Chapter Five:
Discussion & Conclusion
5.1. Overview

The purpose of this chapter is to discuss and present the conclusions of quantitative findings of this study in addressing the research questions. In this section, the two research questions were answered and discussed based on data obtained through tests which were administered to the two student groups. As shown in the previous chapter, the researcher treated the data by making contingency tables and t-test in order to analyze the relationship between the variables and the degree of significance of these relations. In this chapter, the related discussion, conclusion and implications will be presented in the order of the research questions. Moreover, some explanations and generalizations arisen will be suggested. Finally, the suggestion for further researches will be recommended.

5.2. Study one: Identification of the discourse markers frequencies in different sections of medical research articles

5.2.1. Research Question one

This part of the present study set out to answer the first research question dealing with whether there is any difference in using the discourse markers frequencies in the different sections of research articles. With respect to this question, having examined a representative corpus of ESM texts, extracting the frequencies of discourse markers and using percentage test, it was observed that there are some discourse markers which are most used in the different sections compared with other discourse markers. Judging from the data presented in the table 4.2, in the preceding chapter, it is revealed that the discussion section benefits from
all kind of discourse markers compared with the other sections. It can be claimed that it is because of the inclusion of different issues such as discussion about the findings, purposes of the study, justification and judgment about the findings and also comparing the findings with previous related studies in this section. But considering the purpose of this part of the study, the researcher was going to get the high frequency discourse markers in the five sections of the medical articles. Using the results of analysis, displayed in table 4.3 and 4.4, it is found out that in all sections, except in one, the discourse marker of addition is the most frequent. Needless to say that the number of types of this discourse marker is high compared with other discourse markers and plays a great role in cohesion of the text especially in longer and combined sentences. These tables demonstrate that in the abstract section, the second and third most used discourse markers are the purpose and adversative respectively; it can be judged that as this section is a summary of the article, the purpose of any article is to be mentioned in this section and also the adversative discourse markers are most often used to express the comparison and expectation of the researchers. In the introduction section also, the purpose and adversative discourse markers are the most used ones. It seems that it is because of the mention of the statement of the problems and the significance of the research in this section. The section on methodology benefits from the purpose and time discourse markers more than the other sections. It may be concluded that it happens since the methods to achieve the purposes of the research and also the time order of the research procedure are mentioned in this section. In the discussion section, discourse markers of purpose and adversative are applied more than the others. It seems that it occurs because the causes and effects, reasons, purposes and findings of the research are discussed in this section. Finally,
the most used frequencies of discourse markers of purpose and comparison are observed in the conclusion section. It is presupposed that the most use of these types of discourse markers tends to support the idea that the findings of the research are discussed in comparison with findings of other researches in this section.

The results obtained from the above mentioned tables in the previous chapter indicated that there is a significant difference in discourse markers frequencies. Therefore, the first null hypothesis stating there isn’t any difference between discourse markers used in different sections of medical research articles in terms of their frequencies was rejected. This statement operates on the assumption that as any genre has its own specific text type, a typical structure, specific language, purpose and audience; it can be different from other genres in terms of application and frequency of some elements; it can be also applied in different subgenres of a given genre. Recent researches have shown that frequencies of certain linguistic and extra-textual features vary according to the communicative function which is expressed in any genre. It can be claimed that conscious knowledge of genre structure plays an important role in effective use of English in academic settings. Therefore, it would be beneficial to present the features of a given genre to the learners to achieve the assumed coherence of the text. In order to reduce the complexity of the text and to help the students facilitate reading comprehension, teachers need to present the high frequency elements in the texts they are using. The frequency study is considered one of the important studies of scientific texts. In frequency studies, it is the significantly frequent occurrence of certain speech elements, forms or structures that characterizes scientific writing and spoken discourse. The general conclusion from these studies is that science is not a homogeneous
linguistic entity, that writer’s purpose and audience rather than topic are determinants of linguistic form and that a variety of English language may be characterized by a configuration of features all of which are found elsewhere (Grabe, 1987). Accordingly, in the register analysis of academic texts, the frequencies of verb tense, vocabulary and syntactic features are conducted for different subjects in order to provide an effective base for reading comprehension. For instance, in the Barber’s (1962) research of frequency analysis which stimulated a number of other studies on the language of science, the findings confirmed the common view that the passive voice was relatively frequent in this kind of writing and simple present tense was the predominant tense. He suggested that his result could be used as an argument for focusing on some frequent tenses in English classes for science subjects.

