



People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Batna 2 University
Faculty of Letters and Foreign Languages
Department of English Language and Literature



A CROSS-DISCIPLINARY GENRE ANALYSIS OF ALGERIAN
ACADEMIC RESEARCH ARTICLES INTRODUCTIONS

The CASE OF APPLIED LINGUISTICS AND PHYSICS RESEARCH ARTICLES

Thesis submitted in Fulfillment of the requirements for the Degree of Doctorat
Science in Language Sciences

Submitted by

AGGOUN Wafa

Supervisor:

Prof. GHOUAR Amor

Board of Examiners

Chairman:	Prof. ABOUBOU Hachemi	University of Batna 2
Supervisor:	Prof. GHOUAR Amor	University of Batna 2
Examiner:	Prof. BAHLOUL Amel	University of Batna 2
Examiner:	Prof. SAADI Hacene	University of Constantine 1
Examiner:	Prof. KESKES Said	University of Setif 2
Examiner:	Prof. NEMOUCHI Abdelhak	University of Oum EL Bouaghi

DEDICATION

To my Dear Parents

ACKNOWLEDGEMENTS

First, I take pride in acknowledging the insightful guidance of Professor GHOUAR Amor. Thank you for your invaluable guidance, inspiration and suggestions in my quest for knowledge. I am extremely lucky to have been afforded the opportunity to work with him at such an advanced stage of my studies.

I extend my sincere thanks to the members of the board of examiners: Professor, ABOUBOU Hachemi, Professor BAHLOUL Amel, Professor SAADI Hacene, Professor KESKES Said and Professor NEMOUCHI Abdelhak. Thank you for agreeing to be part of this work. Your comments and feedback are greatly appreciated.

I have great pleasure in acknowledging my gratitude to my colleagues and fellow researchers in the fields of Applied Linguistics and Physics in different Algerian Universities for their assistance with the collection of my data. Thank you for your willingness and interest to participate in my study.

I would also like to express my deepest gratitude to Professor BELLE Nadir, editor of Sciences & Technologie Journal; Professor NOURI Abdelkader, editor of Journal of New Materials and Technology (JNTM) and Professor Khouni Rabeh, editor of Review of Human Sciences for their kind cooperation and support. I am very grateful that you have been so generous with your time and commitment by agreeing to be part of this study.

I am grateful to all the people who participated in my study and everyone who helped with the data collection reported in this thesis.

Finally, many thanks and great appreciation go to my sister AGGOUN Nadjah in translation field, my sister AGGOUN Ilhem in the field of Physics, and my dear brother AGGOUN Hamza in Mathematics and Statistics field.

Abstract

Scientific research articles provide a convenient vehicle for researchers to cope with the explosive growth of scientific research in different fields. They provide a space to communicate the content of previous studies and cover new phenomena. Introduction plays a vital role in research articles. It is one section of the article which encompasses a range of stages that give a holistic description of the entire article. The present research stemmed from the debate between soft and hard sciences. It is a comparative genre analysis for the identification of rhetorical structure and linguistic features of introduction section of applied linguistics and physics research articles published in Algerian Journals of scientific research. The study proceeded on quantitative and qualitative research methods, through a comparative corpus analysis of introductions, researchers' questionnaire and editors' interview. In general, the findings reveal that there are noticeable differences between the structure of articles' introductions in applied linguistics and physics. This means that writing introduction is inevitably embedded within disciplinary conventions. The findings of this study reveal important implications for the use of genre analysis methods for the teaching of English for specific purposes.

Key words: Research articles' introductions, comparative genre analysis, rhetorical structure, linguistic features, disciplinary conventions

LIST OF ABBREVIATIONS

AD	Academic Discourse
APA	American Psychological Association
ASJP	Algerian Scientific Journal Platform
CARS	Create a Research Space
CITTs	Centers for Innovation and Technology Transfer
CNEG	National Centre of Public Learning
COPE	Committee on Publication Ethics
CSE	Council of Science Editors
DGSRTD	Directorate General for Scientific Research and Technological Development National Evaluation Council
DOI	Digital Object Identifier
EAP	English for Academic Purposes
EF	Eigen factor
EGAP	English for General Academic Purposes
EMode	Early Modern English
ENAL	Entreprise National du Livers
EOP	English for Occupational Purposes
ERPP	English for Research Publication Purposes
ESAP	English for Specific Academic Purposes
ESP	English for Specific Purposes
EST	English for Science and Technology
ICT	Information and Communication Technologies
IF	Impact Factor
JRs	Junior Researchers

M1	Move One
M2	Move Two
M3	Move Three
MD	Multi-Dimensional
MHESR	Ministry for Higher Education and Scientific Research
MLA	Modern Language Association of America
Moodle	Modular Object-Oriented Dynamic Learning Environment
NB	Notes-Bibliography System
NCSTR	National Committee for Science and Technology
NEC	National Evaluation Council
NNES	Non-Native English Speakers
NNS	Non-Native Speakers
PSCs	Intersectoral Committees
+R	Reporting Verbs
-R	Non-Reporting verbs
RAs	Research Articles
SFL	The Australian School of Systematic Functional Linguistics
SRs	Senior Researchers
SRAs	Scientific Research Articles

LIST OF TABLES

Table	Page
1. Rhetorical Process Chart: English for Science and Technology (EST)	22
2. Some Factors Involved in Target Situation Analysis	25
3. Distribution of Selected Linguistic Features in Two General Written Registers	32-33
4. Words Occurring in Academic Settings	35
5. New Words in Early Modern English: Methods of Acquisition	39
6. Top Newspapers of Daily Print Figures, 2012	62
7. Algerian's Position in Global Ranking of Research Output	64
8. Research Output Rank Comparison	65
9. Type of Whole Article in 17 th Century Sample	75
10. The Common Structures of an Experimental RA	79
11. Situational Characteristics of Registers and Genres	98
12. Knowledge and Culture, by Disciplinary Grouping	100
13. Evaluation of Research Article	103
14. Levels or Strata of Language	113
15. Features across the IMRD Sections	124
16. List of Algerian Journals and Universities	141
17. A CARS Model for Article Introductions	142
18. Advantages and Disadvantages of Mail Survey	145
19. Number of Researchers and Universities	146
20. Structured, Semi-Structured, Unstructured Interviews: A Comparison	149
21. Frequency of Occurrence of Moves	155
22. Frequency of Moves-analysis Use	156
23. Number of Moves	156

24. Move Sequences in Introduction Section	157
25. Order of Moves	158
26. Frequency of Occurrence of Obligatory and Optional Steps	159
27. Frequency of M1 Steps Identified in RAs Introduction Section	160
28. Frequency of Occurrence of Claiming Centrality Statements.....	160
29. Frequency of Occurrence of Topic Generalization(s) Statements	166
30. Frequency of Occurrence of Citations.....	169
31. Frequency of Reporting and Non-Reporting Verbs in the two corpora.....	174
32. Position of Reporting Verbs	177
33. Frequency of Occurrence of Tenses	178
34. Tense Combinations in Corpus 1	179
35. Tense Combinations in Corpus 2	180
36. Frequency of M2 Steps Identified in RAs Introduction Section.....	181
37. Types of Questions Used in Corpus 1	183
38. Frequency of Occurrence of Contrastive Statement in M2.....	187
39. Frequency of Occurrence of Conjunctions of Contrast.....	188
40. Frequency of Occurrence of Lexical Negation Indicators	192
41. Types of Opinion.....	197
42. Types of Judgements	199
43. Frequency of use of Cyclicity	200
44. Frequency of M3 Steps Identified in RAs Introduction Section	204
45. Types of Step 3-1	204
46. Frequency of Occurrence of M3 Ending with Step 3-1A/1B.....	207
47. Frequency of Occurrence of Deictic References	209
48. Form of Deictic References.....	210

49. Type of Deictic References	212
50. Tense of Deictic References.....	214
51. Frequency of Occurrence of Authorial Stance	217
52. . Frequency of Occurrence of Fronted-Move 3	218
53. Researchers' Degree.....	219
54. Number of Published Articles	220
55. . Number of Citations	221
56. The most Difficult Section of RAs	223
57. General Structure of RAs Introduction	226
58. Number of Steps.....	227
59. Obligatory Steps.....	229
60. Introduction's Opening Statements	231
61. Use of Topic Generalization(s) Statement	232
62. Incorporating Literature Review in RAs Introduction	233
63. Linguistic Choices of RAs Introduction.....	234
64. Linguistic Choices in RAs Introduction.....	235
65. Occurrence of Research Problem's Statement.....	237
66. Types of Research Problem Statement.....	238
67. Types of Data	239
68. Introduction's Last Step (s).....	241
69. Placement of Research Purposes.....	242
70. Researchers' Attitudes toward their RAs Introductions.....	244
71. Researchers' Attitudes towards the Impact of Academic Discipline on Writing RAs Introduction	245
72. Comparison of The Results of M1	267

73. Comparison of The Results of M2	268
74. Comparison of The Results of M3	269
75. Disciplinary Variations	270
76. Eight Dimensions of E-Learning Framework	272
77. Roles and Functions in Moodle Platform.....	277

LIST OF FIGURES

Figure	Page
1. Revised Schematic Representation of Communicative Competence.....	16
2. The Expanding Focus on ESP	19
3. The Linguistic Approach Vs. the Rhetorical Approach	23
4. English: Purposes	27
5. Continuum of Academic Knowledge	31
6. Grammatical Characteristics of Early Modern English	41
7. Diagram Showing Relation of Modality to Polarity and Mood	44
8. Methods Used in ERPP Research	47
9. Bottom-Up Approach for Publishing Demonstrated on the Publication Pyramid..	58
10. Overview of the Algerian Research System Governance Structure	67
11. Overview of the Publication Process	84
12. AIMRaD: The Hourglass ‘‘Shape’’ of a Generic Scientific Research Article and Key Features Highlighted by this Shape	86
13. The Five Stages of the Introduction	88
14. Three Activities an Author must Perform in the Results Section in order to highlight the data	90
15. Template for the Discussion.....	91
16. Components in a Register Analysis	97
17. CARS Model for Article Introductions	121
18. Prototypical Versions of the Six Major Mixed Methods Research Designs.....	136
19. Three Phases of a Round of Interview	149
20. Number of Moves.....	156
21. Order of Moves	158

22. Occurrence of Obligatory and Optional Steps	159
23. Occurrence of Claiming Centrality Statements.....	161
24. Occurrence of Topic Generalization(s) Statements.....	166
25. Occurrence of Citations.....	169
26. . Occurrence of Tenses	179
27. Summary of M2 Steps Identified in RAs Introduction Section	181
28. Types of Questions Used in Corpus 1	183
29. Occurrence of Contrastive Statement in M2	187
30. Occurrence of Conjunctions of Contrast	188
31. Use of Lexical Negation Indicators.....	192
32. Types of Opinion.....	197
33. Types of Judgements	199
34. Use of Cyclicity.....	200
35. Types of Step 3-1	204
36. M3 Ending with Step 3-1A/1B.....	207
37. Occurrence of Deictic References.....	209
38. Form of Deictic References.....	210
39. Type of Deictic References	212
40. Tense of Deictic References.....	214
41. Occurrence of Authorial Stance	217
42. Occurrence of Fronted-Move 3	218
43. Researchers' Degree.....	219
44. Number of Published Articles	220
45. Number of Citations	222
46. The most Difficult Section of RAs	223

47. General Structure of RAs Introduction	226
48. Number of Steps.....	227
49. Obligatory Steps	229
50. Introduction’s Opening Statements	231
51. Researchers’ Use of Topic Generalization(s) Statement	232
52. Incorporating Literature Review in RAs Introduction	233
53. Linguistic Choices in RAs Introduction (Group 1).....	235
54. Linguistic Choices in RAs Introduction (Group 2).....	236
55. Occurrence of Research Problem Statement.....	237
56. Types of Research Problem Statement.....	238
57. Types of Data	240
58. Introduction’s Last Step (s).....	241
59. Placement of Research Purposes.....	243
60. Researchers’ Attitudes Toward their RAs Introductions	244
61. Researchers’ Attitudes Towards the Impact of Academic Discipline	245
62. A Revised Create a Research Space for Move 1	268
63. A Revised Create a Research Space for Move 2.....	268
64. A Revised Move 3 Structure	269

TABLE OF CONTENTS

DEDICATION	I
ACKNOWLEDGEMENTS	II
ABSTRACT	III
LIST OF ABBREVIATIONS.....	IV
LIST OF TABLES	VI
LIST OF FIGURES	X
TABLE OF CONTENTS.....	XIII
Chapter 1: General Introduction	1
Introduction.....	2
Statement of the Problem.....	3
Research Hypotheses	5
Research Objectives.....	5
Significance of the Study	6
Research Methodology	6
Structure of the Thesis	7
Limitations of the Study	8
Chapter 2: General Overview	10
Section 1: Introduction to Academic Discourse	12
Introduction.....	12
Understanding Academic Discourse.....	12
The Growth of English Academic Discourse	17
The Register Analysis Phase.....	19
Rhetorical Devices Phase.....	20

Target Situation Analysis	23
Skills and Strategies	25
A Learning-Centered Approach	28
Academic Disciplines	29
Linguistic Investigations of Academic Discourse	32
The Growth of Scientific English	38
Section 2: Writing for Publication	45
Introduction.....	45
Introduction to English for Research Publication Purposes	45
The Scope of English for Research Publication Purposes	48
Approaches of English for Research Publication Purposes.....	51
Discourse Analysis.....	51
Social Constructivism and Situated Learning Theory.....	52
International Scientific Publishing.....	55
Types of Scientific Publications	60
Algerian State of Publication	62
Algerian Scientific Research Reforms.....	66
International Standards of Publication	70
Conclusion	72
Chapter 3: Scientific Research Articles	73
Introduction.....	74
History of Scientific Research Articles.....	74
Types of Scientific Research Articles.....	78
Experimental Research Articles	78
Review Research Articles	80

Theoretical Research Articles	81
Objectives of Scientific Research Articles	82
International Format of Scientific Research Articles.....	85
Linguistic Features of Scientific Articles	92
Linguistic Analysis of Research Articles: Register Analysis Vs Genre Analysis	94
Disciplinary Variations in Research Articles.....	99
Evaluating the Quality of Scientific Research Articles	102
Conclusion	105
Chapter 4: Genre Analysis of Research Articles Introduction.....	106
Introduction.....	107
The Growth of Genre Approach to Academic Writing	107
Objectives of Genre Analysis	111
Approaches to Genre Analysis.....	113
The Australian School of Systematic Functional Linguistics (SFL).....	113
The North American New Rhetoric School	114
The ESP Approach	115
Move Analysis of Research Articles.....	116
Create a Research Space Model for Article Introduction	117
The Distribution of Linguistic Features across Introduction Moves	122
Factors Influencing Research Articles' Introductions	128
Linguistic Differences	128
Cultural Differences	128
Disciplinary Variations	129
Criticism against Create A Research Space Model	130
Conclusion	131

Chapter 5: Research Methodology.....	132
Introduction.....	133
The General Framework of the Study.....	133
The Interaction Between Qualitative and Quantitative Research Methods.....	134
Research Methods.....	137
Discourse Communities.....	139
Data Gathering Tools.....	139
Corpus of Academic Research Articles Introductions.....	139
Description of the Corpus.....	140
Corpus-Based Approach to Move Analysis.....	141
Linguistic Features and Discourse Markers.....	144
Researchers' Questionnaire.....	145
Sample.....	145
Piloting and Validation.....	146
Questionnaire Design.....	147
Editors Semi-Structred Interview.....	148
Description of the Interview.....	150
Analysis of the Interview.....	151
Conclusion.....	152
Chapter 6: Data Analysis and Discussion.....	153
Introduction.....	155
Corpus Analysis.....	155
General Analysis of Introductions.....	155
Analysis of Move 1.....	160

