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ULUDAĞ ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜNE

Umut Muharrem Salihoğlu'na ait The Analysis of Research Article Introductions by Turkish Authors Writing in English (İngilizce Yazan Türk Yazarların Araştırma Makalelerinin Giriş bölümlerinin İncelenmesi) adlı çalışma, jürimiz tarafından Yabancı Diller Eğitimi Anabilim Dalı, İngiliz Dili Eğitimi Bilim Dalında Yüksek Lisans tezi olarak kabul edilmiştir.

Başkan

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ÖZET

Mevcut çalışma, ana dili İngilizce olan yazarlar ve Türk yazarların Çevre Mühendisliği alanında İngilizce olarak yazdıkları araştırma makalelerinin giriş bölümlerinin incelenmesini aktarmaktadır. 20 araştırma makalesinin giriş bölümünden oluşan bütünce (corpus) Swales'in 1990 "Araştırma Alanı Yaratma" modeli (CARS) kullanılarak incelenmiştir. Bulgular İngiliz ve Türk yazarların makro yapıları oluşturan kalıpların seçimlerinde önemli farklar ortaya koymuştur. Sonuçlar, aynı zamanda Türk yazarların alandaki bir açığı belirtme hususundan büyük oranda kaçındıklarını ortaya koymuştur. Çalışma pedagojik çıkarımlar hakkında birkaç kısa öneriyle sonlanmıştır.

ABSTRACT

The study reported here investigates the structure of research article (RA) introductions written in English by Turkish authors and native speakers of English in the field of Environmental Engineering. A corpus of 20 RA introductions were analysed by the use of Create a Research Space model (CARS) proposed by Swales (1990). The findings indicated significant differences among the choice of patterns for macrostructure between native speakers of English and Turkish authors. The results also revealed a high avoidance of gap indication by Turkish authors. The study concludes with some brief suggestions on pedagogic implications.

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1. INTRODUCTION

There has been a wide interest in academic writing in the field of English for Academic and Specific Purposes in the last two decades. The main focus of these studies is the Research Article (henceforth RA) which is a medium for scholars all around the world. The present study investigates the macro structure of RA introductions written in English by native and non-native English writers. Research articles are usually written according to some patterns, which are determined by the members of the groups they are shared in. The structure of research articles refers to the way the articles are organised into structures that form the type of texts or genre they belong to. The organisation styles of the researchers for their research articles may be affected by their purpose in writing and habitual writing behaviours in their culture. This is also the case for non-native English researchers who have to report their research findings in English in order to gain an international readership. The importance of this readership is well acknowledged. On this point Anthony says (1999, p.38), "successful publication of research findings can lead not only to an enhanced reputation, but also peer acceptance, professional advancement, research grants, and so on.."

Non-native speakers of English, who wish to take part in international scholarly publication as stated above, are compelled to write in English. Besides that, they are required to meet the standard criteria and conventions attached to the RA writing practices in English for their research articles to succeed in publication in English. Therefore, a comparative investigation of research article introductions written in English by native and non-native English writers is assumed to be crucial to provide knowledge on the structure choice of the native English researchers and consequently this information is expected to be useful for Turkish writers willing to get their work published internationally. In order to reach this goal, this study uses Swales' (1990) Move Structure analysis model known as the Create a Research Space (CARS) model for the analysis.

This model has had a great influence on genre analysis in ESP and on the teaching of academic writing, both to international or native speaker students, or professional writers willing to publish in international journals. This structural analysis

started with an assumption that texts belonging to the same genre would show some uniformity across cultures, because they were products of an international community whose purpose was to achieve the same goals. In the literature it is stated that Swales appears to have been one of the first researchers to study on RAs. His (1981) pioneering study has been very influential for most of researchers as it was the first full scale account for the analyses. The model was modified in 1990 and the modified version included moves and steps for explaining accounts found in RA introductions which are: (1) establishment of the field in which the author is working, (2) creating a research space for the present study by indicating a gap in current knowledge or by raising questions (3) introducing the study by indicating what the present investigation will accomplish for the field.

Since the publication of Swales' move analyses of "Introductions to Research Articles" (Swales 1981; 1990), there has been a number of comparable studies of the moves in introductions in other subject areas, and also of the moves in other sections of the RA, e.g. the abstract (Stotesbury, 2003, Martin, 2003, Lores, 2004), the methods section (Martinez, 2003, Ferguson, 2001), the results section (Brett, 1994, Williams, 1999, Yang& Allison, 2003), the discussion section (Holmes, 1997, Dudley-Evans, 1994). Also, grammatical and lexical issues such as hedging Varttala (1999), verb forms (Tarone et. al., 1998), imperatives (Swales et. al., 1998) have received attention.

However, as stated in the above paragraph and as Holmes (1997), Samraj (2002) and Swales (1990) stated the Introduction sections of articles are the most studied ones. According to Swales (1990b:190) "the research paper is a relatively well known genre and the characteristics of its introductory section have been relatively studied." Some of these studies are: Crookes, (1986), Samraj (2002, 2004), Swales (1981-1990), Nwogu (1997), Postegullio (1999), Golebiowski (1999).

The underlying methodology of Swales' move model was "Genre Analysis" which has been a productive area of EAP research since the 1980s. This analysis involved the study of how language is used and organised within particular settings e.g. particular types of text, Jordan (1997). The key feature of genre analysis is that it places the discourse into the communicative context within which it occurs and takes account of aspects such as culture and situation in a way that earlier discourse analysis was

unable to do. Accordingly, genre analysis has been considered a very important development in ESP (Dudley-Evans & St John 1998:31).

As a consequence, it is stated that there is a considerable body of research into the nature and structure of the academic article. The present study investigates the macrostructure variations in the NS-NNS RA introductions written in English that were published in two international journals from the field of Environmental Engineering.

A starting point for the present study was to attempt the definition of moves found in RA introductions in the chosen field and make cross-cultural comparisons. Academic writing is even more challenging as in addition to the already mentioned requirements, the learner has to be familiar with the conventions of academic discourse. Academic discourse is formal, objective and there is the need to use implicit language to sound cautious. The decision to select the Introduction section of the RAs for analysis was also shaped by the "troublesome" nature of this section as pointed out by Swales. As he notes, “nearly all academic writers admit to having more difficulty with getting started on a piece of academic writing than they have with its continuation." (Swales 1990:137) The decisions to be made about a number of things such as the background knowledge to be included, the author's stance, appeal to the readership need to be considered in this section. (ibid).

Swales (1990) notes that non-native speakers may need to pay more attention to maintaining and improving their English skills, since papers with evidence of non-standard English are more likely to be rejected. The attempt to provide information about the styles of English research articles may help Turkish researchers to get their research findings published internationally.

This comparative study of English introductions written by native and non-native writers may encourage responses to the possible implications of the study. The results of the study may fulfil some of the needs of the non-native English writers and provide more information in order to improve their knowledge. Raising the rhetorical awareness with the rhetorically regular, but complex structure of RA Introductions may help EAP learners in a process of producing similarly regular writing as genre based approach proposes.

Taking these into account, the aim of this study is to provide some information on the characteristics of research article introductions written in English by native English and Turkish authors, on the basis of a comparison of the properties found in the published RA introductions. It is hoped that the results of this comparative study will supply some valuable insights into the writing features that the Turkish researchers successfully applied and the aspects that they may need to develop and improve for better outcomes.

The results may give options for the Turkish writers to see the preferred writing strategies that are considered to be appropriate and effective by editors and other researchers in the field. Therefore, this study aims to empower the Turkish researchers with knowledge and to increase their awareness of English RA writing as a process of communication in a special community. Information of such type will enable them to participate in knowledge fields internationally.

Following on from this introductory chapter, the literature on the issues raised in English for Academic Purposes is reviewed in the Literature Review. After a brief historical review of approaches and analysis methods, the currents trends of the field will be exemplified. It will be seen that, although some work has been done in the field, cross-cultural studies are considerably rare than the other areas. The third chapter will consider the selection of the corpora and will explain the method of analysis. The fourth chapter both gives and discusses the results of the analysis in detail and shows how the writing preferences of Turkish authors differ from native speakers of English and also discusses the variation found in similar settings.

The fifth and the last chapter to this study will conclude the study by providing a summary of the findings and by supplying some pedagogical implications for teaching academic writing to non-native speakers.

2. LITERATURE REVIEW:

This chapter reviews studies in the field of English for Academic Purposes which is a branch of English for Specific Purposes. With regard to the main goal of the present study, a review of previous studies on English research articles, which focuses on different points and different sections of RA, is presented. A theoretical framework based on the EAP approach is discussed, and this model forms the basis of the structure analysis.

2.1. Definitions of ESP and EAP

Recently, there has been a growing interest in the field of English for Specific Purposes, which is a result of increasing demands in all fields all over the world. Specific Language knowledge is needed in order to meet these demands. These needs raise the importance of the teaching of languages for special goals. As a result, English for Special Purposes has become one of the important branches in English language teaching. Besides, the increasing number of learners in the world studying in academic areas and their needs resulted in the creation of English for Academic Purposes, a sub-category under the heading of English for Specific Purposes. The present study will provide some explanations about the mentioned fields in detail, below.

Two of the major researchers in the field of English for specific Purposes; Hutchinson & Waters (1987), described what ESP is not rather than giving a strict definition of what ESP is. Their three-step definition is summarised as follows:

a) ESP is not a matter of teaching specialised varieties of English.

b) ESP is not a matter of specific vocabulary and grammar for scientist or occupations.

c) ESP is not different from any form of language teaching, so it should be based on effective and efficient principles of learning.

Dudley-Evans & St John (1998, p. 4-5) provide some characteristic information about the field as:

I. Absolute Characteristics

- ESP is defined to meet specific needs of the learner;
- ESP makes use of the underlying methodology and activities of the discipline it serves;
- ESP is centred on the language (grammar, lexis and register), skills, discourse and genres appropriate to these activities.

II. Variable Characteristics

- ESP may be related to or designed for specific disciplines;
- ESP may use, in specific teaching situations, a different methodology from that of general English;
- ESP is likely to be designed for adult learners, either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level;
- ESP is generally designed for intermediate or advanced students;
- Most ESP courses assume some basic knowledge of the language system, but it can be used with beginners. Dudley-Evans & St John (1998, pp. 4-5)

Johns (1991) distinguished the branches of ESP as shown in the figure.

<table>
<tr><td rowspan="4">ESP</td><td rowspan="2">EOP
English for Occupational Purposes</td><td>VESL: Vocational ESL
(e.g., English for Auto Mechanics)</td></tr>
<tr><td>PROFESSIONAL ENGLISH
(e.g., English for Business & Economics)</td></tr>
<tr><td rowspan="2">EAP
English for Academic Purposes</td><td>EST: English for Science & Technology</td></tr>
<tr><td>EAP: English for Academic Purposes
(i.e., other than EST)</td></tr>
</table>

Johns (1991, p.71)

Figure 2.1. English for Specific Purposes

Compared to English for General Purposes, English for Specific Purposes has immediate advantages. Dudley-Evans & St. John (1998:230) have summarised this point as: “A strength of the ESP profession is that it has always seen itself as engaged in a practical activity in which the determination of learners’ needs and the attempt to meet those needs are given priority.”

Dudley-Evans & St. John (1998:19) also stated that the main reasons for the ESP movement are general developments in the world economy in the 1950s and 1960s that faced the growth of science and technology, an increase for the use of English as the international language for science, technology and business, the increased economic power of certain oil-rich countries and the increased numbers of international students studying in the English speaking countries.

2.2. English for Academic Purposes

English for Academic Purposes originated from an intention to identify and teach the language and literacy skills that students may need to know to be successful in institutions, and especially in their disciplinary contexts. EAP had its roots in formal comparisons of texts and evolved through studies, which encompass increasingly "narrower" and "deeper" treatments (Swales, 1990: p.3) of the social and institutional contexts in which texts are actually authored, circulated and evaluated.

Two definitions of EAP are:

A working definition is “EAP is concerned with those communication skills in English which are required for study purposes in formal education system” (Jordan, 1997:1)

EAP is currently “related to any English teaching that relates to a study purpose” (Dudley-Evans & St John, 1998: 34).

This implies that EAP involves teaching as well as researching the various linguistic, stylistic and communicative genres of academic disciplines, as well as the specific ‘study skills’ required for them.

Hutchinson and Waters (1987) noted that there is not a clear-cut distinction between EAP and EOP: "people can work and study simultaneously; it is also likely that in many cases the language learnt for immediate use in a study environment will be used later when the student takes up, or returns to, a job" (p. 16).

"Work in ESP was by the middle 80s, not merely interested in characterising linguistic effects*;* it was also concerned to seek out the determinants of those effects" (Swales, 1990: p. 4). As a consequence, ESP became concerned with discourse as communication and interaction in a social context. To sum up, EAP refers to the language and related skills that learners need to study in higher education through the medium of English. The following section discusses a major analysis system that has led to developments in EAP and provides background information.

2.3. Genre Analysis

Genre analysis has been able to join language, social context and communicative purpose together but has run into problems of definition and prescriptiveness. Genre Analysis represents an attempt to integrate multiple methodologies and data sources in the study of academic genres in English, especially from linguistics, rhetoric and anthropology. The overall aim is to frame systematic inquiry that can inform best practices in the design of English for Academic Purposes curricula. In the definition of Bhatia (1997) "Genre analysis is the study of situated linguistic behaviour in institutionalised academic or professional settings"

Swales (1990, p.58) offers a definition for genre when he states that:

> A genre comprises a class of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert members of the parent discourse community, and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the discourse and influences and constrains choice of content and style.

Later he provided a relatively simple definition as: "a genre is a recognised type of communicative event. In the research world common genres are: a research paper, a grant proposal, an application letter or a conference paper" (Swales & Feak, 2000).

Dudley-Evans & St. John (1998:115) also noted that "Knowledge of genre involves an understanding of the expectations of the discourse community that reads the text and of the conventions that have developed over time about the structure, the language and the rhetoric of the genre"

Another perspective is that the concepts of discourse community and apprenticeship provide a rich contextual framework for researching the social practices that shape students' writing in disciplinary contexts. As Swales puts it, discourse communities can only be joined on purpose; they depend on special training and experience with appropriate genres as part of a professional or other intentional association.

> (1) A discourse community has a broadly agreed-upon set of common public goals.
> (2) A discourse community has mechanisms for intercommunication among its members.
> (3) A discourse community uses its participatory mechanisms primarily to provide information and feedback.
> (4) A discourse community utilizes and hence possesses one or more genres in the communicative furtherance of its aims.
> (5) In addition to owning genres, a discourse community has acquired some specific lexis.
> (6) A discourse community has a threshold number of members with suitable degrees of relevant content and discoursal expertise.
>
> (Swales, 1990, p.24-27)

The terms discourse and genre analysis have an overlapping nature. The quotation below clarifies the distinctions between these terms:

> Any study of language or more specifically text at a level above that of the sentence is a discourse study. This may involve the study of cohesive links between sentences of paragraph structure or the structure of the whole text...Where, however, the focus of the text analysis is on the regularities of structures that distinguish one type of text from another type; this is genre analysis and the results focus on the differences between text types and genres.
>
> (Dudley-Evans & St. John, 1998, p.87)

As an outcome of the gained knowledge, learners are expected to share ideas more consciously in their professional community by participating in the ongoing communications rather than having simple roles of a passive reader and a writer of prescribed texts. Martin (2002) states that in today's competitive academic world, the pressure to publish is continually increasing and in order to justify publication, writers

must create a research space that permits them to present new knowledge claims to the other members of the academic community.