5.3. Study two: the effect of explicit treatment of discourse markers application & function on learner’s reading comprehension performance

5.3.1. Research Question two

Judging from the data and the results obtained from the independent t-test performed on the total scores of the two groups in the pre instruction ESP test and TOEFL test, as tables 4.5 and 4.7 displayed, it is clear that no significant differences between the groups of the study in these tests. So, the researcher interpreted the groups of study as being homogenous in terms of their knowledge in ESP and language proficiency abilities. As mentioned before, to determine the scores of the participants on the ESP test after the treatment, the participants of both groups performed the second ESP test. Taking into account the scores of participants in control and experimental groups from the pre-and post-tests and the comparison
between the t-value and t-critical related to the post ESP test revealed the
difference between them in the post t-test. The findings showed that there
was a significant increase in reading performance of the experimental
group. These participants who received the treatment, did better in the
post test than the other group. Since the scores of the participants of the
study in the pre-instruction ESP test were not significantly different and
the difference of the scores appeared after the treatment, this offers
convincing evidence that the treatment is an independent variable which
affects the knowledge and abilities of the students. In other words, while
both groups in this study were supposed to possess equal knowledge of the
language proficiency required for the comprehension of the text, the group
provided with the teaching application and function of discourse markers
were able to demonstrate high performance in their reading
comprehension tasks. This leads the researcher to consider that explicit
discourse markers function instruction is a significant determinant in
improving the performance of the participants in the post test; this stresses
the significance of providing the learners with some instructions to enable
them to fully read and comprehend ESM text. Since, through this explicit
instruction the students are able to recognize the exact meaning and
function of the discourse markers as they should be interpreted in the text;
for instance, in the following example including discourse markers of,
purpose, contrast and addition:

1- The three hormones are produced by the thyroid, the largest of the
endocrine gland, called tri-iodothyronine, thyroxine and calcitonin.
The function of the first and second hormones is to regulate
metabolism while the third one to lower serum calcium levels.

2- All four horizontal recti were surgical addressed with combinations
of resections and recessions in standard fashion to correct
horizontal strabismus alone or combinations of an AHP and strabismus.

3- The other reason for delayed diagnosis is that the virus of HIV entered the nervous system shortly following infection. Moreover, HIV could involve the brain before there were any physical manifestations of disease.
	he learners should be aware that in the example one, the function of while is to indicate contrast meaning of previous sentence with the following sentence. This discourse marker can have ‘during and simultaneously’ meaning in the other discourse context. Also, confronting the discourse marker of to correct, in example two, the students should learn that its function in this discourse is to show the purpose of the occurrence of the second sentence. In the example three, they are to be informed that the discourse markers such as moreover, in addition and furthermore are used to add information to what has been said previously but sometimes the usage of these words is much more elegant than just making a list or using the cohesive device ‘and’. Hence, getting knowledge of discourse markers function helps the reader understand the text as well as the writer’s perspective. It is worth noting that core meaning of the discourse markers poses many problems, since each element may appear in such a multiplicity of functional context and due to their various meaning, it is very difficult to assign a core meaning. So, it is in agreement of Schiffrin’s (2001) explanation that discourse markers tell us not only about the linguistic properties (semantic and pragmatic meanings and functions) and the organization of social interactions, but also about the cognitive, expressive, social and textual competence of those who use them.
Apart from the instruction about the function of discourse markers for the experimental group in the treatment course, effort has been done to instruct them the application of discourse markers in the text. One way to explicitly teach the discourse markers, as applied in this study, is providing a list and having students underline them in a text as an identification activity. After students mastered this type of activity, the teacher can ask students to consider the application activities to use discourse markers. The types of application activities can be a: fill in the blank activities; the teacher erases the discourse markers from the texts and students fill the blank with appropriate discourse markers. In these activities, for giving guidance to students, the teacher can use multiple choice answers. b: location activities, without any blanks. Teacher erases all the discourse markers from a text but doesn’t leave any blanks. So students apply discourse markers, and must locate place in the text (when the students are proficient) (Farrell & Thomas, 2009).

As the results revealed in this study, the more one learns the discourse markers function, the more easily one could comprehend ESP texts or materials in their own field of study. These results provide positive answer to the second research question of this study and therefore reject the second null hypothesis posed in the chapter one stating that the explicit treatment of discourse markers function in the medical discourse doesn’t have any impact on the reading comprehension of learners of ESM and there isn’t any difference in performance between those who are aware of discourse markers that recur in specific genre and those who are not aware of discourse markers. To fulfill the learner needs in ESP program, the content of the course should be specified. To do this purpose, two approaches are employed: text analysis and discourse analysis. These two approaches put forth two traditions of teaching ESP: structural and
functional / communicative. The former approach is a command of usage; according to text analysis the requirements of language specific purpose are the linguistic core, the special register and a list of the most frequently used grammatical structures. It has some inadequacies because this approach doesn’t fulfill the major aim of language teaching and learning, i.e. communication. That’s why a good replacement approach for the structural one in teaching ESP is the communicative/ functional approach. The ultimate goal of this approach is to provide the students with communicative ability in dealing with scientific discourse. Scientific discourse includes not only linguistic items such as special structures, but also communicative functions that the scientists try to send to the receivers. Therefore, this approach is preferred to be applied practically & communicatively more than the structural knowledge in university. In this regard the functioning of linguistic items in transactions and interactions should also be addressed.