Analysis of Move 2	181
Linguistic Indicators of Gap.....	187
Analysis of Move 3	204
Researchers' Questionnaire	219
Analysis of Section One: General Information.....	219
Analysis of Section Two: Background to Research Articles (RAs) Introductory Section.....	223
Analysis of Section Three: Introduction Opening Statements.....	231
Analysis of Section Four: Writing a Research Problem	237
Analysis of Section Five: Introduction Aims and Structure	241
Analysis of Section Six: Researchers' Attitudes towards RAs Introductions	244
Editors' Semi-Structured Interview	248
Difficulties in Writing RAs.....	248
Problematic Sections	250
Language Problem.....	250
Objectives of Introduction.....	252
Introduction and Articles' Content.....	253
Reviewers Critical Comments.....	254
Language and Academic Discipline.....	255
Editors Recommendations.....	257
Comparison and Discussion of the Results.....	260
Conclusion	264
Chapter 7: Research Implications: Suggestions and Recommendations	266
Introduction.....	267
Comparison of the Outcomes and Conclusions of the Research	267

A General Evaluation of Genre Theory in the Algerian Context	271
Background to Online Learning.....	272
Types of Online Courses.....	273
Correspondence Courses	273
Synchronous Courses	274
Asynchronous Courses.....	274
The Status of E-Learning in Algeria.....	274
Online Course Management	276
Course Reference	276
Learning Management System.....	276
Objectives of Online Course	277
Course Design	277
Sample Online Course.....	280
Research Implications and Recommendations	296
Conclusion	297
General Conclusion.....	298
References.....	300
Webliography	326
Appendices	
Appendix A	
Appendix B	
Appendix C	
Appendix D	
Appendix E	
Appendix F	

Appendix G

Résumé

ملخص

GENERAL INTRODCUTION

Chapter 1 : General Introduction

Introduction	2
Statement of the Problem	3
Research Hypotheses.....	5
Research Objectives	5
Significance of the Study	6
Research Methodology.....	6
Structure of the Thesis.....	7
Limitations of the Study.....	8

Introduction

A large body of data concerning research articles (RAs) has been reported and there have been many papers describing the quality of this academic genre in terms of its structural and rhetorical conventions. There is strong evidence to support the hypothesis that writing RAs should undergo writers' choice of rhetorical structures, meta discourse features as well as discipline-specific modes that distinguish one genre from another. Swales (1990) argued that language choices of RAs intimately pertain to conventions of particular discourse communities or the academic discipline. However, reality shows that only few researchers adhere to this claim and it is still not clear whether all researchers can deal with this academic genre. Hence, additional studies on RAs are needed in order to explore those writing components that are responsible for researchers' failure to write a good RA.

It becomes crucial to consider ways to gently weave the content of scientific research articles (SRAs) and bridge the gap between their form and meaning. Because publishing in international literature is the aim of scientific researchers in general and Algerian researchers in particular, it is important for academic writers to browse international standards of publication as well as modern trends in the field of academic writing to improve the quality of their writings.

In the relevant literature, many endeavors are made by linguists and discourse analysts to create an analytical framework that combines different dimensions of developing RAs including the diachronic analysis of RAs to understand their rhetorical organization (Swales, 1990, 2004; Petric, 2009, Joseph et al., 2014; Wang & Yang, 2015), their historical changes (Atkinson, 1992; Kuhl & Mousavi, 2015; Hyland & Jiang, 2016) as well as their lexicogrammatical aspects (Halliday & Martin 1993, Kong, 2006, Golpour Lasak, 2011; Muangsamai, 2018).

Theoretically, writing RAs provides satisfactory description of academic and scientific results and enhances researchers to understand and produce them. Moreover, writing articles could be a stepping stone for less English proficient researchers to learn more about what people in their fields are working on.

In practice, writing RAs is one of the greatest challenges for non-native speakers of English who experience considerable difficulty with this academic genre to make well validating decisions about how to construct an article. This leads to a sort of disconnectedness between article's sections. Moreover, the misuse of meta-discourse features across the different sections may pose problems concerning the meaning of manuscripts. This issue increasingly foregrounds discourse and genre studies to become a new object of study in academic research.

Statement of the Problem

The present study is concerned with the introductory section of RAs in which researchers share their own insights and draw their own conclusions. Introduction poses such a huge problem for writers especially non-native writers and it becomes the stumbling block that is far from being realized. Swales (1990) mentioned two reasons for the difficulty of introduction: attracting the reader and achieving acceptance and recognition. Swales (1990) argued that, "introductions are known to be troublesome, and nearly all academic writers admit to having more difficulty with getting started on a piece of academic writing than they have with its continuation" (p. 137). In this respect, introduction can be seen as a distinct section which has its unique characteristics and clearly defined purposes. More important, this section is highly affected by academic disciplines which determine its structure and content.

Most studies explained the difficulty of introduction in terms of the several functions it serves like introducing the topic, describing the scope of the topic, reviewing what is known about the area of research and what gaps are in the literature. Gupta (1995) considered

introduction the most difficult part of RAs to write. This difficulty arose from two important sources; the first is the structuring of discourse and the second is the overall structure of the introduction (Gupta, 1995).

In his attempts to find out how editors of international journals approach non-native speakers (NNSs) publishing, Flowerdew (2001) found that editors consider introduction the most problematic section for NNSs writers that needs further attention.

For Nygaard (2008), the difficulty with the writing of introduction lies in maintaining the compatibility between research question and the scientific dialogue. she stated, “While the introduction may not feel like the most difficult section to write, it is by far the most difficult to write well. Its function is relatively straightforward: to present your research question, to explain to the reader the nature of your inquiry” (Nygaard, 2008, p. 99).

Overall, introduction is the most important, the most frequently revised, and the most difficult section to compose in a manuscript (Yayli & Canagarajah, 2018). In this section, researchers are required to go through thousands of pages long literature to identify an interesting research gap and address distinct research questions.

The present study discusses the writing process of RAs introduction by emphasizing the possible problematic areas as well as the writing conventions common in soft fields like applied linguistics and hard fields such as physics. Much of the discussion revolves around the problem of the writing conventions used in RAs introductions published in some Algerian journals of scientific research including their rhetorical structures and linguistic realizations stemmed from Swales’ genre theory and his well-known *Create a Research Space* (CARS) model.

Basically, this research is guided by two underlying questions:

1. What is the dominant rhetorical move structure of applied linguistics and physics RAs introduction produced by Algerian researchers?
2. Do Algerian researchers in applied linguistics and physics have disparate writing difficulties and preferable strategies to write RAs introduction?

Research Hypotheses

A number of questions have been raised regarding the consistency between the structure of the introductory section in soft and hard fields as well as the distribution of linguistic features. This helps to understand how researchers across different disciplines use this genre to target the needs of their discourse community. On this basis, two hypotheses are proposed:

Hypothesis 1

Move structure of RAs introduction is rhetorically and linguistically different in applied linguistics and physics RAs due to the different thematic scopes of these fields.

Hypothesis 2

Algerian Researchers in the soft and the hard fields experience difficulties with writing RAs introduction and thereby evoke different writing strategies.

Research Objectives

The primary objective of exploring the structure of RAs introduction published in Algerian journals of scientific research is to investigate Algerian researchers' process of writing introduction and explore disciplinary variations in writing this section. Moreover, attempts are made to weave a relationship between genre theory and needs analysis in order to suggest a pedagogical methodology for teachers and researchers that would contribute substantially to boost researchers' comprehension of introduction form and content.

Significance of the Study

This comparative genre-based analysis study is carried out to explore the generic structure of an important academic genre that is the introduction section of RAs published in some Algerian journals of scientific research. Despite the growing awareness among researchers of the importance of this section, studies examining genre analysis of Algerian RAs introduction have rarely examined the role of cross disciplinary variations in shaping introductions and the necessity to understand disciplinary conventions that govern the use of English language in scientific articles. In fact, cross-disciplinary genre analysis of RAs has been the focus of attention in numerous studies such as Hyland (2000), Suhaily, (2016), Afshar et al, (2018). Although disciplinary variations have been extensively discussed, there are few studies that are truly comparative in nature. The fact that most studies analyze genres from a single discipline does not reveal much about generic variations among academic genres. Therefore, this study focuses on the analysis of RAs introductions from two different fields, applied linguistics and physics drawing upon Swales (1990) framework in order to identify the lexico-grammatical features and the communicative/ rhetorical purposes of introduction section of specialized texts.

Research Methodology

Qualitative and quantitative research are often presented as two fundamentally different approaches which set a growing trend in constructing and explaining research in social sciences. Yet, combining qualitative and quantitative methods of research allows to produce more accurate results about genre theory particularly the rhetorical patterns and linguistic features of introduction. Comparative method is the type of research methodology used in order to investigate the structure of RAs introduction in soft and hard disciplines.

A corpus-based comparative method is used as an authentic background derived from the writings of Algerian researchers. The corpus involves 140 introductions of two distinct

academic RAs (applied linguistics and physics). Corpus analysis is performed on three stages: collecting articles, analyzing articles and comparing results. The study of researchers' attitudes towards writing introduction is another major area of investigation in this research. Researchers' questionnaire is used as a complementary tool that provides sufficient evidence of the process of writing introduction by Algerian researchers. In fact, the findings obtained from researchers' questionnaire could potentially yield either confirming or disconfirming corpus results.

Because editors play a significant role to evaluate research papers and increase their publication's chances of acceptance, a great deal of research has been devoted to how Algerian editors decide about the suitability of articles for publication and how they respond to reviewers' comments on manuscripts. Accordingly, a semi-structured interview is conducted with three editors of Science and Technology journal, New Materials and Technology Journal in addition to an editor of Review of Human Sciences. The interview seeks to gain insight into journals' policies and guidelines concerning writing articles in general and introduction in particular.

Structure of the Thesis

The thesis consists of seven chapters including a general introduction and conclusion. The theoretical part comprises three main chapters which provide a broad outlook for the literature and expositions of the background of genre theory. The introductory chapter provides an overview of research problem and some indications of why the topic is worth explaining and what is the contribution the study can make to theory or practice. The second chapter is divided into two sections. The first section deals with the study of academic discourse while the second section is concerned with scientific publishing and Algerian state of publication. The third chapter revolves around scientific research articles, their types, objectives and structure. The core of the subject matter is exposed in chapter four which is

devoted to genre analysis of RAs introduction dominating the international academic community.

The practical part provides a relatively detailed description of research methods. Chapter five offers profiles of the discourse communities and population, with a focus on analysis procedures. This chapter paves the way for the subsequent chapter (chapter six) in which attempts are made to analyze and discuss results extracted from quantitative and qualitative data. The last chapter (chapter seven) draws some general conclusions from the findings of the preceding chapters and considers a range of pedagogical implications which will draw heavily on the development of Algerian researchers writing of RAs introduction.

Limitations of the Study

As with all research, this study has some limitations that have to be acknowledged. First, it has to be noted that all the articles used in corpus analysis are selected from national scientific journals category C before the new decree N°1478 of 06 August 2019 which restricted the number of scientific journals to 58 journal.

A second important limitation is concerned with ASJP platform which is still poorly organized. Most scientific journals' archives are not available what hinders the process of collecting articles.

A third limitation worth mentioning is that running the questionnaire for this enquiry was very difficult because researchers belong to different Algerian universities and many of them refrain from answering the questionnaire. For this reason, the size of the sample is limited and it does not allow for greater generalizability of the findings.

Moreover, the corpus used in this study is limited to applied linguistics and physics RAs. As a further study, several other soft and hard disciplines can be analyzed using the similar methodology in order to reach more general conclusions related to CARS model. Although RAs introduction section has been deemed more difficult to write, reality shows that all'

article's sections have equal value, therefore, research may also encompass other sections of the article.

One of the policies adopted by Algerian scientific journals is that the identities of the reviewers remain unknown. Despite all the attempts to conduct an interview with reviewers who can provide more detailed information about main language problems facing researchers, these attempts have not been very successful in convincing many editors who perceived this policy to be among the main factors that enhance the quality and credibility of their journals. Additionally, the interview with editors has been delayed for more than six months after initial contact, then, only three editors out of 6 agree to conduct the interview.

Finally, the fact that Moodle platform is not available at Batna 2 University does not yet make it possible to launch the proposed online course.

GENERAL OVERVIEW

Chapter 2: General Overview

Section 1: Introduction to Academic Discourse.....	12
Introduction	12
Understanding Academic Discourse	12
The Growth of English Academic Discourse.....	17
The Register Analysis Phase	19
Rhetorical Devices Phase	20
Target Situation Analysis	23
Skills and Strategies.....	25
A Learning-Centered Approach	28
Academic Disciplines.....	29
Linguistic Investigations of Academic Discourse.....	32
The Growth of Scientific English.....	38
Section 2: Writing for Publication	45
Introduction	45
Introduction to English for Research Publication Purposes.....	45
The Scope of English for Research Publication Purposes	48
Approaches of English for Research Publication Purposes	51
Discourse Analysis	51
Social Constructivism and Situated Learning Theory	52
International Scientific Publishing	55
Types of Scientific Publications.....	60
Algerian State of Publication	62
Algerian Scientific Research Reforms	66
International Standards of Publication	70

GENERAL OVERVIEW

Conclusion.....	72
-----------------	----

Section 1: Introduction to Academic Discourse

Introduction

The growth of scientific research reveals the importance of creating a special type of language that communicates the needs of the academic community. This chapter accounts for the study of academic discourse making a reference to its theoretical foundation, growth, analysis, disciplines and varieties. Additionally, the chapter casts light on the occurrence and development of scientific English. The spread of English as almost a lingua franca develops an impressive array of research on international publishing that is the main interest of this chapter which gives special attention to the Algerian state of publication.

Understanding Academic Discourse

As early as 1980s, the concept of academic discourse (AD) occupied the foreground of writing studies as a distinct genre which refers to a given discourse community where various competing cultural, discourse, perspective and voice aspects are present. In the literature, the term AD has been approached from different perspectives. Bartholomae (1985) defined AD as, “peculiar ways of knowing, selecting, evaluating, reporting, concluding and arguing that defines the discourse of our community” (p. 134). Elbow (1991) developed a general understanding of academic language as being, “a discourse that academics use when they publish for other academics” (p. 135). According to him, writers have to be clear in their claims and assertions when writing academic texts giving no value to their feelings, opinions and personal experiences. Elbow emphasized the idea that academic discourse offers a kind of exclusionary language that teaches a set of social and authority relations and it involves four stylistic conventions: a) a version of reality and explicitness b) a way of professing professionals and neglecting nonprofessionals c) a note of insecurity or anxiety d) an element of display or a tendency to show off (Elbow, 1991).

Silva (1993) defined AD in terms of the discourse community that uses the same language to discuss a topic in a published material. According to her, each academic community has its own writing style that addresses the same faculty members. In a similar context, Zamel (2008) confirmed that, “academic discourse has come to characterize a separate culture, one within which each discipline may represent a separate cultural community” (p. 187). This reveals that AD is concerned only with a particular category of readers who belong to the same field. However, reality shows that even non-specialist readers may have access to information from different academic texts.

Adamson (1993) introduced the notion of academic competence concerned with the knowledge or ability to succeed academically. He made a distinction between two levels of academic competency: lower level and higher level. The lower level accounts for language proficiency to process simple facts. In return, the higher level refers to the cognitive ability of understanding, analyzing and evaluating knowledge (Adamson, 1993). Similarly, Flottum et al., (2006) explained AD in terms of two strands of research: The pedagogical strand which focuses on students’ needs and competences, and the strand of research that searches the way expert writers communicate with their discourse community. Therefore, AD becomes the object of study for the branch of applied linguistics as well as discourse analysis.

Hyland (2009) considered AD the dominant mode of education and knowledge creation. He stated, “Academic discourse refers to the ways of thinking and using language which exist in the academy. Its significance, in large part, lies in the fact that complex social activities like educating students, demonstrating learning, disseminating ideas and constructing knowledge, rely on language to accomplish” (Hyland, 2009, p. 17).