It is stated by Dudley Evans (1997) that writing scholars who were sympathetic to the aims of genre analysis, suggested that the initial work on moves in genre analysis suffered from not considering the disciplinary environment where the academic writing took place and which had major influences on the style and form of the communication. Just like other approaches, the genre approach has a limitation of centering the focus mainly on written language.

As mentioned earlier, the focus of ESP narrowed during the 1980s to accounts of particular linguistic or discoursal features within specific disciplinary genres like the research article introduction. Dudley Evans (1998) points out that "the work of genre analysis, especially the various analyses inspired by the original work of Swales (1981), has had a profound influence on the teaching of English for Specific Purposes, especially the teaching of academic writing to graduate students." This theory assumes that the focus on imparting certain genre knowledge is part of a short-cut method of raising students' proficiency in a relatively limited period of time to the level required of them by their departments and supervisors. According to Swales, the rhetoric approach views genre as a means of social action, which is situated in a wider socio-rhetorical context, and which works as a mechanism both to achieve and identify the goals of the community (Swales, 1990a:44). The Genre Analysis model has proven very influential in EAP and genre studies generally. This is largely owing to its explicitness, completeness and capacity to investigate and "explain" complex relationships between text and context in educationally appropriate terms (for example in Swales', (1990) treatment of the research article)

2.4. A Detailed Description of Swales' Model

The purpose of this section is to investigate and further explain the move and step structure proposed by Swales' (1990), "Create A Research Space Model" (CARS), for article introductions which is a full schema model for the analysis of research article introductions. Firstly, the section will cover what is known from Swales' research that

has taken place and, secondly, it will give a full account of Swales' CARS model by brief definitions and examples for a better understanding. Swales (1981) examined the introductions of forty-eight research articles in the natural and social sciences, and found that most of them contained a sequence of four rhetorical moves through which a scientist creates a research space for his work. The model proposed four moves.

Using these moves the writer:

(1) establishes the field, in which he or she is working,

(2) summarises related research in the area of concern,

(3) creates a research space for the present study by indicating a gap in current knowledge or by raising questions and

(4) introduces the study by indicating what the investigation being reported will accomplish for the field.

Later in 1990, Swales had to revise his work because of the certain defects in the first model that "have become increasingly apparent" (1990, p.140). Many authors criticised Swales' model because it was impossible to draw a clear line between Move 1 and Move 2. Having this point in mind, Swales offered a revised three-move model in which "Reviewing items of previous research" appeared as Step 3 in Move 1 and called the three-move model the "CARS" (Create A Research Space) model for article Introductions. The figure below is the full representation of Swales' proposed model:

The Create A Research Space (CARS) Model for Article Introductions:

Move 1 Establishing a territory:

Step 1 Claiming centrality and/or
Step 2 Making topic generalisation(s) and/or
Step 3 Reviewing items of previous research

Move 2 Establishing a niche

Step 1A Counter-claiming or
Step 1B Indicating a gap or
Step 1C Question-raising or
Step 1D Continuing a tradition

Move 3 Occupying the niche
Step 1A Outlining purposes or
Step 1B Announcing present research
Step 2 Announcing principal findings
Step 3 Indicating Research Article structure

Swales (1990:141)

Figure 2.2. The CARS model for Research Article Introductions

The following section will explain the moves and the steps of the proposed model in detail.

2.4.1. The Create A Research Space (CARS) Model

2.4.1.1. Move 1- Establishing a territory:

In the introduction, writers generally start by trying to define a field for their study. Authors need to re-establish the importance of the field in the eye of their discourse community. All of the examples in the following sections are taken from Swales (1990, p: 142-161) and (Swales & Feak, 1994, p: 173-194)

Step 1 Claiming Centrality:

This step aims to persuade the group of readers about the importance of the field of study by indicating the significance of the general research area and implies that the present work is crucial, relevant and interesting in some respects.

Centrality claims are defined by Swales as:

"Centrality claims are appeals to the discourse community whereby members are asked to accept that the research about to be reported is a part of a lively, significant or well established research area" (1990, p.144)

Claiming centrality can be utilized as the examples below:

The increasing interest in ... has heightened the need for ....
Of particular interest and complexity are ....
Recently, there has been growing (wide)(spate of) interest in ....
The development of ... has led to the hope that....
The .., has become a favourite topic for analysis ....
The study of ... has become an important aspect of ....
A central issue in ... is ....
The ... has been extensively studied in recent years.
Many recent studies have focused on ....

Step 2- Making Topic Generalisations

The second step for Establishing a Territory (Move 1) is Making Topic Generalisations. It represents a more neutral general statement than centrality claims. Swales (1990) states that this step can take a variety of forms but falls in two categories in most cases which are:

a) Statement about knowledge and practice: states, current state of the art of knowledge, techniques. The typical language used in these statements is

The ..... is well known
There is now much evidence to support the hypothesis.....
A standard procedure for .....

b) Statement about phenomenon: emphasises the frequency/complexity of data. The typical language used in these statements is

There are many situations where....
There are as yet only few.....
..... is a common finding in...

Step 3- Reviewing Items of Previous Research

The last stage in Move 1 of the CARS model is "Reviewing Items of Previous Research". In Step 3, authors provide specifications of who has found what and take a stance towards the findings. By referring to previous work the author not only establishes a theoretical base for his research but also attempts to attract the attention of reader group. There are two basic kinds of citation structures you can use: integral vs. non-integral citations (Swales 1990, p.148).For non-integral citations the authors name is not included as a part of the sentence structure, but is included in parentheses (brackets) at the end of the section that discusses their ideas. For integral citations, the authors name is included as part of the sentence structure and the author is mostly taken into the role of the subject. The year of the publication only is included in parentheses.
By the combination of two categories, there will be four possibilities (examples are from Swales 1990, p149):

> Integral/reporting citation: "Brie (1988) showed that the moon is made of cheese."
> Integral/non-reporting citation: "Brie's (1988) theory of lunar composition has general support."
> Non-integral/reporting citation: "It has been shown that the moon is made of cheese (Brie, 1988)."
> Non-integral/non-reporting citation: "The moon is probably made of cheese (Brie, 1988)."

Swales (1990:148) states that this step is compulsory in Move 1 and explains it as: "Apart from at least one exceptional disciplinary area, minimal reference to previous work is the obligatory step in Move 1 while other steps from a corpus perspective are discretionary".

2.4.1.2. Move 2- Establishing a Niche:

This move has a function to connect Move 1, what has been done up to now to what the present paper will do in the field of interest .This move gives a rationale for the reasons for carrying out a study. There are four ways of showing that the author is adding something new to the literature. According to Swales this move in most cases

opens with an adversative sentence connector like "However" (also nevertheless, yet, unfortunately etc.) In addition to this, there is a cyclical pattern in articles. For more information see Crookes (1986). In previous studies occurrences of the cycles Move 1 step 3 and Move 2 were reported. In move 2 there are four steps: A-B-C-D.

Step 1A: Counter Claiming:

In this step a conflicting claim, theory or method is put forward against the existing one. For example, some researchers can argue that previous researchers' assessments on a specified topic are too complex and that a simpler process can and should be used instead. Under this heading, sometimes the writers try to say that the previous work is misguided. In those cases they question the validity of a study by not expressing their negative attitude directly but by leaving a possibility that the previous research may have disadvantages .This is rare and difficult to do. Posteguillio (1999) says that, it is hard to realise this step in different disciplines. The reason for this may be an avoidance strategy. As the author is trying to create a space for himself in the field, the language used should be selected carefully.

Step 1B: Indicating a gap:

In this step the authors indicate that there is a gap in the specified area where no or little study has been done. Keeping this in mind authors often list the work already realized to point out the specific gap in the research. By drawing readers attention to the limitations of problematic cases of previous research a Niche is created for the present study to fit in. The limitations are often signalled with negative phrases like (no, little, none, few etc.) often combined with "however" or words with negative meaning Such as verbs, adjectives

Verbs
However, previous research in this field has _____ X.

Neglected To	Suffered From
Consider	Underestimated
Disregarded	Misinterpreted.
Overestimated.	Been Limited To.
Failed To Consider	Been Restricted To
Overlooked	Concentrated On
	Ignored.

Or some negative adjectives

Adjectives:

Nevertheless, these attempts to establish ..... are at present .....

Controversial	Inconclusive
Questionable	Unsatisfactory
Incomplete	Misguided
Unconvincing	

(Swales & Feak, 1994, p: 187)

Step 1C: Question-raising:

When a researcher is raising a question, it means that the research problem is defined by asking a question to which the answer is unknown, and which he will explore in his research. It is often directly stated with the use of the word "question"

e.g.
Questions have included...
The question remains...

Step 1D: Continuing a tradition:

This step demands a weaker challenge than Step 1B (Indicating a gap). Sometimes the writer expresses a need or an interest in the community to know more about the mentioned topic. In other words, researchers build on work already done, but they take it further by using a new sample, extending the area, taking more factors into consideration or taking fewer factors into consideration and working specifically on the point decided.

Authors also make contrastive comments:

The research has tended to focus on ...,rather than on ....
These studies have emphasized ...,as opposed to ....
Although considerable research has been devoted to ..., rather less attention has been paid to ....
The previous research ... has concentrated on ....
Most studies have been content to ....
So far, investigations have been confined to ...

2.4.1.3. Move 3 -Occupying the Niche

The third and the final step of Swales' CARS model is to indicate that the author wants to fill the gap or answer the questions presented before in Move 2. By doing so the author tries to evaluate the present paper within the gap created. There are 3 steps in this move which are:

Step 1A: Outlining purposes

In most cases researchers involve a description of their objectives in their introduction for the reader to have a good understanding of what they try to accomplish. Usually there is a general objective written in one sentence. This move is often an obligatory move, which starts with phrases like "this paper" and "purpose" or "aim"

e.g.
The purpose of this paper is to ...
The purpose of this investigation is to ...
The aim of this (the present paper) paper is to ...
This paper reports on the results obtained ....
This study was designed to (evaluate) ...
In this paper, we give (preliminary) results of ...
In this paper, we argue that ....
This paper argues that ....

Step 1B: Announcing present research

In this step important points about the methodology used are outlined, usually including the scope of the study. However, the methodology is *not* given in detail as details will be included in the methodology section of the RA.

Step 2: Announcing principal findings

This second step is rarely found in the articles for; many writers do not prefer to give their results in the early parts of their work. Announcing the results has a quite marked disciplinary divergence as stated by Swales and Najgar (1987) cited in Swales (1990a). To realize this step researchers may indicate the kind of results they obtained, or an overall summary of their findings.

e.g.

X investigated in this work and the results proved that good ..... could be achieved.

Step 3: Indicating the structure of the research article

Within this step, the authors help the reader understand how the article is organised through the use of stages. Although in an IMRD (introduction-methods-results-discussion) research article the existing structure makes this step less common, it may still be regarded beneficial to point important issues and sections as well as their order.

e.g.
First we will define.....
In the second section we will discuss.....

This approach not only makes reading of the research article easier but also it helps the reader to place relevant information to their knowledge. According to Swales (1990a:161), this step always occurs at the end of the introductions. His examples are:

We have organised the rest of this paper in the following way ....
This paper is structured as follows ....
The remainder of this paper is divided into five sections ....

2.5. Studies on Research Articles

Research article (RA) has become the most popular and most recent media for sharing information among researchers all over the world. Koutsantoni (2004: p.163) summarizes this issue as the research article occupying a prominent position in research publications, and is considered to be the main means employed by the hard sciences for

the dissemination of knowledge, the publicisation of claims. Breivega et. al. (2002) state as researchers are faced with the ever-increasing competitive production of research articles, making the marketing of their own research more important, the use of subjective elements can also be seen as a way of promoting and selling their own results at the expense of other researchers' work. With the aim of helping novice writers who are supposed to approximate their writing to the expectations of the target disciplinary community, some studies have been conducted which focus on both the micro and macro level organisation of RAs.

2.5.1. Micro Level Organisation of Research Articles:

Research on English RAs investigated micro level items of RAs such as, Grammar, lexis, hedging, collocations and verb forms. A brief review of the studies of RA microstructure is presented in what follows. Among the most studied macro organisers, citation conventions had an important place. For example, Hyland (1999) showed how citations might vary across disciplines and commented that this was a result of differences in epistemological and social conventions of the disciplines. Hyland investigated citations in 80 articles from the fields of Sociology, Marketing, Philosophy, Applied Linguistics, Biology, Physics, Mechanical Engineering and Electronic Engineering. He concluded that the social science and humanities writers used more citation than the science and engineering writers. Regarding the use of integral vs. non-integral citation structures, the overall preference in all the disciplines, except Philosophy, was for non-integral structures. There was, a greater use of integral structures in the Humanities and Social Science disciplines compared with the Science and Engineering disciplines. There were also differences in the preferences for reporting verbs used by the different disciplines. The science and engineering writers chose more neutral verbs such as *report, use, develop* and the humanities and social science writers preferred more tentative verbs such as: *suggest, claim, and argue.*

Hyland (2002) also explored the aspect of identity in L2 writing by examining the use of personal pronouns in 64 Hong Kong undergraduate theses in comparison to a corpus of 240 research articles. According to the study, significant under-use of

authorial reference by students and clear preferences for avoiding the use forms in contexts were encountered in NNS writers' products.

Salager-Myer & Ariza analysed 76 Spanish medical research articles published during a period of 69 years, in order to investigate the Academic Criticism (AC) behaviour of authors. Their results indicated an increase in the number of ACs and they proposed reasons for this increase as:

> " (1) the growth in the number of researchers and of scientific publications,
> (2) the scientists' need to publish in order to gain "visibility", and
> (3) the paradigmatic shift from an assertive type of science to a skeptical and probabilistic type based on claim refutability, i.e. on criticism." (ibid: 108)

According to Swales et.al (1998) "one of the most studied features in research articles is the use of hedging devices". In the light of this definition I can briefly summarise Varttala (1999) whose study focused on hedging in popular scientific and specialist Research Articles in medicine. The main focus was on the modal auxiliaries, main verbs, adverbs, adjectives and nouns. An investigation of 15 medical articles from a popular scientific publication, and 15 from a specialist journal of Medicine had helped the researcher to test the idea that hedges were a feature of communication between equal discourse participants, such as the writers and readers of specialist publications.

Varttala also noted that hedging devices were also commonly used in the popularisation of medical research and a possibility of such kind did not receive sufficient attention in earlier studies. She stated that hedging does not seem to be needed in communicative situations where expert authors address readers but should be used effectively in peer communication between medical specialists and can also be used as an interpersonal negative politeness strategy.