Although, as mentioned earlier, there is no precise experimental research finding dealing with the coherent role of discourse markers on the academic reading comprehension, some researches have been conducted to indicate the discoursal function and show the facilitator role of some discourse markers in learning English language. In this point of view, the findings of this study are compatible with some of the empirical studies conducted earlier. For example, Fukazawa (1994) argues that the comprehension process of foreign language is facilitated if this learning is favored by the use of linking word, especially discourse markers. His study indicates that the strategy of using these elements is used in simplifying the text for fostering reading comprehension process and language learning. That is why the teacher should consider the function of these elements in simplifying the texts. Indeed, concerning the importance
of the use of discourse markers in the listening process, some studies have been carried out by Tyler (1992), and Williams (1992, as cited in Flowerdew and Tauroza, 1995). These studies indicate that a reduced use of markers makes the speech of ESL speakers appear less comprehensible to L1 listeners. Therefore, it is evident that it would also affect the L2 listeners adversely. Spoken text with few discourse markers provides less assistance to listeners in dividing the units of information in the text.

What was revealed in this study about the impact of the discoursal function of discourse markers in ESP program is in agreement with the findings of Castro (2009) study which provides an account for the main functions of discourse markers in classroom interaction. A qualitative analysis reveals that discourse markers fulfill a number of textual and interpersonal functions which may contribute greatly to the coherent and pragmatic flow of the discourse generated in EFL classroom interaction. In addition concerning the positive effect of the explicit instruction also was in the line with the findings of the study conducted by Doughty (1991) who agrees that instruction does make a difference and promotes acquisition. This result also concurs with the view suggested by Krashen, Seliger, Hartnett (1974), as reported by Long (1983). They have looked at the effect of amount of instruction on populations with the same amount of exposure.

The results presented in this study offer convincing evidence that instruction makes a difference and that formal instruction of discourse markers facilitates and promotes acquisition of reading comprehension of medical texts. It was found that participants who received formal instruction out performed those who did not. Since an adequate reading is a phase of foreign language acquisition and also one of the major problems of any practical ESP program, this will improve the atmosphere
of the ESP classrooms, in which the teacher must daily function and help create more successful student performance when they leave their classrooms.

5.4. Conclusion

Recent research into foreign language reading and discourse analysis has empirically proven that text is not a series of isolated and independent units. Reading a text is efficient if the structure of longer units such as paragraphs or discourse within a text is understood. As some extraordinary long sentences hamper readability and comprehension, the students should prepare themselves not only to pay attention to the significance of discourse, but also to recognize the various cohesive devices used to create textual coherence. Discourse markers are elements, among these devices, making coherence and connecting ideas in a text which signals the information structure of the discourse. Simple recognition of the inter-or intra-sentential connectors will help learners understand the development of ideas and propositions in the passage. Among the aspects of language which has been practically ignored by genre analysis is the contextual meaning of the discourse markers and their function in grasping the coherence of the text. Most studies on discourse markers have focused on their role as a facilitator in reading comprehension, but in this study, we have sought to examine their frequencies, application and discursive function in one genre, that is, the medical research article. There is a set of discourse markers which tends to occur with high frequency across the different sections of medical research articles. Since the learners interact more these elements in the text, focusing on these frequent elements in academic reading course
would be beneficial for ESP students; it paves the way of interaction between the text and the reader in interpretation of message.

Therefore, the learners need to recover the function of discourse markers as the coherence devices to render the meaning of the text in reading task. Regarding the importance of the above mentioned issues, this type of study does not deserve to be ignored in ESP researches, especially in the analysis of a given genre. For, the present study aimed at finding out the most frequent used discourse markers in different section of medical texts and examining the impact of explicit treatment of application and function of discourse markers as coherence devices and facilitators in reading comprehension of medical discourse. Certainly, there can be no better way of achieving this aim than to examine the medical research article genre critically in terms of these indices. The more the ESP / EAP practitioner can do this, the better s/he will be at teaching those areas of academic discourse in which her/his students are engaged.

