crawford, 2000). In addition, this has brought forward the subject of the necessity of including student centered approaches as a means of realizing learning in the most successful way (Brickman et al., 2009).

However, in schools, where classical method has been used, the duty of teacher was to give the knowledge directly (Demirel, 2006). In this point of view, science was restricted to the scientific practices and the use of data. In the construction process of knowledge, the importance of students' views was not taken into consideration (Driver, Newton, & Osborne, 2000).

Therefore, in this study, it is claimed that considering the situation, students need some activities, which can eliminate those drawbacks, to let them overcome this. It is also believed that an argument-based Science Education may help to improve this status. In addition, in previous studies, the importance of scientific argumentation has been clearly dwelled on to obtain and systematize scientific knowledge and to develop students' mental activities.

1.1. Scientific Argumentation (Argument-Based Science Inquiry Approach)

Instead of a program that transfers the information directly to the students, a program, which targets to raise individuals that can search, question, transfer what they learn to their life and use scientific method to solve the problems they encounter, is preferred. That is the situation in our country's (Turkey) National Education System, as well. It is believed that the only way to make this happen is with research-inquiry based lessons. In addition, to make a student's cognitive activities emerge and to help his/her capacity develop, it becomes evident that the teacher, environment and curriculum need to be in a supportive position (Grandy & Duschl, 2007). Students interested in solving the real scientific problems become active in research-inquiry based science classes (Polman & Pea, 2001). Laboratory practices, which allow students to develop their problem solving, researching and exchanging information skills, make the concept that will be acquired and relations between concepts more effective and consistent (Hofstein & Lunetta, 2004). The main aim of science education includes not only giving scientific concepts but also learning how the way of dealing with "the scientific discourse" should be (Kuhn, 2010). Therefore, it is necessary to emphasize the importance of argument in science education. Argument in science has a significant role in investigating new thoughts to make an idea valid and reliable. In science schools, argument is used as a tool to develop students' understanding of new science contents (Cavagnetto, 2010).

The original name of Argument-Based Science Inquiry, "The Science Writing Heuristic" (SWH) has been adapted into Turkish as "Yaparak Yazarak Bilim Ogrenme Yaklasimi" (YYBO) (Gunel, 2006; Hand & Keys, 1999; Keys, Hand, Prain, & Collins, 1999). Researcher that developed this approach has changed its name as "Argument-Based Science Inquiry" recently (Hand, 2008; Kingir, Geban, & Gunel, 2011). Hand and Keys (1999) have seen ABSI approach as the framework of scientific argument in science classes and have developed it as a tool to take this forward.

This approach takes its roots from constructivism, and it is based on the processes, which give importance to research-inquiry strategies and thinking. Argument-Based Science Inquiry approach has a function of establishing a connection between formal and informal knowledge in science education (Akkus, Gunel, & Hand, 2007). ABSI approach allows students give various explanations and test their hypotheses by giving them the starting questions. In addition, since it establishes a ground for them within the evidences to do discussions against small or big groups, it helps students to understand and interpret science concepts better.

Toulmin, who has analysed argumentation process, addresses argument as backed claims. (Toulmin, 2003). In Toulmin's model, *data*, *claim*, *warrants* and *backing* establish the basic argument structure, however, in more complex arguments, *qualifiers* and *rebuttals* can also be seen (Driver, Newton & Osborne, 2000). While data, claim and warrants are listed as the basic elements to establish an argument, backing, qualifiers and rebuttals are the elements that contribute to the validity of the argument (Kaya & Kilic, 2008).

Studies have shown that in science classes, the applications of Argument-Based Science Inquiry approach were limited (Jimenez-Aleixandre, Rodriguez, & Duschl, 2000; Newton, Driver & Osborne, 1999). When both science education and scientific argument are considered, the factors of scientific research and scientific inquiry can be seen in both structures. This close relationship between the two structures make scientific argument an important and necessary part of science education. As it is mentioned before, studies have shown that scientific argument practices have not been given enough importance in science classes; and when the reasons for that are evaluated, it is seen that there are factors like teachers' not knowing the approach very well, cannot providing a discussion setting, and having difficulties to carry on the discussion, behind it (Driver et al. 2000). Teachers' disciplined rules in the classroom and their approach to students in terms of these rules make it difficult for students to use their reasoning skills, and make it more complicated for them to become active about the topic (Yerrick, 2000).

1.2. The Aim of the Study

In this paper, the main aims are applying the Argument-Based Science Inquiry approach to Science Education Laboratory Practices II class and identifying teacher candidates' views about their success in science laboratory and about the approach at the end of the process. In addition, it is also planned to let them experience a model learning environment, which will serve to the overall objectives of science education. With this study, it is also aimed at promoting a positive attraction for teachers especially on argument method.

1.3. Problem Statement

The problem statement of this study is as follows:

Is there an effect of "Argument-Based Science Inquiry" approach used in Science Education Laboratory Practices II class on Science Education teacher candidates' academic achievements?

With this question in mind, it has been investigated whether there is a statistically significant difference between the means of experimental and control groups' pre-test and post-test scores in terms of using ABSI or traditional method, and also experimental group's participants' views about ABSI have been reviewed.

2. Method

2.1. Design of the Study

In this study, a mixed methods research has been used to identify the effect of ABSI based Science Education on the 3rd grade teacher candidates' academic achievements in the subject of "Electricity" and to define their thoughts about the approach at the end of the process. Mixed methods research is a method that allows data collection, analysis and integration by hypothesizing research problems, which cannot be understood using only quantitative or qualitative research methods but facilitating both of them together (Creswell & Plano-Clark, 2007). Therefore, mixed methods researches can be defined as the combination of quantitative and qualitative methods, approaches and concepts. Researcher may achieve this integration in a single work or in a series of works (Creswell, 2003; Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998).

In the research, quantitative methods have formed the base design, and with the inclusion of qualitative dimension, the research has been transformed into an embedded design research. At first, the quantitative data collection phase has been processed and then the qualitative data collection phase has been completed.

Through the process, lessons in both groups have been carried out by the researcher. Researcher has been used ABSI approach in the experimental group and traditional method in the control group. In both groups, at the beginning of the lesson, teacher candidates have been asked some short-answer questions, which have been prepared by the researcher, consisting of the achievements of subject of the lesson to define their readiness levels. The study has been planned as a 16-week process, and in the first eight-week period, the subject "Electricity" has been presented. At the end of the process, teacher candidates' academic achievements in this subject have been evaluated.

A semi-experimental method has been used to collect the quantitative data of the research. Results related to the quantitative data are shown by tabulating the scores. Experimental and control groups have been formed for the experimental design:

Experimental Group: Participants in the experimental group have realized the stages of this study with groups of 5. Activities based on scientific argument have been prepared by the researcher. Toulmin's Argument Model has been used in the base of the preparation process of lesson materials. In the study, experiment report, creating an argument, guess-observe-explain activities have been facilitated from the scientific argument model applications. In addition to these techniques, higher order cognitive skills and critical thinking skills like positing a hypothesis, designing an experiment, controlling, defining the variables, using the data, interpreting, developing a counter-view, evaluating, being aware of assumptions have been given place in the study.

Control Group: Participants in the experimental group have been divided into groups of 5. Classes have been carried out by using the classical or in another term, traditional method. In this approach, subjects have been taught under the authority of teacher and students were merely audience. Throughout the process, direct instruction method, question-answer techniques and demonstration experiments have been used. As for the lesson materials, course book and some animations prepared in terms of computer presentation technique have been utilized.

For the qualitative part of the study, semi-structured interview questions have been used, and data containing the details and depths of information have been collected from a small sub-sample. Some examples and explanations, which are related to the generalizations reached at the end of the study through the analyses of these interviews, are also presented.

2.2. The Universe and Sample of the Study

The universe of the study was the students of a university in Antalya, Turkey, and the sample consisted of 106 Science Education teacher candidates, who were studying in the 3rd grade of the Department of Science Education of this university in the spring semester of 2013-2014.

2.3. Identification of the Study Groups

The study has consisted of 106 teacher candidates. 52 of them have taken place in the control group, and 54 of them have taken place in the experimental group. With the aim of deciding the group equality, previous semester's GPA's of teacher candidates, who were planned to take part in the study, have been evaluated, and it has been seen that groups were equal before the experimental process. That means there was no statistically significant difference between the experimental group (X=5.46; p>.05) and the control group (X=6.31; p>.05) before the study.

This equality between groups is shown in the table below.

Table 1. *Means of academic achievement pre-test scores related to group equality*

Group	*N*	*X*	*S*	*df*	*t*	*p*
Experimental	54	5.46	2.313	103.8	1.958	.053*
Control	52	6.31	2.129	104	1.955	.053*

*p> .05

2.4. Techniques of Data Collection and Measurement Tools

Data of the research consist of the results obtained through "Academic Achievement Test" (AAT) to define to what extent achievements and objectives were reached, and the answers gathered via interview questions that were prepared to identify teacher candidates' thoughts about the ABSI approach.

In the quantitative dimension of the study, a 30-item test has been evaluated by 2 experts and 2 teachers to strengthen the validity. In a pilot study, to define the comprehensibility level and the time length of the test, the achievement test has been applied, apart from the actual sample group, to 115 Science Education teacher candidates, who were studying in the 2nd grade of the same department in the university. After the pilot application, necessary adjustments have been made and the time length has been decided as 40 minutes (one class hour). In the pilot study, to figure out the reliability of the test, the Cronbach's Alpha score of 115 students' answers to 30 questions has been calculated. As a result of item difficulty index, item discrimination index and reliability analyses, it has been concluded that 15 items in the achievement test could not meet the conditions of the study. By eliminating these 15 items, the reliability of the test has been improved.

In the qualitative dimension of the study, a semi-structured interview technique has been utilized to identify teacher candidates' thoughts about the ABSI approach in details. Interview questions intended to define the thoughts of teacher candidates about the approach and the learning process have been prepared with the help of 2 experts, and they have been given their final shapes after an evaluation. As a result, 7 open ended questions have been used in the interview.

2.5. Data Analysis

Both quantitative and qualitative research techniques have been used to analyze the data obtained from the study. In the analysis of the quantitative data, results gathered from the

sample have been evaluated at the ".05 significance level", by using SPSS 23.0 program, to define the effect of ABSI approach on the academic achievements of teacher candidates. In the study, a Paired Samples T-test for the first and second sub-problems, and an Independent Samples T-test for the third sub-problem have been applied. On the other hand, in the qualitative dimension of the study, teacher candidates have been interviewed to identify reflections on argument based practices, and data have been analyzed by using content analysis method. Recordings gathered in the first step of data collection have been transcribed for a few times and have been divided into themes. For each theme, a code list has been created. Researcher's recurrent work on the codes that s/he has organized by reading the collected data has formed the data coding process (Yildirim & Simsek, 2013). Data have been described systematically, in terms of the codes and themes created, and interpreted after tabulating the results. Answers that each student has given to the questions are presented by giving direct quotations from students' speeches in the Findings Section of the study.

3. Findings

3.1. Findings of Academic Achievement Test

3.1.1. Findings related to the comparison of academic achievement pre-test post test scores of teacher candidates in the experimental group

To define the effect of current education program (classical learning approach) and ABSI approach on academic achievement, the achievement test's results have been specified by comparing pre-test and post-test scores in Table 2.

Table 2. *Paired samples t-test results related to the difference between pre-test and post-test achievement scores of experimental group students*

Experimental G.	*N*	*X*	*S*	*df*	*t*	*P*
Pre-test	54	5.46	2.313	53	-15.66	.000*
Post-test	54	9.70	2.015			

*p< .05

In Table 2, results obtained from pre-test and post-test scores of experimental group students have been analyzed. The mean of pre-test scores has been found as 5.46, and the mean of post-test scores has been found as 9.8. This result shows that there is a significant difference at .05 significance level between the pre-test and post-test scores of experimental group students, in favour of the post-test.

3.1.2. Findings related to the comparison of academic achievement pre-test post test scores of teacher candidates in the control group

Table 3. *Paired samples t-test results related to the difference between pre-test and post-test achievement scores of experimental group students*

Control G.	*N*	*X*	*S*	*df*	*t*	*p*
Pre-test	52	6.31	2.129	51	-3.622	.001*
Post-test	52	7.88	2.981			

*p< .05

In Table 3, results gathered from pre-test and post-test scores of control group students have been analyzed. The mean of pre-test scores has been found as 6.31, and the mean of post-test scores has been found as 7.88. This result shows that there is a significant difference at .05 significance level between the pre-test and post-test scores of control group students, in favour of the post-test. In other words, science and technology program applied to the control group have increased students' achievements, as well.

3.1.3. Findings related to the comparison of the difference between academic achievement post-test scores of teacher candidates in experimental and control groups

Table 4. *Independent samples t-test results related to the difference between post-test achievement scores of experimental and control group students*

Post-test	*N*	*X*	*S*	*df*	*t*	*p*
Experimental	54	9.70	2.015	89.147	-3.667	.000*
Control	52	7.88	2.981	104	-3.693	.000*

*p< .05

In Table 4, the results obtained from post-test scores of experimental and control group students have been analyzed, and it is seen that experimental group students' arithmetic mean of post-test scores (X=9.70) is higher than control group students' arithmetic mean of post-test scores (X=7.88). In addition, this implies that there is a statistically significant difference between the two groups' post-test scores in favour of experimental group (p=.00<.05).

3.1.4. Findings related to the thoughts of teacher candidates in experimental group about Argument-Based Science Inquiry Approach

In the interview, there are 7 open ended questions related to the thoughts of teacher candidates about the application of ABSI approach in Science Education Laboratory Practices II class. After the implementation of the study, 4 different themes, which are student outcomes, skills that asserting a claim and data use in ABSI approach make the teacher candidates acquire, negative thoughts that students have about ABSI and advantages of ABSI, have been identified from the interviews with teacher candidates. These are listed and described as follows:

Table 5. *Theme and code lists of the interviews*

Themes	Codes
Student outcomes after the application of approach	Meaningful learning Sense of discovery Permanent learning Sense of wonder Cause and effect related learning Pedagogical outcomes
Skills that asserting a claim and data use in ABSI approach make the teacher candidates acquire	Thinking skills Research-inquiry skills Scientific process skills Scientific thinking skills Scientist like thinking skills Scientific thought
Negative thoughts that students have about ABSI	Noise in crowded classroom environment applications Withdrawn attitudes of some teacher candidates Not having a division of labour in some groups
Advantages of Argument-Based Science Inquiry approach	Making lesson efficient Developing a different perspective Saving the lesson from monotony

Examples of teacher candidates' thoughts in relation with these themes have been given below.