On the occurrence of passive and active verb forms in journal papers in Astrophysics, Tarone et.al. (1998) examined whether writers in that field preferred the passive over the active, and investigated the rhetorical functions of these forms in depth. In both astrophysics journal articles, active verb forms greatly outnumbered passive verb forms verb forms. They also found that "we plus an active verb" occurred at least as frequently as the passive in both articles.

Thetela (1997) studied the topic of evaluation in the RAs in order to clarify how evaluation worked through a text to convey the writer's aim. The paper used a corpus of RAs from four main disciplines: history, economics, psychology and applied linguistics. 60 of those RAs had been analysed in detail in order to find out about the "ascribed value" (AV) and "evaluated entity" (EE), which she defined as “AV refers to the evaluation that is bestowed on a "thing", EE refers to the "thing" in the "real" world on which value is bestowed.” (ibid. p.103) The data showed evidence of no significant differences among the four disciplines in terms of the kinds of evaluated entities and ascribed values, as well as the lexical realisations of such values which Thetela assumed that values of research are the same in different disciplines and therefore predictable.

Breivega et. al. (2002) conducted a pilot study which had been undertaken as a preparation for a comparative research project called “Cultural identity in academic prose, in Norwegian: Kulturell identitet iakademisk prosa, or KIAP. (ibid. 219) The project included research articles from three disciplines; which were medicine, economics and linguistics– and three languages – English, French and Norwegian. They mainly focused on items of academic activities that defined cultural identity and tried to reveal whether those items were culture bound or discipline specific. The results indicated that there were not any clear language differences; only except a low occurrence of first singular pronouns in French. They hypothesised that cultural identity is more likely to be related to discipline than language with regards to culture.

Another researcher from the KIAP project; Dahl (2004) started his research with an underlying rationale that academic writers leave traces of themselves in their writing which might be linked to national as well as disciplinary culture. In order to investigate this phenomenon he analysed the text format of the medical research articles by using a corpus consisting of 180 refereed research articles within three languages- English, French and Norwegian, and three disciplines- economics, linguistics and medicine. His findings suggest that the language variable is the most important one within economics and linguistics, where English and Norwegian show very similar patterns, using much more metatext than French. The results revealed that in the Anglo-Saxon and the Scandinavian traditions, authors were clearly visible in the text; taking responsibility for

the argumentation whereas their French colleagues favoured an authorial presence which was less visible and direct.

Intercultural variation has also attracted the attention of researchers. Moreno (2004) started her study with an assumption that there may be intercultural variations in the rhetorical choices of different cultures preferences of the use of retrospective cohesive mechanisms in premise–conclusion metatext. She quoted the metatext from Crismore et al. (1993) as "the linguistic material in texts, either spoken or written, which does not add anything to the propositional content but that was intended to help the listener or reader organise, interpret, and evaluate the information given" (2004:322). Her study made use of a parallel corpus consisting of research articles (RAs) from the fields of business and economics- 36 in English and 36 in Spanish. By comparing and contrasting the types and preferred uses of the retrospective mechanisms employed by English and Spanish writers, she was able to show that both English and Spanish academics had a tendency to use implicit labels in retrospective premise–conclusion metatext with great frequency.

In a study conducted in 2001 Vassileva investigated the writing styles of Bulgarian specialists. The study mainly focused on the subject of commitment and detachment and included a corpus consisting of English, Bulgarian and Bulgarian English RAs published in international or Bulgarian journals. She compared the native speakers' style to that of Bulgarian ones. Her findings indicated some degree of differences in Bulgarian and Bulgarian English when compared to English texts and revealed that Bulgarian authors could not meet the styles used by native speakers. A list of reasons for the existing problems was given in her study.

Another issue on the micro structure of RAs is collocation. The relationship between two words or groups of words that often go together and form a common expression is called collocation and there have been studies to define the collocation structures in order to help learners' development in EAP field. On the topic of collocations, Campoy (2002) selected 25 research articles dealing with the subject of technical ceramics and focused on the verb types in the RAs and found 30 most frequent verbs by using a concordancing process. She grouped the verbs into four sections regarding their semantic similarities or their use in similar situations as a) verbs related

to a mental process (e.g. calculate); b) verbs expressing some kind of comparison (e.g. measure); c) verbs used to express that an event or a state is brought about (e.g. achieve); and d) verbs that refer to the manipulation of something (e.g. decrease). The study outlined the collection of words from the corpus that allowed the researcher to observe explicit rules for the use of near synonyms or related word and also helped to produce her own teaching material. Gledhill (2000) worked on the collocations of high frequency words in introductions by using a corpus consisting of 150 cancer research articles. His computer-based analysis had presented a good base for the design of a representative and specialised corpus of the research article and a contextual approach to corpus based studies that would be appropriate to the language teaching for specific purposes.

Balocco (2000) was concerned with the academic articles published in scholarly journals in the area of literary research in English, an area which she claimed to have been neglected in linguistic studies. She used Swales' 1990 CARS model on the aspects of rhetorical routines in literary research articles. Her corpus consisted of 20 published articles. Her findings revealed that moves proposed by Swales (1990) to occur in the introduction might be distributed throughout the article: in the body of the article or even towards its conclusion. Another significant finding of the study was the non-linear configuration of moves in literary research. Therefore, she warned other researchers not to expect an automatic or one-to-one relationship between realization type of move and rhetorical function. She concluded that the discussion of genre conventions in academic discourse should include a disciplinary dimension.

Swales et. al. (1998) investigated imperatives in ten disciplines ranging from Statistics to Communication Studies. This preliminary study was conducted to explore the role of imperatives in research articles, and their syntactic as well as rhetorical functions across disciplines. The researchers exemplified their findings as "the use of *see* - imperatives as citational devices has become a well established discourse convention in the field." (1998:103). Their study provided a preliminary look at the forms and functions of imperatives in academic articles over a variety of fields. With the examined data; they emphasised that imperatives are generally quite rare in main

texts and demonstrated the imperatives “See, Consider, Note (that), Suppose” were the most frequent ones.

2.5.2. Macro Organisation of Research Articles:

Significant attempts to describe the macro-structure of English RAs arouse from the work in the tradition of ESP, pioneered by the work of Swales (1981, 1990). In the literature, the macro-organisations of RAs have been analysed with reference to the widely reported Introduction–Methods–Results–Discussion (IMRD) framework (e.g. Swales, 1990; Holmes, 1997). This framework is generally self-explanatory. The following sections provide a brief review on the issues mentioned. Some studies have been done to investigate the whole RA structure (e.g. Nwogu, 1997; Posteguillo, 1999; Kanoksilapatham, 2005). Nwogu (1997) investigated the structure and function of medical research papers. He identified eleven (11) typical moves for the overall structure of medical research papers .The number of moves for the introduction remained 3 like that of Swales’, however the definitions of moves had been changed and some steps were excluded .

Posteguillo (1999) investigated the schematic structure of computer science RAs. He found difficulties in identifying the structure since "there was no structural model applicable for all the RAs in the sample" (1999:140). Other features that are considered as obligatory in Swales' model, such as review of previous research, were not frequently used. The explanation for this phenomenon was provided by Cooper (1985), who stated that the absence of review might be due to the relative newness of the discipline and the commercial orientation of the papers (cited in Posteguillo, 1999:154). Posteguillo also found that a vast majority of articles showed a lack of a well-defined macrostructure, a systematic avoidance of Move II-1A (i.e. *Counter-claiming*) which he reported as:

> *“B. Move 2. Step 1A, in Move 2 (counter-claiming), seems to be systematically avoided by authors in this field (only 2.5%). Counter-claiming is not regarded as a proper way to introduce the problem which motivates the research in question. Instead, step 1B (indicating a gap), appears as the preferred means of presenting the need for the work”*
>
> (1999:143)

On the same line of research, Kanoksilapatham (2005) conducted a move analysis based on Swales' 1990 CARS model, on a corpus of 60 biochemistry research articles. With the findings of the analysis, the author proposed moves and steps for the texts. The structure consisted of 15 distinct moves: three moves for the Introduction section, four for the Methods section, four for the Results section, and four for the Discussion section. It should be noted that the models proposed by Nwogu (1997), Kanoksilapatham (2005) for the overall RA structure are divided into sections and each related sub-model is given in the tables in the following sections.

2.5.2.1 Abstracts:

An abstract is a brief single paragraph summary of the work completed or work in progress. At a glance, a reader can learn the rationale behind the study, the approach to the problem, present results, and significant conclusions or new questions to be raised. There has been an assumption about writing an abstract in English that it is relatively an easier task for the non-native English speaker when compared with the laborious task of completing the research article as a whole (Lores, 2004, p.280; Swales, 1990, p.179). In contrast to these simplistic assumptions, some studies have been carried out on this section. Stotesbury (2003) conducted a study that investigated the evaluation in research article abstracts across disciplines. The data consisted of 300 abstracts, randomly taken from a variety of journals. The abstracts were divided into the domain of the humanities, social sciences and natural sciences. On the basis of this data, the researcher was able to show that research article abstracts made use of attitudinal language and modal constructions of alternative kinds as well. The results also revealed that interdisciplinary tendencies created highly noticeable differences between the three major fields. Martin (2003) analysed a total of 160 RA abstracts written in English and Spanish in terms of Swales' (1990) model. His results showed that the Spanish abstracts in experimental social sciences largely followed the international conventions based on the norms established by the English-speaking international academic community. He further indicated that the abstracts written in English for international journals more

closely reflected Swales' (1990) model with regards to using the three moves, whereas the Spanish abstracts in the same field were found to be less rhetoric complex. Some degree of divergence had been reported.

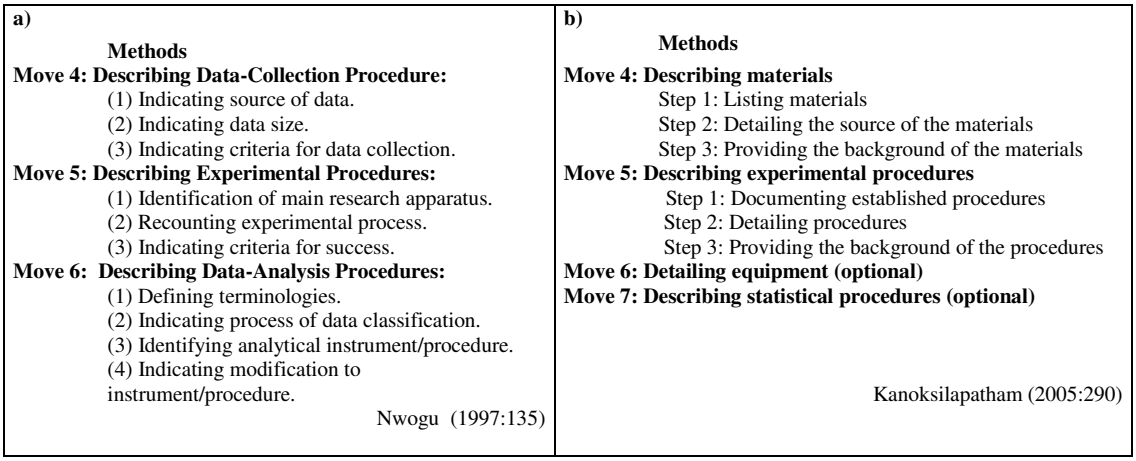
Another researcher who based a study on Swales' (1990) model was Lores (2004). She analysed the global organisation of RA abstracts from linguistics journals. Her small scale study showed that, about one third of the samples displayed the CARS structure. However the majority of the abstracts displayed a rhetorical structure commonly accepted to be the canonical global organisation of abstracts, one which mirrored the organisation of the RA in other words the IMRD structure. As a second step she investigated thematic analysis in terms of thematic progression and the findings revealed distinct patterns of thematic distribution and choice. She emphasised that the study of thematization could shed light on the complex profile of the RA abstract and contribute to the understanding and description of the texts.

An important contribution to the understanding of the abstract section was attempted by Samraj (2004b) in which the researcher focused on the generic structure of research article introductions and abstracts on a set of 12 RAs for each, from two related fields which namely were Conservation Biology and Wildlife Behavior. She made use of models such as Swales (1990) for article introductions and Bhatia (1993) for abstracts for an investigation of abstract sections. The findings of the study indicated that the abstracts from the two disciplines could be distinguished mainly in terms of moves they contained. Most significantly, Conservation Biology abstracts included centrality claims that were said to be characteristic rhetorical strategies found in research article introductions. On the variation found, Samraj stated that "., disciplinary variation in academic writing is not just manifested in generic structure but also in the relationship among genres."(2004:141)

2.5.2.2. Methods:

The methods section is regarded as the easiest section to write. The objective is to document all specialised materials and general procedures, so that another individual may use some or all of the methods in another study or judge the scientific quality of

work. It is neither a step by step description of everything done, nor a set of instructions. In particular, it is not supposed to tell a story. Previous studies focused on the methods sections of RAs. However as far as the international publication is concerned, no recent study that merely focused on the rhetorical structure of methods section is available. Two studies that discuss the overall structure of RAs as mentioned before are Nwogu (1997) and Kanoksilapatham (2005) and these studies proposed rhetorical move structures for the methods sections as:



a)

Methods

Move 4: Describing Data-Collection Procedure:
(1) Indicating source of data.
(2) Indicating data size.
(3) Indicating criteria for data collection.

Move 5: Describing Experimental Procedures:
(1) Identification of main research apparatus.
(2) Recounting experimental process.
(3) Indicating criteria for success.

Move 6: Describing Data-Analysis Procedures:
(1) Defining terminologies.
(2) Indicating process of data classification.
(3) Identifying analytical instrument/procedure.
(4) Indicating modification to instrument/procedure.

Nwogu (1997:135)

b)

Methods

Move 4: Describing materials
Step 1: Listing materials
Step 2: Detailing the source of the materials
Step 3: Providing the background of the materials

Move 5: Describing experimental procedures
Step 1: Documenting established procedures
Step 2: Detailing procedures
Step 3: Providing the background of the procedures

Move 6: Detailing equipment (optional)

Move 7: Describing statistical procedures (optional)

Kanoksilapatham (2005:290)

Figure 2.3. Models proposed for methods sections

On the micro level studies about methods section two recent studies are; Martinez (2003) and Ferguson (2001). Martinez (2003) analysed the thematic structure of the Methods and Discussion section of biology research articles by a corpus of 30 journal articles. The study revealed differences in the thematic construction of the sections. According to the findings, the Methods section was dominated by simple themes, realised by subjects that predominantly represented objects of research. Ferguson (2001) carried out a study on the sections of research articles including methods sections and investigated conditionals in medical discourse. The conditionals mainly functioned to provide operational definitions. It was apparent in the paper that that two sections, the Methods and the Discussion, accounted for nearly 90% of all conditional sentences in the genre. The frequency of occurrence in the Methods section

was perhaps the greatest surprise to the researcher's knowledge which he quoted "since Methods sections are not usually associated with the hypothesising or predictive contexts which conditionals are believed to be frequent." (2001, p.71)

2.5.2.3. Results:

The results section should include answers to the questions listed in the Introduction and goals section in the introduction of the experiment. The section is to summarise the data collected and the statistical analyses performed on the information. According to Yang & Allison, (2003), the Results Section focuses on `Reporting results. Nevertheless, result section has received little specific attention, and indeed it is usually investigated in relation to the Discussion section, since in many cases RAs are often found to combine the two sections.