The results of the present study strongly support the existence of the difference in the frequencies of discourse markers and the critical interaction of knowledge of these elements and reading comprehension of ESM text, which are shown through statistical analyses in tables 4.2-4.10. This study stresses the significance of providing the learners with some instructions to enable them to fully read and comprehend ESM text. As the results obtained from tables 4.3.1 & 4.3.2 indicate the significant difference in the frequencies of discourse markers in different sections of medical researches, therefore, the first null hypothesis posed in the chapter one was rejected. This finding follows the common agreement that each specialist or professional text embodies specific and distinctive linguistic and discourse features (Swales, 1985). For instance, medicine language
may prove different from literature in terms of kind and frequency of certain features. Consequently, to comprehend the specialist texts, efficient readers should gain a good grasp of these features so that they may decipher the codes more economically.

Therefore, regarding the result of t-test, shown in table 4.10 that t-observed value exceeds the t-critical value of F at 66 degrees of freedom, provides the researcher with wealth of data towards rejection of the second null hypothesis saying that there should be a significant difference between the performances of the two groups in reading comprehension of ESP texts. It should be mentioned that the only difference in the treatment of the two groups was that the experimental group was made aware of the role of discourse markers and their function in academic text reading during the program. It appeared that the intervention program had a positive and statistically meaningful effect on the test result of the experimental subjects’ reading ESP comprehension and overall language proficiency. In other words, English course with the mentioned context not only increased the subjects’ level of language proficiency but also enabled the learners to cope with their materials in their own fields of study. The improvement was statistically significant enough for the researcher to make a claim that there is a significant and meaningful relationship between functional knowledge of discourse markers and the ability of reading ESM materials of the learners. It can, thus, be inferred that natural growth and exposure to the academic reading situation need to be supported by awareness-raising program such as the one designed for this study.

Concerning the importance of the discourse markers’ role in comprehension process, the result of this study is similar to Talita’s study (1990) which shows that if students are aware of the role of discourse
markers in listening comprehension process, they should be able to extract factual information from the lecture more effectively and may improve the quality of their listening comprehension in the academic situation. Her newly acquired awareness of the role that discourse markers play in structuring written text might have enabled the students to pay closer attention to what was relevant in the text and thus derive more factual information from the lecture. It thus seems imperative that students should be supported by means of intervention course and that the knowledge of the role of discourse markers in structuring oral text should not be underestimated. Therefore, without sufficient discourse markers in a piece of writing, a text would not seem logically constructed and the connections between the different sentences and paragraphs would not be obvious. The consideration of the above mentioned issues forces us to apply an approach in reading teaching which focuses on the importance of the cohesive devices in the coherence of a text in order to weave the net of interaction and holds the communicative force of the interaction together.

It is clear that an important subcategory of communication competence is discourse competence. This is the ability to comprehend the contextual relationship at discourse level; needless to say it is an essential part of comprehension. Discourse analysis tries to investigate the structure of utterances and text, i.e., cohesion and also the meaning relationship that resides in the mind of interlocutors (Halliday & Hasan, 1983). Concerning the role of cohesion in sentences, Halliday (1990) states that the cohesion devices are used between sentences to stand out the sentences more clearly because they are the only source of texture and in description of a text it is the inter-sentence cohesion that is significant. A text should be seen as a semantic unit or the unity of meaning in context, “a texture that expresses the fact that it relates as a whole to the environment in which it
is placed” (Halliday & Hassan, 1983, p. 293). As coherence is of central importance to discourse analysis, the question of how different dimensions of discourse are integrated through a model of discourse coherence is raised in the text analysis studies. Shiffrin (1987) argued that discourse structure, meaning, and action are jointly integrated by recipients and senders in their efforts to find coherence. The contextual factors, the functional role of cohesive devices and the real intentions for interaction between the sender and the recipient are some aspects that establish the coherence of the text.

There is indeed much empirical support for the position that connectives and other linguistic coherence markers play a facilitating role during the reading process (Gaddy, Vanden Broek & Sung, 2001). The result of the study of Degand (2002) indicates that the use of suitable relational markers making coherence relations between text segments explicit has been shown to speed up the on-line process of text processing. This research and the other researches replicated the finding of Degand et al. (1999) showing that the relational markers lead the reader to provide better answers on comprehension questions after they have read the text. In another study Moreno (1990), confirming hypothesis of Sinclair (1993) about written text, argued that the cohesive resources dealing with whole sentences, larger fragments, or certain simple clauses linked practically can be considered as textual in nature, in other words, in this case they contribute to the reader’s perception of coherence. She adds that, according to most models of cohesion in English, cohesive devices play an essential role in perceiving text as meaningful. These models account for the explicit linguistic devices used in texts to indicate relations between sentences (Halliday & Hasan, 1976). However, the exact role of the different kinds of cohesive devices in the perception of text relevance
and coherence remains unclear. Her study claims that for a better understanding of the role of cohesive ties in the perception of text relevance, and coherence, analyses should focus on all textual mechanisms. In sum, studies of cohesion indicate that the meaning conveyed by a text is meaning which is interpreted by sender and recipients based on their inferences about the propositional connections underlying what is said. Cohesive devices do not themselves create meaning; they are clues used by them to find the meaning which underlies surface utterances and serve as devices to better comprehending of the text.