Table 6. *Teacher candidates' thoughts about student outcomes related to the ABSI Approach*

Student Outcomes	*f*	*%*
Meaningful Learning	13	25
Sense of Discovery	10	19
Permanent Learning	9	17
Sense of Wonder	8	15
Cause and Effect Related Learning	7	13
Pedagogical Outcomes	5	10

In Table 6, teacher candidates' thoughts on learning outcomes related to ABSI have been presented. It can be seen that 25% of the teacher candidates in the experimental group have stated that they have achieved meaningful learning in the first place as an important outcome of ABSI approach. 19% of them have mentioned that sense of discovery is the second most important outcome of the ABSI approach. In the third place, permanent learning has been referred by 17% of teacher candidates as another important outcome. The rest of the outcomes are lined up as in the fourth place sense of wonder with 15%, in the fifth place cause and effect related learning with 13%, and in the last place pedagogical outcomes with 10%.

Below, some teacher candidates' statements supporting these findings have been presented:

S1: "*By writing my own questions, I have passed from theory to practice. In the old system, all questions were given ready and almost everything I would do was fixed. My creativity have been improved with this approach, and I had the opportunity to reach what I wondered.*"

S2: "*We have participated into the process very deeply. I acquired permanent learning with this approach and thus my learning realized more enduringly and motivated.*"

S4: "*I had the opportunity to think with this approach. Instead of doing the experiments directly, I decided what is right or wrong by thinking, designing and using claims and rebuttals. And this made me learn more permanently.*"

S5: "*Instead of remaining in one framework, with discovery, I had the chance to discover unattained and never wondered points. So, I can say that it broadened my horizon.*"

S3: "*The base of learning is to answers to our questions. With the help of this, I found an answer to my will of knowing, understanding and wondering.*"

S3: "*By preparing questions myself, my sense of wonder was motivated. While designing an experiment to find answers to those questions, I acted with suspicion towards the events around me.*"

S1: "*I learned how permanent learning could be developed with this approach. I rediscovered the main objective of laboratory practices. I certainly want to use this approach in the classes throughout my teaching life.*"

S5: "*This approach improved me a lot in terms of perspective. At the same time, it made laboratory classes entertaining. I certainly want to use this approach in the classroom during my professional teaching.*"

S3: "*This class, which was carried out with classical method, became much more enjoyable, and the lesson was saved from monotony. In my teaching profession, I will definitely prefer this approach.*"

S6: "*ABSI made me learn meaningfully. It developed my sense of wonder.*"

S7: "*I think it is the ABSI, because it is more contemporary. There was an active participation in the process. It was motivating for the class. Meaningful and permanent learning were realized.*"

S8: "*It is certainly the ABSI. I will also use this approach when I become a teacher. I think it makes learning permanent for the learner. It reveals the sense of discovery.*"

Table 7. *Thoughts of teacher candidates related to the skills that asserting a claim and data use in ABSI Approach make them acquire*

Skills Acquired by Asserting a Claim and Data Use	*F*	*%*
Thinking Skills	10	26
Research-Inquiry Skills	7	18
Scientist Like Thinking Skills	7	18
Scientific Process Skills	6	16
Scientific Thinking Skills	5	13
Scientific Thought	5	13

In Table 7, the results about teacher candidates' thoughts related to the skills, which have been acquired by them via asserting a claim and data use, have been shown. The first group of skills they have mentioned that they have acquired are thinking skills with 26% of the experimental group. With 18% research-inquiry skills are the second group of skills that teacher candidates have stated. In addition, scientist-like thinking skills are sharing the second place again with 18%. They are followed by scientific process skills with 16%, scientific thinking skills with 13%, and scientific thought again with 13%.

Below, some teacher candidates' statements supporting these findings have been presented:

S1: "*I had a chance to see false facts. I spotted my mistakes. I leaned towards thinking like a scientist.*"

S2: "*Showing evidence is important in making one gain scientific method and scientific thinking skills. Positing hypotheses in line with the claims made me use the scientific method. On the other hand, it made me acquire skills like critical thinking and reflective thinking. Like a scientist, I realized the importance of reasoning by knowing the cause instead of believing the facts blindly.*"

S3: "*It made me think like a scientist.*"

S4: "*My thought system evolved. It made me live the processes of hypothesizing, doing experiments and observations, improving claims with evidences or positing new hypotheses via rebuttals, and also made me act with a scientist's thought system.*"

S5: "*I think, we acquired scientific thinking skills. With the scientific process skills, we had the opportunity to think like a scientist. We did a lot of inquiries.*"

S6: "*In my opinion, we worked like a scientist in the process. We concentrated on scientific thoughts and acquired various thinking skills.*"

S7: "*We did research and inquiry. We gained important achievements at the end of the process.*"

Table 8. *Negative thoughts of teacher candidates related to ABSI Approach*

Negative Thoughts Related to ABSI Approach	*f*	*%*
Noise in Crowded Classroom Environment Applications	5	41
Withdrawn Attitudes of Some Teacher Candidates	4	33
Not Having a Division of Labour in Some Groups	3	25

In Table 8, teacher candidates' negative thoughts about ABSI have been shown. It is seen that almost half of the participants, 41% of them, in the experimental group have stated that ABSI approach has caused noise when applied in crowded classroom situations. In addition, 33% of them have complained about attitudes of shy classmates, and 25% of them have mentioned unfair labour division problems in some groups.

Below, some teacher candidates' statements supporting these findings have been presented:

S1: "*There were some friends, who were hesitating to ask questions in the classroom. So, their participations into the lesson were low.*"

S2: "*There should not be a leader in small group works. Having a specific leader makes other students stand in the background.*"

S3: "*The classroom's being crowded caused some noise from time to time, so it sometimes lowered the level of comprehension of the discussions.*"

S4: "*In fact, because of classroom's being crowded, sometimes there could be some noise in some lessons.*"

S5: "*Some of my friends did not participate in to the lesson, so they did not contribute to the division of labour. Because of this, we occasionally had problems.*"

S6: "*Our class was crowded. Sometimes disturbances were occurring, since there was no division of labour among some of my friends in the group. We could be facing some noise.*"

S7: "*In my opinion, group discussions should not be used in crowded classrooms. We faced some difficulties in the periods, when we had difficulty in the division of labour.*"

S8: "*In fact, I did not experience many troubles in the process. But sometimes some of my friends were having difficulty to listen to each other. And that was causing some noise on a small scale.*"

Table 9. *Thoughts of teacher candidates about the advantages of ABSI Approach*

Thoughts Related to the Advantages of ABSI Approach	*f*	*%*
Making Lesson Efficient	7	39
Developing A Different Perspective	6	33
Saving the Lesson from Monotony	5	28

In Table 9, teacher candidates' thoughts about the advantages of ABSI approach are given. It can be understood from the table that 39% of the participants in the experimental group have mentioned that the approach has made the lesson more efficient. As another advantage, developing a different perspective has been stated by 33% of them. In addition, 28% of the teacher candidates have suggested that the approach has broken up the monotony in the classroom.

Below, some teacher candidates' statements supporting these findings have been presented:

S3: "*This class, which was carried out with classical method, became much more enjoyable, and the lesson was saved from monotony. In this way, it transformed into both an entertaining and an efficient lesson.*"

S4: "*The classes, which were monotone, became entertaining. I had a chance to apply my knowledge that was generally stayed in theory, so my interest to this lesson increased.*"

S2: "*With this approach, I think my thoughts developed a lot in terms of perspective, at the same time, laboratory classes turned into more entertaining lessons. I spent a productive term.*"

S1: "*I caught the chance of looking into the events from different frameworks with this approach. Classes, which were mainly monotone, became entertaining. It was a fruitful year for me.*"

S5: "*It made me gain a different perspective. Classes were mainly enjoyable. We did not see the traces of classical method.*"

S6: "*I spent a productive year. Classes were entertaining. We got rid of monotony. We learned to look at from different frameworks.*"

S7: "*Monotonous classes ended.*"

S8: "*With a different perspective, all my prejudices about the lesson got lost. Lesson was saved from monotony quite a lot.*"

4. Conclusion and Discussion

In this part, the results, which have been reached based on the findings from the analyses have been interpreted.

4.1. Results Related to the Comparison of Academic Achievement Pre-test Post-test Scores of Teacher Candidates in the Experimental Group

Laboratory activities prepared with Argument-Based Science Inquiry approach have positively affected the academic achievements of teacher candidates. In the literature, there are works that support the results related to the aforementioned sub-problem of the study (Kaya, 2005; Zohar & Nemet, 2002)

4.2. Results Related to the Comparison of Academic Achievement Pre-test Post-test Scores of Teacher Candidates in the Control Group

An increase has been seen in the academic achievements of teacher candidates learning with the classical approach (in which classical experiment reports are prepared, the decision of what experiment will be done is given by the teacher, the tools of experiment are provided by the teacher) in the control group. However, it has been concluded that the increase in the academic achievements of teacher candidates in the experimental group, where ABSI approach has been used, is higher than as it is in the control group.

When the studies have been evaluated, it has been seen that science educationists meet on the view that the success in the traditional science education will rise with the use of laboratory. According to them, laboratory use in science education makes the concept development and learning easier (Fix & Renner, 1979; Freedman, 1997). In the traditional teaching, laboratory education is based on the principle of reaching knowledge by doing concrete experiments. However, in the practices conducted in this framework, it has been seen that comprehension is not at the sufficient level because of recipe like experiments,

some basic concepts are not properly created in the mind of a student, and knowledge is not constructed, therefore, meaningful learning do not happen (Novak, 1988; Singer, Hilton & Schweingruber, 2005). In addition, it has been emphasized by various researchers that students tend to fake the findings they need to get from the experiment in line with the information in the experiment or in the course book (Roth & Roychoudhurg, 1994; Watson, Prieto & Dillon, 1995). As a result, in our study, it has been seen that traditional laboratory education has developed teacher candidates' academic achievements at a lower level.

On the other hand, it is exactly vice versa in the Argument-Based Science Inquiry approach. Thus, teacher candidates' pre-test and post-test means being higher in the experimental group than in the control group is an inevitable consequence that has been reached. This shows us the effectiveness of Argument-Based Science Inquiry approach.

4.3. Results Related to the Views about the ABSI Approach of Teacher Candidates in the Experimental Group

In accordance with the results gathered from the interviews, teacher candidates have stated that teaching/learning with ABSI has made classes entertaining, and given them a chance to live the process like a scientist. In addition, they have expressed that in the practices they participated in actively, they have had the opportunity to live many experiences like critical thinking, research-inquiry and rediscovery of the knowledge via their self-expression skills, and they have been extremely pleased with this approach. However, they have decided that they have had problems at some points such as non-collaborative work of some of their friends and occurrence of a noisy environment in the classroom from time to time. When the literature has been examined, it has been seen that there are study results that show parallelism with the factors, which teacher candidates have underlined in this study about the ABSI approach (Ceylan, 2010; Jimenez-Aleixandre, Rodriguez & Duschl, 2000; Ozer, 2009; Richmond & Striley, 1996; Tekeli, 2009; Ulucinar Sagir, 2008).

5. Suggestions

In our country, classical laboratory practices are still being used in many schools, and with this approach, knowledge is presented directly and unilaterally by the teacher. With the classical laboratory practices, students' reasoning, research-inquiry, associating a cause and effect relation, and as a result, meaningful learning activities cannot achieve a total success. Argument-Based Science Inquiry approach lets students use many skills such as in-depth learning, thinking, questioning, positing a hypothesis and refuting if necessary. Therefore, in-service training activities, which introduce and suggest the use of this approach, may be organized, and in that way, the use frequency of this approach can be increased.

This research has been done in a limited time. Thus, it might be possible to do a science education with longitudinal works or projects based on the ABSI, and its effect on other variables besides academic success can be investigated. In addition, the effect of using the ABSI approach with other models, methods and techniques on students' acquisition of various skills with the help of their achievements might be investigated. Considering the positive effects of arguments on the comprehension of science concepts, development of science, investigation of knowledge by the students, and constitution of permanent knowledge, it is believed that giving arguments a place in course books can make enormous contributions to the students.

Argument-Based Science Inquiry approach, whose effectiveness has been proved with many studies abroad, should be taught to teacher candidates studying in universities, and teacher candidates' discussion skills should be developed in the framework of this approach. This study has been carried out with 3rd grade Science Education teacher candidates studying

at the university. It may be suggested that the ABSI approach should be used in several classes of primary education, in elementary education, and in other classes of universities. In other words, this research has been done with a restricted sample. Therefore, in case the research is carried out with a wider sample or it includes samples from different universes, it might be possible to generalize the effect of ABSI to a wider universe.

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LEARNING AND STUDY STRATEGIES INVENTORY (LASSI) AND ITS RELATIONSHIP WITH UNIVERSITY STUDENTS' ACADEMIC ACHIEVEMENT

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Abstract

Lack of learning and study strategies (LASS) is one of the most important reasons for frustration and academic failure in student, so learning and study strategies resemble a tool applied in solving academic problems, assisting the students to develop the skills required in their academic course. Identifying and enhancing these strategies helps the person go through college education successfully depending on their own capabilities, discovering and strengthening them. So, the aim of the present study is the use of Learning and Study Strategies Inventory (LASSI) and its relationship with university students' academic achievement. The study results did not show remarkable relationship between the three main LASS and academic achievement (AA) among students of Guilan University of Medical Science and levels of LASS are very low among these students. Concerning the criticality of the students' AA, the academicians of this university are recommended to take some measures in order to decrease academic failure and improve it via boosting the students' knowledge and skill.

Keywords: study strategies, students, academic achievement, learning

1. Introduction

Every year, a large number of the college goers enter universities and higher educational centers worldwide drop out or do not manage to complete their education within the due period. Besides, some other students deal with minor failures (Haghani & Khadivzade, 2009). For consecutive years, the instructors used to assume that the older and more experienced the learners become, the more their academic skills develop. Thus, newcomer students were expected to have knowledge about the novel efficient learning concepts and apply effective learning strategies. This issue is somewhat true but unfortunately most of the students lack such skill and will not acquire the skill until they get direct training (Salehi & Enayati, 2009). Learning strategy refers to the learner's behaviors influencing learning process (Iqbal, Sohail, & Shahzad, 2010). Some students have a clear-cut image of their educational and career future and know for sure that they have strived for their best academic activity at school or university to achieve their academic and professional goals in the future. Unlike them, another group being less future-obsessed value their educational activity less. Also, the students with more engaged in academic and career prospects possess, have the best learning

model (de Bilde, Vansteenkiste, & Lens, 2011). Psychologists and educators are highly in accord with the importance behind self-regulation and motivation and its role in realizing academic accomplishments (Ning & Downing, 2010). Nowadays, problem-solving strategy is recognized highly critical as a metacognitive skill in the students' learning and study effectiveness (Javadi et al., 2011). Perceiving the relationship between learning, study strategies and academic proficiency can mark out learning obstacles and create some strategies to boost the students' learning experiences (Schutz, Gallagher, & Tepe, 2010).

Due to lack of LASSs, most of the students run into disappointment and academic failure. Learning and study strategies resemble a tool employed to resolve educational issues and help the students develop the skills needed during education course. To identify and enhance these strategies helps one successfully pass academic years relying on their potential, discovering and strengthening them (Murray, 1998).