<table>
<tr>
<td>a)

Results

1. Metatextual categories
1.1. Pointer
1.2. Structure of section
2. Presentation categories
2.1. Procedural
2.2. Hypothesis restated
2.3. Statement of data
3. Comment categories
3.1. Comparison of finding with Literature
3.2. Evaluation
3.3. Further research suggested
3.4. Implications
3.5. Summarising

Brett (1994) cited in
Posteguillo (1999:145)</td>
<td>b)

Results

Move 7: Indicating Consistent Observation:

(1) Highlighting overall observation.
(2) Indicating specific observations.
(3) Accounting far observations made.
Move 8: Indicating Non-Consistent Observations:

Nwogu (1997:135)</td>
</tr>
<tr>
<td>c)
Results
Move 1—Preparatory information
Move 2—Reporting results
Move 3—Commenting on results
-Interpreting results
-Comparing results with literature
-Evaluating results
-Accounting for results
Move 4—Summarizing results
Move 5—Evaluating the study
-Indicating limitations
-Indicating significance/advantage
Move 6—Deductions from the research
-Recommending further research

Yang&Allison (2003:374)</td>
<td>d)

Results
Move 8: Stating procedures
Step 1: Describing aims and purposes
Step 2: Stating research questions
Step 3: Making hypotheses
Step 4: Listing procedures or methodological techniques
Move 9: Justifying procedures or methodology
Step 1: Citing established knowledge of the procedure
Step 2: Referring to previous research
Move 10: Stating results
Step 1: Substantiating results
Step 2: Invalidating results
Move 11: Stating comments on the results
Step 1: Explaining the results
Step 2: Making generalizations or interpretations of the results
Step 3: Evaluating the current findings
Step 4: Stating limitations
Step 5: Summarizing

Kanoksilapatham (2005:290)</td>
</tr>
</table>

Figure 2.4. Models proposed for results sections

Therefore, the study by Brett (1994) (cited in Posteguillo 1999; Williams, 1999), represented a considerable and welcome step forward. In an analysis of 20 sociology RAs, Brett presented a pedagogically usable description of the communicative categories found in the Results sections. In another study about the results section, Williams (1999) attempted to investigate the structure of Result sections of eight medical research articles. He modified Brett's rhetorical categories and his findings provided additional evidence of greater disciplinary variation in this section than in the Introduction and Discussion sections. He stated that although Brett's model is "an adequate basic model for interdisciplinary genre analysis" (1999, p.363), this basic model requires modification if it is to be applied to different disciplines. Yang& Allison (2003) provided a 6 move scheme on this section. See figure 2.4.c.

2.5.2.4. Discussion:

There is a general opinion about the discussion section that it is a mirror image of the introduction. It moves from specific results to general implications. The objective is to provide an interpretation of the results and support for all of your conclusions, using evidence from the study and generally accepted knowledge. Below, the significant points of findings are described. In this section the aim is `Commenting on results' by interpreting, accounting for, evaluating or comparing with previous work; Yang & Allison, (2003)

Studies on the Discussion section were initiated by Hopkins and Dudley-Evans (1988), who found nine (9) moves in this section, (cited in Dudley-Evans &St. John,1998:90) as presented in Figure 2.5.a. below.

Holmes (1997) carried out a study on a corpus of 30 discussion sections of social science RAs. He chose ten RAs each from history, political science and sociology. The articles were analysed in terms of the sequence and structure of their rhetorical moves. His study was motivated by his will to define the variations between natural and social sciences. It was found that, although there were fundamental similarities to the natural sciences, social science discussion sections also displayed some distinctive features. History texts were particularly distinctive, and of the three disciplines bore the least

resemblance to those of the natural sciences" (p.321) He also found out that there was no obligatory move to appear in all of the RAs and there were some variations in the same disciplinary field.

Hopkins and Dudley-Evans (1988) (cited in Dudley-Evans &St. John,1998) also found that the organisation of the Discussion section is less fixed in pattern, in comparison to the Introduction section, and is made up of a number of move cycles that combine two or more of the 9 moves. Swales (1990:173) adopted and distilled the model into an 8-move model, based on the frequency of occurrence of the moves. Swales' version of the Discussion section is presented in Figure 2.5.b. Yang& Allison (2003) also offered 7 moves on this section. An analysis of communicative moves in discussion sections across seven disciplines was done by Peacock (2002)

The investigation was carried out in terms of Dudley-Evans's (1994) model (see figure 2.5.a) on a corpus of 252 RA discussion sections from seven disciplines. He found some degree of interdisciplinary and NS/NNS variation.

a)

Discussion:
Move 1 Information Move
Move 2 Statement of Result
Move 3 Finding
Move 4 (Un)expected Outcome
Move 5 Reference to Previous Research
Move 6 Explanation
Move 7 Claim
Move 8 Limitation
Move 9 Recommendation

Huckin and Dudley-Evans
(cited in Dudley-Evans &St. John,1998:90)

b)

Discussion:
Move 1 Background information.
Move 2 Statement of results
Move 3 (Un)expected outcome
Move 4 Reference to previous research for comparison or support
Move 5 Explanation
Move 6 Exemplification
Move 7 Deduction and Hypothesis
Move 8 Recommendation

(Swales 1990:172-173)

c)

Discussion:
Move 1—Background information
Move 2—Reporting results
Move 3—Summarizing results
Move 4—Commenting on results
-Interpreting results
-Comparing results with literature
-Accounting for results
-Evaluating results
Move 5—Summarizing the study
Move 6—Evaluating the study
-Indicating limitations
-Indicating significance/advantage
-Evaluating methodology
Move 7—Deductions from the research
-Making suggestions
-Recommending further research
-Drawing pedagogic implication

Yang&Allison (2003:376)

d)

Discussion:
Move 9: Highlighting Overall Research Outcome:
Move 10: Explaining Specific Research Outcome:
(1) Stating a specific outcome.
(2) Interpreting the outcome.
(3) Indicating significance of the outcome.
(4) Contrasting present and previous outcomes.
(5) Indicating limitations of outcomes.
Move 11: Stating Research Conclusions:
(1) Indicating research implications.
(2) Promoting farther research.

Nwogu (1997:135)

e)

Discussion:
Move 12: Contextualizing the study
Step 1: Describing established knowledge
Step 2: Presenting generalizations, claims, deductions, or research gaps
Move 13: Consolidating results
Step 1: Restating methodology (purposes, research questions, hypotheses restated, and procedures)
Step 2: Stating selected findings
Step 3: Referring to previous literature
Step 4: Explaining differences in findings
Step 5: Making overt claims or generalizations
Step 6: Exemplifying
Move 14: Stating limitations of the study
Step 1: Limitations about the findings
Step 2: Limitations about the methodology
Step 3: Limitations about the claims made
Move 15: Suggesting further research (optional)

Kanoksilapatham (2005:291)

Figure 2.5. Models proposed for discussion sections

2.5.2.5. Introductions:

One researcher to apply Swales' earlier 1981 model is Crookes (1986). Crookes claimed that Swales' (1981) work lacked empirical validation, One major point that Crookes (1986, p. 61) stated about rhetorical move analysis was, ''the Swales' model is open to the criticism that, however explicit its criteria and its exemplification, it remains in the end based on personal and individual judgement, as Swales himself recognises". So he had provided a solution to overcome this limitation by using different raters for the purposes of validating the analyses and having a higher inter-rater reliability.

a)	**b)**	**c)**
Introduction **Move 1 –Establishing a territory** Centrality claims _ importance in real World _ importance in research world **Move 2 –Establishing a niche** **Gap in research** Problem in real world **Move 3 – Occupying a niche** Background discussions Principal findings	Introduction **Move 1: Announcing the importance of the field** Step 1: Claiming the centrality of the topic Step 2: Making topic generalizations Step 3: Reviewing previous research **Move 2: Preparing for the present study** Step 1: Indicating a gap Step 2: Raising a question Move 3: Introducing the present study Step 1: Stating purpose(s) Step 2: Describing procedures Step 3: Presenting findings	Introduction **Move 1 : Presenting Background Information:** (1) Reference to established knowledge in the field. (2) Reference to main research problems. **Move 2: Reviewing Related Research:** (1) Reference to previous research. (2) Reference to limitations of previous research. **Move 3: Presenting New Research**: (1) Reference to research purpose. (2) Reference to main research procedure.
Samraj (2002)	Kanoksilapatham (2005:290)	Nwogu (1997:135)

Figure 2.6. Models proposed for introduction sections

In terms of investigations of research articles from different fields, Tucker's study can be mentioned. In his paper (2003) Tucker tried to identify some features of Art historical RAs. He used 3 articles from the field and examined them in the framework of Swales' (1990) CARS Model and Hunston's (1993) model. He stated that evident signs of moves and steps, listed by Swales in his CARS model, were relatively few and unpredictably located. He gave the reasons for this as follows: the analysed texts did not fit the pattern of the 'standard' research article. His explanation of this

account is “the art historical researcher is not concerned to report an experiment but to demonstrate, through matching of evidence of different kinds.

Aluisio & Oliveira (1996) dealt primarily with the corpus analysis on Introductions of on Experimental Physics research papers where they observed eight components which overall corroborate the Swales’ model. Their study was based on a rationale to create a software tools for making the case-based reasoning approach feasible for assisting non-native English users.

Anthony (1999) applied Swales’ (CARS) model, to a description of the structure of RA introductions in the field of software engineering. He evaluated whether the model could be applied to 12 articles that received “Best Paper” awards. His results demonstrated that although the model described the main frame of the introductions, there were a number of features which were not accounted for. Particularly an extended review of literature, many definitions and examples, and an evaluation of the research in terms of application or novelty of the results were not mentioned. Another significant finding of his study was that the step occurrence, cycling and move length across different disciplines might be greater than thought or estimated. The author further emphasised the instance where Cooper found that electrical engineering articles showed few examples of step1-3, while in his software engineering study, step 1-3 was extensively used.” (ibid: 41-42). Anthony offered a few changes to the model and added the step “Evaluation of findings” into the Move 3.

As mentioned in the above sections, there have been attempts to define the contrastive rhetoric styles of non-native academic writers (eg. Vassileva, Moreno, Dahl). Dudley-Evans & St. John (1998:231) reported the significance of this point as follows:

> “the discussion of cross-cultural issues has led to an awareness that the increasing use of English in international business and publication, and the privileging of the Anglo-American rhetorical style in these discourses may disadvantage those use other rhetorical styles.”

The work of Golebiowski (1999) has a great relevance to the present study. Golebiowski applied the CARS model to the analyses of introduction sections of research papers produced by Polish authors. The study focused primarily on the

scholars' ability to write cross-culturally. His findings suggested that Polish scholars use a different style of writing from other English-speaking colleagues. This difference in their discourse avoids the possibility of correspondence of moves defined by Swales. Golebiowski stated that "Swales' model could only be employed in very generic terms" (1999:237) as the data revealed a pattern not similar to that of Swales' CARS model. Golebiowski concluded that authors of academic papers who are speakers of other languages rather than English might have a tendency to transfer their L1 styles and it is with a high probability that the methodological tools and schemas to account for all are not suitable for a universal application.

Another significant study about the move-step structure of RA introductions is the one that was done by Ryvityte (2003). The researcher started with a rationale of distinguishing variations across disciplines and cultures. The corpus consisted of 60 introductions written in English (30) and Lithuanian (30) in the fields of Medicine, Economics and Linguistics. The analyses were carried out by the use of the CARS model. Results revealed some similarities within the fields and languages. The most significant finding of the study was the low ratio of establishing a niche and the weakness of centrality claims in Lithuanian papers. "The most noticeable difference in Move 3 was the unwillingness of Lithuanian authors to indicate the RA structure in the introduction while half of the English introductions in economics and linguistics used this step" Ryvityte (2003:7)

As Samraj (2002) suggested: "there has been less research, on the variations in RA introductions across disciplines despite the growing interest in disciplinary differences in academic writing."

Nevertheless, such studies point to the ways in which academic genres can vary significantly across disciplines, which has important implications for ESP needs analysis. Taking genre analysis as a base of analysis on introduction sections Arvay &Tanko (2005) studied forty English and Hungarian theoretical research article introductions. As a result of the analysis it was found that the CARS Model (Swales 1990) did not fully capture features of theoretical research article introductions. It did not account for the illustration of the phenomenon in focus and for the methodological

explications by the writers. However, they raised a consideration for their relatively small corpus and the focus on one discipline, and made calls for further studies.

The literature cited above is assumed to establish a base for the present study. While the mentioned studies and others on disciplinary variation in research articles have given us some insights into variation within one cultural/linguistic community due to the influence of disciplinary values, our knowledge of the interaction of disciplinary norms in text structure still remains unclear. In order to shed light on this Swales' (1990) CARS model of the Introduction sections is employed to investigate the RA macro structure written in English by native English and Turkish authors .

The present study aims to explore the differences between the move structure and step organisation in introductions written in English by NS author and Turkish NNS authors in the field of Environmental Engineering. With regards to this aim, the following research questions will be used:

1- Are there any differences in the move structure of introductions written in English by NS and NNS authors in the field of environmental engineering?

2- Are there any differences in the organisation of steps in introductions written in English by NS and NNS authors in the field of environmental engineering?

The following section presents the methods for corpus selection and the procedures for the detailed move analysis.

3.0 CORPUS AND METHODS

This chapter consists of two sections. In section 3.1. information about the materials used in the study, in 3.2, description of the procedure followed has been presented.

3.1 The Corpus:

The corpus used in the present study consisted of 20 RAs. The texts in the corpus were selected from the field of Environmental Engineering. 20 papers were randomly selected from two of the well established journals in the field recommended by specialist informants, which are "Waste Management" and "Water Research". The 2002 and 2003 issues of these journals were examined and to provide a native speaker and non-native speaker data 5 articles from each journal were selected mostly from the year 2003. It was not possible to find articles written by only one author, so the maximum number of authors was restricted to four. All of these papers were reporting empirical studies in the field.

The corpus consisted of two types of RA introductions. The first type was a selection of ten RA introductions from the international journals, 5 from Waste Management and 5 from Water Research that were written by native speakers. NS authors were distinguished from NNS authors using Wood's (2001, p. 79) ''strict'' criterion (not his less stringent ''broad'' criterion): authors had to have names ''native to the country concerned'' and also work in an institution in that country (cited in Peacock, 2002:485). Taking this criterion as a starting point, the names and surnames that sounded like native speakers of English were chosen. The institutions of authors were also noted, resulting with 14 authors working in the USA, 6 in th UK and 4 in Australia. In order to check whether the authors of the articles were native speakers, e-mails were sent individually to these researchers' mail addresses given in the first pages of the RAs. However it was not possible to have every e-mail returned. Two of the authors' e- mail addresses were no longer in use. As a consequence, eight authors were sent e-mails. Out of these eight authors, six (6) had replied and acknowledged that English is their native language. The second set of introductions was written by Turkish

authors in English. The 10 RAs were taken from the aforementioned international journals (5 from each). The list of the Research articles is given in Appendix I.