Smith et al., (2009) offered different explanation of AD in terms of a set of writing habits and conventions that make it intelligible, interesting and engaging to the reader. According to them, both writers and readers form a part of the academic community that presents the

academic text and respond to it (Smith et al., 2009). Suomela-Salmi and Dervin (2009) went further to consider AD as a communicative act which can be written, spoken or mediated. For Suomela-Salmia and Dervin (2009), AD requires both the I which refers to the writer or the speaker and the Other or the community. There are four groups that identify the relationship between AD participants: specialists ↔ specialists; specialists ↔ novices, young researchers; specialists ↔ general public; specialists ↔ the media (Suomela-Salmia & Dervin, 2009).

The communicative competence of AD reveals a great deal about writers' ability to change their communicative practices to cope with the demands of the academy (Hyland, 2009). Swales (1990) considered communicative competence among the determinant elements of language use within the academic context besides the pragmatic and the socio-linguistic conventions of genres. In fact, the notion of communicative competence occurred in response to Chomsky's linguistic competence which is the fundamental aim of linguistic analysis. Chomsky (1965) stated,

Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance. (p. 3)

Chomsky's linguistic theory made a distinction between the concepts of competence and performance. While competence refers to the unconscious knowledge of the grammatical features of language, performance is the users' actual realization of this knowledge in real situations (communication). Chomsky approved the role of competence rather than performance to produce correct grammatical sentences (Chomsky, 1965).

Hymes (1972) further extended the meaning of communicative competence to include grammatical, sociolinguistic, psycholinguistic and probabilistic systems of thoughts (Hymes,

1972). Therefore, the competent writer is the one who knows when, where and how to use his/her language rather than merely how to produce correct sentences.

In their communicative approach, Canale and Swain's (1980) communicative competence was made up of three component competencies: grammatical competence, sociolinguistic competence and strategic competence. The grammatical competence is concerned with the mastery of language codes like grammar, vocabulary, spelling etc. The sociolinguistic competence involves socio-cultural and discourse rules which serve as a guide for the language user to use language appropriately in a given situation. The strategic competence composed of verbal and non-verbal communication strategies that ensure successful communication. For Skehan (1998), in strategic knowledge, "We are dealing with knowledge about how to solve communication problems in general, which may then be activated when a particular problem is encountered" (p. 158). Arguably, the grammatical, sociolinguistic and strategic competencies are essential parts of any discourse and they overlap with a type of competence called discourse (textual) competence concerned with texts' cohesion and coherence. In Canale's words, "This type (discourse competence) of competence concerns the mastery of how to combine grammatical forms and meanings to achieve a unified spoken or written text in different genres" (Canale, 1983, p. 9).

Discourse competence plays an important role to develop skills in academic writing. For Bruce, there are two principles which guide discourse competence:

- Discourse competence involves a range of different types of knowledge, including both linguistic and non-linguistic knowledge;
- Pedagogy that develops discourse competence, in novice writers for example, the need to be able to integrate the full range of the different types of knowledge that discourse competence draws upon (Bruce, 2008, p. 5).

In general, the concept of academic discourse addresses two main issues: discourse competence and discourse community which are mandatory elements to obtain a coherent text. In her communicative competence model (see Figure 1), Celce-Murcia (2007) claimed that the interaction between lexical, linguistic, formulaic and socio-cultural patterns in discourse competence is necessary to shape the overall structure of the academic text. Celce-Murcia (2007) stated,

Discourse competence refers to the selection, sequencing, and arrangement of words, structures, and utterances to achieve a unified spoken message. This is where the top-down communicative intent and sociocultural knowledge intersect with the lexical and grammatical resources to express messages and attitudes and to create coherent texts. (p. 46)

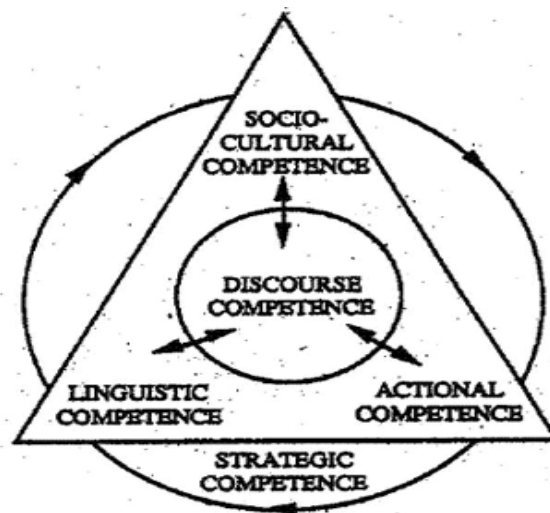


Figure 1. Revised schematic representation of communicative competence (Adopted from Celce-Murcia, 2007, p. 45)

Discourse community is another notion that contributes to shape our understanding of academic discourse. Sometimes variations in academic texts are ultimately interpretable in terms of the individuals to which the text is addressed. Swales (1990) explained the relationship between discourse community and text's genre. He asserted that each community has a set of common goals and communication conventions that characterize their writing

genre. Barton (1994) developed a holistic definition of discourse community is reflected in the following words:

A discourse community is a group of people who have texts and practices in common, whether it is a group of academics, or the readers of teenage magazines. In fact, discourse community can refer to several overlapping groups of people: it can refer to the people a text is aimed at; it can be the people who read a text; or it can refer to the people who participate in a set of discourse practices both by reading and writing. (p. 57)

The Growth of English Academic Discourse

It is a well-known fact that the vast majority of academic writings today are done in English. Statistics presented at *The Scientist Journal* (1989) showed that by 1987, 100% of the articles published in the Pasteur Institute in Paris were in English compared to about 15% in 1973. This was certainly a noticeable decline in the use of French language among researchers. Before this, Swales (1985) compared the prominence of English language with some European languages. He found that English predominated massively (75%) over French (5.5%) and Spanish (4%). This confirms that, “English is indeed the strongly dominating language for the communication of research on an international level” (Swales, 1985, p. 3). Swales (1985) defended the idea that English should not remain a vehicle for the dissemination of research results in the northern world only; rather, it must be an international language of research.

The spread of Anglophone culture in the 18th century was the first step in carving out a greater place for English language to become the first language of academic publishing. Hyland (2009) justified the growth of English academic discourse in terms of three main reasons. First, the expansion of higher education which offers students ample opportunities to learn various subjects and new languages. The second reason relates to professional training

programs and scholarships that increase concerns with teaching and learning issues and thus academic writing. Hyland stated,

Staff lecturing skills and student writing competencies are often key areas in these evaluation and accreditation regimes and have become central to professional development programs and of national frameworks for the training of university teaching staff. (Hyland, 2009, p. 4)

One last reason is concerned with the emergence of English as the international lingua-franca of research and scholarship. Therefore, an enormous number of researchers and students resort to English language to complete their academic papers. Hyland and Paltridge (2011) added a further reason for the widespread of English academic discourse that is academic persuasion. According to them, writers of different disciplines have different interpretations of the data presented to them. Therefore, they would use a discipline-specific discourse in order to successfully convince readers.

Obviously, interest in academic English increased with the development of English for Specific Purposes (ESP) studies. From early 1960s, ESP has emerged as a major topic in EFL teaching to fulfill specific learning needs. Hence, English becomes the language of almost all fields of knowledge. The origins of ESP have been traced back to the end of World War II with the expansion of science, technology and commerce that foster the development of cross-cultural communication. The post-war changes led to the emergence of a new generation of learners for whom English language was the only possible way to cope with recent development. ESP was the first discipline which offers various ways of using English in different fields. For Hutchinson and Waters (1987), ESP has undergone the following five phases of development:

The Register Analysis Phase

The concept of special analysis was used by Hutchinson and Waters (1987) to refer to a language system that characterizes a specific register and helps to understand essential differences between academic discourse grammatical and lexical features.

Register analysis phase was dominated by studies in English for Science and Technology (EST). The expansion of science and technology in the last 50 years made them the object of study for ESP researchers. Parkinson (1988) stated,

Yet, characteristic forms and vocabulary of science or technology should not be considered as separate from the genres in which they occur, because linguistic differences are part of what constitutes genre. Similarly, the genres of science and technology partially constitute the various disciplines, and cannot be separated from them. (p. 156)

Parkinson (1988) maintained that interest in ESP began with linguistic forms and language skills then it is expanded to include genre and disciplinary socialization and finally disciplinary culture and values. (see Figure 2).

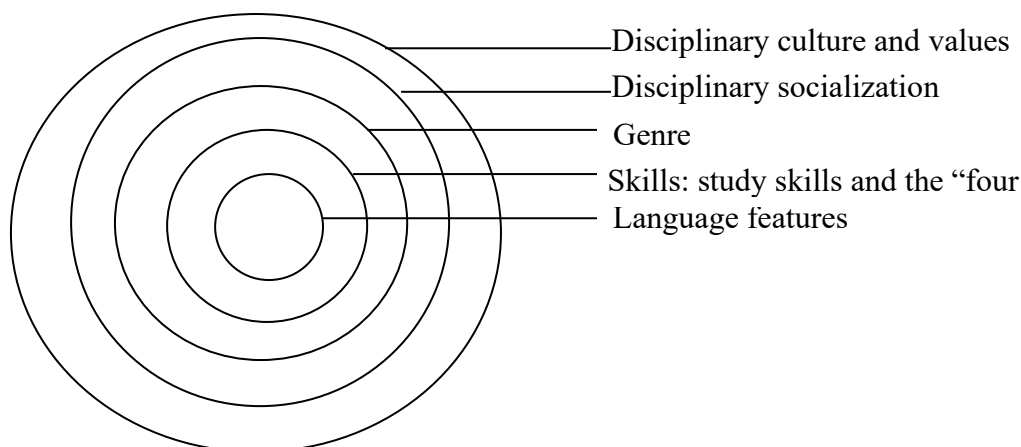


Figure 2. The expanding focus on ESP (Adopted from Parkinson, 1988, p. 156.)

The term register analysis received different names and descriptions. While Swales referred to register with the term lexicostatistics (Swales, 1988, as cited in Dudley-Evans & St.

John, 1998, p. 21). Robinson (1991), instead, used the term frequency analysis to refer to the grammar and structural and non-structural vocabulary of various disciplines. In general, register analysis has been mainly concerned with the linguistic description of lexical and grammatical features of various texts.

Despite its wide use in the literature, Haseli (2008) raised the following points of criticism against register analysis:

- It restricts the analysis of texts to the word and sentence level (West, 1998);
- It is only descriptive, not explanatory (Robinson, 1991);
- Most materials produced under the banner of register analysis follow a similar pattern, beginning with a long specialist reading passage which lacks authenticity (Dudley-Evans & St. John, 1998).

Rhetorical Devices Phase

Rhetorical devices phase or discourse analysis brought a different way of texts' analysis basing on their communicative ends. It accounts for writers' choices of discourse elements and its function in the text. Therefore, the term rhetoric refers to a process used by writers to organize text's information depending on a specific set of purposes. Hutchinson and Waters (1987) extended the role of rhetorical analysis beyond the sentence level to include the whole discourse. They argued that, "the concern of research, therefore, was to identify the organizational patterns in texts and to specify the linguistic means by which these patterns are signaled. These patterns would then form the syllabus of the ESP course" (Hutchinson & Waters, 1987, p. 11). Hutchinson and Waters' view was basically built on Allen and Widdowson's (1974) rhetorical hypothesis in which they claimed that success in language learning is associated with students' ability to use language communicatively rather than their ability to practice the grammar of language. Widdowson (1984) identified two ways to describe English language varieties: language as register and language as rhetoric. The first

way describes the formal properties of the English text; however, the second way accounts for the mode of communication of English discourse.

Research on rhetorical ESP was basically improved by Selinker et al., (1976) rhetorical framework (see Table 1) in which they suggested four levels for paragraph rhetorical process development. The first level accounts for the objectives of discourse; the second level is concerned with the rhetorical functions that develop the objectives stated in the first level; the third level focuses on some specific rhetorical functions in order to develop the general rhetorical functions in the previous level in addition to the fourth level of rhetorical techniques which weaves the relationship between the specific rhetorical functions developed in the third level.

Swales (1981) explored the rhetorical structure of RAs. He argued that scientific RAs have a specific rhetorical structure that allows authors to present their arguments to the scientific community appropriately.

Table 1 <i>Rhetorical Process Chart: English for Science and Technology (EST)</i>	
LEVEL	DESCRIPTION OF THE LEVEL
A	<i>The Objectives of the Total Discourse.</i> EXAMPLES: 1. Detailing an Experiment 2. Making a Recommendation 3. Presenting new Hypotheses or Theories 4. Presenting other Types of EST Information
B	<i>The General Rhetorical Functions Employed to Develop the Objectives of Level.</i> EXAMPLES: 1. Stating Purpose 2. Reporting Past Research 3. Stating the Problem 4. Presenting Information on Apparatus: Description 5. Presenting Information on Apparatus: Operation 6. Presenting Information on Experimental Procedures 7. Referencing an Illustration 8. Relating an Illustration to the Discussion
C	<i>The Specific Rhetorical Functions Employed to Develop the General Functions of Level B.</i> EXAMPLES : 1. Definition 2. Classification 3. Description: Physical and Function 4. Description: Process
D	<i>The Rhetorical Techniques that Provide Relationships Within and Between the Units of Level.</i> EXAMPLES : 1. Time Order 2. Space Order 3. Causality 4. Results 5. Comparison 6. Contrast 7. Analogy 8. Exemplification

Note. From “Presuppositional rhetorical information in EST discourse,” by Selinker et al., 1976, TESOL Quarterly, 10, p. 283.

Flowerdew (2001) made a clear cut between two approaches of ESP: the linguistic approach and the rhetorical approach. According to him, the linguistic approach develops interest solely on the organizational patterns of discourse level whereas the rhetorical approach seems more ethnographic than linguistic (Flowerdew, 2001). In fact, the situational context plays a vital role to draw the distinction between the two approaches. While the

linguistic approach depends on the situational context to interpret texts' structures, the rhetorical approach, rather, relies on the text in order to interpret the situational context.

Flowerdew explained the two approaches in the following diagram:

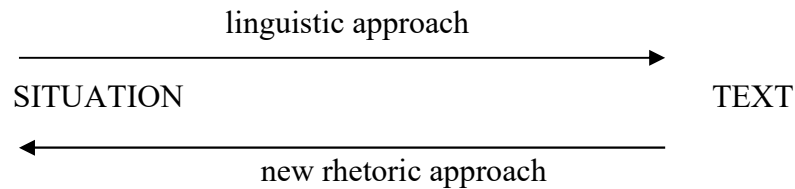


Figure 3. The linguistic approach vs. the rhetorical approach (Adopted from Flowerdew, 2001, p. 92)

Bhatia (2014) maintained that ESP rhetorical theory does not account for the frequency of occurrence of linguistic features across texts; rather, it attempts to discover how specific linguistic features contribute to realize the communicative purposes of texts. He stated,

In grammatical-rhetorical analysis, the analyst typically tends to investigate discourse from the Vantage point of the writer to consider how a scientist-communicator makes certain grammatical choices as he writes and somehow limits the level of analysis to certain specific syntactic features of these texts. (Bhatia, 2014, p. 41)

Target Situation Analysis

The third stage concerns itself with the analysis of the target situation in which learners use the language they are learning (Hutchinson and Waters, 1987). Target situation analysis accounts for language features that shape target language situations as well as the communicative competence required for each situation. Johnson (1989) argued that, “The emphasis of target situation analysis is on the nature and effect of target language communications in particular situations (in offices, on assembly lines, in meeting rooms, in content-area classrooms, for example)” (p. 57).