Learning strategies involve any thought, behavior, belief or feeling facilitating fresh knowledge and skills acquisition, perception and their subsequent transfer (Haghani & Khadivzade, 2009). The conducted studies pinpoint that LASSs improve the students' performance via facilitating their learning process (Salehi & Enayati, 2009). The vitality of the strategies as the ones to promote the education level has been fully recognized (Hosseini Shahidi, Atarodi, & Moghimian, 2005). The findings imply that all of the three main learning and study strategies hold meaningful relationship with academic achievement and these three main LASSs differ among various educational groups of the students and also, the LASS profile of female and male students have been different in several areas (Salehi & Enayati, 2009).

1.1. Purpose and Importance of the Study

The aim of this study was to implement the Learning and Study Strategies Inventory (LASSI) and its relationship with university students' academic achievement. About the necessity of this study among Guilan students' community, it deserves mentioning that the current study can pave the ground for the information on major LASSI components, the students' academic achievement relationship being accessible and this way, it will be viable to lead the students towards the direction that is ultimately effective and useful for their academic achievement and professional development while increasing their LASS. So, considering the importance of using study strategies in academic achievement and having no accurate statistics of these methods application in Guilan University, we have decided to investigate the association between the main components of LASSI and the students' academic achievement in Guilan University. According to the aim and context of the study, five research questions have been generated in accordance with the theoretical framework of the study:

1. What is the amount of average and standard deviation of study and learning strategies components in Guilan students?

2. Is there a relation between study and learning strategies and students' academic achievement?

3. Is there a relation between the study and learning strategies and students' academic achievement (in students with high GPA)?

4. Is there any difference in ten areas of study and learning strategies in terms of gender?

5. Is there any difference in the main components of learning and study strategies in terms of the colleges?

2. Methods

2.1. Model

The research aimed at implementing the Learning and Study Strategies Inventory (LASSI) and its relationship with university students' academic achievement. In this survey descriptive-correlative method has been employed.

2.2. Study Group

The present study was conducted with a total of 447 students of Guilan University of medical sciences in 2014-2015 academic year.

2.3. Data Collection Process

The statistical community consists of all students of Guilan in 2014-2015, announced as 3802 students according to the statistics. To set the sample size according to Morgan table, 351 subjects have been determined and selected based on relative stratified sampling. The inclusion criteria are: studying at the time of conducting this research and being willing to participate in the study; the exclusion criteria involve: not completing or having questionnaire filled in an impaired way. Out of 500 distributed questionnaires, 447 was completed and collected, thus among 447 statistical community subjects, Medical school students (n=110), nursing and midwifery (n=61+22=83), health (n=41), paramedic (n=57), dentistry (n=23), pharmaceutics (n=8) and the international department (n=29) have been picked up.

2.4. Data Collection Tool

The instruments used for this research was the Learning and Study Strategies Inventory (LASSI) questionnaire. The original version of the LASSI, which was published in 1987, is designed for students who are currently enrolled in college. The high school version was developed in response to the need to assess skills that are critical for academic success at the high school level, but that is also instrumental for making a successful transition into a college setting. The LASSI-HS is a diagnostic and prescriptive measure that assesses student thought processes and behaviors that affect studying and learning (Weinstein & Palmer, 1990). The mentioned questionnaire covers three main components as skill, will and self-regulation in ten areas:

1-The LASSI scales related to the skill component of strategic learning are: 1- Information Processing (These scales examine students' learning strategies by the items 58, 50, 44, 27, 23, 15, 11, 3) and 2-Selecting Main Ideas (These scales examine skills and thought processes related to identifying, acquiring and constructing meaning for important new information, ideas and procedure by the items 73, 68, 64, 57, 53, 24, 21, 10), 3-Test Strategies (These scales examine how they prepare for and demonstrate their new knowledge on tests or other evaluative procedures by the items 63, 52, 45, 38, 26, 19, 5, 2).

2-The LASSI Scales related to the will component of strategic learning are: 1- Attitude (students' being interested in college and university; the scale measures it by the items 76, 70, 51, 48, 41, 36, 17, 6) and 2- Motivation (perseverance, self-regulation and willingness to work hard in doing tasks; the scale measures it by the items 80, 65, 59, 42, 39, 30, 22, 14) and 3-Anxiety (the degree to which they worry about their academic performance; the scale measures it by the items 78, 46, 72, 43, 69, 35, 61, 29)

3-The LASSI Scales related to the self-regulation component of strategic learning are: 1-Concentration (focusing their attention and maintaining their concentration over time; the scale measures it by the items 75, 67, 55, 49, 32, 16, 8, 1), 2-Time Management (how students manage, or self-regulate and control the whole learning process through using their

time effectively; the scale measures it by the items 79, 62, 59, 31, 28, 13, 7, 4), 3-Self-Testing (checking to see if they have met the learning demands for a class, an assignment or a test; the scale measures it by the items 75, 60, 47, 37, 25, 18, 9) and 4-Using Academic Resources 5- Using Study Supports (such as review sessions, tutors or special features of a textbook; the scale is measures it by the items 77, 71, 66, 54, 40, 34, 20, 12).

To measure each area, 8 items are applied. Each of the skill and will components has three areas. Thus these two components can get the score range of 24-120 and since self-regulation itself has 4 components, they can get scores of 32-160. Because a questionnaire is a diagnostic tool to find out learning problems in 10 distinct areas, its total score is not calculated. Meanwhile, to define the areas' cut-off line: percentile below 50 means poor learning skills requiring educational consultation, between 50 and 74 signifies good learning skills, and over 74 implies excellent skills (Salehi & Enayati, 2009). In this research, the questionnaire's validity has been verified via content validity after being converted into Persian and being translated and analyzed by the specialists in terms of the expressions' comprehension potential and its reliability by referring to the study and the reliability coefficient has been estimated as 0.76 to 0.88, and for Anxiety (α=0.76), attitude (α=0.78), concentration (α=0.77), data processing α=0.88), main idea selection (α=0.85), self-administering test (α=0.88), study manual (α=0.77), test strategies (α=0.83), time management (α=0.76) (Salehi & Enayati, 2009). It is worth mentioning that this inventory does not have total reliability coefficient; rather each area has its own reliability coefficient (Serin, Serin, & Şahin, 2009).

2.5. Analysis of Data

After gathering the questionnaires and extracting the inserted data information, ultimately to describe the data, the descriptive statistics (mean and standard deviation) and to statistically analyze and compare the data, t-test, variance analysis and to discover the correlation between the two study variables, Pearson correlation coefficient at significance level ($p<0.05$) have been employed using SPSS Version 16.

2.6. Ethical Considerations

It has been announced to the educational groups' students and authorities that the information gained have been merely for their learning and study strategies improvement. Since this research is of descriptive–correlative types and usually in such studies, the ethical codes including keeping the information confidential, not inserting names, the individuals' voluntary and informed participation and accurate report presentation are of the noteworthy results; consequently, in the current research, the researchers have been obliged to observe these codes in all stages related to carrying out the research and presenting the findings.

3. Findings

Out of 447 students, 153 (34.2%) were male and 294 (65.8%) were female. The students' distribution based on the college has been as follows: medical 105 (23.5%), dentistry 51 (11.4%), nursing 115 (25.7%), paramedic 110 (24.6%), health 29 (6.5%), pharmaceutical 8 (1.8 %) and the international department 29 (6.5%) respectively.

In the research, an answer to question "What is the amount of average and standard deviation of study and learning strategies components in Guilan Students?" was searched for. The results suggested that the maximum mean has been assigned to information processing (26.14±4.36) and motivation (26.01±3.87) and the minimum mean to test strategies (21.68±4.46). Besides, self-regulation has got the highest mean out of the three main components. The results were given in Table 1.

Table 1. *Mean and SD of study and learning strategies components among Guilan students*

Main components	Area	Mean	S.D	Min	Max
Skill	Information processing	26.14	4.36	9	40
	Main idea selection	22.96	4.02	12	34
	Test strategies	21.68	4.46	11	36
	Total	**70.78**	**9.01**	**41**	**98**
Will	Anxiety	23.45	5.49	8	39
	Attitude	23.05	3.71	14	34
	Motivation	26.01	3.87	13	39
	Total	**72.50**	**8.89**	**45**	**103**
Self-regulation	Concentration	24.67	3.73	12	36
	Self-administering test	23.87	5.19	8	60
	Study guide	24.24	3.70	15	36
	Time management	24.98	3.48	15	35
	Total	**97.73**	**10.60**	**61**	**136**

*p<0.05

In the research, an answer was sought for the question "Is there a relation between study and learning strategies and students' academic achievement?". To investigate the relationship between the main learning strategies (skill, will and self-regulation) and educational attainment, Pearson correlation test has been applied and Table 2 depicts three correlation positions among learning and study strategies and students' attainment. The correlation analysis results display that no significant relationship exists between any of the components and educational attainment ($p<0.05$).

Table 2. *The correlation between study and learning strategies and students' attainment*

Component	Skill	Will	Self-regulation	Academic achievement
Skill	-			
Will	0.628**	-		
Self-regulation	0.596**	0.678**	-	
Academic achievement	-0.067	-0.025	0.005	-

*p<0.05

In the research, an answer to question "Is there a relation between the study and learning strategies and students' academic achievement (in students with high GPA)?" was searched for. The results indicate that in the students with high GPA, a meaningful relationship is seen in terms of information processing out of the components skill, attitude and motivation out of the components as will, concentration, self-administering test and study guide out of the component self-regulation (Table 3).

Table 3. *The correlation of the study and learning strategies and the students with high GPA*

Area	Information Processing	Attitude	Motivation	Concentration	Self-administering test	Study guide
High GPA	0.191**	0.143*	0.198**	0.161**	0.201**	0.157*

*p<0.05

In the research, an answer was sought for the question "Is there any difference in ten areas of study and learning strategies in terms of gender?". The results denoted that there is no meaningful difference in two female and male groups in terms of learning strategies (skill, will and self-regulation) (Table 4). Since in the component known as skill and self-regulation, the mean scores of the female students have been higher than those of the males, it is concluded that the female performance has been better than that of the males in these areas.

Table 4. *The mean difference in ten areas of study and learning strategies in terms of gender using t-test*

Component	Gender	No.	Mean	SD	t	Sig.
Skill	Female	153	71.66	10.089	1.497	0.136
	Male	294	70.32	8.381		
Will	Female	152	72.48	9.676	-0.082	0.080
	Male	294	72.52	8.478		
Self-regulation	Female	153	98.28	11.75	0.784	0.433
	Male	294	97.45	9.95		

*p<0.05

In the research, an answer was found for the question "Is there any difference in the main components of learning & study strategies in terms of the colleges?". In order to analyze the difference in the study and learning strategies among the educational groups, variance analysis and post hoc Tukey test have been applied as described in Tables 5 and 6. As observed in Table 6, in the two main components of will and self-regulation, there has been a meaningful difference among the colleges.

Table 5. *Analyzing the main components of learning and study strategies in terms of the colleges using variance analysis*

Component	Variance analysis	Square sum	Freedom degree	Mean Square	F	Sig.
Skill	Intergroup	707.729	4	176.932	2.201	0.680
	Intragroup	35523.3544	442	80.370		
	Total	39231.074	446			
Will	Intergroup	1311.282	4	327.820	4.267	0.002*
	Intragroup	33882.209	441	76.830		
	Total	35193.491	445			
Self-regulation	Intergroup	2599.603	4	649.901	6.051	0.000*
	Intragroup	47469.247	442	107.396		
	Total	50068.850	446			

*p<0.05

Regarding the results in Table 5, skill in the study colleges revealed no remarkable difference (p=0.680), while there has been a significant difference in will and self-regulation. Therefore, using Post hoc Tukey test, the subgroups have been compared in pairs to determine which groups differ in will and self-regulation in pairs (Table 6).The results of Post doc Tukey test suggest that in the component of will, a meaningful difference has been observed between the medical and dentistry colleges and also between the dentistry and paramedical colleges, and the performance of the medical and dentistry group has been higher. In the component of self-regulation, the mean of the medical and dentistry colleges has been better than that of the nursing and paramedical colleges.

Table 6. *Tukey test results to separately compare the means of three components LASSs in terms of college*

Component	College		Means difference	Sig.
Will	Medical 1	Dentistry 2	5.923	0.001
	Dentistry 2	Paramedic 4	-4.314	0.029
Self-regulation	Medical 1	Dentistry 2	7.528	0.000
	Dentistry 2	Nursing 3	-6.289	0.002
	Dentistry 2	Paramedic 4	-8.033	0.000

*p<0.05

For comparison, the percentile of the LASSs used by the female and male students and of the Guilan students with the normal sample of the strategies applied by the American college goers have been used.

Figure 1. *Comparing the LASSs profile of Guilan Medical Science University students with that normal sample of the American students adopted from the 2nd edition of LASSI*

Skill			Enthusiasm				Self-regulation				
Percentile	Information Processing	Main idea selection	Test strategies	Anxiety	Attitude	Motivation	Concentration	Self-administering test	Study guide	Time management	Percentile
99	40	40	40	40	40	40	40	40	38	40	**99**
95	38	38	38	37	39	39	37	36	35	37	**95**
90	35	37	36	35		38	35	33	33	35	**90**
85	34	35	35	33	38	37	34	31	32	33	**85**
80	33	34	34	32	37	36	33	30	30	32	**80**
75	31	33	33	31			32	29	29	31	**75**
70	30	32	32	30	36	35	31	28		30	**70**
65		31		29		34	30	27	28	29	**65**
60	29	30	31	28	35	33	29	26	27	28	**60**
55	28	29	30	27					26	27	**55**
50	27			26	34	32	28	25			**50**
45		28	29	25		31	27	24	25	26	**45**
40	26	27	28	24			26	23	24	25	**40**
35	25	26		23		30	25	22		24	**35**
30	24	25	27	22	32	29	24		23	23	**30**
25		24	26	21		28	23	21	22	22	**25**
20	23	23	25	20	31	27	22	20	21	21	**20**
15	22	22	24	18	30	26	21	19	20	20	**15**
10	21	21	23	17	28	24	19	17	19	18	**10**
5	19	18	21	14	26	22	17	15	17	16	**5**
1	15	13	18	10	21	18	13	12	13	12	**1**

Male students ------ **Female students** –·–·–· **Students in total** _____

Figure 1 depicts that the LASSs used by Guilan Students dramatically differ from the profile of American college goers national normal LASSI (Weinstein & Palmer, 1990). The self-administering test areas correspond to percentile 45, information processing, anxiety, study guide and time management to percentile 40, concentration to percentile 35, main idea selection to percentile 20, motivation to percentile 15, rest strategies to percentile 10 and

attitude to percentile 5 of the American college students' norms. Therefore, percentiles obtained from the subjects of the research were lower than percentile 50 of American students' norms in all areas.