Table 3.1 displays the length of the introduction of the RAs. The number of words was counted by a word counter (word processor- word count). The publication years of the articles are also given. The names of the journals will be used in abbreviated form henceforth. “Waste Management =WM” and “Water Research =WR”. T stands for articles written by Turkish authors.

	Number of words in the introductions	Page length of the articles	Publication Date
WM1	181	11	2003
WM2	773	11	2003
WM3	913	13	2003
WM4	344	3	2003
WM5	623	12	2002
WR1	477	8	2003
WR2	543	10	2003
WR3	408	8	2003
WR4	299	7	2003
WR5	470	12	2003
WMT1	701	8	2002
WMT2	674	6	2003
WMT3	162	7	2003
WMT4	241	3	2003
WMT5	170	6	2003
WRT1	568	7	2002
WRT2	193	4	2003
WRT3	561	6	2003
WRT4	544	8	2003
WRT5	324	7	2002
Total :	9169		

Table 3.1. Features of the NS and NNS Corpora

3.2 Method of Analysis:

The corpus was analysed in the framework of Create A research Space model proposed by Swales (1990). The macro organisation of the introduction sections were analysed in terms of moves.

The definition of "a move" is provided by some researchers as follows:

> *"The term move means a text segment made up of bundles of linguistic features (lexical meaning propositional meaning illocutionary forces etc.) which give the segment a uniform orientation and signal the content of discourse in it."*
> Nwogu (1997:122)

Holmes's (1997:325) definition of 'move' is:

> *''a segment of text that is shaped and constrained by a specific communicative function''*

Swales& Feak define a move as:

> *"Move is a functional term that refers to a defined and bounded communicative act that is designed to contribute to one main communicative objective, that of the whole text."*
> (2000:35)

According to Dudley-Evans& St. John (1998:89):

> *"A move is a unit that relates both to writer's purpose and to the content that s/he wishes to communicate. A step is a lower level text unit than the move that provides a detailed perspective on the options open to the writer in setting out the moves in the introduction."*

The above definitions all carry some points of importance and share similar features in defining the move. All see it as a segment or unit that is used in relation to needs of the author realising an extent of communicative purposes.

The introductions were manually analysed to find out the overall organisational patterns. The strategies in the two text groups were identified and analysed according to the moves and steps in Swales' CARS model. As the research articles were clearly divided into sections, no problems were encountered in defining the introduction

sections. First of all, all of the 20 introductions were read carefully. The analysis was carried out at the sentence level. The linguistic signals of moves were highlighted with colour pens as suggested by Swales and Feak (1994). Each sentence was analysed in relation to the other, in order not to see the sentences isolated from the context. The analysis of the corpus had to be performed several times as the analyst was a non specialist in the field. This problem was a concern for Crookes (1986). To overcome these limitations, in the instances where there were difficulties in defining the move or step that a sentence belonged to, the sentences were noted down. These were later discussed with specialist informants in personal reviews.

In order to provide interrater reliability 6 of the RAs were analysed by a researcher specialising in Applied Linguistics. High level of inter-analyst agreement on move structure was initially achieved and complete agreement was reached after discussions.

A sample analysis of an RA introduction chosen from the corpus is provided in the Appendix (See appendix A). Some phrases, lexical items and other indicators that are used to discriminate between steps, are highlighted to show how the decisions were made. The results of the study will be provided in the following section.

4. RESULTS AND DISCUSSION

This section provides the overall results of moves in the two corpora. In section 4.1 the results of Native Speaker Corpus and Turkish Author Corpus are given in details. Section 4.2 provides information about the steps found in both corpora and interpretation of these findings are stated and discussed. In 4.3 contrastive comments about the findings across the two corpora are made and an evaluation about the probable reasons for these findings is provided.

4.1. Move Structures of the Introductions in the Native Speaker and the Non-native Speaker Corpora

The move structures of the introduction sections of the Native speaker and Non-native speaker RA introductions are shown in Table 4.1. In the table below the names of the RAs are abbreviated as WM (Waste Management Native speakers' RAs), WMT (Waste Management Turkish writers' RAs), WR (Water Research Native speakers' RAs), WRT (Water Research Turkish writers' RAs) and henceforth the names will be used this way. The number of move units in the introductions has also been given. By looking at the data, especially the first column, it is possible to say that all of the introductions in the whole corpus started with Move 1 "Establishing a Territory".

RA	Structure (moves)										Number of Move units
Waste Management											
WM1	**1**	**2**	**1**	**3**							**4**
WM2	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**3**	**10**
WM3	**1**	**2**	**1**	**3**							**4**
WM4	**1**	**2**	**1**	**3**							**4**
WM5	**1**	**3**	**R**								**3**
WMT1	**1**	**2**	**1**	**2**	**3**						**5**
WMT2	**1**	**3**									**2**
WMT3	**1**	**3**	**1**	**3**	**1**	**3**					**6**
WMT4	**1**	**3**									**2**
WMT5	**1**	**2**	**1**								**3**
Water Research											
WR1	**1**	**2**	**1**	**3**							**4**
WR2	**1**	**2**	**3**								**3**
WR3	**1**	**2**	**1**	**2**	**1**	**3**	**X**				**7**
WR4	**1**	**2**	**1**	**3**							**4**
WR5	**1**	**2**	**1**	**2**	**3**						**5**
WRT1	**1**	**3**	**1**	**2**	**1**	**2**	**1**	**3**			**8**
WRT2	**1**	**3**									**2**
WRT3	**1**	**2**	**1**	**3**							**4**
WRT4	**1**	**3**									**2**
WRT5	**1**	**2**	**1**	**2**	**3**						**5**

WM: Waste Management WR: Water Research

WMT: Waste Management -Turkish writers WRT: Water Research -Turkish writers

Table 4.1. The Move Structures of Introductions by NS and NNS authors

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To comment on the results provided in table 4.1, it can be stated that in both NS and NNS corpora Move 1 (Establishing a territory) is the most common move type and it occurred in 20 out of 20 introductions. However, the same account was not found in Move 2 (Establishing a niche). 9 out of 10 introductions in the NS corpus included Move 2; whereas this amount was rather low for the NNS corpus.

For a better explanation of this finding, the total numbers of moves in two corpora are provided in figure 4.1. below.

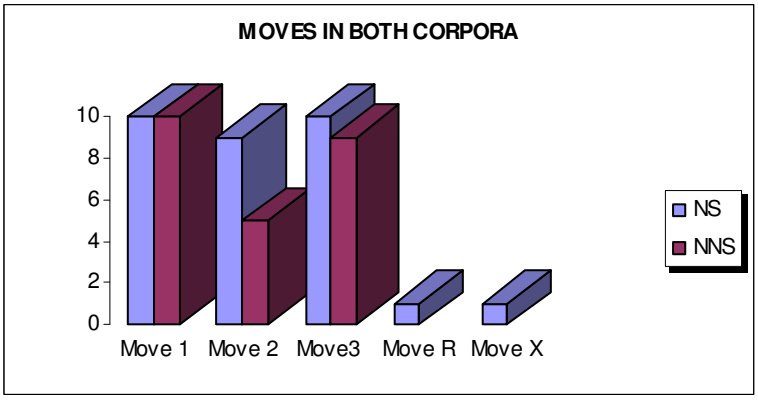

Figure 4.1 Percentages of moves in corpus

As it can be seen in figure 4.1, there is a high resemblance between the two corpora with regard to Move 1 and Move 3. Nevertheless, the results of the analysis of Move 2 revealed that the number of introductions which included Move 2 in the NS corpus doubled the number of introductions in the NNS corpus. In other words, Move 2 occurred only in 5 of the introductions in contrast to the high occurrences of Moves 1 and 3. A detailed analysis of the NS introductions can be examined at Appendix 2 and for the NNS introductions (Turkish authors) see Appendix 3. In order to understand move occurrences and step frequencies better, a detailed analysis is needed.

For this analysis, the frequencies of step organisation of the introduction sections of the Native and Non-native Speaker RA introductions are shown in Table 4.2.

	Instances		Number of RAs		Percentage in the corpus	
	NS	**NNS**	**NS**	**NNS**	**NS**	**NNS**
***M1** Establishing a territory*						
S1	**7**	**8**	**4**	**6**	**3.74%**	**4.57%**
S2	**85**	**81**	**10**	**10**	**45.45%**	**46.28%**
S3	**45**	**41**	**10**	**8**	**24.06%**	**23.42%**
					73.25%	**74.27%**
***M2** Establishing a niche*						
S1A	**0**	**0**	**0**	**0**	**0%**	**0%**
S1B	**18**	**11**	**9**	**4**	**9.62%**	**6.28%**
S1C	**0**	**0**	**0**	**0**	**0%**	**0%**
S1D	**0**	**1**	**0**	**1**	**0%**	**0.57%**
					9.62%	**6.28%**
***M3** Occupying the niche*						
S1A	**9**	**7**	**6**	**5**	**4.81%**	**4%**
S1B	**15**	**21**	**8**	**7**	**8.02%**	**12%**
S2	**0**	**5**	**0**	**1**	**0%**	**2.85%**
S3	**0**	**1**	**0**	**1**	**0%**	**0,57%**
					12.83%	**19.42%**
Unlabelled moves						
M -R	**6**	**-**	**1**	**-**	**3.2%**	**0%**
M -X	**1**	**-**	**1**	**-**	**0.53%**	**0%**
TOTAL	***187***	***175***	***10***	***10***	**100%**	**100%**

Table 4.2. Frequency of Occurrence of Each Move and Step in the NS and NNS Corpora

The figures in the table show that the steps that realised Move 1 are in close relation in both corpora. For example Step 2 “Making topic generalisations” had revealed a ratio of 45.45% in the NS speaker corpus, and 46.28% in the NNS corpus. It can be also seen that the total percentages of moves in the corpora showed similarities.

These numbers revealed that Move 1 occupied nearly three quarters of the overall corpora. The domination of this move can be seen in Figures 4.2 and 4.3.

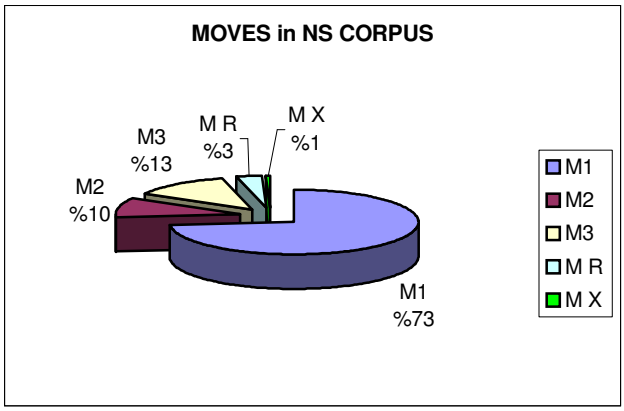

Figure 4.2 Percentages of moves in the NS corpus

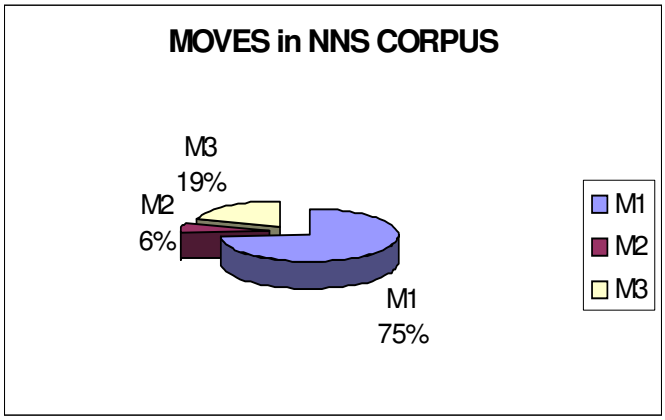

Figure 4.3 Percentages of moves in the NNS corpus

It was mentioned in the above discussion that the total number of Move 2s in the NNS corpus was relatively low, compared to the NS corpus. However, the figures above seem to represent findings concerning the Move 2, which may be regarded similar. Nevertheless this is not the case, as the figures represent the proportion of the Move 2 instances in both corpora with percentages. These percentages of 10% in the NS corpus and 6% in the NNS only represented the occurrences of instances in the overall corpora. Consequently, when the distribution of M2 over introductions is concerned, Move 2s in the NNS corpus are low in comparison to the NS data. Martin (2003:41) speculated about the high incidence of the deletion of Move 2 in the Spanish abstracts on the basis of the audience and claimed that Spanish scientific community of experimental social sciences regard criticising the work of previous authors unconventional. He explained the reason may be due to the fact that the reduced number of members belonging to this community makes it unnecessary for the Spanish researcher to establish a niche, whereas the opposite should put a pressure to have a research place in international settings.

According to Swales (1990: 159) there is a strong link between Move 2 and Move 3: whenever a niche is created with the help of a Move 2, it is followed by a Move 3. Therefore, Move 2 relates what is in the literature to what will be in the RA. If the CARS model is investigated, then one may suppose that Move 2s should be followed by Move 3s. However, this was not the case in the majority of introductions. There were only four instances in the corpora: two in the NS corpus and two in the NNS corpus, where the gap identified were followed by an announcement of present research. In the rest of the introductions that included M2s, there were 8 introductions (in both corpora) in which M2s were followed by M1s which were often topic generalisations and reviews of previous research. Just after 1 or 2 sentences (max 3 in two cases) that realise M1, they were followed by M3s.

In addition to these, the data showed that there were some forms which could not be categorised into any step of the model. In the NS speaker corpus, two moves outside the parameters of CARS model definitions were found. In the first one (example 1), the author directly stated the rationale of the study. The analysis of the 6 sentences that realised this function were labelled as R and shown as the same in the tables and figures. See example below:

1) *"Two facts led the authors to conduct the study. First, the site is legally obligated to remove the contents from the high-level waste tanks and to produce an environmental impact statement (EIS) that considers options."*

WM5

In a detailed analysis in his book Swales himself (1990:168) was not able to specify the type of a sentence and left it uncategorized with a question mark. This concern was also raised by Anthony (1999) who had modified the model and added a step in order to overcome these limitations.

2) *"These studies should be useful for developing more efficient strategies for in situ bioremediation of explosive contaminated soils and groundwater."*

WR3

The example above is the second instance of the unlabelled moves. This sentence was the closing sentence of an introduction and was preceded by a M3S1B. The sentence explained the benefit of the study. This may arguably be regarded as an attempt to justify the usefulness of the study.