According to West (1997), target language analysis phase represents the earliest form of needs analysis which accounts for learners' needs and necessities to acquire the language. He maintained that target situation analysis operates at various levels including:

- a. Establishing priorities in terms of various languages –English, German, etc.
- b. Establishing priorities in terms of skills in one language –speaking, reading, etc.
- c. Establishing priorities in terms of LSP situations, functions or tasks –speaking on the telephone, listening to lectures, etc. (West, 1997, p. 71)

Hutchinson and Waters (1987) developed a framework for the analysis of students' target needs regarding target situation analysis. The framework involves all kind of information that teachers and curriculum designers need for a holistic view of the type of learning required for foreign and/or second language learners.

Nunan (1988) used the concepts objective needs and subjective needs to refer to target situation analysis and needs analysis. While objective needs deal with the analysis of language requirements of target situations, subjective needs; however, aim to understand learners' perceptions and attitudes towards the course. Nunan (1988) found that, "There is a tendency to equate objective needs with the specification of content, and subjective needs with the specification of methodology, the two need not be seen as synonymous" (p. 44).

Arguably, identifying the context in which learners will use the language is considered essential to decide about the appropriate registers and modes of communication. Hyland (2004a) studied the relationship between target situation analysis and academic writing (see Table 2). He believed that target situation analysis plays a crucial role to establish the linguistic skills and knowledge required to engage in academic writing (Hyland, 2004a). Hyland identified four basic factors involved in target situation analysis of academic writing are:

- Identifying the contexts of language use
- Observing the language events in these contexts
- Noting the sequences of these events
- Listing the genres employed

<p>Why does the learner need to write?</p> <p>Study, work, exam, promotion, etc.</p>	<p>What will the content areas be?</p> <p>Academic subjects, professional area, personal, secondary school, craftsman, manager.</p>
<p>What genres will be used?</p> <p>Lab reports, essays, memos, letters, etc.</p>	<p>What is the structure of these genres?</p> <p>Move patterns, realizations of social purposes, key features, combinations of elemental genres</p>
<p>Who will the learner communicate with?</p> <p>Native or non-native speakers</p> <p>Reader's knowledge-expert, layperson, etc.</p> <p>Relationship-colleague, client, teacher, subordinate, superior</p>	<p>Where will the learner use the language?</p> <p>Physical setting: office, school, hotel</p> <p>Linguistic context: overseas, home country</p> <p>Human context: known/unknown readers</p>

Note. From "Genre and second language writing," by Hyland, 2004a, University of Michigan Press p. 96.

Skills and Strategies

By the 1980s, the skills approach to ESP emphasized the use of language skills and the strong connection between them. The skill-centered approach to ESP aims to promote learners' reasoning and interpreting processes getting away from the surface performance data and focusing on the competence underlying performance (Hutchinson & Waters, 1987). Ideally, improving authors' academic skills leads to subsequent increase in their academic achievement. Hutchinson and Waters' ESP approach considers the importance of learners'

cognitive abilities to move beyond the boundaries of mapping only the surface structure of texts to high-level analytical and communicative skills. They (1987) stated,

The principle idea behind the skills-centered approach is that underlying all language use there are common reasoning and interpreting processes, which regardless of the surface forms, enable us to extract meaning from discourse. The focus should rather be on the underlying interpretive strategies, which enable the learner to cope with the surface forms, for example guessing the meaning of words from context, using visual layout to determine the type of text, exploiting cognates (i.e. words which are similar in the mother tongue and the target language). (Hutchinson & Waters, 1987, p. 13)

Jordan (1997) explained the relationship between writing and reading skills in academic setting as follows,

Reading, as a skill, is normally linked with writing. This is a fundamental characteristic of the target academic situation in which students are typically reading books and journals, noting, summarizing, paraphrasing, and then writing essays, etc. In practice material for reading, the link with writing is normally included. Although the focus may be on various reading strategies and comprehension practice, the resultant exercises usually involve writing (apart from some multiple-choice questions and yes/no, true/false formats). (p. 143)

Jordan (1997) offered an adequate explanation for the use of language skills in academic situations is presented in diagram of figure 4 that shows the close relationship between language skills and the academic situations. The most fundamental aspect that determines this relationship is the purpose of language use that implies the use of particular skill. Otherwise, all language skills are mandatory to achieve language purposes (Jordan, 1997).

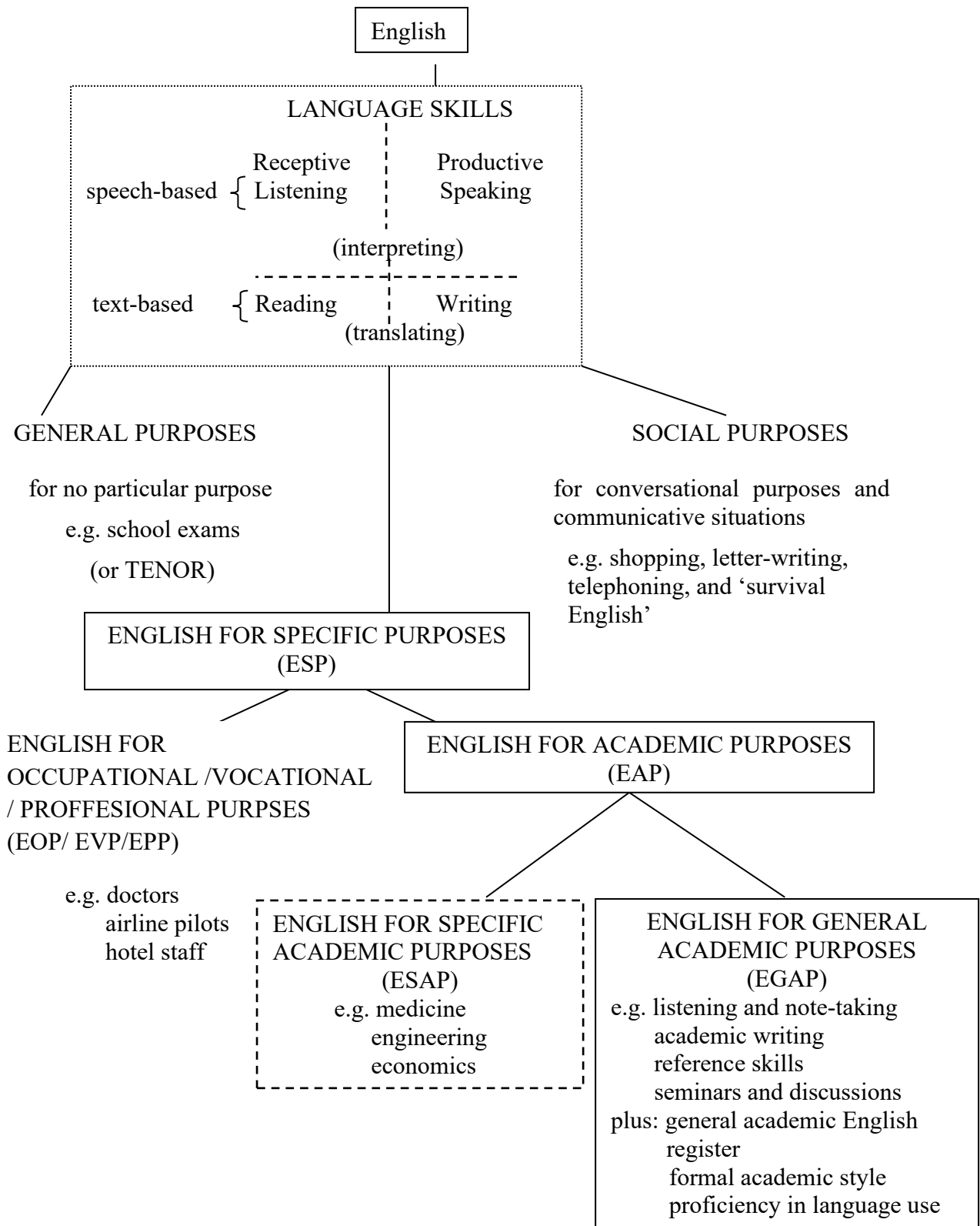


Figure 4. English: Purposes (Adopted from Jordan, 1997, p. 3)

A Learning-Centered Approach

The latest approach to ESP was built on the belief that learning is not restricted to a set of surface forms and underlying processes, rather, it is an internal process which involves both learners' prior knowledge about the language as well as their ability to use this knowledge in its context (Hutchinson & Waters, 1987). In other words, learning-centered approach does not account for the description of language but for its actual use. Hutchinson and Waters (1987) argued,

Our concern is with language *learning*. We cannot simply assume that describing and exemplifying what people do with language will enable someone to learn it [...]. A truly valid approach to ESP must be based on an understanding of the processes of language learning. (p. 14)

Dudley-Evans and St John (1998) stressed the importance of learning-centered approach to improve learners' academic skills taking into consideration their learning styles. Agnaou (2004) went further to claim that the same approach is effective to evaluate learners' needs by emphasizing the gap between the desired and actual states of learning as well as the possible solutions to reach the desired goals. This means that learning-centered approach does not intend to discover language competence but how learners acquire and grow this competence.

ESP is divided into two major branches: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). English for academic purposes is housed in academic contexts in order to assist learners with appropriate use of academic language required for different academic disciplines. According to Hyland (2009), EAP contributes to understanding the disciplinary knowledge and the communicative behaviors of academic contexts. EAP itself is divided into two branches: English for General Academic Purposes (EGAP) stands for the study of formal academic styles and proficiency in language use and English for Specific Academic Purposes (ESAP) which studies the kind of English used for a

particular academic topic like business, science etc. Peterwagner (2005) explained the difference between EGAP and ESAP as follows,

Whereas the EGAP courses, which cater for a rather heterogeneous group of students from mixed disciplines, deal with generalizable skills applicable to most students, ESAP courses are geared to the needs of a homogeneous group of students and to the requirements of one special discipline. As a result, the students will be familiarized with specialist vocabulary, grammatical peculiarities, distinctive features of discourse, a special disciplinary culture etc. (p. 30)

EOP for ESP branch aims to improve job-related language skills in order to achieve professional purposes. EOP courses are designed to develop the communicative competence of workers, employees, doctors and professionals. According to Kucherenko (2013), “EOP is the language in a broad variety of work-related settings, such as Business English, English for Economics, English for Law, and other types” (p. 4).

Indeed, ESP provides a strong motivation for the development of academic discourse. All researchers come to appreciate the importance of ESP to afford first insight into understanding academic discourse and considering its practical utility. In this regard, ESP and EAP can be considered as sister fields which are placed alongside each other (Hamp-Lyons, 2011).

Academic Disciplines

An exciting research had been done in the history of science and scholarship about disciplinary domains and the knowledge shaping them. Academic research distinguishes between two types of disciplines: soft and hard. The major difference between the two types is that hard sciences like physics, biology and chemistry confine themselves to studying natural phenomena; whereas, soft sciences such as philosophy, sociology, and anthropology deal with nonphysical entities like attitudes and opinions.

In his comparison between social science research and physical science research, Hedges (1987) reached an important conclusion that, “physical science experiments are more cumulative than those of social science experiments does not have much empirical support” (p. 443). However, Diamond (1987) believed that soft sciences and hard sciences should be distinguished as easy and hard sciences. The fact that science is perceived by many people as something performed in laboratories using testing tubes and mathematical equations, while diminishing the value of soft sciences for their methods of operationalization is not quite evident to Diamond (1987) who believed that soft sciences are more difficult to study due to its uncontrollable variables and abstract phenomena. In his words, “Ecology and psychology and the social sciences are much more difficult, and to some of us, intellectually more challenging than mathematics and chemistry” (Diamond, 1987, p. 39).

Johnson (1987) divided hard sciences into two types: pure and applied sciences. Pure sciences account for facts about the universe and its inhabitants; whereas, applied sciences create things that are useful to man basing on scientific laws and principles. Meanwhile, Yngve (2004) explained hard sciences in terms of the following four standard assumptions:

- a. There is a real world out there to be studied;
- b. it is coherent so we have a chance of finding out something about it;
- c. we can reach valid conclusions by reasoning from valid premises, and;
- d. observed effects flow from immediate real-world causes.

Another difference was emphasized by Artiga-LeÓN (2006) who argued that hard sciences are predominantly analytical and factual; they convey information in impersonal and precise manner by minimizing speakers’ subjectivity. Conversely, soft sciences are more likely to construct messages tentatively rather than making categorial claims. They are more subjective because they express writers’ viewpoints towards topics.

Hyland (2009) explained a distinction between two types of academic disciplines in the following diagram:

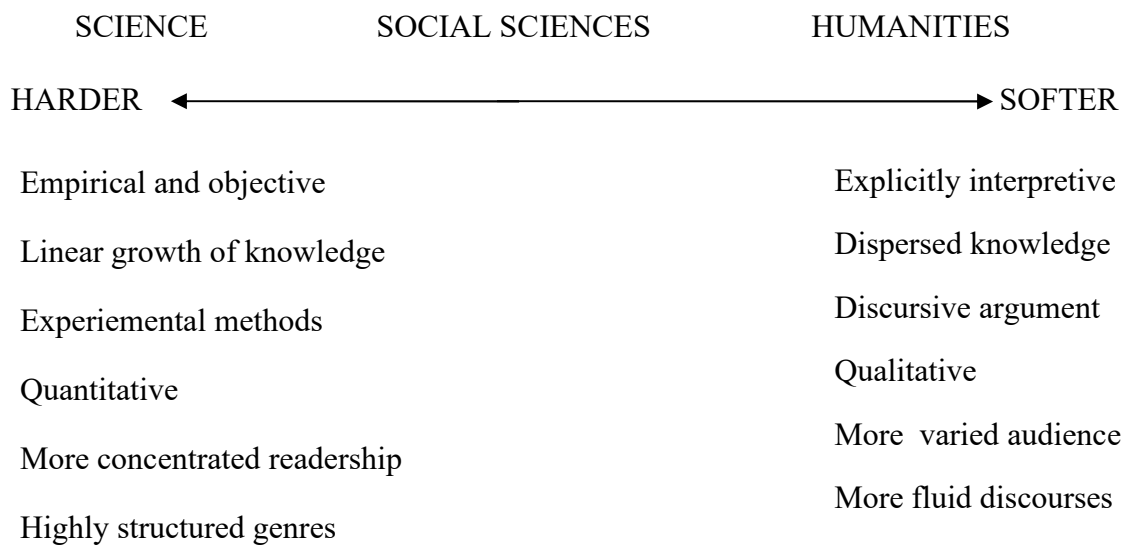


Figure 5. Continuum of academic knowledge (Adopted from Hyland, 2009, p. 63)

According to Hyland (2009), writing for hard sciences should undergo three stages:

- Highlighting a gap in knowledge;
- Presenting hypothesis related to this gap, and then;
- Experiments and finding to support this hypothesis.

In return, soft scientific disciplines are built on untestable assumptions about man and society in general. Unlike natural sciences, social sciences give greater importance to introspection and argumentation and they rely on qualitative data analysis and subjective explanation.

For Hyland (2001), hard and soft sciences are distinguished by specific discourse markers like authorial presence which occurs apparently in soft sciences more than hard sciences. Hyland (2001) has noticed that soft sciences employ more reader-oriented markers than hard sciences which are restricted to the use of inclusive *we* pronoun. Also, he reported that hard sciences focus on the use of directives while soft sciences respond to a high proportion of questions (Hyland, 2001). Differences between hard and soft sciences create new research insights regarding the choice of language in each discipline. Therefore, Livnat

(2012) distinguished between hard and soft sciences in terms of their structure of knowledge in RAs. According to her, the structure of knowledge in hard sciences is more compacted and it does not need to attract readers' attention, in contrast to the structure of knowledge in soft sciences which is less fixed and it opens up a wide range of possibilities for readers.