5. Discussion and Conclusion

As a result of the investigation of the relationship between three main components of LASSI and academic achievement of Guilan Students, it has been discovered that there is no tangible relationship between 3 components and academic attainment, that this is not compatible with research findings of Albaili (1997), Haynes, Comer and Hamilton-Lee (1988), Hosseini Shahidi et al. (2005), Salehi and Enayati (2009) in the component known as information processing and main idea selection. Regarding the students that have participated in the research and study in diverse medical majors and degrees from associate to professional doctor, it can be stated that one of the reasons behind the above mentioned result (no significant relationship) is the incongruence of the educational content size and the content type presented and the students' scientific fields, research and experiences in various majors and educational levels. Also, it can be concluded that most of students do not have enough information about this strategy and for this reason, despite all the time that they spent for studying, they do not have effective and stable learning (Hosseini Shahidi et al., 2005).

The study findings showed that in the students with high GPA (16 and over), a meaningful relationship has been obtained among the areas of information processing, attitude, concentration, self-administering test and study guide and their academic achievement; the results are consistent with those of Albaili (1997), Haghani and Khadivzade (2009), Hashemi and Hemmati (2008), which indicate a robust relationship between LASSI and academic achievement. Moreover, Yip's (2007) research showed a remarkable relationship between the two groups of the students with high and low GPA in LASSI in two areas of attitude and motivation. The two areas of motivation and self-administering test have meaningful correlation with the mean final grades of the students, which means the ones with lower GPA got lower scores in these two areas and vice versa (Salehi & Enayati, 2008). It appears that the students with higher GPA have outperformed the others and have higher analyzing power. In association with these findings, it can be said that attitude causes a relation between scientific action and their future life goals and it is a reflection of the feelings of students about school where they are studying at. So it is very effective in terms of their efforts for study, learning and GPA. On the other hand, processing information can help the students make a connection between what they know and what they try to learn. Use of this knowledge can help understand new information for success. Learning is incomplete without review and testing, so they are very important in incorporating and completing educational subjects.

This research showed that there is no meaningful difference between the two groups of females and males in terms of learning strategies (skill, will and self-regulation). Maybe this is due to the difference in the learning environment and culture.

Since in this study, the female students' mean scores have been higher than those of the males in the component of skill and self-regulation, it can be concluded that the females have outperformed the males in these areas. The research by Salehi and Enayati (2009) also suggested that between the two female and male groups, there is a difference in the areas of information processing, test strategies, self-administering test and main idea choosing, matching the present study. Maybe the males' lower score than the females can be attributed to their worries for future and that education does not guarantee having the right career in the future. The females are less concerned than the males in this respect. Uncertain job prospects, the post-graduation joblessness probability and considering lost opportunities can be

influencing when taking the male gender role into account in their educational motivation decline compared with the female students.

The current research displays that the mean main components of LASSI differs in terms of the colleges and in two components of will and self-regulation. There has been a significant difference between the majors in various colleges, and the performance of the medical and dentistry groups has been better than that of the nursing and paramedical colleges. The study by Hashemi and Hemmati (2008) suggested that the level of the learning strategies used among the engineering students and primary education is different, which is in line with the current research. Analyzing this finding, it can be deduced that due to the short duration in undergraduate and graduate studies, this groups of students have less experience than general physics and dentistry students. Therefore, to increase their academic performance, they have a greater need to use the study guide, but the professional doctor students' use of their time management ability better. It means that with regard to more academic experience; they improved their knowledge about factors of a waste of time. So, they have an effective plan for completing their scientific tasks on time.

Moreover, this study extracted results about comparing Guilan Students' LASSI profile with the normal sample table of American Students, and disclosed some remarkable differences. The areas of self-administering test equal to percentile 45 while information processing, anxiety, study guide and time management correspond to percentile 40, concentration to percentile 35, main idea selection to percentile 20, motivation to percentile 15, test strategies to percentile 10 and attitude to percentile 5 of the American students' norm. Therefore, the participant students' percentiles in all areas have been lower than the American students' percentile 50. This study's finding is consistent with those gained by Salehi and Enayati (2009) and Hosseini Shahidi et al. (2005). That research finding show the scores in the areas of attitude, motivation, anxiety, concentration, information processing, study guide, self-administering test. LASS of Gonabad Medical Science students have been lower than those of the American students' normal scores. Salehi and Enayati's (2009) study demonstrated the scores in the areas of self- administering test and study guide as percentile 45, the main idea choosing as percentile 30, test strategies as percentile 20, motivation as percentile 10 and attitude as percentile 5, and these have corresponded to the American students' norm. Also the study by Tafazoli and Khadivzadeh (2002) suggested that the students' scores in the areas of attitude and motivation, time control, information processing, self-administering test and test strategies are lower than percentile 50 of the American students' normal table scores. They also reported that the students' scores in the motivational activities correspond to percentile 15 of the American students' normal sample. The current research results are in line with those discovered by Shih, Chiang, Lai and Hu (2009) regarding the students' percentile in the areas of attitude, motivation and self-administering test.

The present study results imply that the Medical Science University students have got lower levels in LASSI. With respect to the significance behind the students' academic achievement, it is recommended to take measures to lower the academic failure and boost it through increasing the knowledge and skill of the students and the educational practitioners in the university, holding educational workshops on training learning and study strategies. In many universities worldwide, training study skills and techniques when the students enter university is recognized as essential to improve their learning process (Feizipour & Zeinali, 2013). Regarding the limitations of the present study, we can mention high volume of data collection tools and the multitude of questions which lead to disinterest in students while completing the questionnaire. Also this study is limited to students in Guilan university medical sciences.

The following recommendations can be made as a result of the study:

1. To raise LASS utilization among the students;

2. To make the students familiar with learning strategies by offering an optional course in all majors;

3. To hold a course on learning strategies for all majors' teachers;

4. To equip the university libraries with scientific texts on learning strategies;

5. To make teaching learning strategies to the students one of the career priorities for the consultant teachers.

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CHAOS-COMPLEXITY THEORY AT MANAGEMENT

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Abstract

Internal and external environment where operating continues their activities have a changeable structure continuously. It is stated that operating has to adapt to this structure which causes unexpected, undesirable and sudden results. How operatings behave during this period is stated in chaos-complexity theory. Thus, it is pointed out that organizations can evaluate the environment from not only one perspective but also different perspectives. This study contains three parts. First part involves theoretical information about chaos term. It mentions how some researchers use the chaos term. At the second part, how chaos complexity theory undergoes changes until today is uttered. Moreover, in recent years, the importance of chaos complexity theory from administrative perspective has been mentioned. The last part contains some main features of chaos complexity theory. In this regard, some basic properties like butterfly effect, mutual attachment, edge of chaos and self-organization have been analyzed in this study.

Keywords: chaos, chaos and complexity theory, edge of chaos, eelf-organization, complex adaptive systems.

1. Introduction

Chaos concept means open, vacuum of space, cliffs, making gaps in Greek. This concept which we often use in our daily speech and is in philosophy, sociology, education, organization have been defined differently by varied authors. According to these writers, chaos is not a science of case, it is science of a period and not a science of an existence, it is science of a formation (Çamlıbel, 2003). Chaos is also defined as a metaphor in which small changes cause great changes. Briefly, chaos is an order in irregularity of cosmos (Öğe, 2005, p. 286).

Chaos concept was first used in physical science by Boltsman in 19th century (Koçak, 2006, p. 10). Accordingly, chaos points out that complex, nonlinear and dynamic systems have acted disorganizedly (Gleick, 2000, p. 24). Complex means sophistication, nonlinear means mathematics formation; dynamics also shows that this system does not have a stable form (www.ittu.edu.tm/16.htm).

2. Chaos-Complexity Theory

Chaos Theory, one of the theories having come into prominence in organizational studies recently, is an approach which allows individuals to look at the environment they live in a different way and again. In chaos theory, the fact that everything is constantly changing, that change is immutable in a developing world, and that organizations have to adapt to such changes have been questioned (Sayğan, 2014, p. 413). If not so, it has uttered that system would move away from a structure organized itself. Chaos being in biology, ecology, chemistry, mathematics and physics as the result of the scholars' studies especially in the early

1970s and 1980s refers to the capacity to react the environment in which it is from not only one direction but also very different directions (Allen, 2001, p. 150; McMillian, 2004, p. 26; Goodwin, 2001, p. xii; Mitleton-Kelly, 2003, p. 23; Prigogine, 1987, p. 98). Luhmann (1985, p. 25) also defined chaos as the numerous possibilities that might occur within the system. With the works of the Sante Fe Institute in this area, the chaos theory has brought a new breath to the current organizational theories (Anderson, 1999, p. 217).

Chaos theory points out that the relationship in complex organization structure is nonlinear and there is a mechanism which reveals unexpected and sudden results (Töremen, 2000, p. 200-219). Especially currently, as a new perspective, chaos theory has brought a new expansion to scientific field with its finding and data by adapting to many scientific areas (Kaçmaz, 2005).

When we look upon the studies about chaos theory within the historical process, it has been seen that especially Ilya Prigogine has an important role. Russian chemist Prigogine enhanced "destructive structures" theory which identified self-organization systems in order to understand complexity theory. In this theory which is one of the main components of complexity theory, Prigogine had pointed out that systems had a nonlinear and dynamic structure (McMillian, 2004, p. 26-27; Prigogine, 1987, p. 97-99; Kondepudi & Prigogine, 1998, p. 427).

The other scientist having an important role in complexity theory is Goodwin. Goodwin had dealt with biological evaluation within the context of complexity theory and had dwelt on the terms like "edge of chaos and order emerging from complexity." He asserted that complexity theory had given a new point of view to the other science fields to understand phenomenon and nature (Goodwin, 2001, p. xiv).

Stewart is another scientist contributing to development of complexness. Maths scientist Stewart has uttered that mathematic is a significant means to understand cosmos and nature though it is abstract and delusive. Accordingly, natural events and universe can be understood by mathematics due to cosmos and natural events have a structure consisting of regular shapes. Stewart has stated that natural events in the universe have a simple and repetitive order in itself as a result of a long term observation even though they seems as much complex (Stewart, 1995, p. 1-13).

Chilean biolog Humberto Maturana and Francisco Vareko are the other scientists having contributed to the development of complexity theory. These two scientists improved self-organization approach. In questioned approach, thoughts that the organizations being advocated in traditional system approach have to be open to natural events have been criticized and because of this, that the organization have closure property has been asserted. According to this, interaction of the organizations with the external environment has been in fact circular reflection of its self-organization. It has also been mentioned that organizations interact with their environment to reorganize themselves. As a result, it points out that environment of the organization is a part of itself (Maturana & Valera, 1980). According to Morgan, (1998, p. 281-282), when organizations have closure property, it does not mean that they do not interact with their environment under no circumstances. On the contrary, it is thought that organizations will be interaction and harmony with its environment.

Finally, John Holland improved complex adaptive system approach in order to understand complexity theory. In this approach, John Holland pointed out that systems being called as "spy" consisted of so many components (Holland, 1992, 1995, 1998; McMillian, 2004, p. 28). Spy has contained decision maker unit like administrator, designer and control systems organizationally (McCarthy & Gillies, 2003).

Complex Adaptive System Features;

a. Having Learning Skill: Organizations search, in detail, the external environment where the organization operates. At the end of the research, organizations adapt itself to the environment (Marrison, 2008). In other words, complex adaptive system adapts to current circumstances by gathering required information (Lewin & Regine, 2003).

b. Being in interaction with: It is uttered that there is an interaction between components creating the system and the environment, because of this interaction, complex behaviours occur (Rammel et al., 2007). None of these components have an impact on the revealed behaviour.

c. Having experience: It is uttered that the organization gains experience as a result of the events faced with and so it reorganizes itself again (McMillian, 2004, p. 103).

3. Features of Chaos-Complexity Theory

a. Non-Linearity and Unpredictability:

It is known that minor events cause minor effects, beside this, great events cause great effects in the determinist universe which operates as the clock mechanism. These situations shows that events in the universe have a predictable structure and causality, linearity, control and universality features (Byrne, 1998, p. 14; Morrison, 2008, p. 16; Prigogine, 1987, p. 97; Stacey et al., 2000, p. 17).

b. Butterfly Effect, Sensibility and Bearing Upon Puller Items:

Butterfly Effect: From technical aspect, butterfly effect which is called as dependence to the initial conditions is that minor and unimportant changes in complex structure cause fundamental changes. The changes affect behaviours of the system because all these changes occur suddenly, unexpectedly and unpredictably (Anderson,1999, p. 217; Morgan, 1998, p. 291; Prigogine, 1987, p. 101). Edward Lorenz has stated this situation as that a butterfly fluttering in Peking may cause a storm in New York in the next month.

Sensibility and effect of puller items: According to Hayles, pullers are that any point of orbit pulls the other part of the orbit toward itself (Hayles, 1990). Puller item means that complex system having sensible stucture will be influenced by different puller items.

c. Dependence and Mutual Interaction:

It states that particles in the complex structure are in interaction with each other (Anderson, 1999, p. 216; Cilliers;1998, p. 3; Morrison, 2008, p. 17). This feature points out that change of a particle affects other particles (Mitleton-Kelly, 2003, p. 26-27).

d. Self Organization (Otopoyiyez):

Complex structure has self organization feature as mentioned before. This feature is that a group coming together to perform any task defines what will be done and where and when it will be done by itself (Mitleton-Kelly, 2003, p. 41-42). Wheatley says that every living organism does what requires to continue its life by spending energy.

e. Planning, Designing and Impossibility of Predetermination

Order in the universe occurs automatically and without planning and external intervention.

f. Formation/Organism:

Instead organisms in the system are analyzed one by one and evaluated as a whole (Ashby, 1962, p. 258; Byrne, 1997, p. 15; Morrison, 2008, p. 18; Stacey et al., 2000). It means that the whole has much more meaning and value than organism forming the whole (Ashby, 1962, p. 258; Mitleton-Kelly, 2003, p. 40-41).

g. Co-evoluation:

Factors in a system react to changes taking place in another sytem. The reason of this reaction is that environment and organization intercovert each other. That organization and environment have reciprocal interaction more than one sided interaction is the basis thought of evaluation (Baum & Singh, 1994, p. 3-20).

h. To Move away from Equilibrium:

It is mentioned that in the complexity theory based on open system approach, system performs under some conditions far from equlibrium because of energy, material and information exchange (Cilliers, 1998, p. 4; Comfort, 1994, p. 397; Kondepudi & Prigogine, 1998, p. 409; Wheatley, 2006, p. 79).

i. Varieties of Probability Areas:

Small changes cause a series of upheavals in complex systems which include several regular and dispersed interaction, so non-predictable results will reveal (Mitleton-Kelly, 2003, p. 35-36; Bryne, 1998, p. 14).

j. Edge of Chaos:

In the organizations based on open systems, organizations will be in an irregular position when they are far from equlibrium. A new order will take place of this ireegularity after a while and irregularity takes place again during this period. Edge of chaos includes an area between order and disorder (Mitleton-Kelly, 2003, p. 43).

k. Positive/Negative Feedback:

As positive feedback means convertion, refreshment and increasing degree of influence, negative feedback means finding the balance, ordering and nothingness in unstable conditions (Mitleton-Kelly, 2003, p. 37; Morrison, 2008, p. 17; Wheatley, 2006, p. 78).

l. Way Cohesion:

Nicolis and Prigogine calls way cohesion as bistable. It means that changes in any unit composing complexity sytems change another unit with themselves (Prigogine, 1987, p. 100).