One significant aspect in Swales' CARS model is the possibility for the repetition of moves-steps, forming a cycle. Swales (1990) indicated two reasons for this occurrence: the lengths of the Introductions and the perception of the research field. As Swales explained niche-establishment does not necessarily occur only at the end of a literature review, but may follow reviews of individual items, so that cycles of Move 1/Step 3 and Move 2 recur (Swales, 1990:158). This cyclical pattern of Move 2 was not clearly a typical aspect of introduction sections in the NS environmental science RAs. The analysis showed that a cycle of M1-M2 occurred in only one third of the introductions (3 introductions), ranging from two to four cycles in each Introduction. Most of these cycles occurred between Move 1-S2 and Move 2-S1B. In the NNS introductions, the same cycle occurred with the same frequency (3 introductions). However, the number of the cycles was only two but when they occurred, they repeated mainly Move 1-S2 and Move 2-S1B and in two cases cycles of Move 1-S3 and Move 2-S1Bs occurred. When compared with the cycles in native English introductions, the cycles in the non-native ones were found to have a close resemblance.

There are some reasons for such choices. As Anthony (1999: 41) puts it "Swales comments that the occurrence of steps will be discipline-dependent, stating that the hard sciences will show a preference for using steps 2-1B and 2-1D over steps 2-1A and 2-1C, which are more common in education, management, and linguistics." Posteguillo (1999) states that an important distinctive feature of Move 2 is its cyclical nature (also see Crookes, 1986); that is, it is normal to find this move repeated in a series of instances throughout the same introduction, usually alternating with steps in Move 1.

The present study also looked at the patterns of moves found in the NS and NNS introductions. When the overall move structures of the introductions were investigated, it was found out that only one introduction out of 10 matched with Swales' pattern. An interesting finding of the study was that 50 % of the introductions followed a 1-2-1-3 move order.

One of the introductions in the NNS corpus, which was composed of 27 sentences included 10 move units. This finding supports Crookes (1986) and Swales' (1990) claims that the longer an introduction is, the more chances of cyclicity. On the contrary in the NNS corpus, an introduction formed of 27 sentences included just two moves by an absence of M2. The examination of move patterns in both corpora revealed some distinctive features, as presented in Table 4.3. and Figure 4.4.

		Number of Occurrences		
	Move Patterns	**NS**	**NNS**	**Total**
Pattern I	**1-2-1-3**	**5**	**1**	**6**
Pattern II	**1-3**	**-**	**4**	**4**
Pattern III	**1-2-1-2-3**	**1**	**2**	**3**
Pattern IV	**1-2-3**	**1**	**-**	**1**
Pattern V	**1-3-R**	**1**	**-**	**1**
Pattern VI	**1-2-1-2-1-3-X**	**1**	**-**	**1**
Pattern VII	**1-2-1-2-1-2-1-2-1-3**	**1**	**-**	**1**
Pattern VIII	**1-2-1**	**-**	**1**	**1**
Pattern IX	**1-3-1-3-1-3**	**-**	**1**	**1**
Pattern X	**1-3-1-2-1-2-1-3**	**-**	**1**	**1**

Table 4.3. Move Patterns found in the NS and NNS Corpora

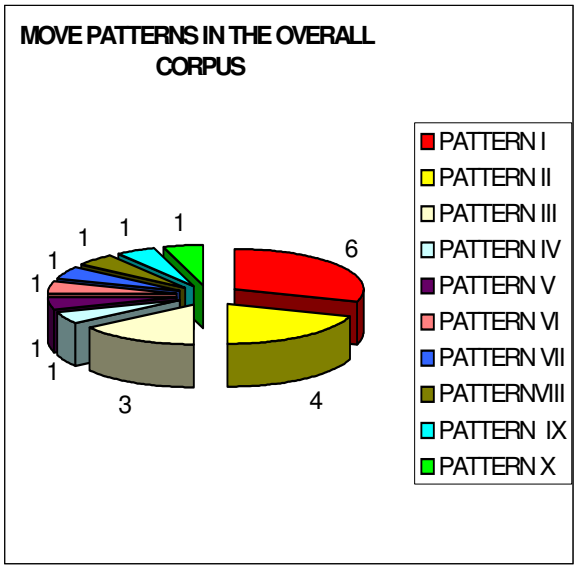

Figure 4.4. Move Patterns in the NS and NNS Corpora

By looking at the data in the table, and especially the "moves patterns" column, it is possible to see that 10 different move patterns occurred in 20 RA introduction sections. The numeration of the patterns was arbitrary. The only criterion was to start with the most preferred patterns in the corpus. If the figure above is examined, it may be noticed that the large red slice in the pie chart which is Pattern I, occurred in 6 introductions. Since table 4.2 is designed with an order of instances, it is easy to see Pattern II which is the second most preferred pattern in the NNS corpus, occurred in 4 of the introductions written by Turkish authors. Considering the pie chart, this pattern has the second largest slice. In addition, Pattern III the third most preferred and second common pattern among the NS and NNS introductions, was realized 3 times. The rest of the patterns were unique for each of the articles and therefore were represented with slices in the pie chart (see figure 4.2)

The results revealed that the most preferred structure was Pattern I. The preference for this 1-2-1-3 pattern can be explained this way. The 5 instances in the NS corpus opened with steps of establishing a niche then continued by a Move 2 step 1B and later, a Move 1 step 2 or step 3 followed this move, finally the introductions were concluded by Move 3 Step 1As or 1Bs. On the other hand, the only instance in the NNS opened with a M1 S2 and continued with a M2S1D which was followed by a M1 S3 and M3 S1A. The main aim of this pattern was to explain the topic of the identified gap by topic generalizations or references to the literature. The examples below provide information about this description.

3) *"The anaerobic biodegradation of explosives is well documented***(M1S2).** *However, most studies have been carried out under poorly defined conditions with respect to the electron donors and acceptors.* **(M2S1B).** *For example, studies have demonstrated the anaerobic biodegradation of RDX in nutrient broth yeast extract medium and municipal sludge.* **(M1S3).**

As illustrated in the above example, the identified gap was explained by the following sentence. This may be due to an underlying motivation for a clear identification of the importance of the gap. By doing this, authors may be trying to prove the accuracy of their claims.

The second pattern, which was 1-3, occurred in four of the NNS introductions. In these introductions, the authors did not point to any problem in the previous research and directly moved from generalisations about the field to the announcement of the features of their studies. The example below is a good representation of this instance.

4) *Limited amounts of O2 within the waste are the main reason for the reduced risk of CH4 explosions at solid waste sites. In this study, quantitative determination of gases such as O2, CO, CO2 CH4 and H2S was carried out at the disposal site near the Uzundere Compost Plant of the Solid Waste Treatment Department of Izmir Metropolitan Municipality.*

WMT2

In the above example, the authors stated a point in the current knowledge and directly moved to announcement of their study, which is concerned with that knowledge. This may be regarded as an establishment of a research space in the field, without any criticism to previous research.

To sum up, the findings of the study revealed some similarities especially for the frequencies of steps in Move1. Besides, English researchers had a preference to establish the niche by indicating gaps in previous research, and half of their Turkish colleagues favoured to use that step, whereas the other half, did not apply any of the steps for gap indication.

4.2 The Organisation of Steps in the NS and NNS corpora

The following section is divided into three subsections according to the three major moves in the Introduction sections proposed by the CARS model (Swales, 1990) as “Establishing a research territory”, “Establishing a niche” and “Occupying the

niche". The percentages and numbers given for results throughout this section can be seen in Table 4.2.

4.2.1 Move 1- Establishing a Research Territory

Research article introductions open with a move of setting up the significance of the research space the study takes place in, where authors establish their research territory.

Step 1 Claiming Centrality

This step aims to persuade the group of readers about the importance of the field of study by indicating the significance of the general research area and implies that the present work is crucial, relevant and interesting in some respects. In the native speaker corpus, this ratio was 40 % (4 out of 10 articles) and 7 sentences realizing this step formed 3.74% of the corpus. In the Turkish writer corpus, this ratio was 60 % (6 out of 10 introductions) and 8 sentences realizing this step formed 4.57% of the corpus. This finding is slightly above the NS data.

Swales (1990:141) reported that in a detailed examination of 158 introductions, he found out the occurrence of this step slightly less than 50 %. Swales also claimed that this step may widely be distributed across disciplinary areas and exercised less in physical science (ibid). In a study, Ryvityte (2003) reported that the percentage of this step amounted to 80% in the corpus of 30 English RAs from 3 different fields. Anthony (1999) illustrated the ratio for the same step as 41.7 % (5 out of 12 RA's) in his corpus of computer science RAs. However, Arvay & Tanko (2004:77) stated that only 6 RAs out 30 RAs in the English corpus utilised this step. Samraj's study in Environmental Science demonstrated a high ratio of step 1. 17 out of 24 RAs included the step. Besides, Samraj (2002:6) gave additional information about the step and she separated it under two headings as "importance in real world" and "importance in research."

In the present corpus from the field of Environmental Engineering, I have found similar patterns, however no division among step 1 was done assuming that the importance in research and importance in real world carry the same degree of importance and together create the field of interest therefore should not be divided.

Some examples are:

5) *"Recently, there has been increased emphasis on the operation of landfills as bioreactors to enhance decomposition (Mehta et al.,2002; Pohland and Kim, 2000; Pacey et al., 1999)."*

WM3

6) *"The need to assess whether environmental management is effective and efficient in Turkey and to develop mechanisms to improve environmental management are urgent issues."*

WMT5

7) *"The pulp and paper making industry is a very water-intensive industry and ranks third in the world, after the primary metals and the chemical industries, in terms of freshwater withdrawal."*

WR1

8) *"The removal of these contaminants has received considerable attention in recent years."*

WRT5

Another interesting finding of the present study is that Step 1 is used as the initial sentence of only one introduction out of 4 that included the step. The other 6 instances were located in the middle or closer to the end of the introductions. Regarding the position of steps, they may be arguably counted as controversial points to Swales' (1990) model, which placed the step to the very beginning of the writing scheme.

Step 2: Making Topic Generalizations

In the native speaker corpus this step was used by all authors in all cases (10 out of 10). This step that is used for the generalisations is the most frequent step among all other steps. There were 85 instances where this step occurred amounting to 45.45 % of the NS corpus. Besides, 6 RAs started with this step. Some examples are:

9) *"The raw wastewater from paper and board mills can be, potentially, very polluting."*

WR1

10) *"There are basically two types of wastewaters; one is high strength process wastewater that originate from yeast separators and processes such as centrifuges and rotary vacuum filters, and the other one is low and medium strength process wastewaters that originate from floor washing and equipment cleaning."*

WRT1

Similarly, in the non- native speaker corpus, on the other hand, this step was used by all authors in all cases (10 out of 10), the same as the native speaker corpus. This step was the most frequently used step among all other steps. There were 81 instances where this step occurred amounting to 46.28 % of the NNS corpus. Besides, 7 RAs started with this step.

11) *"Many different acidic leachants have been used to simulate particular environmental stresses or to simulate accelerated/long-term exposure to the environment."*

WM2

12) *"Electrocoagulation is a process consisting of creating a floc of metallic hydroxides within the effluent to be cleaned, by electrodissolution of soluble anodes."*

WMT1

The finding regarding the high frequency of step 2 has similarities with other studies in the literature. For example Ryvityte's ratio of 100 % in 30 RAs (2003:3), Anthony's ratio of 91.7 % (1999:141), Samraj's ratio of 100 % (2002:6) and Posteguillo 65 % (1999:142) have a relevance with the findings of present study.

During the analysis, examples like the above ones were easily defined but whenever an ambiguous point was encountered, the previous and preceding sentences were investigated and lexical items were used for the clarification of the step. It should be noted that some difficulties were encountered in distinguishing this step from the third step in Move 1 namely Reviewing Items of Previous Research.

This problem was also reported by Samraj as follows:

> "In the present analysis it was difficult to distinguish steps 2 and 3 of move 1. Previous studies of article introductions have not alluded to this problem. However, there appears to be no clear basis for distinguishing topic generalizations from reviews of previous research."
>
> (2002:6)

Anthony (1999:40) also commented on a problem related to this step. His concern was somewhat different as he pointed out the overlapping nature of move 1 Step 2 with Move 2 Step 1D. However, in the present study no difficulties of this kind were met but the criteria was kept in mind.

For example:

13) *" Sepiolite is a natural clay mineral with a formula of magnesium hydrosilicate (Si12)(Mg8)O30(OH)6 (OH2)4 _ 8H2O* [1]. *"*

WRT 5

14) *"Nutrient enrichment, especially by nitrogen and phosphorus, can have a significant effect on watercourses, resulting in changes in aquatic communities, vegetation and invertebrate assemblages, including large increases in the biomass of filamentous algae, cyanobacteria and macrophytes [1–3]".*

WR2

In this step, the author's choice was classified as a generalization for the current knowledge although there is a reference bracket at the end of the sentence. Therefore, it may be claimed that the authors may have a tendency to support their generalizations by references to the literature or they may draw conclusions from the literature and state their ideas by this generalizations for the current state of knowledge.

Step 3- Reviewing items of previous research

The results obtained from the NS author corpus of the present study can be summarised as: 10 out of 10 RA introductions in the NS corpus included the reviews for the previous works in the field. This step took an initial place in the opening sentence of 3 RA introductions. 45 sentences were recorded to realise this step occupying the 24 % of the overall NS corpus. The findings of the NNS author corpus of the present study are in accordance with the NS style. 9 out of 10 RAs in the NNS corpus included the reviews for the previous works. This step of the main trends and findings of previous research had an initial place in the opening sentence of only 1 RA introduction. 41 sentences were recorded to realise this step occupying the 23.42 % of the overall NNS corpus.

The examples from the corpora are given below:

15) *"Since the 1960s, B.pseudomallei has come to prominence in other parts of the world through infection of Vietnam veterans and, more recently, as a potential biological weapon [5]."*

WR4

16) *"Heck et al. [10] concluded that the effect of metallic shock loads on unacclimated sludge was greater than that on acclimated sludge."*

WRT4

17) *"Previous research has found that 4, 8, and 17% of the gross regional product of the regions surrounding the Hanford, Savannah River, and INEEL sites is directly attributable to the DOE's environmental clean-up spending program [5]."*

WM5

18) *"Measurements of CH4 and CO2 in seven waste disposal sites in the UK showed that the concentration of the two gases varied between 37 and 65% and 24 and 42%, respectively (Allen et al., 1997)."*

WMT2

The findings accord with Anthony's results. He illustrated a similar finding in his corpus of 12 computer science RAs in which Move 1 Step 3 occurred with a percentage of 100 (1999:41). Posteguillo's study (1999:142) in the same disciplinary area showed an occurrence of step 3 with a frequency of 75 % in 40 RAs. Arvay& Tanko (2004:83) explained that step 3 was the most frequent step in their corpus although not all the articles in their English corpus included this step.

There is one interesting point to be noted for this step. In the process of the identification of this step, there was an obstacle to overcome. For this step, Swales defines two types of citation structures: integral vs. non-integral citations (Swales 1990a:148). These two types a) non-integral (authors' name in brackets), integral citations (authors name included in sentence as a subject). However; the example below does not feature either type of the citations but was labelled as a step 3.

19) *"Leachate concentrations of 920–1400 mg NO3_/l were generated in a refuse reactor that was supplied with air and the leachate was cycled to a denitrification reactor where NO3_ removal ranged from 91 to 93%."*

WM3

As mentioned above, when the citations are taken into consideration or the footnotes are accounted, the above example does not feature any of these items. On the other hand, if the sentence is examined in terms of lexical items, it will provide evidence that it is reviewing a previous study. The finding suggests that the description of a move or step is very much likely to be bound to its place and the sentences before and after it. The example below would seem to clarify the criteria for such a conclusion.