It can be claimed that among other things, the knowledge of linguistic, semantic and pragmatic function of some cohesive devices in reading skill is needed for the learners to interact properly with technical texts. The findings emphasize that much attention is required from the teacher and learner to the semantic value of discourse markers in order to facilitate the reading comprehension process.

In this line, the present study demonstrated that the performance on reading comprehension of the ESM text was facilitated for the students who were provided with explicit instruction of some cohesive devices which play the role of coherence devices. And as the data illustrated in the previous chapter, the effect of this interventional program was significant. Therefore, the results of the study lead the researcher to reject the null hypotheses put forward in this study and provide some answers for the research questions, there seem to be some important contribution in this study to English language education in ESP program at university level. In teaching academic reading, discourse markers should be taught at word or phrase level as well as at the discoursal level. This study helps the foreign language teachers expand their focus in this concern.
Therefore, it can be concluded if it is accepted that discourse markers have a positive influence on the learner’s comprehension, we should pay due attention to the teaching of those discourse signals in the teaching of reading. Unfortunately, in most cases these elements are treated as parts of speech like adverbs or conjunctions; students seldom receive adequate explanation as to the functions of discourse markers. Rules of use have to be taught with as much care as rules of grammar. What is evident from previous research as well as the present one is that we should shift our attention away from an exclusive concentration on grammatical competence to communicative competence. Nevertheless, the findings of this study indicate that discourse markers as a topic of research in ESP/EAP reading comprehension, teaching, and material design deserves more attention.

5.5. Pedagogical Implications

The current findings offer implications which may provide insights for educational research, theory and practice in EFL, in general and ESP situation in particular, and classroom interaction syllabus design for improvement of reading. These findings may have implications for theories of ESP syllabus with and without instruction of some elements focusing their function in the academic texts. The current study was conducted to shed some light on some difficulties encountered in reading academic texts and to overcome these difficulties. It aimed at considering the issues of teaching and learning English at university level, finding the ways of improving the quality of learning in ESP program, making an attempt to tackle the problems in this program. Traditionally, curricula have tended to concentrate on imparting knowledge of linguistic aspects
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of language in reading focusing on the form of the target language by presenting pieces in carefully graded steps. Furthermore, they have neglected other aspects of language like semantics and pragmatics. In this line, teaching reading comprehension has been dominated by merely providing instruction to read and answer questions over what was read. Therefore, the strategies need to be modified to become consistent with the learner’s needs and program requirement in the sense of reading teaching in ESP program at university level.

In the medical field, reading ability and providing access to the literature are seen widely as priorities for medicine students as well as medical professionals, not only for passing the ESP course in university and research purposes, but also for clinical practices. About the medical profession Berry (1981) states:

If we do not retrace the steps of evolution, the most important entry requirement for further medical students will have to be proficiency in speed reading (p. 402).

Adding ‘speed reading in English’ would be safe because nowadays English is the current scientific lingua franca and the world’s major language of scholarship.

Thus, in accordance with some new reading instruction models for, this study attempted to benefit from applying genre and discourse analysis of language to teaching ESM texts for exploring its implication for academic reading material design to raise ESP learners’ discourse awareness and provide them the contextual information. In a piece of expositing prose, Eskey (1986) identifies two categories of knowledge that must interact if there is to be full or at least native like comprehension of written texts; knowledge of form and knowledge of substance. Formal knowledge includes recognition of graphic, lexical, syntactic, semantic
and rhetorical patterns of a language; knowledge of substance encompasses cultural, pragmatic and subject specific information. The purpose of the present study was to contribute to the structural, semantics and pragmatics knowledge of language for successful academic reading and to the reader’s ability to cope with reading materials, in general and ESM materials in particular in order to create meaning through interaction with such texts. Thus, this may have implications for the teaching of ESM reading in a foreign language. It is worth mentioning that the implications need to be seen as suggestive in nature since the other factors that affect reading performance of the learners were not controlled and considered in this study.