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DOMAIN SPECIFIC BELIEFS ABOUT WRITING AND WRITING PERFORMANCE OF PRESERVICE ENGLISH TEACHERS: IS THERE ANY RELATIONSHIP?[1]

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[1]This research is part of the master's thesis completed at Anadolu University (See Tanyer (2014)).

DOMAIN SPECIFIC BELIEFS ABOUT WRITING AND WRITING PERFORMANCE OF PRESERVICE ENGLISH TEACHERS: IS THERE ANY RELATIONSHIP?

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Abstract

Learning as a retrospective phenomenon can make learners transmit their past as an ingredient while they are (re)structuring their present and future. Previous and present experiences can form a basis for cognitive, behavioral and motivational factors which can create a cognitive load for learners and affect their learning process. In this regard, current study aims to investigate first-year undergraduates' beliefs about writing and relation of these beliefs to writing performance in essay writing. A total of 147 students studying in ELT department of a Turkish university participated in the research. Their domain-specific beliefs about writing were determined through the Beliefs about Writing Survey (BAWS). Writing performance was measured on an essay writing task by calculating both overall grade and six component grades. As a result, multiple regression analysis affirmed that beliefs about writing accounted for writing performance independently. Pearson correlation values showed that some beliefs about writing were adaptive and associated with higher writing scores (e.g. "Adapt to the Audience"). Also, some belief subcategories were associated with each other. The results of the present study have been discussed along with the related literature on beliefs about writing and writing performance. Implications/suggestions related to the coursework, writing practices and future research have been presented.

Keywords: beliefs about writing, foreign language writing, writing performance, preservice English teachers, teacher training.

1. Introduction

Writing, the neglected skill of foreign language education, "today is not a frill for the few, but an essential skill for the many" (National Commission on Writing, 2003, p. 11). We require this skill to flourish as a student, as an employer and as a citizen because foreign language writing is one of the critical components of academic foundation that students need, an essential prerequisite in the workplace and a critical requirement to be active citizens of a globalizing world. Therefore, this skill becomes valuable for different groups including preservice teachers of English who are potential teachers of all other groups. This assumption has motivated the researcher to explore quite a lot about writing discipline, and its first and earlier practices in undergraduate composition classes. Following this perspective, domain-specific beliefs about writing have been chosen as the target focus in this study.

Social cognitive theory of Albert Bandura refers to the significant role of beliefs in human learning and performance (Bandura, 1989). Self-efficacy beliefs are one of them which are mainly related to a person's belief in oneself to perform tasks and reach particular goals (see Bandura (1997) for further reading). More than thirty years, research on participants from primary school children to university students have already reinforced the relationship between writing self-efficacy, writing apprehension and writing performance (e.g., McCarthy, Meier, & Rinderer, 1985; Meier, McCharty, & Schmeck, 1984; Pajares & Johnson, 1994; Pajares & Valiante, 1999; Prat-Sala & Redford, 2012; Tanyer, 2015). However, only recently,

the social cognitive view of writing has been extended via the concept of beliefs about writing which has been related to writing performance as well as writing self-efficacy and apprehension (i.e., Sanders-Reio, 2010; Sanders-Reio, Alexander, Reio, & Newman, 2014). This belief category (terminologically domain specific beliefs about writing) has been built on studies from the fields of educational psychology, writing and rhetoric, and concentrates on beliefs about what good writing is, what god writers do as well as the elements related to writing process itself.

The exploration of preservice English teachers' beliefs might be crucial in terms of various reasons. Firstly, it is possible for them to transmit their past as an element to learning environments of today and future. Therefore, if preservice teachers get promoted to reflect their own beliefs, they can construct or reconstruct their belief systems about writing. Moreover, beliefs about writing can be related to learners' writing performance as shown in the literature (e.g., Perry, 2011; Sanders-Reio, 2010; Sanders-Reio et al., 2014; White & Bruning, 2005). Also, like other foreign language skills such as speaking and listening, writing can be regarded as one of the neglected skills until university education. Probably because of this fact, this skill has been observed as a challenge for first-year preservice English teachers, and it would be worthy to discover what kinds of beliefs about writing are held by this specific group. In addition, while organizing a writing course in an EFL teacher-training program, there may be a need to learn future teachers' beliefs about a specific domain that they would teach in the future which is "writing" in this study. Identifying their personal beliefs and the additional details about these beliefs in depth by means of valid and reliable instruments might present valuable implications for teaching writing skill in a teacher education program.

1.1. Literature review

This review presents a conceptual framework for the exploration of research on beliefs about writing as well as a summary and discussion of the studies conducted in this area. The topics related to the research on writing beliefs have been ranging from innateness of writing skill to role of audience, mechanical and substantive writing skills, specific models of writing beliefs as well as transmissional, transactional and domain specific beliefs about writing. The first topic of empirical studies about writing beliefs concentrates on the role of giftedness in writing ability. With 247 undergraduates, Palmquist and Young (1992) examined the relationship between the beliefs in the innateness of writing ability and four other variables that were writing apprehension, self-assessment of writing skills, the confidence in mastering writing skills and genres, and previous experience with writing teachers. According to the results, the belief in the innateness of writing skill might "contribute to these students' apprehension about writing" (Palmquist and Young, 1992, p.151). Also, the participants believing that writing skill was innate-gift tended to be less confident in their ability to become professional writers. The undergraduates carrying this belief also reported their experiences with their previous writing teachers less favorably. Therefore, Palmquist & Young (1992) concluded that the belief in innateness might provoke unprompted limitations about undergraduate courses and future careers which required writing skills.

From the same point of view, Charney, Newman & Palmquist (1995) added one different variable that was writing performance, and investigated the relationship between beliefs about the innateness of writing ability, students' assessments about their own writing, writing apprehension and writing performance of 446 undergraduate students. The findings revealed that participants believing that writing could be learned were more likely to enjoy writing although they did not accordingly score higher on their writing assignments. Also, participants enjoying writing more tended to label themselves as good writers, and the female participants were prone to regard writing skill as something that could be learned. In addition,

they enjoyed writing more, and scored higher in writing assignments than the male ones. As suggested by the two studies above, the belief in giftedness might have prejudicial effects on student writers and trigger limitations in writing career (Palmquist & Young, 1992). Therefore, it would be valuable to question this belief in that writing lecturers may need to become aware of it and combat its negative effects.

Another perspective in beliefs about writing research deals with the role of audience in writing process. The analysis of audience is an important element of planning process because it decides the format, the language, the information included, and even the use of figures and graphics. In this regard, Nelson (2008) indicated the role and importance of audience and addressed three issues that were "writing related to reading, writer related to reader, and text related to text" regarding them as central to written discourse (p. 547). Her study revealed that the participants considered readers and writers interacting in a bilateral aim instead of isolated existences. It was indicated that the products of writers varied according to the different types of audience by means of an adaptation process. Nelson also noted the evidence of developmental differences between younger and older students.

The four other researchers, Miller and Chorney (2008) and Beach and Friedrich (2006), focused on three main dimensions of writing that are persuasion, audience and argument, and discussed how writers adapted the organization, content, tone of their arguments according to target audience, their age, their assumed attitudes, and to the specific discourse community. Also, emphasizing the significance and pervasiveness of writing in the workplace, Beaufort (2008) researched how writers in workplace adapted their voice, tone, level of clarity, and stated that the writers had decided on their choice of words in response to the power groups. As claimed by Miller and Charney (2008), the notion of influencing and persuading readers has been emphasized since Aristotle. However, in school environment, the written products that students produce may not address a real aim or a real audience. For this reason, it can be valuable to question students' beliefs about this inauthenticity and the role of audience in a foreign language environment.

Mechanical and substantive skills are two other components of writing skill which address different issues: while mechanical skills are interested in grammar, spelling, punctuation and style; substantive skills attend to organization, development, clarity, and cohesion. The differences between these two skill types can be observable in research. In their study of how students' beliefs about writing affect the product and writing process, Graham, Schwartz & MacArthur (1993) made a distinction between mechanical and substantive skills. Via open-ended interviews, the 4th, 5th,7th and 8th grade students with and without learning disabilities were asked about their beliefs and knowledge with respect to what good writing was, what good writers did, why some students had trouble in writing, and how they would write a paper for a younger child. The participants were also asked to evaluate a text written by a child by employing their knowledge and beliefs about writing. The findings revealed that the better writers who were also older and normally achieving students tended to highlight substantive skills instead of mechanical skills in their definitions of good writing. In their accounts of who good writers were and what they did, these participants emphasized writing processes over written product. To sum up, Graham, Schwartz & MacArthur (1993) claimed that "The knowledge, attitudes, and beliefs that students hold about writing play an important part in determining how the composing process is carried out and what the eventual shape of the written product will be" (p.246). As writing teachers, if we uncover the students' beliefs about mechanical and substantive issues, these beliefs might be (re)shaped by writing instruction that they would receive.

Some scholars have also started to develop models on beliefs about writing combining different variables. The earlier empirical study of beliefs about writing has been published by

Silva and Nicholls (1993) who designed their scales based on six traditions of discourse theory. Based on these traditions, Silva and Nicholls included some goals and beliefs in two different scales (i.e., "Writing Goals" and "Beliefs about the Causes of Success in Writing"). They also applied three more scales that were "Intrinsic Commitment to Writing", "Dualism Scale" and "Perceived Ability Scale". The results revealed that students with beliefs referring to substantive issues liked writing more than the ones holding beliefs stressing "Surface Correctness and Form". Silva & Nicholls (1993) also stated that beliefs about writing might reflect writing teachers' styles and classroom culture. Therefore, as in the Bandura's model, the effect of environment on the person could be observed in writing classrooms, as well.

In addition to those above, Ellen Lavelle has published a number of studies about students' approaches to writing (e.g., Lavelle, 1993, 2001, 2003; Lavelle & Guarino, 2003; Lavelle, Smith & O'Ryan, 2002; Lavelle & Zuercher, 2001). She started her research by developing a questionnaire, The Inventory of Processes in College Composition (IPCC; Lavelle, 1993), a factor analysis of which has provided five different writing approaches of college students: *Elaborationist Approach*, *Low Self-Efficacy Approach*, *Reflective-Revisionist Approach, Impulsive Approach* and *Procedural Approach*. Those five approaches were collected under two broad categories as deep and surface approaches (Lavelle & Guarino, 2003). Writers taking a deep approach are more meta-cognitive, more involved in their writing and regard themselves as a real operator in meaning making. These writers tell a strong sense of audience, carry holistic views of writing tasks, and they are directed more toward meaning of the written product than form. For them, revision is an important part of writing process, and they tend to revise and reflect thoroughly on their product. Writers taking the surface approach are less aware of writing process and audience, and they are less dedicated to their written product. Writing is not a learning source for them; they are more rule-bound, focus on mechanical errors in writing, and instead of revising, they edit their work at the surface level.

As well as the models mentioned above, White and Bruning (2005) adapted the earlier works of Schraw and Bruning (1996, 1999) to writing which investigated transmissional and transactional beliefs about reading. According to the new model, writers with high transmissional beliefs see writing principally as a channel of transmitting authoritative knowledge to readers with minimum addition of writer's own perspective while writers with high transactional beliefs view writing as a medium to combine what they have learned with their own knowledge and perspectives. In order to measure transmissional and transactional beliefs about writing, White and Bruning (2005) developed the Writing Beliefs Inventory and examined the relations among 170 undergraduates' beliefs about writing, writing self-efficacy, writing apprehension, past writing experiences and writing performance. The results indicated that beliefs about writing were related to writing performance because the participants with transmissional beliefs had significantly lower writing scores while those with transactional beliefs had higher writing scores. Students with high transmissional scores also had less affective and cognitive engagement with writing and were less likely to write for pleasure. On the other hand, students with high transactional scores spent more time for writing and were more likely to find writing pleasurable.

More recently, Bruning, Dempsey, Kauffman & Zumbrunn (2011) extended the work of White and Bruning (2005) by revising Writing Beliefs Inventory and surveyed 556 eleventh graders from two high schools to investigate the relationship among implicit beliefs about writing, affects towards writing, writing self-efficacy, writing grades and statewide writing assessment scores as well as English/Language Arts course enrollment. Results demonstrated that transactional beliefs were significantly related to liking writing, self-efficacy for writing ideation, self-efficacy for writing conventions, self-efficacy for writing self-regulation, self-reported grades, and the statewide writing assessment score. Also, students in more advanced

classes of English/Language Arts course had higher transactional beliefs and lower transmissional beliefs. Following that study, Perry (2011) investigated 153 college students' implicit beliefs about a specific writing task and associations of those beliefs to writing score with the measures of "Writing Habits and Beliefs Scale", "Writing Beliefs Inventory-Revised" (Bruning et al., 2011), "Liking Writing Scale" and "Beliefs about Intelligence" scale. Results revealed that college students held implicit beliefs about the specific writing task and those beliefs were related to liking writing and beliefs about intelligence. However, transmissional and transactional beliefs did not affect scores of writing task. All in all, this study indicated that learners approached "writing with a unique set of beliefs, assumptions, and motivations", and they entered "the classroom with a wide variety of skill sets, experiences, and prior knowledge" (Perry, 2011, p.96).

Referring to a scarcity, Sanders-Reio (2010) indicated that while investigation on writing self-efficacy beliefs and its relation to writing apprehension and writing performance had started to become accumulated, the research area of beliefs about writing was limited. Therefore, she examined the association between domain specific beliefs about writing, writing self-efficacy and writing apprehension, and their relations to writing performance on a three-phase study. The first two phases were assigned to instrument construction and validation while the last phase investigated the relations among the target variables. The participants were 207 pre-service teachers studying in the College of Education, and the measures were "Beliefs about Writing Survey", the modified "Writing Self-Efficacy Scale" (Zimmerman and Bandura, 1994), the modified "Writing Apprehension Test" (Daly and Miller, 1975), and a demographic survey. Writing performance of the preservice teachers was assessed via a structured five-page paper written for the educational psychology course.

The results revealed that four of the beliefs about writing – *Expert Orientation*, *Writing Supports Thinking*, *Address Substantive Issues First* and *Mechanical Errors Are Shameful* - appeared to be adaptive in that they positively correlated with all or some of the grades for writing performance or with other adaptive beliefs. *Expert Orientation* also correlated positively with writing self-efficacy and enjoyment for writing while *Writing Support Thinking* had the highest correlation to enjoyment of writing. Hierarchical regression analysis revealed that beliefs about writing independently explained 12% of the variance in writing performance. Apprehension about making grammatical and other mechanical errors had a strong negative effect on writing performance. Lastly, after controlling for domain specific writing beliefs, writing self-efficacy weakly predicted writing performance.