20) *"Onay and Pohland (1998) simulated a series of landfill cells operated under methane producing, nitrifying, and denitrifying environments.**Leachate concentrations of 920–1400 mg NO3_/l were generated in a refuse reactor that was supplied with air and the leachate was cycled to a denitrification reactor where NO3_ removal ranged from 91 to 93%."***

WM3

4.2.2. Move 2- Establishing a niche

There are four steps under this heading. Counter-claiming, Indicating a gap, Question-raising or Continuing a tradition.

Step 1A -Counter Claiming

None of the authors of the introductions in the NS corpus preferred to counterclaim that the previous work is hopelessly misguided. As a result, no instances of this step were found. This is also the case for the authors of the introductions in the NNS corpus. No instances of this step were found in the NNS corpus.

Posteguillo (1999:143) discussed that this step seemed to be avoided systematically and was not regarded as a suitable way to introduce the matter for the research in question. Ryvityte (2003:3) found only one instance of S1A out of 30 English introductions and supported the view of Posteguillo. Furthermore, it should be noted that there were no occurrences of Step 1A in Anthony's corpus (1999) which consisted of 505 sentences. All of the above information and the present data clearly suggest that counter-claim of previous work is not a preferred style of establishing a niche and is systematically avoided.

Step 1B-Indicating a Gap

The step for pointing that the previous work suffered from some limitations is the most preferred way of establishing a niche in research. The NS corpus included a rate of 90 % (9 out of 10 Introductions) for the use of this step. This step is the only

favoured one among other three steps for establishing a niche. 18 sentences occupied 9.62 % of the overall corpus and 100 % of M2 in the corpus.
Examples of this are:

21) *"Little is known of the susceptibility of solidified industrial wastes and solidified contaminated soils to this form of attack, or whether conventional leaching models can be applied."*

WM2

22) *"However, most studies have been carried out under poorly defined conditions with respect to the electron donors and acceptors."*

WR3

This step is also the most preferred way of establishing a research space for the NNS authors. The corpus included a rate of 90 % (9 out of 10 introductions) for the use of this step. It is the most preferred one among other three steps for establishing a niche. 11 sentences occupied 6, 28 % of the overall corpus and 91.7 % of M2 in the corpus. This rate is a bit lower, when it is compared to the NS corpus.
Examples of this are:

23) *"However, no study to date has appeared on the adsorption of quaternary amines onto sepiolite."*

WRT5

24) *"Large pH fluctuation is especially troublesome because the pH tolerance of conventional biological and chemical treatment systems is very limited."*

WMT1

These results support the findings in the literature. In the studies of Posteguillo (1999) and Anthony (1999) Step 1B was found to be the most frequently used step for establishing a niche. Two other studies that support these findings are Ryvityte (2003) and Arvay &Tanko (2004), whose English corpora revealed that this step was the most frequent one. Therefore, in the view of these findings, it is reasonable to suggest that the

step indicating a gap, is the most preferred way when there is a need to point out a dearth in the previous work both by the NS and NNS authors.

Step 1C -Question-raising

In the NS corpus, there were no instances of a research problem that is defined by asking a question to which the answer is unknown. The NNS corpus did not include any instances of a question to which the answer is unknown. This suggests that raising a question is not a preferred way to establish a niche by either the NS or NNS authors.
These findings support Anthony (1999). However, they do not comply with what is already stated in some of the studies. In Posteguillo (1999) and Arvay &Tanko (2004) (English Corpus), Step 1C was the second most frequent step in move 2. In addition, there were instances of step 1C in Ryvityte's (2003) English corpus and that was interesting to note that all of the Economics RAs in the corpus realised M2 only by this step.

Step 1D-Continuing a tradition

Sometimes the author expresses a need or interest in the community to know more about the mentioned topic. However, none of the introductions in the NS corpus had examples of this step. Only one of the introductions in the NNS corpus raised the importance of more studies needed in the field. This step is the second favoured step for establishing a niche. 1 sentence occupied 0.57% of the overall corpus and 8.33 % of M2 in the corpus.

Some findings in the literature showed that this step more or less was another preferred way of establishing a niche. In half of the RAs in Anthony's corpus (6 out of 12), this step was used and in Posteguillo's (9 out of 40), the step was included. This number is rather low in Arvay &Tanko's (2004) English corpus, only 2 out of 20 and a little higher in Ryvityte's English corpus as 4 out of 30.

The only example in both corpora is:

25) *"For integrated WAO–biological treatment process, more detailed studies concerning the WAO pretreatment step are necessary for the design of a rational and efficient integrated process [4]."*

WRT3

To sum up, the analysis of Move 2 with regards to its steps showed similar strategies in the NS and NNS introductions. Both author groups seemed to avoid presenting counter-claims of previous research findings, and they even preferred to use the gap indication as the only step for niche establishment only with one single exception in the NNS corpus. As mentioned early in this section, similar findings were revealed in other studies such as Posteguillo (1999), Anthony (1999), Ryvityte (2003), where Move 2 seemed to be avoided systematically by authors. However, when the distribution of this move in the corpus was investigated, it was found that in the NNS corpus only 50% of the introductions included Move 2 (5 out of 10) and four of these instances were realised by Move 2-S1B (*Indicating a gap*) as the most preferred means of presenting the need for the work and Move 2-S1D only in one introduction in both corpora.

4.2.3 Move 3 -Occupying the niche:

The last move Swales proposes in his CARS model which indicates the contents, structure and/or aims of the paper in relation to the background information and main issue is occupying the niche. This is done by outlining purposes, announcing present research, announcing principal findings or indicating research article structure. Swales also notes that there is a strong link between Move 2 and Move 3: "whenever a niche is created with the help of a Move 2, it is followed by a Move 3, whose function is to fill the niche" (1990: 159).

Step 1 A - Outlining Purposes

Out of the five types of step choices S1A is the second most preferred in Move 3 in the NS corpus. 6 out of 10 introductions contain this step, occupying 4.81 % of the overall corpus. The NNS corpus revealed that S1A was also the second most preferred step in Move 3. 5 out of 10 introductions contain this step, occupying 4 % of the overall corpus which is very similar to the findings of the NS corpus. This finding is in line with the findings in the literature. Ryvityte's (2003) English corpus showed some variety in the distribution of the step across disciplines but the step 1A was the most frequent of all. In Anthony (1999) the rate was slightly lower but nearly half (5 out of 12) of the number of the introductions identified the step. Arvay & Tanko's English corpus illustrated that this step was present in all of the introductions and was the second most frequent step type in move 3 as is the case for the present study.
Examples of the step are:

26) *"The primary objective of this study was to examine the ability of a series of electron donors to stimulate the anaerobic biotransformation of explosives."*

WR3

27) *"The ultimate goal in the study is thus to further treat the plant's wastewater towards the removal of color and COD."*

WRT1

28) *"The purpose of this paper is to demonstrate, through an experimental laborator investigation, that crumb rubber from scrap tires can be used to produce a high-quality, lightweight flowable fill for construction*."

WM1

29) *"In this study, our aim was to investigate the decolorization by electrocoagulation from the solutions containing some textile dyes and to determine the influence of the variables such as current density, cell voltage, mixing rate and electrolysis time on decolorization process"*

WMT1

Step 1B -Announcing Present Research

Another predominating form that Move 3 Step 1 can take is announcing the scope of the methodology of the study. Results revealed that 80 % of the introductions in the NS corpus contained this move. With a percentage of 8.02 in the overall corpus, Step 1B was the most frequent step in Move 3. This suggests that the NS author have a preference to place items of their present research, mostly methods, materials and procedures. The NNS corpus results revealed that 70% of the introductions contained this move. With a percentage of 12 in the overall NNS corpus, Step 1B was the most frequent step in Move 3. In addition, the sentences used for the realization of this step in the NNS corpus occupied more place than that of the native speakers. Although this step took place in 8 introductions in the NS corpus, there were only 15 instances, on the other hand, 7 introductions in the NNS corpus included this step 21 times.
Examples:

30) *"Given this context, this paper uses an interregional economic simulation model to estimate the impacts of building and operating facilities to manage the salt wastes in the high-level waste tanks at the Savannah River nuclear weapons site in South Carolina"*

WM3

31) *"The measurements of the various gases were correlated with each other in order to explain the observed differences in gas concentrations in various locations at the disposal site."*

WMT2

32) *"In the current study, we set out to test the efficacy of these criteria for chlorine disinfection of B. pseudomallei in water."*

WR4

33) *"Also considered in the present work is the determination of the change of the ratio of biological oxygen demand to chemical oxygen demand."*

WRT3

These findings are similar with the findings of Posteguillo (1999) and Anthony (1999). The frequencies are the same as almost all of their corpora contained instances of Step 1B (97.5 %; 100% respectively) In addition to this, in Arvay &Tanko's (2004) Step 1B was found to be the most frequent step in M3.

Step 2 -Announcing Principal Findings

In this step, researchers may indicate the results they obtained or give an overall summary of their findings by the use of this step. However none of the NS authors used it in the corpus. This is at odds with the findings of Anthony (1999:41) who found a ratio of 75% and Posteguillo (1999:142) who found a ratio of 70 %.

On the other hand, there is one introduction in the NNS corpus that made use of the step to announce findings which occupied 2,85% in the overall NNS corpus.

34) *"Results of the gamma spectrometric analyses have shown that the activities were low enough to be considered as LLW. Total alpha counts were taken to verify that there was not any a (alpha) bearing waste in the active sludge."*

WMT4

Arvay& Tanko (2004:88) found a low ratio of this step and proposed underlying reasons for this as: "due to the fact that the results that a theoretical argumentation may produce are of different nature and cannot be summarised with the help of a few figures."

Step 3 -Indicating Research Article Structure

In this step authors explain the structure of their study. It is assumed to be useful to outline the organization of the written research that follows so that the reader has a clear idea of what is going to come next and in what order. Ryvityte (2003:6) describes the articles that have this step to be reader friendly.

Nevertheless, none of the NS authors preferred to use this step. It may arguably be said that the journals included in the present study follow a similar pattern and the

introductions are relatively short. As a result, no indication of RA structure is assumed to be necessary in the NS corpus. However; there is an example in the NNS corpus. This example is interesting to note as it resembles to a sentence taken from a methods section or elsewhere in the RA.

35) *"Specifications for the liquid LLW and the sludge are given in Table 1."*

WMT4

Posteguillo (1999:145) reports that in computer science RA introductions Move 3-Step 3 had a high percentage of use and even one introduction had an independent sub-section within the introduction solely for giving a full account of the contents of each section in the RA.

In the present study, the results of the analysis revealed that six of the native English Introductions ended with Move 3-S1B (*Announcing present research*), only 3 introductions closed with Move 3-1A (*Outlining purposes*), and one introduction finished with Move R, a move not included in the CARS model. The non-native English introductions mainly used Move 3-S1B for the closure of their introductions (6 out of 10), and 3 introductions closed with Move 3-1A. Still, one introduction also used the step M3-S2 which was not found in the native English introductions. The remaining introduction did not include any M3 steps. In addition, it should be noted that except one case, Move 3-S2 and M3-S3 were not used in either corpus. The absence of these steps in introductions may be bound to the special topic under discussion and the available space limitation in journals.

4.3. Overall Findings from the NS and NNS Corpora

This chapter has discussed the move structure and the similarities and differences between the native and non-native English RA introductions. The results of analysis of the NS corpus with regards to steps showed that environmental engineering introductions were in accordance with the framework of CARS model, in terms of occurrence of the Moves and Steps. However, the same could not be encountered for

the M1-M2-M3 move structure of Swales. When the move structures of the introductions in both corpora were investigated, it was found out that only one introduction out of 10 matched with Swales' 1-2-3 move model. The non-native writers seemed to use similar move-step structures with the NS authors in their writing practices concerning the territory establishment and occupying a niche. On the other hand, the analysis showed that a significant difference occurred in the move for establishing a niche. Half of the RA introductions in the NNS corpus did not bring any questions about the previous research. There may be reasons for such a choice.

It may be speculated that the non-native writers' limited knowledge of writing practices in their discourse community resulted in a deficiency of control over their writing. Besides, counter claiming and indicating a gap in international research may be assumed as inappropriate acts by these authors. This may, thus be a field of further research. In the following section, a summary of the findings of the present research will be given and some conclusions and implications will be stated.

5. CONCLUSION AND SUMMARY

There are four sections in this chapter. In section 5.1. a short summary of the present study is given. Section 5.2. provides the conclusions derived from the data analysis. Further research and the importance of research on other related concerns have been expressed in section 5.3. And as a final part to the present study, section 5.4. articulates some implications for teaching academic writing especially the introduction sections.

5.1. Summary

The purpose of this study was to investigate whether there were differences and similarities between the structure of RA introductions written by native and non-native English researchers and how the differences may be regarded to affect the success for publication of the NNS RAs.

Starting with this aim, the present study was divided into five sections. In the first section a brief introduction about the study and the field of study was presented. The second section included a review of previous studies carried in the field of academic writing. The methods were explained in section 3. In the results and discussion section, which was labelled as section 4, the discussion of the findings was provided. And now, in this (section 5) conclusion section, the study will be summarized and a few ideas for teaching the conventions of disciplinary writing will be proposed for the Turkish authors who are willing to actively participate in their branches.

5.2. Conclusions

The recent investigations on the macrostructure of introductions have clearly shown that there are some variations both across and within disciplines. This study investigated this issue by a move step analysis on the RA introduction sections taken from two journals in the field of Environmental Engineering.

The results of the present study revealed that there were significant differences between the move-ordering patterns of the NS and NNS regarding Swales' (Move 1-2-3) move pattern. A surprising finding showed that the move order patterns of the NS and NNS introductions were not in accordance with the move-ordering patterns of Swales' CARS model in that only 1 out of 20 introductions followed Swales' 1-2-3 move pattern- 4 of the NNS introductions consisted of only Move 1 and Move 3. There were 10 different move patterns found in the corpora and out of these 10 only two of the patterns were common in both groups. The most frequent move structure labelled as Pattern I was found 6 times in the corpora, 5 instances in the NS and 1 instance in the NNS introductions. Move 1 and Move 3 were found nearly in all introductions but Move 2 was found to occur less in the NNS introductions than those two moves.

The results also showed that the introductions in the corpora displayed a few similarities with Swales' CARS model with regards to lexicogrammatical signals used to signal the functions; in other words, the steps. However, they did not follow Swales' model in terms of the order of moves. Half of the native speaker author group seemed to show a uniformity in the patterns of their own. Besides, there was a common pattern found in the NNS corpus, which excluded Move 2. These different patterns among the NS and NNS introductions clearly show that each group has its own strategies and stages of writing and this appears to be accepted by the discourse community they belong to.

5.3. Further Research

Further studies with larger corpora of both Native and Non-native English introductions can be beneficial to investigate whether the findings of the present study are only idiosyncratic features of the present data, or whether it is a common practice among the writers' writing in the field of Environmental Engineering. In such a small sample, there seems to be a high possibility that certain features could be strongly case based. For example, the two moves outside the parameters of Swales' may not occur in other cases.