Linguistic Investigations of Academic Discourse

Academic writing is addressed to a scientific community which shares writing traditions and conventions for communicating sciences effectively. Linguistically speaking, academic discourse is structurally complex. In their attempts to map the prominent linguistic features of academic prose, Biber and Conrad (2009) found that nominal features (nouns, nominalizations, prepositional phrases, etc.) are extremely common in academic discourse except personal pronouns (see Table 3). Besides, findings show higher use of simple present tense than past tense and a modest use of modals and passives which cover one fourth of all finite verbs. Circumstance adverbials are rare in academic prose in contrast to linking adverbials which are very common.

Linguistic Feature	Newspapers	Academic prose	Conversation
1. Nominal Features			
Nouns	Very common, even more common than in academic prose	Very common	Less common
Nominalizations	common	Extremely common, especially -tion	Rare
Prepositional phrases after nouns	common	Extremely common	Less common
Attributive adjectives	common	Extremely common	Less common
Nouns as pre-modifiers of nouns	Extremely common	common	Rare
Personal pronouns	Rare	rare	Extremely common
2. Verb characteristics			
Present tense	Less common than in academic prose; slightly more common than past tense	More common than in news, far more common than past tense	Very common

Continued Past Tense	Much more frequent than in academic prose; slightly more common than in conversation	Rare	Uncommon
Modals	Uncommon, slightly less common than in academic prose; <i>will</i> and <i>would</i> most common	Uncommon; slightly more common than in news <i>can</i> and <i>may</i> most common	More common than in news or academic prose (about 15% of all finite verb phrases)
Passives	About 15% of all finite verbs	More common than in news, about 25% of all finite verbs	Rare
3. Circumstance adverbials of time and place	Time adverbials by far most common; place also common	Time and place adverbials rare	Time and place adverbials both common
4. Linking adverbials	rare	Very common	<i>So</i> and <i>then</i> are very common
5. Other features			
Sentence structure	Standard syntax	Standard syntax	Many fractured clauses, incomplete utterances, etc.
Questions	rare	rare	Very common
Type-token ratio	Higher than academic prose	Higher than conversation	Lowest

Note. From “Register, genre and style,” by Biber & Conrad, 2009, Cambridge University Press, pp. 115-116.

A previous research has been made by Kern about the main components of academic discourse. In his academic literacy modal, Kern (2000) identified three dimensions of competence required for academic English are: linguistic, sociocultural/psychological and

cognitive. The linguistic dimension refers to the ability to master sounds, words, grammar and the pragmatic of language use. Kern (2000) stated,

From the linguistic perspective, literacy involves the ability to recognize and produce graphic representations of words and morphemes, and knowledge of the conventions that determine how these elements can be combined and ordered to make sentences. (p.25)

No doubt that converting graphic symbols into verbal forms is the first step towards successful writing; however, academic literacy may be extended to include understanding larger segments of texts and knowledge of genres and styles (Kern, 2000). From the sociolinguistic perspective, Ferris claimed that linguistic competence includes the following issues:

- varying language appropriately for different audiences (friends versus professors, formal versus informal).
- the ability to carry out everyday social tasks such as apologizing, complaining, or requesting.
- the ability to carry out academic tasks such as defining, explaining, and justifying.
- the use of cohesion (linguistic devices that link ideas such as pronoun reference, conjunction, synonyms, etc.) to follow ideas in a text (for reading) and provide signals to a reader (for writing).
- understanding the purpose and structure of complicated academic genres (e.g., abstracts, research articles, dissertations) and knowledge of general modes of discourse such as narration, persuasion, compare and contrast, cause and effect and so forth. (Ferris, 2009, p. 27)

Linguistic competence is an umbrella term that encompasses phonological, lexical, grammatical, besides sociolinguistic and discourse knowledge. Phonological competence refers to the ability to produce distinctive meaningful sounds and realize sound differences across academic words, for instance the words photograph and photography (Ferris, 2009). It is crucial for academics to increase their awareness of the phonological aspects of academic language including intonation, stress and sound patterns. The lexical competence is related to the knowledge of academic vocabulary as well as most frequently occurring words in academic discourse (Ferris, 2009). Scarcella (2003) divided academic vocabulary into two types: specialized to non-specialized vocabulary (see Table 4). Specialized vocabulary refers to technical language that is used to satisfy the needs of specific disciplines such as medicine, business, history, etc. In opposite, non-specialized academic vocabulary is more general and less clearly connected to a particular field.

Types of Words	Meaning	Domain	Examples
General words	Nonspecialized	Used across fields	already, busy
Technical words	Specialized	Used in specific fields	fulcrum, pivot
Academic words	Both specialized and non-specialized	Used across fields	assert, research

Note. From “Academic English: A conceptual framework,” by Scarcella, 2003, University of California Linguistic Minority Research Institute, p. 14.

The grammatical competence is another dimension of academic English that is concerned with the ability to use grammatical rules governing words and sentences. It is the ability to form common sentence structures like John hits the ball, the ability to subordinate (you are my friend because you are nice), and the ability to understand noun and verb systems (Scarcella, 2003). Singhal (2004) defined grammatical competence as,

Knowledge of the rules of punctuation that enables students to make sense out of and use of the grammatical features associated with different rhetorical modes and writing purposes such as describing, defining, analyzing, and synthesizing. (p.4)

The sociolinguistic dimension accounts for the social and cultural values that impact academic English. Different social situations require the use of different academic terms. Halliday and Hasan (1976) explained sociolinguistic competence in terms of the individual's ability to write cohesively. According to them, there are five cohesive devices which indicate the semantic relation between the different elements in the text are: reference, substitution, ellipsis, conjunction, and lexical cohesion. For Scarcella (2003), sociolinguistic knowledge contains general language functions used for everyday English like apologizing or complaining in addition to those academic functions that signal cause and effect, hypothesizing, contrasting, justifying, evaluating etc.

Cognitive competence refers to ways of thinking about writing as a body of knowledge acquired over years. It is widely believed that learners' use of prior knowledge is of paramount importance to apply new knowledge and solve unfamiliar communicative situations. Kern (2000) made a distinction between two types of knowledge: declarative and procedural knowledge. Declarative knowledge refers to the knowledge that is stored in the memory and it is consciously accessible. Procedural knowledge is the skills that operate automatically through repeated practices (Soled, 1995). Also, Kern (2000) explained procedural knowledge in terms of the cultural context in which language is used. According to him, procedural knowledge refers to learners' ability to embed their reading and writing skills in different cultural contexts (Kern, 2000). Scarcella (2003) introduced the notion of critical literacy of academic writing which refers to "the ability to read for intentions, to question sources, and to identify others' and one's own assumptions" (p. 22). Similarly,

Singhal (2004) assumed that higher exposure to the language is more likely to stimulate learners' prior knowledge and increase their ability to think critically.

A further important component has been incorporated in cognitive dimension is strategic competence which involves a set of metacognitive strategies to achieve communicative goals (Bachman & Palmer, 1996). Strategic component exists alongside the metalinguistic awareness component which is the executive component of cognitive processing that involves processes of planning, monitoring, revising and editing academic discourse (Kern, 2000).

Research on academic English shows that the production of academic texts requires more than grasping the linguistic and cognitive writing forms and skills, rather, it extends yet further to include the social norms and conventions that characterize academic communities. Vygotsky (1986) emphasized the role of social interaction to ensure child's cultural development. According to him, "Each function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological), and then inside the child (intra-psychological)" (Vygotsky, 1986, p. 5). Gee's (1996) theory of discourse went further to see discourses as social languages that connect to specific social identities. He defined discourses as,

Ways of behaving, interacting, valuing, thinking, believing, speaking and, often, reading and writing, that are accepted as instantiations of particular identities (or "kinds of people"), by specific groups... (Gee, 1996, p. 3)

Research on the development of academic writing reveals that mastering academic English includes considerations of three interwoven dimensions: linguistic, cognitive and sociocultural. In order to ensure appropriate use of specific linguistic features in an academic piece, it is necessary to attain a certain level of cognitive growth that allows interpreting meanings and transferring knowledge. Finally, this knowledge is framed by social practices to achieve communicative goals.

The Growth of Scientific English

Early Modern English (EMode) represents the last phase in the history of English language (after c.1500) that was shaped by many factors including social changes taking place during the Renaissance and its deep impact on changing the status of English language to become the language of prestige and opportunity (Zapała-Kraj, 2010). Moreover, the scientific revolution of the seventeenth century brought about significant shift in the political, economic and social structure of European countries. The spread of trade, the invention of computer and the growth of science and technology were striking reasons that explain the growing global use of English as a language of science.

The publication of the first international English scientific journal, *Philosophical Transactions of the Royal Society*, in 1665 marked the official beginning of scientific publication. The journal was edited by Henry Oldenburg who established basic principles of writing scientific papers to become later the central foundation of scientific journals. Hunter (1989) praised the language used in the same journal and he considered it “an agency for publicizing the new science” (Hunter, 1989, p. 27).

In its infancy, the vocabulary of scientific English was quietly modest. The period of Early Modern English is known as the Age of Linguistic Anxiety (Millward, 1996). Accordingly, a countless number of scientific words had been borrowed from other languages especially Latin and Greek, in order to enrich scientific English. Despite the debate arises upon the question whether or not borrowing would contaminate the purity of English language, Millward (1996) confirmed that, “borrowing was the easiest and most obvious way to fill the gaps in English vocabulary, and Latin was the easiest and most obvious language from which to borrow” (p. 198). According to Graddol (1996), there were four techniques that shaped scientific English:

- a. the Latin terms can be ‘borrowed’ in its entirety into English, adapted to English morphology;
- b. the Latin word can be translated element for element into English (what is technically known as a *calque*);
- c. a new English word can be invented;
- d. an existing word can have its meaning extended so that it acquires a specialized, technical, as well as everyday sense.

Barber (1997) provided a thorough explanation of the main methods to add new words to English. He concluded that suffixation such as *al*, *m* and *ist* and prefixation like *re*, *anti*, *ex*, *pro* etc., were the most commonly used methods for converting words into English. However, Table 5 shows that the vast majority of English words are of Latin and French origins (Barber, 1997).

Word-formation	No	Loan-words	No
Suffixation	607	Latin	393
Prefixation	261	French	121
Compounding	217	French or Latin	20
Zero-morpheme derivation	99	Greek	35
Others	39	Spanish/Portuguese	16
		Italian	16
		Low German/Dutch	9
		Other languages	15
Total	1,223	Total	625

Note. From “Early modern English,” by Barber, 1997, Edinburgh University Press p. 221.

Latin loanwords were generally nouns, verbs and adjectives. Several morphological modifications accompanied the transformation of words from Latin to English what causes changes in the meaning and the pronunciation of words. Prasad (2012) listed a number of Latin words borrowed over the following centuries:

16th century: area, miser, fungus, vagary, genius, circus, ignoramus, medium, vacuum, exit, etc.

17th century: album, apparatus, focus, complex, arena, lens, status, minimum, tortor, specimen, etc.

18th century: albi, bonus, extra, inertia, insomnia, deficit, nucleus, ultimum, via, etc.

19th century: babillus, ego, opus, moratorium, referendum, etc. (Prasad, 2012, p. 214)

Scientific borrowing reached its peak in the nineteenth century which was the period of great expansion of scientific research where attempts were made to provide new names for newly identified phenomena. According to Durkin, there were two possible ways to create scientific words in English:

- Words formed by modern scientists from one or more Latin (or Greek) elements, either with ending that are identical to those found in classical Latin (or some ancient Greek), or using the naturalized forms of those same endings that are found in the modern vernacular languages.
- Loanwords from the Latin employed by modern scientists in the systematic terminology of various disciplines, especially taxonomy and medicine, which has a rather special (and difficulty) status, since it is mostly used in discourse that is otherwise entirely framed in modern vernacular languages. (Durkin, 2014, p. 341)

Inevitably, the emergence of scientific vocabulary led to the rise of a new type of grammar known as scientific grammar. Because early English grammar was written in Latin, it was hard for early English grammarians to escape the grammatical rules inherited from Latin grammar (Barber, 1997). Grau and Reeves (1995) distinguished Early Modern English (EMode) grammar from contemporary grammar in the following way:

EMode	CONTEMPORARY
1) The possibility of V before S:	
a) Went he hence now? (Otherello)	Do-construction:
V S	Did he go away from there now?
b) Then is Doomesday near (Hamlet)	Inversion after initial adverb, Today limited to constructions such as: Not only am I (...) but also (...)
c) Mobility of <i>not</i> :	
I like not that (Othello)	I don't like that
I saw him not (Much Ado about Nothing)	I didn't see him
It not appears to me (Henry IV part 2)	It doesn't appear to me
d) Double negatives:	
Nor this is not	This isn't my nose either
My nose neither (Shakespeare)	
Ne never shal none be	Never will anyone be
Born fairer than she (Caxton)	Born fairer than her
e) Double comparatives and superlatives/Different inflectional patters. More rarer/ most unkindest/ beautifullest/ nothing certainer.	
f) Appearance of adverbs without -ly: drinke deepe/ wondrous strange / new lighted	

Figure 6. Grammatical characteristics of early modern English (Adopted from Grau & Reeves, 1995, pp. 96-97)

The syntax of EMode does not differ broadly from contemporary English. Barber (1997) studied the structure of noun phrases (NPs) in EMode which composed of determiner (D), adjective (A) and noun (N). However, this structure may undergo various modifications with the insertion of post and pre-modifiers like numerals, noun-adjuncts, participles, prepositional phrases etc. According to Barber (1997), the structure of NPs in EMode can take one of the following forms:

- Personal pronoun functions as the head of the NP instead of the noun

Example: Lady, you are *the cruell'st shee* aliue (Shakespear, Twelfth Night)

- Personal pronoun followed by prepositional phrases as adjuncts

Example: *they of Rome* are entered in our Counsailes

- Adverbs are used in NP as adjunct or even as head

Example: Thou loosest here *a better where* to finde (King Lear)

The verb phrase in EMode is guided by a system of tenses which marks progressive, pastness, perfect or passive (Berber, 1997). Auxiliaries play a significant role to determine the verb tense which is usually formed by the auxiliaries *be*, *have* and *do*. In EMode, it is not possible to find tense combination with progressive and passive forms. A form like *the meal was being eating* did not occur until the late eighteenth century (Berber, 1997). Perfect tense is formed with the auxiliary *be* to denote a state of being or with the auxiliary *have* to indicate a continuing process of a verb (Berber, 1997). Moreover, the idea of inverting simple sentences into question forms did not break out until the seventeenth century.

Latin and Greek grammars serve as a point of departure for scientific grammar. Halliday stated, "A scientific 'grammatics; we mean the grammatical resources of the natural languages by which science came to be construed" (Halliday, 1993a, p. 13). Halliday (1988) traced the roots of scientific language to the language of physical sciences which draws the difference between scientific English and other registers. In his article *On the language of physical sciences* (1988), Halliday listed seven characteristics of scientific English are:

- Interlocking definitions
- technical taxonomies
- special expressions
- lexical density
- syntactic ambiguity

- grammatical metaphor
- semantic discontinuity

The notion of grammatical metaphor was introduced by Halliday (1993a) as the most important characteristic of academic and scientific discourse. He defined grammatical metaphor as follows:

It is a substitution of one grammatical class, or one grammatical structure, by another; for example, his departure instead of he departed. Here the words (lexical items) are the same; what has changed is their place in the grammar. Instead of pronoun he + verb departed, functioning as Actor plus Process in a clause, we have determiner his + noun departure, functioning as Deictic plus Thing in a nominal group. (p. 87)

Grammatical metaphor is two types: ideational and interpersonal. Ideational metaphor refers to the language used to construe our own experiences. Ideational function of language allows people to construct meaning by means of more complex grammatical forms mapped by mood (indicative or imperative) and transitivity (Halliday, 1988). The latter is concerned with the selection of process type (material process, mental process, relational process, behavioral process, verbal process and existential process); the selection of transitivity functions (the process, the participants in the situation, the attributes assigned to the participants, and the circumstances associated with the process); and the selection of sequence of group/phrase class (verbal group, nominal group, adverbial group, prepositional phrase, etc.) (Santibanez Saenz, 2000).