A following study of Sanders-Reio et al. (2014) also followed Kellogg's (2008) cognitive model of writing development and investigated the relations among beliefs about writing, writing self-efficacy, writing apprehension and writing performance. "The Beliefs About Writing Survey", "the Writing Self-Efficacy Index" and the modified "Writing Apprehension Test" were administered to a total of 738 undergraduates, and writing performance was evaluated based on a class paper. According to the findings, beliefs about writing accounted for writing scores significantly and, while the beliefs, *Audience Orientation* and *Recursive Process*, were the positive predictors of the scores, *Transmissio*n and Transaction were the negative predictors. As for the other variables, the writing self-efficacy positively and apprehension about grammar negatively predicted writing performance while writing apprehension as a block was not a significant predictor.

More recently, Tanyer & Subaşı (2016) conducted a qualitative study and investigated 26 preservice English teachers' beliefs about EFL writing via interviews. In the study, the participants' beliefs about good writing and writers, writing ability and the factors affecting their beliefs about good writing were interrogated. As a result, it was found that participants approached good writing and writer characteristics and the nature of writing ability with

particular belief sets. The scholars also interpreted their findings according to the writing scores gathered by the participants. Based on these interpretations, they claimed that the relationship between writing beliefs and writing performance had been reinforced by their study.

All in all, the findings above support the possibility that writing beliefs can be an influential variable while teaching writing skill. Following the research above dealing with domain-specific beliefs about writing, the present study has two main purposes. Firstly, it aims at investigating first year undergraduates' domain-specific beliefs about writing. Secondly, it questions the role of these beliefs in undergraduates' writing performance. In line with these purposes, it has been assumed that this study would provide a profile of preservice English teachers by reporting their beliefs about what good writing is, what good writers do in addition to the writing processes, writing tasks, writing skills and the procedures these tasks and skills involve. The research questions guiding the study are as follows:

RQ1. Do preservice English teachers hold any domain specific beliefs about writing?

RQ2. Is there any relationship between domain specific beliefs about writing and writing performance?

RQ3. Do domain specific beliefs about writing predict writing performance?

2. Methodology

2.1. Participants

The participants included 147 first-year preservice teachers studying in the ELT Department of a Turkish university. In this department, students must take two main writing courses in their first year (i.e. Written Communication and Academic Writing and Report Writing). In this study, the ones from all eight sections of "Academic Writing and Report Writing Course" participated. Each section of that course comprised almost 30 students; however, the ones that had failed in previous years and retook the course were excluded from the analysis. Most of the participants were female with the proportion of 74.8% (*N=110*), while 25.2% of them were male (*N=37*). Additionally, the average age of them was 19.69 (*SD*= 2.12).

There are several reasons for the selection of this population of interest in this research. Firstly, they receive considerable amount of practice and instruction in writing through two semesters, so learning more about them and undergraduate writing might facilitate the development of writing instruction for this sample. The second reason is that the participation of this sample would facilitate comparison with and the extension of much of the existing research (e.g., Bruning et. al., 2011; Sanders-Reio, 2010; Sanders-Reio et al., 2014; White & Bruning, 2005) about pre-service teachers' domain specific beliefs about writing.

2.2. Instruments

In the present study, two data sources were combined which were a recent survey of beliefs about writing and writing scores. The survey administered and measurement of writing performance have been described below.

2.2.1. Survey

The participants indicated their domain-specific beliefs about foreign language writing on a five-point likert scale which was The Beliefs about Writing Scale (BAWS; Sanders-Reio, 2010). BAWS had specifically been designed with Hispanic first-year preservice teachers who were enrolled in College of Education in south Florida, USA. The original BAWS comprised 76 items with 14 subscales, although a four subscales-version of it have recently

been developed and used by Sanders-Reio et al. (2014). In the current study, the first version with 76 items and 14 subscales were administered.

Beyond the beliefs about foreign language writing, the survey battery also asked participants to provide relevant background information about themselves such as their age, gender and year of study. The respondents were also required to reveal some more details such as their attitudes toward foreign language writing and their past educational experiences. Some items of the instrument theorized to be vague for the first-year preservice teachers were disambiguated with their synonyms or with some examples. Moreover, three writing instructors all of whom were experts in ELT and lecturing in ELT Department reviewed the survey battery and approved the modifications. The comparison between the initial and modified version of the items have been listed in Table 1:

Table 1. *The original and modified version of five items of BAWS*

Original	Modified
9. It's important to develop a distinctive writing style.	**9.** It's important to develop a distinctive ***(peculiar, original)*** writing style.
19. Writers need to immerse themselves in their writing.	**19.** Writers need to immerse themselves in ***(involve deeply in)*** their writing.
39. Papers with typos are terrible embarrassment.	**39.** Papers with typos ***(misspellings)*** are terrible embarrassment.
45. During revision, one should carefully check one's manuscripts for both substantive and mechanical problems.	**45.** During revision, one should carefully check one's manuscripts for both substantive ***(organization, development etc.)*** and mechanical (***grammar, spelling etc.)*** problems.
46. Good writers demonstrate their skills at crafting complex sentences.	**46.** Good writers demonstrate their skills at crafting ***(creating)*** complex sentences.
69. It's humiliating to give a PowerPoint presentation with typos and misspellings.	**69.** It's humiliating to give ***an essay*** with typos and misspellings.

2.2.2. Writing Performance

Writing performance was assessed via the grades participant received on the papers they wrote for the Academic Writing and Report Writing Course. During an in-class exam, the students were provided with three optional writing prompts and were free to choose any of them for essay writing. Also, based on their topic, they were supposed to decide the genre type which they would write in using APA citation techniques appropriately. The papers were assessed analytically via ESL Composition Profile of Jacobs, Hartfield, Hughey and Vormuth (1981) which includes five main rows: Content, Organization, Vocabulary, Language Use, and Mechanics. As Andrade & Boulay (2003) have argued, using such profile for assessment can support learning and development of writing skills by laying out clear, concrete characteristics of good writing.

2.3. Data Collection and Analysis Procedures

2.3.1. The Survey

At the beginning of spring semester, randomly selected thirty-two (32) preservice teachers studying in ELT Department firstly indicated their domain specific beliefs about foreign language writing via BAWS. The purpose of applying this instrument to that small group was to discover whether the items were clear and definite for the respondents. As no negative feedback was received and there had been no additional modification on the survey, the data

gathered from this quite small sample were combined with the main study. Thus, a total of 147 participants answered the survey battery in a class hour.

The ELT Department demands their candidates to be at B2 level according to the standard language levels of Common European Framework of Reference for Languages (CEFR) while accepting them to the department. This level was assumed to be appropriate for preservice teachers to comprehend the items of the BAWS by the faculty members. For this reason, the original English version of the survey was applied during the data collection process. Furthermore, the preservice teachers were demanded to approve their voluntarily participation to complete the survey package by signing a consent form. In that consent form, the participants were enlightened about the purpose of the research and asked for their permission.

2.3.2. Writing Performance

As for the writing performance, the participants' first midterm exam scores were taken into consideration. During an in-class exam, the preservice teachers wrote their own essays. In the exam paper, the students were provided with three optional writing prompts and were free to choose any of them. Also, based on their topic, they were supposed to decide the genre type they would write.

2.3.3. Data Analysis

A number of statistical calculations have been performed in order to address the research questions. For RQ1 (i.e., Do preservice English teachers hold any domain specific beliefs about writing?), descriptive statistics such as means and standard deviations were used. For RQ2 (i.e. What is the relation between beliefs about writing and writing performance?), the Pearson correlations were computed and analyzed between the independent (beliefs about writing) and dependent (writing performance) variables. To answer RQ3 (i.e. Do domain specific beliefs about writing predict writing performance?), a standard multiple regression analysis was employed to determine the unique variance explained by beliefs about writing in writing performance.

3. Results

In the following headings, reliability of measures, descriptive statistics, and the findings of correlational and standard multiple regression analyses have been presented.

3.1. Reliability of measures

To assure that the Beliefs about Writing Scale (BAWS) was a reliable measure, internal consistency of measures was used by computing the Cronbach's alphas for the total scale and all subscales (see Table 2). The Cronbach's alpha for the total scale was .855, which was close to the entire value of original BAWS (i.e. 0.87; Sanders-Reio, 2010, p. 116). The Cronbach's alphas for the fourteen subscales of BAWS ranged from .524 to .797, which had ranged from .61 to .80 in the original scale. As eliminating any items did not provide higher reliability, none of the items had been removed from the scale.

Table 2. *Reliability coefficients for BAWS and its subscales*

	N of items	Cronbach's α
1. Transmissional	6	.569
2. Writing Supports Thinking	4	.797
3. Writing Is a Personal and Emotional Experience	6	.653
4. Writing Is an Innate Gift	5	.762
5. Basics (Mechanics) First	4	.578

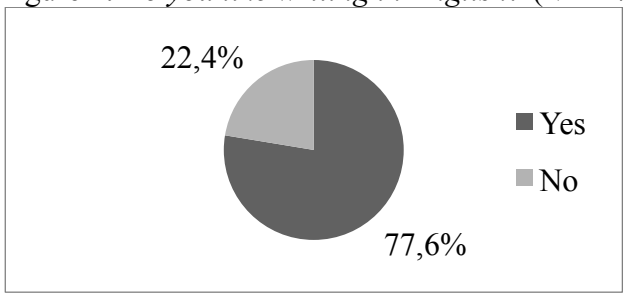
6. Address Substantive Issues First	5	.524
7. Writing Is an Iterative Process	8	.597
8. Minimize Revision	7	.604
9. Write to Impress	4	.609
10. Use Plain English	6	.638
11. Adapt to the Audience	8	.664
12. Clarity Is Essential	3	.532
13. Development Is Important	5	.589
14. Mechanical Errors Are Shameful	5	.778
Beliefs about Writing Survey (TOTAL)	76	.855

Writing performance was assessed via the scores participants received on the essays they wrote for the first midterm exam on three optional topics. As for the reliability of writing scores, two graders each of whom were experienced instructors of writing and had been lecturing for at least fifteen years evaluated the participants' papers following the dimensions of ESL Composition Profile (Jacobs et. al., 1981). The mean of the two graders' scores was used in the study. Based on these two score sets, a correlational analysis was operated in order to calculate the inter-rater reliability as instructed by Gay (1992). The correlation value between the total scores given by the two scorers was .94.

3.2. Descriptive statistics

The values below demonstrate descriptive statistics about the participants' profile, past educational and writing experiences in addition to means and standard deviations of the subscales.

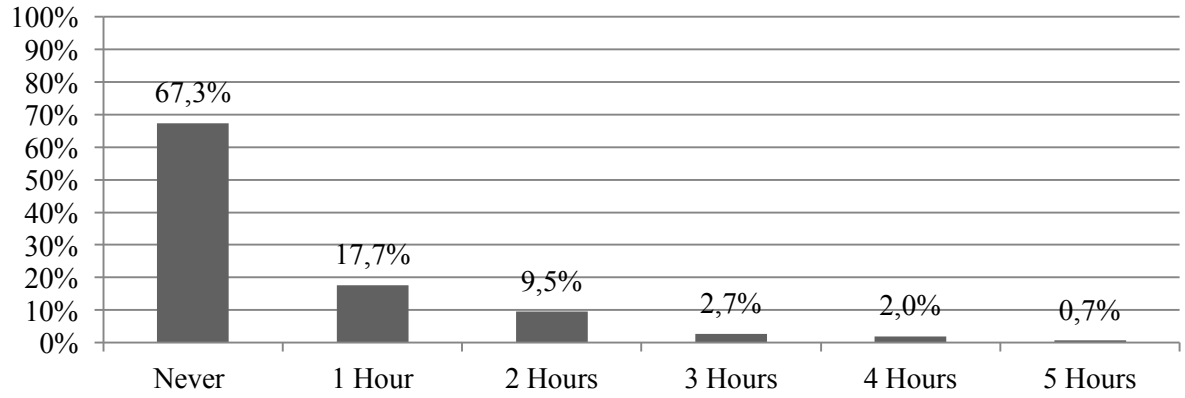
Figure 1. *Do you like writing in English?* (*N*=147)



The first question, *Do you like writing in English?,* inquired participants' attitudes toward foreign language writing. As revealed by Figure 1, most of the students (77.6%) seem to have developed a positive attitude toward writing in English, while the rest 22.4% of them reported that they did not like writing in English.

The remaining open-ended questions provided us some more details about the participants' past writing practices in English. For example, the hours of English courses they took in a week during high school ranged from 2 to 14 hours with a mean of 10.71. But, when the course hours allocated for foreign language writing was searched, it was indicated that 67.3% of the participants (*N*=99) had not done any practices of writing in English at high school (see Figure 2 below). The time allocated for writing practice for the rest of the participants was also quite limited varying between one (1) and five (5) hours with a decreasing proportion from 17.7% to 0.7% respectively.

Figure 2. *How many hours of English courses in a week were allocated to improve your writing skills at high school? (N=147).*



In Table 3, the means and standard deviations of the fourteen (14) subscales in BAWS were demonstrated. The subscales were ordered in a descending order from the one with the highest average to the one with the lowest average.

Table 3. *Means and standard deviations of the subscales in BAWS (N=147)*

	M	*SD*
1. Development Is Important	4,125	0,424
2. Clarity Is Essential	4,063	0,571
3. Writing Supports Thinking	4,056	0,663
4. Adapt to the Audience	3,996	0,437
5. Writing Is an Iterative Process	3,938	0,427
6. Writing Is a Personal and Emotional Experience	3,818	0,524
7. Address Substantive Issues First	3,693	0,574
8. Writing Is an Innate Gift	3,449	0,805
9. Basics (Mechanics) First	3,449	0,635
10. Use Plain English	3,353	0,554
11. Write to Impress	3,258	0,727
12. Transmissional	2,997	0,584
13. Mechanical Errors Are Shameful	2,851	0,793
14. Minimize Revision	2,409	0,524

As presented in Table 3, the beliefs that were *Development Is Important*, *Clarity Is Essential* and *Writing Supports Thinking* had the highest means while the beliefs, *Transmissional*, *Mechanical Errors Are Shameful* and *Minimize Revision,* had the lowest mean scores. The other eight belief categories about writing were in between these two outlier sets. Descriptive statistics showed that the upper three beliefs were highly agreed by the participants; on the contrary, the last three beliefs seemed to be disagreed.

In Table 4 (below), the results of one-sample t-test that had compared the averages of each subscale with the middle value (i.e. 3) were presented. Among the subscales which were agreed, the highest average belonged to the belief, *Development Is Important* (*M*= 4.125), while the lowest average belonged to the belief that writers should *Write To Impress* the audience (*M*= 3,258). Although the lowest average had a mean of 3,258, this value was higher than the middle value (i.e., 3) with a t-value of 4.307 and a probability value of .000.