The results of this study are of practical and pedagogical use because they show that the frequency study can be applied in the genre analysis in academic reading and also the explicit instruction of the discourse markers function role in the coherence of the texts produces more beneficial effect on the learners reading comprehension of ESM. Then, if language is the cause of difficulty in reading of the foreign language, one way to remove these inconveniences is to rely on the linguistic, semantic and pragmatic aspects of language as an appropriate reading strategy to foster the comprehension process. The empirical evidence gained through this experiment supports the view that the instruction of functional role of some cohesive devices which cause most difficulty in reading, should be provided in ESP programs. It supports the ideas that in addition to recognize the text type as a beneficial approach in academic reading comprehension, successful readers use the writer’s signaling devices to help them in interpretation of the message and concepts. If the teachers teach their students to become more aware of functional role of such devices, the students can better understand the text
and as a result, may be better able to use these discourse markers in their own writing. Therefore, an awareness of the generic structure of a text in reading will have positive effect on their future writing. This study also demonstrates how this analytical procedure can be applied to the material development for academic writing which is, in turn, a challenging problem for instructors and researchers to write their articles to be presented and published. The findings can be considered as a beneficial teaching source in short courses and workshops for academic writing purposes in educational environments. Furthermore, the findings can be included in general courses as well.

Our belief lies in the fact that the result of this study provides a clear representation of the information about the coherence role of some cohesive devices in reading academic texts. We, thus, hope that our research provides a solid block of information about certain structure of medical research article genre and subgenre as well as to develop our knowledge of textualizations associated in reading a given genre. It can be claimed that to comprehend the information from a written scientific discourse necessitates to have common linguistic code with the writer, to be familiar with socio linguistic conventions used in the text, to comprehend the writer’s communicative intentions and concepts employed to convey the intended message and to realize the situation in which these conventions are followed.

A significant implication of this study is related to reading classes in ESM courses to consider appropriate ways of dealing with the coherence of the text. In other words, as the meaning of the message is carried from the author to the reader through a coherent text, a lack of sufficient knowledge of the function of cohesive devices for making the coherence between the fragments of the text may be one of the main
sources of reading difficulty in academic reading comprehension. One of the challenges of the readers is to work out the writer’s intended meaning in the text for which they took different strategies depending on the nature of the matter and situation. It seems students are to have a whole picture of a text. In effect, in addition to linguistic knowledge, the reader’s functional knowledge of cohesive devices and also background knowledge of the text organization can be beneficial to understanding the overall message of a text. Researches demonstrated that the teacher needs to have the students read a text using this knowledge to discover and analyze the author’s intention. The results of this study may be applied directly to language teaching and learning. It may be of benefit to both instructors and students, and may help instructors to overcome the inadequacies of educational programs. The finding of this study would be useful for the teachers of ESM in that they know what teaching points they must concentrate on and they can orient themselves to a new ESP program and environment. The ESP practitioners need training in ways of teaching language focusing on discourse and genre analysis and training in designing language courses. Furthermore, this study has a direct implication not only for those who are taking these courses, but also for those who arrange such courses as well as those who prepare and compile the required materials.

This study has significant implications for those who are involved in the educational administration, program design and classroom teaching such as methodologist, teachers, teacher trainers, and syllabus designers in curriculum planning and developing materials. The strategy of training the function role of discourse markers can be easily implemented into language syllabuses. The result can be a good source of knowledge for syllabus designers because of the significance and the priorities of
rendering the coherence between the fragments in the text. Also, it may contribute to plan a desirable course of teaching English reading comprehension. Since, having taken the beneficial results of identifying the most frequent discourse markers and treatment of their function in comprehending written medical discourse, course designers determine the prerequisites of an ESM course. As the evidence from the current research can provide precious information to guide teaching reading practices, the results might help the ESM textbook writers in following valid procedures, and it would affect not only the texts, but also the types of exercises assigned for every text.

The conclusion of the current study can be drawn the population from which the sample subjects were selected. It can be claimed that the medicine students must reach a certain level of discourse analysis in foreign language competence before they can effectively read ESM texts.