Interpersonal metaphor is another essential component to construct scientific knowledge and it accounts for expressive functions of language that help to codify meanings. According to Halliday and Hasan (1976), “The interpersonal component is concerned with the social, expressive and conative functions of language, with expressing the speaker’s ‘angle’; his attitudes and judgments, his encoding of the role relationship into the situation, and his motive

in saying anything at all” (p. 26-27). Interpersonal metaphor ensures active interaction between the speaker and listener. Modality is a key aspect of interpersonal metaphor which involves four principle features to encode speaker’s opinions: probability (certainly, perhaps, possibly), obligation (should, supposed, necessary), usuality (always, never, ever) and inclination (willing, keen) (Halliday & Matthiessen, 2014). Additionally, there are four types of orientation in modality (subjective, objective, explicit or implicit) as well as three values or degrees (high, medium and low) (Halliday & Matthiessen, 2014). The following diagram explains Halliday and Matthiessen modal of modality expressed through interpersonal metaphor:

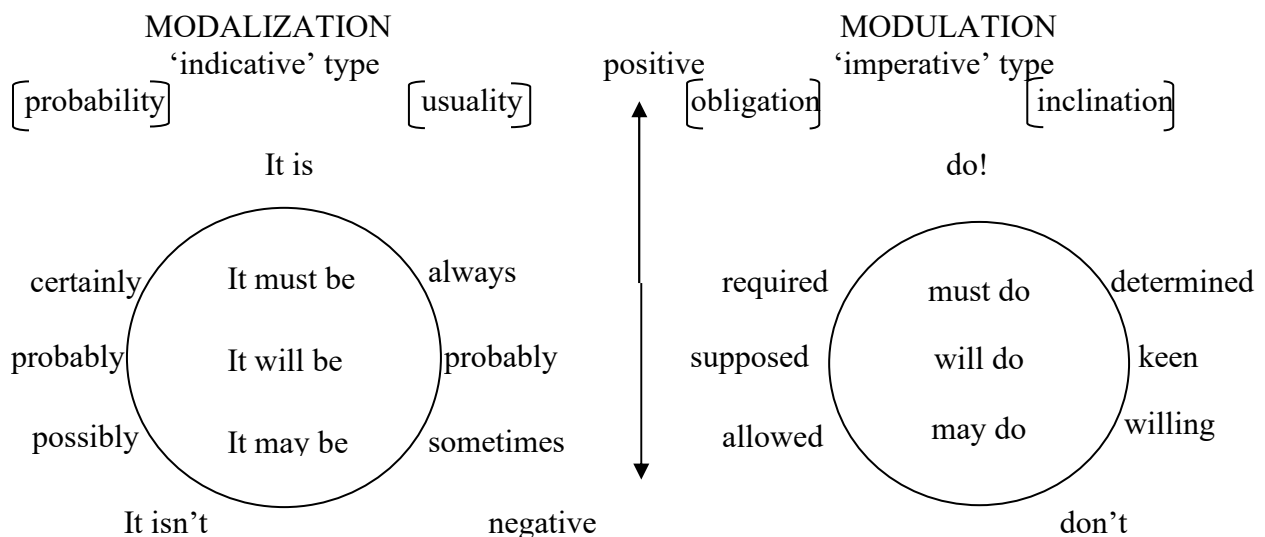


Figure 7. Diagram showing relation of modality to polarity and mood (Adopted from, Halliday & Matthiessen, 2014, p. 691)

The ideational and interpersonal grammatical metaphors are key components to write scientific texts. On the one hand, transitivity plays a critical role to determine the grammatical complexity of scientific language. On the other hand, modality serves as a medium of communication to convey scientific knowledge. This reveals that metaphors of transitivity and modality contribute to construct additional layers of meaning and wording in scientific discourse.

Section 2: Writing for Publication

Introduction

Undoubtedly, the rapid growth of academic writing would impact scientific publishing. Writing for publication is a new field of study which concerns itself with the publication standards of academic papers. Today, academic publishing is no more a matter of collecting information and printing a paperback, rather, it is a complex process which involves the interaction of many factors. This section addresses the issue of using English in academic publication. Also, it offers insight into Algerian state of publication as well as the contribution of Algerian authors in the field of academic writing.

Introduction to English for Research Publication Purposes

English for Research Publication Purposes (ERPP) is a sub-field of EAP that accounts for the difficulty researchers encounter when transferring their scientific findings into academic papers for publication (Herrando-Rodrigo, 2013). Herrando-Rodrigo (2013) has identified two major problems facing non-native researchers when dealing with academic papers: First, reading on a foreign language which becomes an uphill struggle for most researchers. The second problem lies in recognizing the scientific knowledge delivered through RAs. Certainly, the two problems open a debate about what competences researchers need to write a research paper.

Hyland (2004b) considered writers' professional competence a key factor in academic publishing. According to him, most publishing problems arise due to writers' inability to present their topics appropriately. Hyland argued that,

Each discourse community has unique ways of identifying issues, asking questions, solving problems, addressing its literature, criticizing colleagues, and presenting arguments, and these make the possibility of transferable skills unlikely. (Hyland, 2004b, p. 145)

In fact, writers' professional competence is affected by internal factors associated with writers' linguistic competence and their ability to negotiate meanings in addition to some external factors confined to the social act or readers' perceptions of writers' style. Flowerdew (2013) believed that ERPP is the outcome of four main factors. The progress of university education and international research are strong motives to come up with this field. Additionally, communication networks play an important role to increase scientific publishing, and thus the intensity of competition between universities. Besides, the prominence of English as a language of research facilitates the publishing process to become the main concern among college students (Flowerdew, 2013).

Scientific research requires a unified language that successfully describes events, explains phenomena and reveals facts. For this reason, English language becomes the tongue of scientists the worldwide. Research on ERPP offers novice writers four methods of publishing research papers (Flowerdew, 2013). The first method investigates the attitudes and perspectives of experienced writers towards publishing in English. A second method accounts for writers' perspectives on writing for publication in English. The third method depends on a careful comparison between texts written by scholarly writers in order to identify main differences between them. One last method is related to analyzing and evaluating texts by editors and reviewers (see Figure 8).

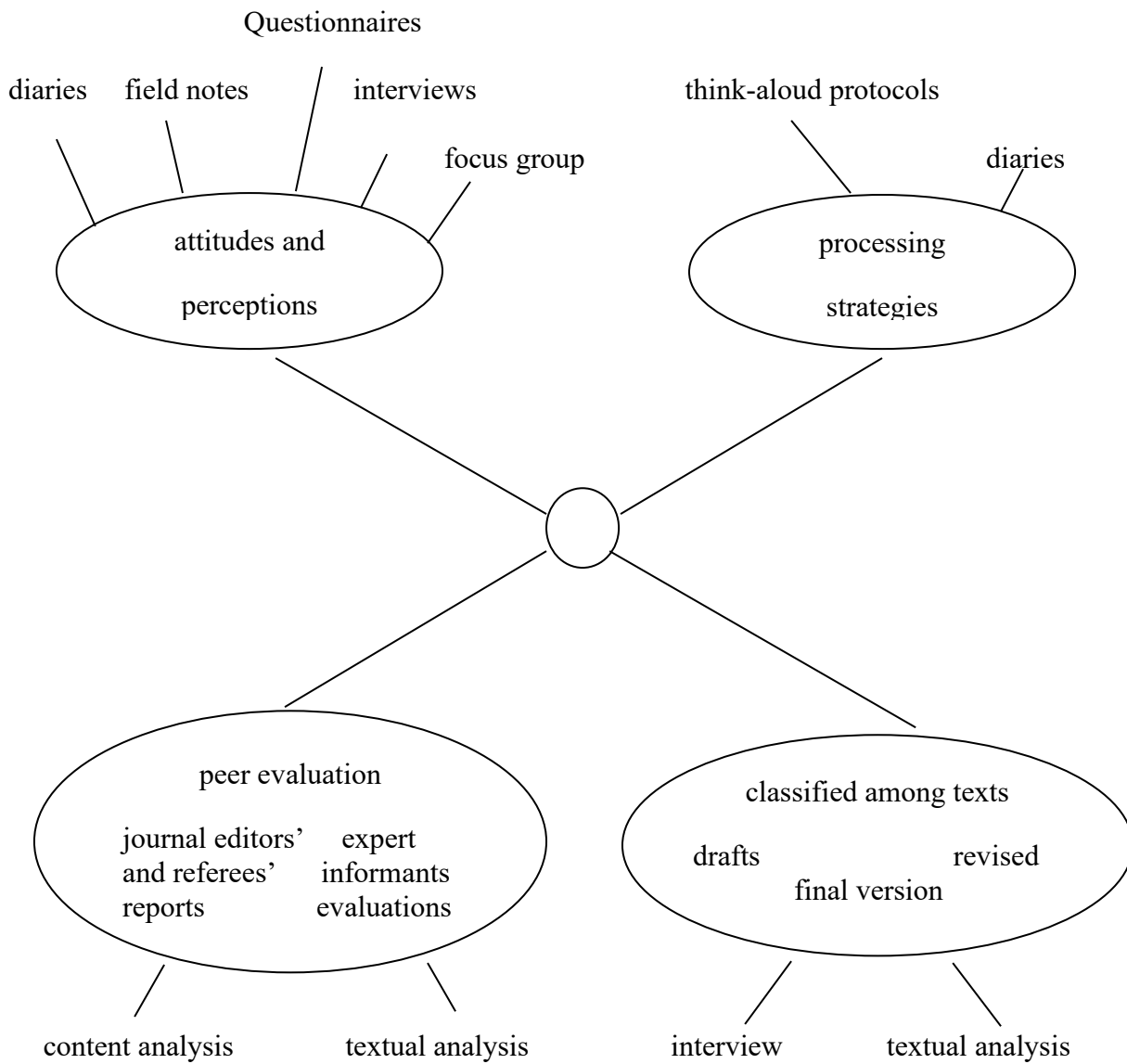


Figure 8. Methods used in ERPP research (Adopted from Flowerdew 2005, p. 68).

Using English as an additional language for academic publication might have either positive or negative impact on academic research. On the one hand, writing in English opens new prospects for writers to engage in international research and gain insight into the theoretical contributions as well as methods of research. On the other hand, publishing in English is classified among the thorniest issues relating to academic publishing, especially for NNS writers who are unable to cope with the burden of English as an international language of research. Hyland (2016) believed that NNS writers have limited access to scientific

research compared with native writers who have full access of English literature in addition to the writing conventions of international journals.

The Scope of English for Research Publication Purposes

ERPP falls within the framework of cross-cultural academic discourse analysis and it stands for the study of linguistic and cultural factors that affect the development of academic discourse. The main purpose of ERPP is to design courses for NNS writers to improve their English academic product. According to Moreno (2001), “ERPP is a branch of EAP, defined as ‘teaching English with the aim of developing skills that enhance NNES scholars’ opportunities to have their research result published in English” (p. 55). Gotti (2012) emphasized the role of cross-cultural academic studies to conform to the conventions of the relevant professional communities.

Suomela-Salmi and Dervin (2009) distinguished two conceptions of culture in academic discourse. The culturalist approach views culture as an absolute entity that determines academic practices ignoring the significance of writers’ individual attitudes and the contextual aspects of discourse; the differentialist approach considers culture as a changing phenomenon that is governed by regularities learnt by the individual in a given institutional context (Suomela-Salmi & Dervin, 2009). Surely, exploring cultural differences in academic discourse paves the way to understanding writers’ tendency. Lakic (2015) emphasized the role of cross-cultural differences to determine the requirements of the author, the publisher and the academic community in general.

The issue of cultural intervention dominated most academic works done by NNS writers. Sapir-Whorf hypothesis went to consider the relevance of culture to shape people’s language and thoughts. Sapir (1929) acknowledged the close relationship between language and culture and he believed that the history of language and the history of culture are two sides of one coin. He stated that, “Culture may be defined as *what* a society does and thinks. Language is a

particular *how* of thought” (Sapir, 1929, p. 218). Whorf (1940) stressed a more deterministic view of the relationship between language and culture. Overall, Sapir-Whorf hypothesis postulated that each language develops its own ways of thinking about the world (Hamp-Lyons & Heasley, 2006). This means that understanding academic discourse is highly influenced by the identification of authors’ cultural backgrounds embodying their style and linguistic choices.

Flowerdew (1999) investigated the issue of writing for publication among Hong Kong writers. He admitted that Hong Kong academics have ample opportunities to publish in English because of their high exposure to English language through education and work (Flowerdew, 1999). There was an overwhelming agreement among Hong Kong academics that English international journals are the most suitable for publishing their research findings; whereas, local and regional journals are allocated to publications in the soft disciplines of Humanities and Social Sciences. Flowerdew (1999) added that the decreasing use of English language in modern Hong Kong society, because of changes in the social and political life, was behind the decline of scientific publications.

According to Moreno, the primary focus on cross-cultural academic discourse analysis is, “to compare the rhetorical and stylistic features of texts across borders” (Moreno, 2011, p. 53). In his study on cross-cultural differences in writing research papers among Spanish researchers, Moreno reached the conclusion that the relationship between cross-cultural studies of academic writing and second language learning can be enhanced by the following features:

- The rhetorical and stylistic difficulties NNS scholars encounter in the publication process;

- The type of unintended rhetorical and interpersonal effects that are caused on the international reader by misusing, underusing or overusing certain rhetorical and stylistic features;
- The minimum essential rhetorical and stylistic revisions associated with publication success, such as those already demonstrated at the level of paragraph coherence, additions and deletions, reorganization and thematic and rhetorical structure, reformulating arguments, positioning etc. (Moreno, 2010, p. 68)

In opposite, Swales (2004) believed that the distinction between native and non-native writers is no longer the interest of academic research, rather, a clear cut is made between experienced or senior researchers (SRs) and less experienced or junior researchers (JR). This disconfirms the assumption that native writers occupy more advantageous position in academic publishing than NNS writers. Proficiency in academic writing is associated with writers' publishing experience as well as their wide exposure to academic language. Likewise, Fergusson (2007) and Hyland (2016) claimed that nativeness is not a critical factor for evaluating writers' academic competence; both native and non-native writers begin as novice writers who do not have enough exposure to academic discourse. Fergusson (2007) stated,

The native speaker and the non-native speaker both start out as novices, a position of parity that the native/non-native dichotomy obscures, but that is noted by some of the editors from Flowerdew's (2001) study (...). This is not to say that native-speakerhood confers no advantage at all. It may do so with particular regard to intuitions of grammaticality, (...). The key dimensions of difference, then, are not so much native or non-native speaker status as expertise (novice or expert) and proficiency, the significance of the latter being underscored if one bears in mind the

frequency with which so-called non-natives display greater facility in academic writing than natives, whose performance levels are in fact very variable. (p. 28)

Overall, Clyne (1987) recommended that coping with the international academic community requires both the mastery of discourse conventions in addition to creating a channel of communication between native and NNS in the international context. Clyne (1987) insisted that, “It is imperative for the cultural basis of discourse structures to be recognized and for variant patterns to be appreciated and respected” (p. 239).

Approaches of English for Research Publication Purposes

Flowerdew (2013) maintained that research on ERPP is considered from two theoretical perspectives: the theory of discourse analysis and social constructivism and situated learning theory.