Therefore, it was found that the participants agreed all the first eleven (11) beliefs about writing listed below.

Table 4. *Summaries of one-sample t-test comparing the averages of variables with the middle value of the likert scale (i.e. 3) (N=147)*

Variable	*Mean*	*SD*	t	df	*p* <
1. Development Is Important	4,125	0,424	32.120	146	.000
2. Clarity Is Essential	4,063	0,571	22.575	146	.000
3. Writing Supports Thinking	4,056	0,663	19.288	146	.000
4. Adapt to the Audience	3,996	0,437	27.639	146	.000
5. Writing Is an Iterative Process	3,938	0,427	26.632	146	.000
6. Writing Is a Personal and Emotional Experience	3,818	0,524	18.910	146	.000
7. Address Substantive Issues First	3,693	0,574	14.656	146	.000
8. Writing Is an Innate Gift	3,449	0,805	6.757	146	.000
9. Basics (Mechanics) First	3,449	0,635	8.564	146	.000
10. Use Plain English	3,353	0,554	7.731	146	.000
11. Write to Impress	3,258	0,727	4.307	146	.000
12. Transmissional	2,997	0,584	-.047	146	.963
13. Mechanical Errors Are Shameful	2,851	0,793	-2.265	146	.025
14. Minimize Revision	2,409	0,524	-13.668	146	.000

On the other hand, the last two beliefs were significanly disagreed which were *Mechanical Errors Are Shameful* (*M*=2.851) and writers should *Minimize Revision* (*M*=2.409) whose means were lower than the middle value (i.e. 3) with t-values of (-2.265) and (-13.668) respectively. Also, they had probability values of (.025) and (.000) which were lower than .05. Therefore, it was apparent that respondents disagreed with these beliefs. The last belief, *Transmissional* (*M*=2.997), was not agreed or disagreed by the subjects. In other words, they were unsure about this belief since the mean of it was so close to the middle value of the scale (i.e. 3). Additionally, it had a very low t-value (-.047) and the probability value of it (i.e., .963) was not lower than .05. In this regard, the pre-service English teachers participating in the present study were found to be unsure about the *Transmissional* belief category.

3.3. Correlations

In order to answer Research Question 2 (i.e. Is there any relationship between beliefs about writing and writing performance?), Pearson correlations among dependent variables (i.e. the subscales of the BAWS), and the Pearson correlations between the dependent variables and the independent variable (i.e. writing performance) were computed.

3.3.1. Correlations Among the Subscales of the BAWS

Firstly, the correlational values among the dependent variables have been reported, and the correlation matrix in Table 5 signified that a number of subscales had been statistically significantly correlated among each other and with writing performance. Some previous studies have theorized (e.g., White & Bruning, 2005; Sanders-Reio, 2010) that beliefs about writing can be adaptive since "they either reflect expert practice, support writing process, and/or tend to be as associated with better grades on writing assignment" (*p.*151). The belief categories theorized to be adaptive were: 1) *Adapt to the Audience*, 2) *Clarity Is Essential*, 3) *Development Is Important*, 4) *Writing Is An Iterative Process*, 5) *Use Plain English*, 6) *Substantive Issues First*, 7) *Writing Supports Thinking* and 8) *Writing Is A Personal and Emotional Experience*.

In the current study, *Adapt To The Audience* significantly and positively correlated with all of the theorized adaptive beliefs. This means that preservice teachers believing that writing should be adapted to the audience were more likely to believe that *Development Is Important* (r =.56, p < .01), *Clarity Is Essential* (r =.54, p < .01), *Writing Is An Iterative Process* (r =.47, p < .01), *Writing Supports Thinking* (r =.31, p < .01), foreign language writers should *Use Plain English* (r =.29, p < .01), *Writing Is A Personal and Emotional Experience* (r =.26, p < .01) and that writers should *Address Substantive Issues First* (r =.24, p < .01). To the contrary, first-year preservice teachers subscribing to the belief, *Adapt To The Audience*, were more likely to hold three of the maladaptive beliefs which were *Basics (Mechanics) First* (r =.303, p < .01), *Transmissional* (r =.24, p < .01), and *Write to Impress* (r =.20, p < .01).

Second adaptive belief correlating significantly and positively with all theorized adaptive beliefs is *Development Is Important*. Therefore, those believing that writers should explain their thoughts effectively were more likely to believe that *Clarity Is Essential* (r =.62, p < .01), writers should *Adapt To The Audience* (r =.56, p < .01), *Writing Is An Iterative Process* (r =.50, p < .01), writers should *Use Plain English* (r =.37, p < .01), *Writing Is A Personal and Emotional Experience* (r =.34, p < .01), *Writing Supports Thinking* (r =.31, p < .01), and writers should *Address Substantive Issues First* (r =.28, p < .01). In contrast, participants subscribing to this belief (i.e., *Development Is Important*) were more likely to believe that writers should master *Basics (Mechanics) First* (r =.38, p < .01), and should *Write to Impress* (r =.18, p < .01) the reader.

The third writing belief subcategory theorized to be adaptive is *Clarity Is Essential*. According to the Table 5, the respondents believing that foreign language writers should convey information clearly were more inclined to believe that *Development Is Important* (r =.56, p < .01), writers should *Adapt To The Audience* (r =.54, p < .01), *Writing Supports Thinking* (r =.39, p < .01), *Writing Is An Iterative Process* (r =.39, p < .01), writers should *Use Plain English* (r =.34, p < .01), *Writing Is A Personal and Emotional Experience* (r =.31, p < .01), and that writers should *Address Substantive Issues First* (r =.28, p < .01). On the contrary, the subjects believing that *Clarity Is Essential* were more likely to believe that writers should master *Basics (Mechanics) First* (r =.30, p < .01) and should transmit authorities' words into their writing (*Transmissional*, r =.23, p < .01).

Five beliefs about writing that are *Transmissional*, *Write to Impress*, *Minimize Revision*, *Writing Is An Innate Gift* and *Basics (Mechanics) First* are theorized to be maladaptive for they contradict with "expert writing practice" and have a tendency to link to lower scores on writing tasks (Sanders-Reio, 2010; p. 154). In the current study, three of these maladaptive beliefs, *Transmissional*, *Write to Impress* and *Basics (Mechanics) First*, correlated with other three maladaptive beliefs. The first one, *Transmissional*, positively and significantly correlated with *Write to Impress* (r =.30, p < .01), *Minimize Revision* (r =.23, p < .01) and *Basics (Mechanics) First* (r =.18, p < .05). This means that participants who regarded writing as a means of transmitting scholarly information to the audience with almost no contribution also believed that writers should *Write To Impress* and *Minimize Revision* while writing.

Minimize Revision supports the notion that writers write it appropriately in the first time and need no revision, and stands as a counterpoint to the concept of expert orientation, especially to the belief that *Writing Is An Iterative Process*. This belief correlated positively and significantly with the other beliefs theorized to be maladaptive including *Transmissional* (r =.23, p < .01), *Write To Impress* (r =.20, p < .05) and *Writing Is An Innate Gift* (r =.19, p < .05). As anticipated, it also significantly and negatively associated with *Writing Is an Iterative Process* (r =.19, p < .05). The belief, *Write to Impress*, which suggested that writers should use big words and attract their readers, was also correlated with the three beliefs.

Table 5. *Intercorrelations among the subscales of beliefs about writing survey and writing performance*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Transmissional	--													
2. Writing Supports Thinking	.090	--												
3. Writing is a Personal Emotional Experience	.216**	.265**	--											
4. Writing is an Innate Gift	.107	-.164*	.136	--										
5. Basics (Mechanics) First	.186*	.130	.069	.156	--									
6. Address Substantive Issues First	-.016	.132	.244**	.047	-.208*	--								
7. Writing is an Iterative Process	.188*	.378**	.282**	-.057	.300**	.137	--							
8. Minimize Revision	.232**	-.131	.122	.194*	.048	.220**	-.192*	--						
9. Write to Impress	.303**	.128	.325**	.214**	.118	.081	.152	.205*	--					
10. Use Plain English	.234**	-.023	.102	.214**	.160	.204*	.273**	.077	-.069	--				
11. Adapt to the Audience	.244**	.313**	.268**	.051	.303**	.245**	.475**	-.025	.209*	.299**	--			
12. Clarity is Essential	.233**	.394**	.314**	.055	.309**	.284**	.391**	-.071	.147	.349**	.543**	--		
13. Development Is Important	.159	.315**	.349**	.100	.389**	.282**	.501**	-.077	.189*	.377**	.568**	.626**	--	
14. Mechanical Errors are Shameful	.159	-.018	-.011	.174*	.391**	-.234**	.000	.022	.217**	.106	.099	.032	.068	--
15. Overall Grade	-.085	.016	.053	-.135	-.022	.153	.170*	-.128	.026	.107	.269**	.136	.171*	.118

** Correlation is significant at $p < .01$. *Correlation is significant at $p < .05$.

theorized to be maladaptive that were *Transmissional* (r =.30, p < .01), *Writing Is An Innate Gift* (r =.21, p < .01) and *Minimize Revision* (r =.20, p < .05).

The other maladaptive belief, *Writing Is An Innate Gift*, was also positively and significantly correlated with *Minimize Revision* (r =.19, p < .05) and *Write To Impress* (r =.21, p < .01). In contrast, this belief also negatively associated with the belief of *Writing Supports Thinking* (r =.16, p < .05) which proposes that writing can help writers better understand what they think. An interesting result was that *Basics (Mechanics) First* correlated positively with only one maladaptive belief which was *Transmissional* (r =.18, p < .05) while correlating positively with four adaptive beliefs, in which the correlational values ranged from .30 to .38 (p < .01).

The last belief, *Mechanical Errors Are Shameful*, was not theorized as adaptive or maladaptive. In our study this belief correlated positively and significantly with three maladaptive beliefs including *Basics (Mechanics) First* (r =.39, p < .01), *Write To Impress* (r =.21, p < .01) and *Writing Is An Innate Gift* (r =.17, p < .05). It also negatively and significantly associated with *Address Substantive Issues First* (r =.23, p < .01) which had been theorized as an adaptive belief in the literature.

3.3.2. Correlations Between the Independent Variables and Writing Performance

One of the characteristics of adaptive beliefs is that they tend to match with higher scores on writing tasks (Sanders-Reio, 2010). As seen in Table 5, the belief that writers should *Adapt To The Audience* was significantly and positively correlated with overall writing performance (r=.26, p< .01), which proposes that those who put emphasis on audience-orientation were more probable to receive higher grades on their written work. In addition to the audience adaptation, the belief, *Development Is Important,* positively and significantly correlated with the overall grade (r=.17, p< .05). This result suggested that those believing that writers should present logical and convincing arguments were more likely to score higher just like the ones believing that audience-adaptation was significant. Lastly, the belief, *Writing Is An Iterative Process*, correlated positively with the overall score (r=.17, p < .05). These results indicated that students subscribing to the beliefs held by expert writers such as audience-orientation, presenting logical and convincing arguments as well as the ones viewing writing as a process of reviewing were inclined to have higher scores on their papers. On the other hand, although some beliefs such as *Minimize Revision* (r= -.12, *NS*), *Transmissional* (r=-.85, *NS*) and *Basics Mechanics First* (r= -.02, *NS*) negatively correlated with writing performance, these correlational values were quite low and not significant.

In sum, the exploration of the correlations between the beliefs about writing and overall writing performance justifies the view that some beliefs are prone to be adaptive while others are tendentious to be maladaptive although the correlational values were not statistically significant in our findings regarding the maladaptive beliefs.

3.4. Standard Multiple Regression

Standard multiple regression analysis was conducted to decide the variance in writing performance explained by domain specific beliefs about writing totally and individually. The prediction model summarized in Table 6 (below) was statistically significant $F(14,132)=2.192$, p < .05 and accounted for approximately 18.9% of variance of writing score (R^2 = .189, Adjusted R^2 = .103). This value is fairly higher in comparison with Sanders-Reio's (2010) outcomes in which all beliefs about writing explained 11.8% of the variance (p<.001).

Table 6. *Standard multiple regression analysis results*

Model	*b*	*SE-b*	Beta	Pearson r (β)	sr^2	Structure Coefficient
Constant	41.167	14.484				
1. Transmissional	-3.331	2.016	-.150	-.085	.016	-.195
2. Writing Supports Thinking	-2.761	1.829	-.141	.016	.013	.036
3. Writing Personal and Emotional	.465	2.276	.019	.053	.000	.122
4. Writing Is an Innate Gift *	-2.843	1.403	-.176	-.135	.025	-.311
5. Basics (Mechanics) First	-2.738	2.114	-.134	-.022	.010	-.050
6. Substantive Issues First	2.630	2.213	.116	.153	.008	.352
7. Writing Is an Iterative Process	2.596	3.155	.085	.170	.004	.391
8. Minimize Revision	-2.160	2.294	-.087	-.128	.005	-.294
9. Write to Impress	.493	1.677	.028	.026	.000	.059
10. Use Plain English	.977	2.263	.042	.107	.001	.246
11. Mechanical Errors Are Shameful*	3.489	1.492	.213	.118	.033	.271
12. Development Is Important	.847	3.674	.028	.171	.000	.394
13. Clarity Is Essential	.336	2.578	.015	.136	.000	.313
14. Adapt to the Audience*	7.741	3.126	.260	.269	.037	.619

According to Table 6, writing scores were primarily predicted by the belief category of *Adapt to The Audience* (β=.26, p<.05), and to a lesser extent by two other subcategories, that were *Mechanical Errors Are Shameful* (β=.21, p<.05) and *Writing Is An Innate Gift* (β=-.17, p<.05). Also, the raw and standardized regression coefficients of the predictors together with their correlations with the writing performance, their squared semi-partial correlations and their structure coefficients were shown in the table. The belief category, *Adapt To The Audience*, received the strongest weight in the model followed by *Mechanical Errors Are Shameful* and *Writing Is An Innate Gift*. Overall, the model indicated that higher *Adapt To The Audience* and *Mechanical Errors Are Shameful* scores predicted higher writing grades while the higher *Writing Is An Innate Gift* scores predicted lower writing grades in our research sample.

4. Discussion

This current research aimed to identify preservice English teachers' domain specific beliefs about writing and examine the relations between various writing beliefs and writing performance. The research literature on writing beliefs does not go far away in time. Moreover, it is limited and related to different samples and disciplines such as reading research (e.g., White & Burning, 2005), writing pedagogy (e.g., Silva & Nichols, 1993), early childhood and/or elementary teacher education (e.g., Graham, Schwartz & MacArthur, 1993). Only a recent study of Sanders-Reio (2010) focused specifically on writing processes and practices of expert writer candidates. Following her, the current study attempted to contribute to the literature on domain specific beliefs about writing applying the BAWS to the preservice English teachers.