5.6. Suggestions for Further Researches

It is generally recognized that most scientific and technical writing is published in English. This means that students and professionals in scientific and technological fields who are not native speakers and fluent users of English need to be able to read relevant subject matter in English (Lynch & Hudson, 1991). That is why in the recent decades, many researches have been carried in ESP field to shed a light to the academic reading process. As was seen in this study, it is still the case that more research is needed in the area of identification and instruction of discourse markers function in making coherence of the text to confirm the results of these studies to be generalized to the populations and situations and to follow up on issues they arise.
This section brings up some suggestions for further researches. This study was primarily designed to find out whether there is any difference between discourse markers in terms of their use in different sections of the articles and also whether explicit discourse markers function instruction has any effect on the reading comprehension of ESP learners. The study reported is not a start in examining the important issue of discourse markers learning but it is further evidence to the previous findings in the field of explicit discourse markers teaching focusing on their function as coherence devices to facilitate the reading comprehension of the ESP learners. The present findings expand the existing research in the area of discourse and genre analysis in learning specific English texts in universities. However, to establish the results of this study into literature more follow up studies are needed. According to Seliger and Shohamy (1989), research is cyclical; it is a recurring sequence of events. The nature of research is such that the more answers are obtained, the more questions arise. Replication of research is, therefore, a way of conducting research for the purpose of verifying and confirming research results. Here, too, the cycle does not end, but rather the results of this study lead to further similar researches with a set of different focus. Here is a list of domain that call for further research and investigation:
- the identification of the most frequent discourse markers in other branches of ESP written texts and the impact of teaching them on students’ reading comprehension performance
- a different genre of ESM discourse can be taken under research
- other measures of discourse analysis can be employed to analyze the data
- individual differences can be added to the variables of the study.
- entering semantics and pragmatics view in the explicit instruction of syntactic features in another discourse and genre levels
- other cohesive devices building coherence in the text can be studied.
- the frequency of other elements like the vocabulary or verb tenses can be taking into consideration in this genre.
- the study can be replicated in different learning situation and contexts where language learners use English as a second language
- similar to this study can be taken under research to see the impact of discourse marker function in another language skill like writing
- a more longitudinal study can be conducted on the impact of explicit discourse markers function instruction
- a different level of proficiency other than intermediate level students of ESP program in university which was the focus of this study, can be taken into consideration
- more than one level of proficiency can be taken into consideration, that is, gathering the same data out of classes having different levels of proficiency, however, it should be noted that the students in this study were judged to be at intermediate level of language proficiency based on the TOEFL test result. A large-scale study with more participants and more levels of language proficiency would yield more reliable statistics.
- It would be valuable to set up more articulated experiments that isolate these different forms of discourse markers in order to determine their effect on reading comprehension of different types of texts for different levels of language proficiency and in different disciplines.
- additionally, only multiple choice test of reading comprehension was used as a dependent variable in this study. Other global measures such as
Cloze test, or summary tasks may add to the validity of the study and provide us with more insights. Thus, it is believed that any research and study helping the over hundred researcher to cope with the ever mounting list of ‘required’ academic reading and to remove the difficulties raised for the ESP learners would definitely be welcome.

5.9. Summary of the study

As many linguists believe scientific discourse consisting of the verbal and non verbal realization of the communicative system of science is a universal mode of communicating, or universal rhetoric, which is realized by academic text in different languages by process of textualization. The focus of research in this study has been to deal with academic reading comprehension problem of ESP learners who suffer from some communicative weakness. They are confronted this dilemma in handling long and complicated sentences to establish coherence between the segments of the academic text. Coherence of the text can be implicit and explicit; when it is explicit, some cohesive devices like discourse markers are applied to make sense of the text. English for Specific Purposes (ESP) context providing readers with knowledge about the application and function of these cohesive devices making coherence in the text may enhance comprehension of English for the Students of Medicine (ESM) texts. Therefore it is hypothesized that teaching these elements is a prerequisite in ESP classes and that improvement of our strategy in reading of academic text should be attempted to overcome this need. Accordingly, the objectives of this study revolve around helping ESP learners to develop their competency in academic reading texts. As the medical research articles as a genre occupy a pivotal position in the
network of scientific communication and in the negotiation of the medicine community members, this study attempted to analyze the discourse markers application in different sections of this genre, prepare a syllabus design about the function of these elements as one of coherence factors and then instruct this syllabus to ESM learners with the goal of promoting their reading strategies in medical texts. In study of genres of medicine, it reveals that they are different because each serves a unique recognizable purpose, each has a typical conventionalized structure and each has a special language characterizing that genre. To grasp the intention of the medical authors in one text, it is needed to know the medical genre which dominates in that text. This fact can be explained by the communicative functions and the corresponding rhetorical moves in each sub genre. Exploring these concepts will certainly help to devise better instructions for different learning situations. However, this study is limited to examining the impact of knowledge of discourse markers function on the reading processes of ESP learners. Based on the objectives of this study, two null hypotheses were proposed in the following interrelated statements:

- There is not any difference between discourse markers used in the different sections of medical research articles in terms of their frequency.
- The explicit treatment of discourse markers function in the medical discourse doesn’t have any impact on the reading comprehension of learners of ESM. And there isn’t any difference in performance between those who are aware of discourse markers that recur in specific genre and those who are not aware of discourse markers.