Discourse Analysis

The theory of discourse analysis provides ESP practitioners with knowledge about the structure of research papers and offers guidance for academic researchers. Swales’ (1990) approach of genre analysis gave an insightful view into how RAs are constructed. Swales put too much emphasis on academic research which becomes the primary object of discursal studies. According to him,

The growing and generalized use of English in research publication today has created the need for the non-native scholar not only to learn English, but to have a good command of the discourse features of all the research genres in English. (Swales, 2004, p. 43)

Motivations for genre analysis become broader and deeper over the past years. Many researchers tackled various subjects related to the analysis of grammatical, lexical and rhetorical realizations of academic texts. Martin (1984) considered genres as social activities guided by writers’ cultural tendency. For Miller (1984), “a genre is a rhetorical means for

mediating private intentions and social exigence; it motivates by connecting the private with the public, the singular with the recurrent” (p. 163). However, Swales (1990) focused on the communicative character of discourse as a key factor to analyze genres. Swales’ model of RAs marked a new beginning in the history of academic research in general and ERPP in particular. Today, the concept of genre is expanded to include a new rhetoric tradition of using discourse. New rhetoric genre theory accounts for the study of socio-cultural aspects of genre in order to link the regularities of discourse types with the social and cultural use of language (Wang, 2006).

Social Constructivism and Situated Learning Theory

Social constructivism theory saw publication as a social activity which requires the contribution of many people. According to Flowerdew (2013),

Individuals write in order to become members of communities of researchers and maintain relations with those communities. In order to become proficient ERPP practitioners, individuals need to learn not just the mechanics of writing, but how to gain access to and maintain relations with the relevant networks, to know what is acceptable rhetorically within those communities. (p. 307)

This means that writing research papers is not only a matter of selecting appropriate vocabulary and producing well-structured sentences, rather, it must convey a set of social norms of the academic community.

Lave and Wenger’s (1991) notion of community practice was an important addition to ERPP. It is defined as “a set of relations among persons, activities, and world, over time and in relation with other tangential and overlapping communities of practice” (Lave & Wenger, 1991, p. 98). According to Lave and Wenger, learning to write for publication is a process through which writers move from the state of legitimate peripheral participation to become

full participants. Thus, writing for publication can be seen as a participation process developed gradually over time.

There is no doubt that the notion of community practice plays a vital role in learning to write for publication; however, reality shows that not all publishing problems are social or cultural issues, there are other impediments like authors' misunderstanding of the writing conventions of disciplines. For Hyland (2016), "Texts and academics themselves are locally constructed through both the social and discursive conventions of a discipline and how these are used to adopt a point of view to both the issues discussed in the text and to others who hold points of view on those issues" (p. 135).

In addition to surface errors and the problem of parochialism i.e., writers' failure to explain the significance of their study to the international community, Flowerdew (2001) attributed most NNS writers' problems to three main issues:

- Misunderstanding of the objectives of articles' sections especially the introduction and discussion sections.
- Absence of authorial Voice
- Nativization of discourse

Ideally, ERPP approach offers solutions for scholarly writers to deal with academic writing problems. Moreno (2011) explained the role of ERPP as follows, "A purely critical ERPP approach in the usual sense of protesting against and criticizing mainstream practices would be a disservice to these (Spanish) scholars" (p. 57). Moreno's critical pragmatic approach to ERPP accounts for the impact of writers' cross-cultural differences on academic writing as well as the impact of inadequate transfer of L1 stylistic and rhetorical conventions of writing for international community (Moreno, 2011).

Non-discursive and discursive aspects of writing are among the common challenges that encompass academic publishing. Canagarajah (1996) described the non-discursive aspects of

writing with the formal and physical requirements of academic publishing that authors need to organize their manuscripts. Canagarajah (1996) stated,

These (non-discursive aspects) are the supposedly commonplace or practical requirements of academic publishing that are not treated as having implications for the language, content, or style of the writing (requirements such as the format of the copy text; bibliographical and documentation conventions, the particular weight and quality of the paper; the copies and postage required; the procedures for submitting revisions and proofs; and the nature of interaction between authors and editorial boards)". (p. 242)

Non-discursive problems are reasonable grounds for rejecting academic papers. Journals' editorial teams use non-discursive aspects as writing policies that have the advantage of evaluating texts in terms of the documentation style as well as the publication critical factors of the journal.

Discursive aspects of publication constitute an additional obstacle in academic writing. Discursive challenges of publication are generally associated with sentence structures, organization, the use of transition devices, word choice etc. (Hyland & Guinda, 2012). Linguistic and discursive language aspects are stated as reasons for rejecting research papers. Saracino (2004) argued that writing for publication poses four main challenges:

- linguistic and discursive problems;
- difficulties associated with the more constrained and laborious composing processes of nonnative writers;
- difficulties associated with cultural differences and different rhetorical traditions;
- problems caused by material disadvantages and limitations.

The social constructivism theory of ERPP has received great support from Casanave (2002) who believed that "academic literacy practices are more than text-based; they are also

deeply social and political” (p. 25). Flowerdew (2013) believed that the social dimension of ERPP creates opportunities but also challenges for academic researchers. It is an opportunity because it ensures a direct contact with other academics including journals’ editors and reviewers whose comments are of great help to improve researchers’ academic performance; it is a challenge because it requires knowledge of the publication process that is directly attained through experience (Flowerdew, 2013).

International Scientific Publishing

The term publication played a central role in the rise of science. Scientific writers would find the act of publishing the fertile land to make their research findings available and accessible to the public.

In Europe, the history of publishing has been traced back to the 15th century with the invention of the printing machine by Johannes Gutenberg. The spread of printing press in Europe was the outcome of a huge intellectual movement originated during the Renaissance and it drew the golden age of scientific publishing. Incunabula refers to the age of early printing (between 1450 and 1550) in Europe which had noticed the printing of more than 9,000,000 books in different domains. This number continued to increase over the coming centuries. However, the evolution of printing and publishing began in earnest in the 19th century due to the increase of productivity of presses which made books accessible to all social classes. Feather (1988) believed that the invention of stereotyping in the first decade of the 19th century was the only technical development which positively impacted printing and printers.

The period between 1880 and 1920 was motivated by a strong desire to develop scientific societies that sponsored publications in different disciplines. Burns (2003) differentiated between two patterns of scientific societies: Britain’s Royal Society that offered open access membership to nonscientists; and France’s Royal Academy of Sciences that allowed limited

membership. The two scientific societies launched the first academic journals of scientific research: the journal of Philosophical transactions (1665) and Le Journal des Scavans (1665).

Accordingly, publishing in scientific journals became a formal way of communication for researchers to enhance the quality of their research. Oravec (2001) considered scientific journals a distinct genre which supports themes and values of scientists. He stated,

The scientific journal served to establish a new set of tools for portraying the initiatives and contributions of individual scientists and their associations. As a genre, it also reflects deep tensions between a form of activity (“doing science”) that is empirical, and kinds of language and presentation that can be evocative as well as sometimes clumsy. (Oravec, 2001, p. 19)

Owen (2007) provided seven characteristics for scientific societies to launch a scientific journal:

- **Sharing:** the societies’ role was that of an open forum for the exchange of ideas, precisely because the new scientific method was based on critical scrutiny and validation of observations of the natural world. This was a crucial development in view of the traditional secrecy that scientists previously had maintained, a secrecy often necessary to prevent ideas being stolen by others.
- **Rapid diffusion** through the use of printing, periodical publication and the mail system.
- **Innovation:** the societies were the focal point for the creation and dissemination of new knowledge.
- **Reputational control:** the societies served a role in the legitimization of scientific claims, acting as a public registry of intellectual property.

- **Interdisciplinary:** the societies encompassed the broad field of science, and ideas and methods were freely exchanged across what we now perceive as distinct disciplines.
- **Contextualization:** There was an interest in scientific application, and membership was also open to ‘amateurs’ working in applied fields.
- **Archiving:** The Royal Society and other scientific societies created an archive of their transactions, effectively documenting the progress of science allowing reference to be made to specific observations and findings. (Owen, 2007, p. 30-31)

Publishing in international literature becomes the ultimate goal for scientific researchers. According to Cargill and O’Connor (2009), there are three important reasons for publishing. The first reason is because researchers want to leave a record of research that paves the way for future research. The second reason is that publishing helps researchers to receive due recognition for ideas and results. Finally, publishing is a good opportunity to show the importance of a given area of research. Reasons for publishing divide researchers into two groups: those who want to improve their research findings and those who want to open a new stream of research in a particular area.

The act of publishing can be developed gradually starting with simple tasks that help novice researchers to acquire experience in writing research papers then engaging in more challenging tasks (Öchsner, 2013). For this reason, publishing in local journals is considered as the best training for academic writers before submitting to international journals. Öchsner (2013) developed a bottom-up approach for publishing in which he explained the different stages researchers go through to publish their research (see Figure 9).

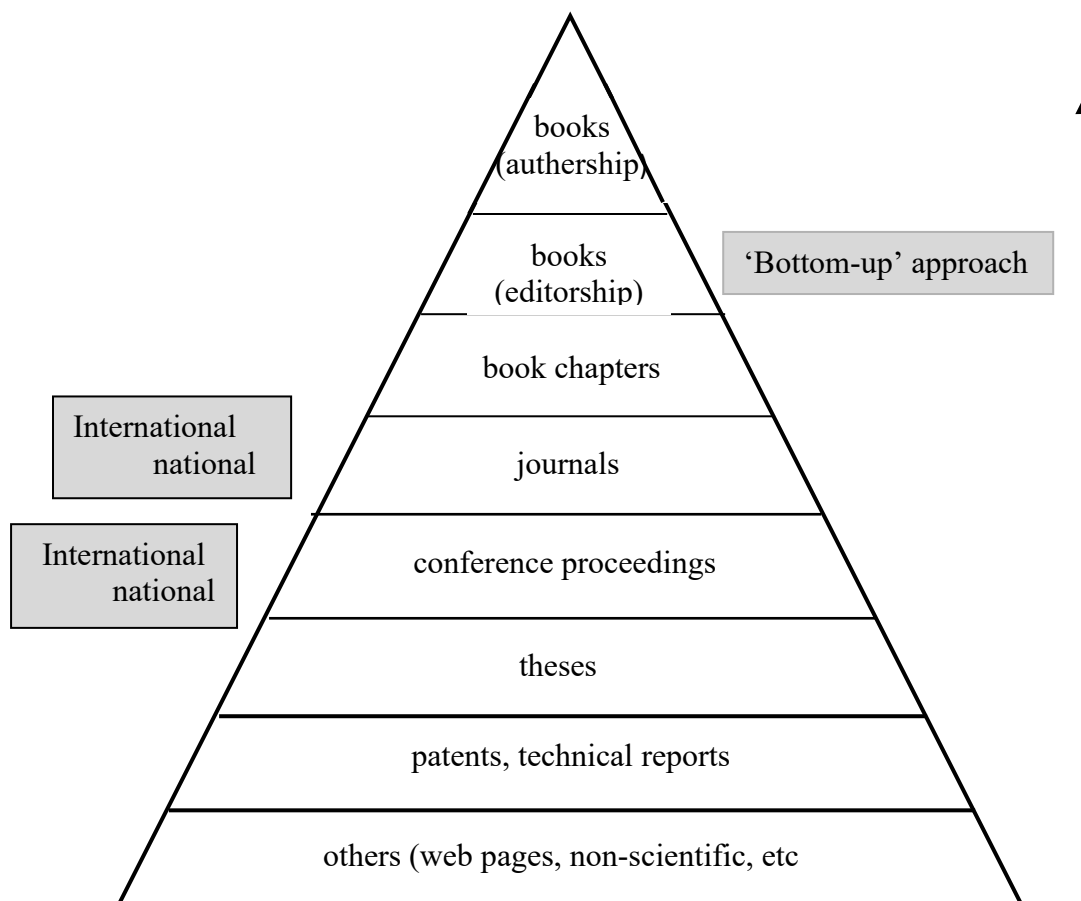


Figure 9. Bottom-up approach for publishing demonstrated on the publication pyramid
(Adopted from Öchsner, 2013, p. 90)

One of the shaking issues that may destroy the publication act is related to researchers' unawareness of publication ethics that is the main cause for rejecting research papers. Öchsner (2013) provided some forms of scientific misconduct in the context of publication are summed up in the following points:

- **Plagiarism:** copying ideas and works made by others is considered among the serious violations of scientific publication. Plagiarism takes two forms: the first is concerned with copying the words, ideas or pieces of writings published by other researchers. The second form is self-plagiarism which refers to the reuse of some parts of writer's own work.

- **Data fabrication and falsification:** another scientific misconduct related to researchers' attempts to undergo their research to fake results or manipulate the data to fit their ideas. Data fabrication is a willful action through which researchers may lose their scientific credibility.
- **Multiple submission** of the same or a revised manuscript may weaken the position of the researcher as a skillful writer. Moreover, well-prepared manuscripts are more likely to be accepted and published more than one time. This comes as opposed to international scientific publication standards.
- **Redundant Publication:** refers to the act of repeating the same results in different publications. In this case, the researcher is required to give a reference to the original source of the results besides explaining the reason of this redundancy.
- **Authorship:** there are two criteria of authorship that determine the contribution in the research paper:
 - A substantial contribution to conception/design/acquisition of data or analysis and interpretation of results.
 - Drafting the article or revising it critically for important intellectual content

Authorship is associated with one of the two conflict criteria; otherwise, any attempt to provide an academic placement or a financial help is not part of this process. These criteria are:

- **Conflict of interest:** judging manuscripts should be carried out in an objective manner neglecting all the financial, personal, academic or religious backgrounds of reviewers, editors and authors.
- **Consequences:** all academic journals have a policy against unethical publication purposes. The article can be retracted from the webpage and sometimes the problem will be extended to include the institution and the superiors of the author. Preventing

the author to submit his/her papers in the publishing house is another consequence besides justice.

Types of Scientific Publications

Publications are two types: periodical and non-periodical. Periodical publications, like newspapers and magazines, are press productions which have a regular stream of publication. Periodical publications are issued daily, weekly, monthly or annually and they can be factual or fictional (Gill, 2013). Ford (2016) has emphasized the role of periodical publications to introduce a new acquaintance and diffuse knowledge across societies. In return, non-periodical publications have no regular intervals. They generally include books, multi-volume publications, pamphlets, booklets, scientific papers etc.

Scientific publications take different forms which vary in terms of purpose and structure. Öchsner (2013) distinguished between twelve types of scientific publications are summed up as follows:

- **Research paper:** a well-designed manuscript which provides significant advancement in a given field of research. Research papers are characterized by originality, novelty and quality of scientific content. They are made up of four important sections: introduction, methods, results and discussion.
- **Review article:** the widely read type of academic manuscripts which offers a summary of research about a certain topic. Reviews are written by experts of particular disciplines after the agreement of the editor.
- **Rapid communication:** offers insight into major scientific findings that editors think are important to stimulate a new research. This kind of publications is brief because many details will be published in the full research paper.
- **Short communication:** a small print which communicates urgent results that are crucial for the scientific community.

- **Technical note:** a scientific manuscript which describes improvements, applications or solutions to problems basing on an established technique.
- **Letter to the editor:** it serves as a medium for the discussion of a published material or a problem in a scientific paper.
- **Book review:** a critical review of a newly published book.
- **Viewpoint:** a type of scientific publication which addresses author's thoughts about a topic.
- **Editorial:** a scientific paper which explains the motivation, topical orientation and the contents of the issue.
- **Calendar event:** an announcement of an event such as conference, seminar or workshop that deals with journal's topics.
- **Industry news:** one or two pages written by journal editor or a company representative in order to spotlight on industrial innovations.
- **Conference report:** a report written by the editor or a conference organizer about a past conference; its aim, covered topics and participants.
- **Erratum:** a short-printed item which cite errors or retractions of previously published article.

Algerian State of Publication

The age of publication in Algeria was traced back to press liberalization in the late 1980s. The constitutional reforms of 1989 led to a gradual development of press in the country when freedom of expression and freedom of conscience and opinion were enhanced (Rample, 1996). Moreover, the emergence of opposing political parties allows more diversified publications. However, the martial law of 1992 played an important role to impede the growth of press when many newspapers were banned and strict measures were imposed on printed media (Berger, 2002 & Jeter, 1996).