One characteristic of adaptive beliefs was that they tended to match with higher scores on writing tasks (Sanders-Reio, 2010). According to our findings, the belief that writers should

Adapt To The Audience was significantly and positively correlated with overall writing performance. This proposed that those who put emphasis on audience-orientation were more probable to receive higher grades on their written work. In addition to the audience adaptation, the belief that *Development Is Important* positively and significantly correlated with the overall writing grade. This result suggested that the students who believed that writers should explain their thoughts and feelings effectively were more likely to score higher as were those who believed that audience-adaptation was crucial and had a significant role in writing process. Lastly, the belief, Wri*ting Is an Iterative Process*, correlated positively with the overall score. These results indicated that the students subscribing to the beliefs held by expert writers such as audience-orientation, effective essay development as well as the ones viewing writing as a process of reviewing were inclined to have higher scores on their papers.

These findings also support Sanders-Reio's (2010) and Sanders-Reio et al.'s (2014) outcomes in which audience-adaptation, attaching importance to development and viewing writing as an iterative process were the three of the beliefs held by expert writers and contributed positively to the writing performance. On the other hand, although some beliefs such as *Minimize Revision*, *Transmissional* and *Basics (Mechanics) First* negatively correlated with writing performance in our outcomes, these correlational values were not significant and were quite low. Two of these beliefs that were *Minimize Revision* and *Transmissional* had been negatively and significantly correlated with writing performance and found maladaptive in previous studies as well (e.g. Sanders-Reio, 2010; Sanders-Reio et al., 2015; White & Bruning, 2005). This means that some beliefs about writing tend to be the negative predictors of writing performance even in different research contexts.

Nevertheless, the findings of the study did not support one of the outcomes of White and Bruning (2005). The *Transactional* belief that had originated from the research on reading and claimed that writers were supposed to be interested in their writing both emotionally and cognitively were divided into two different subscales in Sanders-Reio's (2010) newly developed BAWS. These divided subscales were *Writing Supports Thinking* and *Writing Is A Personal and Emotional Experience*. Despite effecting writing performance positively and significantly in the research of White and Bruning (2005), both beliefs did not have any significant effect on writing performance in the current study. This can mean that our students do not regard writing as a mirror on which they can watch and evaluate their own ideas and/or they do not need to immerse themselves deeply and/or develop a distinctive writing style to become a good writer. One of the underlying reasons for this finding can be preservice teachers' short-term interaction with foreign language writing. However, our results confirmed the findings of Burning et. al. (2011) in which both *Transmissional* and *Transactional* beliefs did not affect the scores on writing, and did not support the findings of Sanders-Reio et al.'s (2014) in which *Transmission* and Transaction was the significant negative predictors of writing performance.

As researchers and teacher trainers, we are pleased to find out that the mean scores of preservice teachers in the ELT department were quite high for the three adaptive beliefs. The first one, *Development Is Important*, has the highest mean score among all others which is followed by *Adapt To The Audience* and *Writing Is An Iterative Process* in the fourth and fifth order respectively (See Table 3). So, it can be said that the first-year preservice teachers tend to implement the requirements of becoming an expert writer. As it is known that majority of the participants (i.e., 67.3%, see Figure 2) have never practiced foreign language writing, the writing classes and its components at university will be the first environment in which the teacher candidates can shape their beliefs about foreign language writing. Therefore, as teacher trainers, we should benefit from these beliefs of students as much as possible.

According to the standard multiple regression, all beliefs about writing accounted for approximately 19% of variance of writing score. This value is higher in comparison with Sanders-Reio's (2010) and Sanders-Reio et al.'s (2014) outcomes in which the all beliefs about writing explained 11.8% and 8.4% of the variance in writing scores respectively. Writing score was primarily predicted by the belief category that was *Adapt To The Audience*, and to a lesser extent by two other subcategories, that were *Mechanical Errors Are Shameful* and *Writing Is An Innate Gift*. On one level, the outcome of present study supports the findings reported in Sanders-Reio (2010) and Sanders-Reio et al. (2014) since the belief category, *Adapt To The Audience*, was positive predictor of writing performance in those two studies. The findings of the study also revealed that the most adaptive variable in this research was the belief, *Adapt To The Audience*, because it was the only belief category that both positively correlated with writing grades and explained statistically significant amount of variance in the writing scores. *It* was also positively correlated with other variables related to good writing that were *Development Is Important* and *Writing Is an Iterative Process*, which strengthens the level of adaptiveness of it. The other supporting point for this adaptiveness was that this belief also positively and significantly correlated with *Mechanical Errors Are Shameful*, which is one of the adaptive beliefs according to our findings.

There is one more issue that needs to be discussed related to these quantitative data. As stated above, *Mechanical Errors Are Shameful* is one of the adaptive beliefs since this belief explained the variance in the writing scores. As proposed by Sanders-Reio (2010), finding this belief as adaptive is quite unexpected since "shame is a negative emotion" (*p.* 201). It has been argued that the preservice teachers' capacity of using writing mechanics might be an effective factor for this issue. For instance, this belief "may motivate students with moderate mechanical skills to" overuse these skills "not to be shamed", or it may cause preservice teachers having weak mechanical skills stay away from "writing and facing the shame associated with" this writing component (*p.*201). Besides, this belief might associate with higher grades of the participants due to their writing instructors' evaluation and scoring criteria. From a different point of view, regarding mechanical errors as shameful might have resulted in dealing with this issue successfully without no excuse for the preservice teachers because most of our participants did not strongly believe that *Mechanical Errors Are Shameful* (*M*=2.851) with a *t-value of* -2.265 although it significantly and positively contributed to the total writing score. Also, some writing mechanics such as punctuation rules can be believed to be a requirement for good foreign language writing, which may shed light on why the belief that *Mechanical Errors Are Shameful* explained approximately 2% of the variance in writing score. When participants were asked what they did with their draft before it was subscribed to their teachers (see Tanyer, 2014; 2017), they stated that they checked both their grammar and other writing mechanics such as typos, spelling and punctuation. All these findings may be one of the explanations of why the belief *Mechanical Errors are* Shameful had been found as an adaptive belief and contributed positively to writing scores in the present study.

As a result of the analysis of data from the survey, the belief, *Adapt To The Audience,* was found as an adaptive belief. This finding was also supported with the interview results in Tanyer & Subaşı (2016). In that study, the nineteen percent (19%) of preservice teachers believed that good foreign language writing aimed to address and impress audience. The same beliefs were also discovered to be one of good writer characteristics because, according to the interviewees, good writers should be aware of their audience (46%). In the same study, also, the belief that *Development Is Important* was also confirmed both as a good property of foreign language writing (e.g., Developing good and creative ideas, 58%) and good foreign language writer (e.g., Producer of knowledgeable and convincing essays, 27%) with the

interview results. Moreover, the other adaptive belief, *Writing Is An Iterative Process*, also associated with the features of good writing and good writers by the participants. Therefore, it can be argued that the preservice teachers have started to discover and internalize expert writing orientations, which is a desirable and promising finding.

As stated above, two other beliefs, *Mechanical Errors Are Shameful* and *Writing Is An Innate Gift,* explained writing performance individually according to our outcomes. The first one (i.e., *Mechanical Errors are Shameful)* was found adaptive, and this result was also supported with the interviews conducted in Tanyer & Subaşı (2016). 8% of the participants stated that good foreign language writing was required to be "accompanied with punctuations rules", and all those respondents (100%) were high-achieving students. Moreover, 58% of the participants expressed that complex and correct sentences must be formed with advance grammar in good foreign language writing, and 67% of that group had also received higher scores in their writing exams. This means that interview results of Tanyer & Subaşı (2016) are in line with the survey results in terms of adaptiveness degree of the belief, *Mechanical Errors Are Shameful*.

The last belief, *Writing Is An Innate Gift,* was one of the maladaptive beliefs in the literature (e.g. Palmquist & Young, 1992; Charney, Newman & Palmquist, 1995; Sanders-Reio, 2010). According to our research sample, that belief had the capacity to negatively explain writing performance. This means that in line with the previous studies, the students in our sample who tended to view writing as an innate gift were likely to score lower in their writing exams, as well. This finding has also been supported with the interview results of Tanyer & Subaşı (2016). As for writing ability, 42% of teacher candidates viewed writing both as an innate talent and a skill that can be improved with appropriate instruction, teacher feedback and student effort. However, 39% of participants characterized writing skill only as an innate gift, which means that it is almost impossible to become a good writer no matter how a novice writer puts effort to success. Lastly, only 19% of teacher candidates viewed writing as a skill that could be developed via enough training and student attempt. Interestingly, 80% of the respondents who had regarded foreign language writing as an innate gift were low-achieving students while 60% of the interviewees who had viewed it as an improvable skill were high-achieving students. Moreover, 73% of the participants who regarded foreign language writing both as an innate gift and an improvable skill (42%) had received higher scores in their exams as well. All these interview findings have confirmed the maladaptive tendency of the belief, *Writing Is An Innate Gift*, for our sample, and they might be the explanation of why this belief was found as maladaptive in our current research environment.

5. Conclusion

Social cognitive theory anticipates that beliefs about writing are associated with success and failure. Within the scope of this theory, self-efficacy in writing and its association with apprehension and success in writing has been discussed in a number of research studies; however, research on domain specific beliefs about writing and its relation to writing performance has been limited. Therefore, the main purpose of the current study was to examine first-year preservice English teachers' beliefs about writing and the relation of these beliefs to writing performance in essay writing.

As for the relationship between beliefs about writing and writing performance, the findings indicated that the beliefs, *Adapt To The Audience*, *Development Is Important* and *Writing Is An Iterative Process*, were significantly and positively correlated with overall writing performance. According to this finding, those who put emphasis on audience-orientation, those who believe that writers should explain their thoughts and feelings

effectively and those who view writing as a process of reviewing and revising were more probable to receive higher grades on their written work. On the other hand, although three beliefs, *Minimize Revision*, *Transmissional* and *Basics Mechanics First*, negatively correlated with writing performance, these correlational values were not significant and were quite low. Overall, the first three beliefs mentioned above (i.e., *Adapt To The Audience*, *Development Is Important* and *Writing Is An Iterative Process*) were prone to be adaptive associating positively with writing performance while the others (i.e., *Minimize Revision*, *Transmissional* and *Basics Mechanics First*) were tendentious to become maladaptive although statistical values regarding the maladaptive ones were not significant in our sample.

As for the domain-specific beliefs about writing predicting writing performance, the findings revealed that all beliefs about writing as a block accounted for approximately 19% of variance of writing score ($p<.05$). Writing performance was primarily predicted by the belief category of *Adapt to The Audience*, and to a lesser extent by two other subcategories that were *Mechanical Errors Are Shameful* and *Writing Is An Innate Gift*. While two of these beliefs (i.e., *Adapt to The Audience* and *Mechanical Errors Are Shameful*) accounted for approximately 3% and 2% of variance in total writing scores respectively, the belief, *Writing Is An Innate Gift*, explained 2% of variance in lower writing scores. Therefore, the findings indicated that higher *Adapt to The Audience* and *Mechanical Errors Are Shameful* belief scores predicted higher overall writing grades while the higher scores of the belief, *Writing Is An Innate Gift*, predicted the lower writing scores in our research environment.

5.1. Pedagogical Implications

The present study highlights the existence of preservice English teachers' domain specific beliefs about writing, and it concludes that domain-specific beliefs about writing are one of the influential factors of writing discipline and writing performance. As a training assistant, I could observe that "addressing course participants' beliefs about writing" would provide another road to "writing competence and to more positive and productive attitudes" toward this discipline (Sanders-Reio, 2010, p. 219). The results of this study indicated that all domain specific beliefs about writing explained 19% variance in writing grades. For this reason, in addition to personal classroom observations, the scholarly findings attribute value to writing beliefs while training preservice English teachers on how to write. That is why the probable implications that would be stated based on these findings can be essential for teacher educators.

Firstly, writing instructors can donate their undergraduate writers with particular strategies such as how to predict and respond to the questions of target audience and adapt their message to them because there are some writing components that need to be adapted according to the audience such as the format taken, the information included, and the language and graphics used. Furthermore, first-year novice writers may be trained for effective peer or individual revision and editing techniques that they can apply before submitting their drafts. As stated in the results, the beliefs associated with higher writing grades were mostly related to "expert writing guidelines and practices" (Sanders-Reio, 2010, *p.* 212). Moreover, one of the beliefs related to expert writing, *Writing Is An Iterative Process*, which advocates writing as a process of editing and revising, was discovered to be associated with high writing grades in our study. Based on this finding, it can be claimed that writing instructors should both observe, research and identify expert writers' practices both in academic and authentic contexts, and furnish their learners with these expert writer qualifications. It should be remembered that as confirmed by the study of Tanyer & Subaşı (2016; i.e., factors and people effecting beliefs about good writing), school environment and

its components (e.g., teachers, curriculum, feedback etc.) are the potential factors shaping beliefs about good writing.

All in all, the findings imply that beliefs about writing can be taken as a crucial leverage point for teaching writing. For this reason, writing instruction can be modified to "emphasize the mindsets and approaches associated with adaptive beliefs and minimize those related to maladaptive and ineffective beliefs." (Sanders-Reio et al., 2014; p. 10). One way to achieve this can be giving homework or doing assignments which will inspire learners to focus on their readers' characteristics and interests. Writing instruction can also help learners to present logical and convincing arguments because the belief, *Development Is Important***,** has been labelled adaptive in nature by the participants. They can be presented with strategies to explain their opinions and findings effectively, to produce and convey qualified ideas, and to become logical and convincing of their own views.

5.2. Limitations

There are some points that need to be characterized as limited in the current study. Firstly, the Beliefs about Writing Survey adopted had originally been developed for the first-year preservice teachers in a second language environment although it was applied to the preservice English teachers in a foreign language context in Turkey. However, beliefs about writing can be specific to culture, writing instruction provided and learning context. Therefore, students' beliefs can change based on these factors, or some other beliefs about writing can exist. To overcome these limitations, it is possible to replicate the study with different populations, or to discover other possible beliefs about writing and causal relations of them. Moreover, despite being persistent with some earlier research studies (e.g., Sanders-Reio, 2010; Sanders-Reio et al., 2014; Shell, Murphy, & Bruning, 1989), the methodology used to decide students' writing performance has not reflected the possible variance in the long-term performance because only one grade received on an in-class exam paper was included in the study.

5.3. Suggestions for Further Research

The findings of this research may call the need for more examination of the variables by means of larger and more representative samples in Turkey. Therefore, some beliefs can be found as more or less adaptive or maladaptive in different learning environments of Turkish universities, or for different writing tasks. Moreover, possible effect of instructional and assessment procedures and writing expertise on beliefs about writing can be investigated via longitudinal studies. Finally, it has been theorized that "there is also a cognitive link mediated by the writer's choice of strategies or a student's openness to instruction in specific strategies" (Sanders-Reio, 2014; p. 10). For instance, learners may pay attention to instruction on how to revise only if they believe that successful writers also revise. Therefore, the possible relationship between beliefs about writing and readiness to instruction, and the effect of this relationship on writing performance can be investigated as a follow-up research study.

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