With respect to the first null hypothesis, forty research articles in the different specialized fields of medicine such as ophthalmology, heart diseases, brain diseases, gynecology and internal diseases were randomly
selected from the prestigious medical journals and then the frequencies of discourse markers in the different sections were extracted and classified; they fell into fourteen categories. Having examined these frequencies and using percentage test, it was observed that there are some discourse markers which are most used in the different sections compared with other discourse markers. It seems it is due to the rhetorical structure and communicative purpose of the different sections of this genre. Judging from the data, it can be claimed that conscious knowledge of genre structure plays an important role in effective use of English in academic settings. Therefore, it would be beneficial to present the features of a given genre to the learners to achieve the assumed coherence of the text. In order to reduce the complexity of the text and to help the students facilitate reading comprehension, teachers need to present the high frequency elements in the texts they are using. Therefore, the first null hypothesis stating there isn’t any difference between discourse markers used in different sections of medical research articles in terms of their frequencies was rejected. Regarding the second null hypothesis dealing with empirically determining the role of instruction of the discourse markers function in comprehending medical research article genre, the patterns of used discourse markers were instructed to the medicine students in treatment course to examine if this treatment enhances their reading comprehension of medical texts. To do this end, two student groups, each consisting of 34 students and majoring in medicine, were chosen to take part in the instructional procedures for this study. They attended English for specific purposes course at the Medicine faculty of Tabriz University of Medical Sciences, Iran. They were divided into two groups as an experimental and a control group. The former was given explicit instruction of the functional discoursal of discourse markers in the
medical texts plus the conventional ESP reading instruction, more specifically, they were taught their textbooks and medical texts focusing on discourse markers function, while the latter was just exposed to conventional ESP reading instruction. But prior to the treatment, in order to ensure the homogeneity of the experimental and control groups, a GEP and ESP tests as the pre-tests were constructed to administer to all the subjects in the two groups. Judging from the data and the results obtained from the independent t-test performed on the total scores of the two groups in the above mentioned tests, it was found out that no significant differences between the groups in these tests. After ensuring the homogeneity of the groups in terms of GEP and ESP reading comprehension ability, an instructional phase was planned and implemented based on the discourse markers application and function in reading comprehension. So, a lesson plan was prepared based on the information and function of the classified discourse markers in order to be taught to the experimental group of medicine students during the treatment course. This material provided information about each category of discourse markers with definition, their functional role in coherence of the text, the manner of order in discourse, list of types, and examples. Each category of discourse marker noted in the above mentioned lesson plan was taught in one session. The medical texts were taught with a focus on these categories and the students were asked to read the texts paying more attention to them in order to acquire fluency in getting the meaning of the text during their reading comprehension tasks.

Having run twelve sessions of instructions, the performances of the groups were compared with each other by administering the ESP reading comprehension test serving as the post-test. Taking into account the scores of participants in control and experimental groups from the pre-and post-
tests and the comparison between the t-value and t-critical related to the post ESP test revealed the difference between them in the post t-test. The findings showed that there was a significant increase in reading performance of the experimental group. These participants who received the treatment, did better in the post test than the other group. Since the scores of the participants of the study in the first recognition ESP test were not significantly different and the difference of the scores appeared after the treatment, this offers convincing evidence that the treatment is an independent variable which affects the knowledge and abilities of the students. In other words, while both groups in this study were supposed to possess equal knowledge of the language proficiency required for the comprehension of the text, the group provided with the teaching application and function of discourse markers were able to demonstrate high performance in their reading comprehension tasks. The results provide the researcher with wealth of data towards the rejection of second null hypothesis and saying that there should be a significant relationship between explicit instruction of discourse markers function as coherence devices in ESM texts and students’ reading comprehension proficiency of ESP texts.

The findings were indicative that as a result of having taught the function of discourse markers of medical text to the experimental group, the level of reading comprehension performance of this group improved significantly, that is, the higher the level, the better the chances that a reader will successfully comprehend a text. The result showed that there is a prerequisite to apply an approach in ESP focusing on the functional role of the cohesive devices. As some writers argued the interpretation of the message in the text is not fully determined by its linguistic properties, the linguistic, semantic and pragmatics aspects of the language elements
should be undertaken to achieve the communicative aim in the teaching reading comprehension environments. So, the students can highly benefit from this learning to facilitate their comprehension in reading ESM texts. It thus seems imperative that students should be supported by means of intervention course and that the awareness-raising of the role discourse markers play in structuring text should not be underestimated.

A significant implication of this study is related to reading classes in ESM courses to consider appropriate ways of dealing with the coherence of the text, however, the results of this study may be applied to language teaching and learning in ESP as well general English programs. The finding of this study would be useful for the teachers of ESM in that they know what teaching points they must concentrate on and they can orient themselves to a new ESP program and environment.