It would be unwise to draw conclusive generalisations on such a small sized corpus. A number of analyses are needed in order to understand the preferred move structures found in the introductions. Investigations in other journals from the field are also needed. The present study accepts these limitations of not seeing the moves from a broader perspective. However, in spite of its limitations, it has a number of important strengths. First of all, there has not been any published work on RA introductions of Turkish authors writing in English. Therefore, it has provided some data from the field of Environmental Engineering on the writing styles of Turkish writers, where no study has been done before.

5.4. Implications for Teaching

Genre analysis is powerful for the exploration of texts and searching for both the general and the specific patterns: general in terms of regularities which exist across texts and discourses, and specific in terms of how communities, adapt the genre for their own purposes.

Swales' analysis of RA generic structure has revealed the occurrence of regular organisation patterns within RA texts of similar disciplines. Such a finding implied the generality of the patterns, and that this manner of communication is expected from the members of this particular scientific discourse community. These expectations create an urge on the NNS authors willing to participate in current debates. So, NNS researchers should be made aware of those conventions.

Concerning the awareness raising, Swales and Feak (1994) used a genre-based approach for teaching the patterns and language used in moves common to the main rhetorical sections of research articles. They supplied a full picture of advices and examples, and discussed the possibilities of differences and similarities between fields. Flowerdew &Peacock (2001) and Martin (2003) also stated that suggestions about raising NNS academic writers' awareness about the conventions of English language is particularly important as this language is probably the lingua franca - used in academe all over the world.

The exposure to academic English is realised by the medium of written texts (mostly Research Articles) in which the knowledge of field is distributed among scholars. Flowerdew (1999) listed the areas of difficulties for non-native speakers and included the structuring of argument and textual organisation which are some of concern for the present study (1999, p.127). Following the research findings, it seems a good idea to teach conventions that may provide a conscious attention to these structures which in turn will increase the general awareness and success in acquiring them.

Golebiowski (1999) makes calls for more work aimed at the analysis of rhetorical structure of RAs written in languages other than English cross-linguistic and cross-cultural. The researcher also claims that the results of those studies would serve as the basis for teaching and at the same time, display patterns commonly utilised in the scientific writing of the target language.

If there is a high need to provide better preparations for students in different branches to understand what rhetorical choices are available, one good starting point can be to look at the various models of organisation that are already used in the available sources. Swales' structural pattern for introductions can be presented to students, and they can be asked to look at RAs in their subject field, and discover what types of patterns are in use. The main focus should be given to the identification of the appropriate forms in their discipline. The analysis can then be elaborated, after an agreement about the most applicable model is reached with concern to researchers' needs. This model of macrostructure can then be a reference for the development of a framework for the organisation of introductions, which may result in with successful papers that may be published in international journals.

The present study, it is hoped, has formed the key issues mentioned in the literature and provided a contribution to the investigations of cross-cultural academic writing styles which is believed to help developing a better understanding of English in academe for authors from different cultural backgrounds. On consideration with Swales' model and comparing this feature with the findings, the study indicates that some of the Turkish authors do not have a concrete knowledge of the stages and strategies of organising the introduction sections in English. Consequently, the findings

of this study are wished to contribute to the teaching of this genre to NNS authors of academic papers. Regarding this understanding, it is assumed that better models for academic writing can be created.

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APPENDIX I

LIST OF RESEARCH ARTICLES IN THE CORPORA

Waste Management:

1- WM1- C.E. Pierce, M.C. Blackwell, *"Potential of scrap tire rubber as lightweight aggregate in flowable fill"* Waste Management 23 (2003) 197–208

2- WM2- J. Knight, C. Cheeseman, R. Rogers, *"Microbial influenced degradation of solidified waste binder*" ,Waste Management 22 (2002) 187–193

3- WM3- G. Alexander Price, Morton A. Barlaz, Gary R. Hater, *"Nitrogen management in bioreactor landfills"* Waste Management 23 (2003) 675–688

4- WM4- G.S. Brown, L.L. Barton, B.M. Thomson ,*"Permanganate oxidation of sorbed polycyclic aromatic hydrocarbons"* ,Waste Management 23 (2003) 737–740

5- WM5- Michael Greenberg, David Lewis, Michael Frisch, *"Local and interregional economic analysis of large US Department of energy waste management projects",* Waste Management 22 (2002) 643–655

Waste Management Turkish Author:

6- WMT1- Ahmet Gürses, Mehmet Yalçın, Çetin Doğan, "*Electrocoagulation of some reactive dyes: a statistical investigation of some electrochemical variables"*, Waste Management 22 (2002) 491–499.

7- WMT2- T. Onargan, K. Küçük M. Polat, *"An investigation of the presence of methane and other gases at the Uzundere–Izmir solid waste disposal site, Izmir, Turkey"* Waste Management 23 (2003) 741–747.

8- WMT3- E. Metin, A. Eröztürk, C. Neyim, *"Solid waste management practices and review of recovery and recycling operations in Turkey"* Waste Management 23 (2003) 425–432.

9- WMT4- A. Erdal Osmanlıoğlu, *"Immobilization of radioactive waste by cementation with purified kaolin clay",* Waste Management 22 (2002) 481–483.

10- WMT5- Sibel Sezer, Günay Kocasoy, Çelik Aruoba, "*How vital is the ''lack of funding'' in effective environmental management in Turkey?"* Waste Management 23 (2003) 455–461.

Water Research:

11- WR1 - Gillian Thompson, Christopher Forster,*" Bulking in activated sludge plants treating paper mill wastewaters",* Water Research 37 (2003) 2636–2644

12- WR2- L.B.Parr, C.F.Mason, *"Long-term trends in water quality and their impact on macroinvertebrate assemblages in eutrophic lowland rivers"* Water Research 37 (2003) 2969–2979

13- WR3- Neal R. Adrian, Clint M. Arnett, Robert F. Hickey, *"Stimulating the anaerobic biodegradation of explosives the addition of hydrogen or electron donors that produce hydrogen"* Water Research 37 (2003) 3499–3507

14- WR4- Kay Howard, Timothy J.J. Inglis , *"The effect of free chlorine on Burkholderia pseudomallei in potable water",* Water Research 37 (2003) 4425–4432

15- WR5- D. Gay, W. Maher,*"Natural variation of copper, zinc, cadmium and selenium concentrations in Bembicium nanum and their potential use as a biomonitor of trace metals",* Water Research 37 (2003) 2173–2185

Water Research Turkish Author:

16- WRT1- S.H. Mutlu, U. Yetis, T. Gürkan, L. Yılmaz, *"Decolorization of wastewater of a baker's yeast plant by membrane processes",* Water Research 36 (2002) 609–616

17- WRT2- Ömer Yavuz, Yalçin Altunkaynak, Fuat Güzel, "*Removal of copper, nickel, cobalt andmanganese from aqueous solution by kaolinite",* Water Research 37 (2003) 948–952

18- WRT3- Y. Kaçar, E. Alpay, V.K. Ceylan*, "Pretreatment of Afyon alcaloide factory's wastewater by wet air oxidation (WAO)",* Water Research 37 (2003) 1170–1176

19- WRT4- Betül Arıcan, Ülkü Yetiş, *"Nickel sorption by acclimatized activated sludge culture",* Water Research 37 (2003) 3508–3516

20- WRT5- E. Sabah, M. Turan, M.S. Çelik, *"Adsorption mechanism of cationic surfactants onto acid- and heat-activated sepiolites"* Water Research 36 (2002) 3957–3964

APPENDIX II

A Sample Analysis of the RA introduction in terms of Swales' CARS model

"Introduction:

The Scrap Tire Management Council estimates that the United States produces 266 million scrap tires per year, which is equivalent to a rate of one scrap tire per person (EPA, 1999). / *Of these, 24% are landfilled or dumped in either legal or illegal stockpiles.* /*Only 4% are beneficially used in civil engineering projects.* / *During the past 5 years, public awareness of this mounting problem has been heightened by several recalls of millions of faulty tires.* / *Since landfilling scrap tires has been prohibited, innovative methods of recycling tire rubber are in great demand.* / *In South Carolina, the state Department of Health and Environmental Control (DHEC) initiated a Tire Fund to support county and municipal governments in their efforts to perform research designed to facilitate scrap tire recycling.* / *DHEC is particularly interested in civil engineering applications of recycled tire rubber, which provides material benefits like low density and high ductility.* / *The purpose of this paper is to demonstrate, through an experimental laboratory investigation, that crumb rubber from scrap tires can be used to produce a high-quality, lightweight flowable fill for construction.* /"

M1S3 → **M1S3** → **M1S3** → **M1S1** → **M2S1B** → **M1S2** → **M1S2** → **M3S1A**

Pierce C.E., Blackwell M.C. (2003), *"Potential of scrap tire rubber as lightweight aggregate in flowable fill"* , Waste Management 23 (WM-1)

APPENDIX III

THE OVERALL MOVE-STEP STRUCTURE OF THE NATIVE SPEAKER CORPUS

	WM1	*WM2*	*WM3*	*WM4*	*WM5*	*WR1*	*WR2*	*WR3*	*WR4*	*WR5*
1	M1S3	M1S2	M1S3	M1S3	M1S2	M1S1	M1S2	M1S2	M1S2	M1S2
2	M1S2	M1S2	M1S2	M1S3	M1S3	M1S3	M1S3	M1S2	M1S3	M1S2
3	M1S2	M2S1B	M1S1	M1S1	M1S2	M1S2	M1S2	M1S2	M1S3	M1S2
4	M1S1	M1S3	M1S3	M1S2	M1S2	M1S3	M1S3	M1S3	M1S2	M1S2
5	M2S1B	M1S2	M1S1	M1S2	M1S3	M1S2	M1S3	M1S2	M1S2	M1S3
6	M1S2	M1S2	M1S3	M1S3	M1S2	M1S2	M1S3	M1S2	M1S3	M1S2
7	M1S2	M2S1B	M2S1B	M1S3	M1S2	M1S2	M1S2	M1S3	M1S3	M1S3
8	M3S1A	M1S2	M1S3	M2S1B	M1S2	M1S2	M1S3	M1S2	M1S3	M1S2
9		M2S1B	M1S1	M2S1B	M1S3	M1S3	M1S2	M2S1B	M2S1B	M1S2
10		M2S1B	M1S3	M1S3	M1S2	M1S2	M1S2	M1S3	M1S2	M1S2
11		M1S2	M1S2	M3S1B	M1S2	M2S1B	M1S2	M1S3	M1S2	M1S2
12		M1S2	M1S2	M3S1B	M1S3	M1S2	M1S2	M2S1B	M1S2	M1S2
13		M1S2	M1S1		M1S2	M3S1B	M2S1B	M2S1B	M3S1B	M1S3
14		M1S2	M1S2		M1S3	M3S1A	M2S1B	M1S2	M3S1B	M1S2
15		M1S3	M1S2		M1S2	M3S1B	M3S1B	M1S2		M1S3
16		M1S2	M1S2		M1S3	M3S1B		M3S1A		M1S2
17		M1S2	M1S3		M1S2	M3S1B		M3S1B		M1S2
18		M1S2	M1S3		M1S2	M3S1B		MX		M1S2
19		M1S2	M1S3		M3S1B	M3S1B				M2S1B
20		M1S2	M1S3		MR					M1S2
21		M1S3	M3S1A		MR					M2S1B
22		M1S2	M3S1A		MR					M3S1A
23		M1S2			MR					M3S1A
24		M2S1B			MR					M3S1A
25		M1S2			MR					M3S1A
26		M1S2			MR					M3S1B
27		M3S1B								

APPENDIX IV

THE OVERALL MOVE-STEP STRUCTURE OF THE NON-NATIVE SPEAKER CORPUS

	WMT1	*WMT2*	*WMT3*	*WMT4*	*WMT5*	*WRT1*	*WRT2*	*WRT3*	*WRT4*	*WRT5*
1	M1S2	M1S2	M1S2	M1S2	M1S1	M1S2	M1S1	M1S2	M1S3	M1S2
2	M1S2	M1S2	M1S2	M1S2	M1S2	M1S2	M1S2	M1S2	M1S2	M1S2
3	M1S2	M1S3	M3S1B	M1S2	M1S2	M1S2	M1S2	M1S2	M1S3	M1S2
4	M2S1B	M1S3	M3S1B	M3S1B	M1S2	M1S2	M1S2	M1S2	M1S3	M1S2
5	M2S1B	M1S3	M1S2	M3S1B	M2S1B	M1S2	M1S2	M1S2	M1S3	M1S2
6	M1S2	M1S3	M3S1B	M3S2	M1S2	M1S2	M1S2	M1S2	M1S2	M1S1
7	M1S2	M1S3	M3S1B	M3S2	M1S3	M1S2	M1S2	M1S2	M1S2	M1S2
8	M1S3	M1S3	M1S2	M3S2		M3S1B	M1S3	M1S2	M1S2	M2S1B
9	M1S2	M1S3	M3S1B	M3S1B		M1S2	M3S1B	M1S1	M1S3	M2S1B
10	M1S3	M1S3	M3S1B	M3S2		M2S1B		M1S2	M1S3	M1S2
11	M1S1	M1S3		M3S3		M2S1B		M1S2	M1S3	M1S2
12	M1S2	M1S2		M3S2		M2S1B		M1S3	M1S3	M1S3
13	M1S2	M1S2				M1S1		M1S3	M1S3	M1S2
14	M1S2	M1S3				M1S2		M1S2	M1S3	M2S1B
15	M1S3	M1S2				M1S3		M1S2	M1S3	M3S1A
16	M1S2	M1S2				M1S3		M1S2	M1S3	
17	M1S2	M1S2				M1S2		M1S2	M1S3	
18	M1S2	M1S3				M1S3		M1S2	M3S1A	
19	M1S1	M1S2				M2S1B		M1S2	M3S1A	
20	M1S3	M1S2				M1S1		M1S2	M3S1A	
21	M2S1B	M1S2				M1S3		M2S1D		
22	M3S1A	M1S3				M1S3		M1S3		
23	M3S1B	M1S3				M3S1A		M3S1A		
24	M3S1B	M1S2				M3S1B		M3S1B		
25	M3S1B	M3S1B				M3S1B		M3S1B		
26		M3S1B								
27		M3S1B								

ÖZGEÇMİŞ

29/11/1979 tarihinde Bursa'da doğdum. İlk öğrenimimi burada tamamladım. 1997'de Bursa Demirtaşpaşa Anadolu Teknik Lisesi'nden mezun oldum. Aynı yıl Uludağ Üniversitesi, Eğitim Fakültesi, İngilizce Öğretmenliği Bölümünü kazandım, ve 2002 yılında bu bölümden mezun oldum.

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2003-2004 Eğitim-Öğretim yılında Yard. Doç. İsmet Öztürk danışmanlığında "İngilizce Yazan Türk Yazarların Araştırma Makalelerinin Giriş bölümlerinin İncelenmesi" isimli teze başladım.

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