Despite the strong government control over press and mass media in general, newspapers and magazines gained wide spread popularity among the Algerian population; more than 150 daily newspapers are published in both Arabic and French languages (Oxford Business Group, 2013). Table 6 below offers insight into the average number of newspapers published in Algeria during the year 2012.

Newspaper	Avg. copies printed daily	Language
El Shorouk	500,000	Arabic
El khabar	400,000	Arabic
El Watan	100,000	French
Liberté	90,000	French
Le Soir	60,000	French
Quotidien d’Oran	40,000	French
L’Expression	40,000	French

Not. From “The report: Algeria” by Oxford Business Group, 2013.

Despite the fact that most Algerian newspapers belong to government printing houses, the privatization of print media in the 1990s led to the establishment of several high-quality journals in French and Arabic like El Watan and El Khabar (International Media Support, 2013).

The desire to write history marked the beginning of academic freedom in Algeria. Almost all the titles of Algerian books were about the period of the War of Liberation. In 1989, book


publishing was strongly enhanced by two major publishers: Entreprise National du Livres (ENAL) devoted to all types of publications and Office des Publications Universitaires responsible for publishing university textbooks (Rampal, 1996).

According to El Kenz and Waast (1997), Algerian scientific community is affected by three historical phases. In the first period (1962-1974), the scientific community was characterized by its nationalism, developmentalism and state dominance. Because organization was the central theme during this period, researchers are left to their own devices to conduct their research. The second period between 1974 and 1983 was called the nationalist upsurge during which the scientific community was institutionalized and began its job in well framed organizations. The third period (1983 to the Present) is known as dismemberment when university scientific community put forward new cultural values that challenged the values adopted by earlier researchers.

Currently, Table 7 shows that Algeria occupies the 56 position in global ranking of research output and it is classified among the fastest research output growing countries during the two years 2013 and 2014 (Taylor & Francis Group, 2015). This growth remains modest in comparison with international publication rates which reached its highest in 2015.

Table 7
Algerian's Position in Global Ranking of Research Output

	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1.	 United States	7.063.329	6.672.307	129.540.193	62.480.425	20,45	1.380
2.	 China	2.680.395	2.655.272	11.253.199	6.127.507	6,17	385
3.	 United Kingdom	1.918.650	1.763.766	31.393.290	7.513.112	18,29	851
4.	 Germany	1.782.920	1.704.566	25.848.738	6.852.785	16,16	740
5.	 Japan	1.776.473	1.734.289	20.347.377	6.073.934	12,11	635
6.	 France	1.283.370	1.229.376	17.870.597	4.151.730	15,60	681
7.	 Canada	993.461	946.493	15.696.168	3.050.504	18,50	658
8.	 Italy	959.688	909.701	12.719.572	2.976.533	15,26	588
9.	 Spain	959.811	715.452	8.688.942	2.212.008	13,89	476
10.	 India	750.777	716.232	4.528.302	1.585.248	7,99	301

56	 Algeria	31.665	30.665	137.505	26.895	7,10	89
----	------------------------------------------------------------------------------------------------	--------	--------	---------	--------	------	----

Note. From “Algeria research output overview,” by Taylor & Francis Group, 2015.

Studies on research output reveal that all North African countries make a relatively modest contribution in international research (see Table 8).

Table 8 <i>Research Output Rank Comparison</i>							
North African Countries		Arab-Speaking Countries		Wider-French Speaking Countries		BRIC Countries	
Country	Rank	Country	Rank	Country	Rank	Country	Rank
Algeria	56	Saudi Arabia	45	France	6	Brazil	15
Morocco	55	Jordan	64	Belgium	21	India	9
Tunisia	52	Egypt	42	Canada	7	China	2

Note. From “Algeria research output overview,” by Taylor & Francis Group, 2015.

Hammouti (2010) justified this decline in terms of the insufficient budgets devoted to scientific research in these countries. According to him, the productivity of scientists is related to three important measures:

- Creating jobs for young doctoral students
- Enhancing cooperation in the field of higher education and scientific research
- The research policy in universities and academic institutions should have a clear objective serving the goals of the university or society, and the studies must be performed in the society service.

Algerian Scientific Research Reforms

The Law 08/05 enacted in February 2008 has reinforced the development of scientific research in Algeria with the creation of new scientific directorate and councils responsible for enhancing the quality of scientific research as well as the role of Algerian researchers at the national and international levels. The law involves a set of issues including:

- Establishment of the Directorate General for Scientific Research and Technological Development (DGSRTD), in September 2008
- Revalorization of research premium for researchers, in October 2010
- Establishment of the National Evaluation Council (NEC), in January 2011. The NEC is in charge of elaborating the national framework (procedures, coding, bibliometrics etc.) and the charter of evaluation (principles, ethics, deontology). It is also in charge of evaluating research policy and its impacts.
- Establishment of support measures aimed at encouraging international collaborations (especially with Algerian Diaspora active within foreign research and higher education institutions).
- Establishment of support measures encouraging scientists and academics' mobility (internal-cross sectorial-and external-international). (Bensaoula, 2012, p. 11)

Bensaoula (2012) explained the Algerian governance structure to develop scientific research that is headed by National Committee for Science and Technology (NCSTR), and motivated by the decisions of DGSRTD, the central executive body which ensures “the intersectoral coordination of scientific research activities” (Bensaoula, 2012, p.13). Moreover, the system shows that the interaction between DGSRTD and Intersectoral Committees (PSCs) becomes mandatory in order to ensure sectoral evaluation of research activities and their impact on various ministerial bodies (Bensaoula, 2012). Besides, the thematic agencies and centers reveal a great deal on the supervision of research participation as well as funding

allocations (see Figure 10). Centers for Innovation and Technology Transfer (CITTs) is a further important sector which brings research results to the business sector of implementation (Bensaoula, 2012).

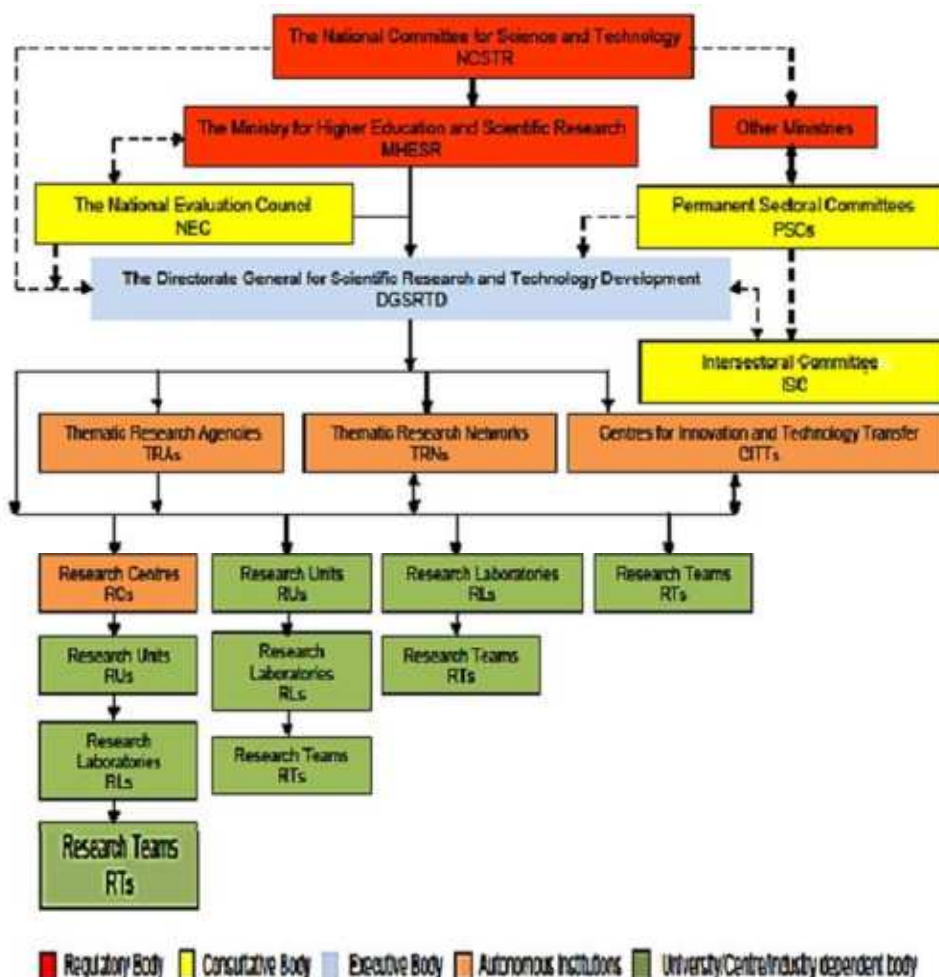


Figure 10. Overview of the Algerian research system governance structure (Adopted from Bensaoula, 2012, p, 14)

At the international level, Algeria’s international cooperation program of science and technology was an important step to strengthen scientific research. For the sake of establishing a scientific coordination with European countries, the Euro-Mediterranean Agreement was initiated on December 19, 2001 between the European Community and its

Member States and the People's Democratic Republic of Algeria. The article 51 of the agreement entitled *Scientific, technical and technological cooperation* identified the aim of the cooperation in four important points:

- a) encouraging the establishment of permanent links between the Parties' scientific communities,
- b) strengthening research capacity in Algeria;
- c) stimulating technological innovation, the transfer of new technologies and know how implementation of technological research and development projects and optimization of the results of scientific and technical research;
- d) encouraging all activities aimed at establishing synergy at regional level (Euro-Mediterranean Agreements Algeria, 2002, p. 45-46)

Another agreement between the Government of the United States of America and the People's Democratic Republic of Algeria was signed in January 18, 2006 and it is made of 12 articles aim to ensure active interaction between the two scientific communities as well as productive scientific exchange. The first article of the agreement clarifies the objective of this cooperation "to provide opportunities to exchange ideas, information, skills, and techniques, and to collaborate on scientific and technological endeavors of mutual interest" (Oceana Editorial Board, 2011, p. 2). Moreover, the two parties promote a direct contact between government agencies, universities, research centers, institutions, private sectors companies in addition to further entities.

Undoubtedly, both of the Euro-Mediterranean and American Scientific Cooperation Agreements are fruitful not only to gain access to a wide variety of potential opportunities in scientific research but they extend further to encompass economic as well as socio-cultural forms.

Further international agreements have been signed by Algeria to develop scientific research including the Cuban Algerian science and technology collaborations in three strategic fields of biotechnology, genetic engineering and, agronomy and agriculture sciences and technologies, besides the Russo-Algerian collaborations which are mainly focused on mining, energy, agriculture and education in addition to South African-Algerian collaborations in the fields of nanotechnologies, laser physics and biotechnology and the Tunisian-Algerian collaborations to enhance the fields of energy, water, agriculture, health and social sciences (Bensaoula, 2012).

Algerian international cooperation policy offers Algerian researchers ample opportunities to participate in international research and deal with both global issues like energy conservation, use of renewable energy sources and sustainable development as well as local issues as desertification and food supply. More important, Ministry of Higher Education and Scientific Research (MHESR) encourages international publications to become an important part of researchers' academic promotions. Bensaoula (2012) has identified two criteria for the promotion from associate professor to full professor:

- The number of defended theses and dissertations under the supervision of the candidate;
- The number of published works which is considered on the basis of the impact factor that determines the value of the scientific work.

Similarly, doctoral students are required to submit at least two successful publications to attain their doctoral degree. The fact that publications are considered among researchers' main academic tasks would stimulate them to take the initiative to improve scientific research and share the results of their studies with Algerian as well as international academic community. However, the main interest of academics is still focused on writing for international

publication that requires researchers to adhere to strict requirements which are particularly difficult to meet.

International Standards of Publication

The Second World Conference on Research Integrity was organized by Committee on Publication Ethics (COPE) in Singapore on 22-24 July, 2010 with the aim of setting out international standards in research publications for editors and authors.

A heavy responsibility has been incurred by editors who take a large part in decision-making concerning the publication process. Kleinert and Wager (2010) put forward eight (08) international editorial principles that are crucial to ensure research integrity:

- Editors are accountable and should take responsibility for everything they publish.
- Editors should make fair and unbiased decisions independent from commercial consideration and ensure a fair and appropriate peer review process.
- Editors should adopt editorial policies that encourage maximum transparency and complete, honest reporting.
- Editors should guard the integrity of the published record by issuing corrections and retractions when needed and pursuing suspected or alleged research and publication misconduct.
- Editors should pursue reviewer and editorial misconduct.
- Editors should critically assess the ethical conduct of studies in humans and animals.
- Peer reviewers and authors should be told what is expected of them.
- Editors should have appropriate policies in place for handling editorial conflicts of interest.

Editors play a very sensitive role in the publication process to ensure the academic credibility of the journals. Editorial policies are deemed necessary to bridge the gap between

editors and authors who receive satisfactory answers about the state of their papers as well as possible improvements.

A great deal of importance has been attributed to authors adherence to authorship's principles that determine the role of the author and his/her responsibility towards the scientific paper. Kleinert and Wager (2010) identified seven international standards for authors are summed up in the following points:

- The research being reported should have been conducted in an ethical and responsible manner and should comply with all relevant legislation.
- Researchers should present their results clearly, honestly, and without fabrication, falsification or inappropriate data manipulation.
- Researchers should strive to describe their methods clearly and unambiguously so that their findings can be confirmed others.
- Researchers should adhere to publication requirements that the submitted work is original, is not plagiarized, and has not been published elsewhere.
- Authors should take collective responsibility for submitted and published work.
- The authorship of research publications should accurately reflect individuals' contributions to the work and its reporting.
- Funding sources and relevant conflicts of interest should be disclosed.

Undoubtedly, authors' choices and decisions form an integral part of the publication process. Authors' unawareness of international standards stimulates two main problems. The first is authors' failure to respond to journals' demands and requirements. A second problem lies in the difficulty of finding reasonable answers to editors' queries or even understanding reasons for retraction.

Conclusion

To sum up, all findings inherited from academic discourse and writing for scientific publication remain theoretical premises that pave the way for further research and subtle analysis of academic papers which encompass a wide variety of linguistic, rhetorical and stylistic patterns. Correspondingly, this chapter offers a theoretical database for the analysis of features and standards that guide scientific publication addressing the main difficulties that prevent academics to adjust their research papers to international rules of publication.

SCIENTIFIC RESEARCH ARTICLES

Chapter 3: Scientific Research Articles

Introduction	74
History of Scientific Research Articles	74
Types of Scientific Research Articles	78
Experimental Research Articles	78
Review Research Articles	80
Theoretical Research Articles	81
Objectives of Scientific Research Articles	82
International Format of Scientific Research Articles	85
Linguistic Features of Scientific Articles	92
Linguistic Analysis of Research Articles: Register Analysis Vs Genre Analysis	94
Disciplinary Variations in Research Articles	99
Evaluating the Quality of Scientific Research Articles	102
Conclusion	105

Introduction

Publishing RAs becomes the most common international activity in the twenty-first century and it is considered as the most frequent motive for researchers to widen the scope of scientific research. The present chapter draws on theory and research on RAs. It offers a brief view on the history of RAs, their types and objectives. A special attention has been placed on scientific research articles (SRAs), which are the focus of controversy for their own sake. Several issues have been raised in this chapter on the writing conventions of SRAs, their format as well as linguistic features and analysis.

History of Scientific Research Articles

SRAs are one of the prominent academic genres that gained wide interest among researchers. The history of RAs has been widely recognized as a key contributor to understanding the reasons beyond the emergence of this writing genre as well as the characteristics that distinguish it from other academic genres.

The growth of SRAs is tightly bound to the history of scientific journals which marked the official beginning of scientific publishing in 1665. The genre of scientific articles is adopted from the informative letters that scientists exchanged with each other (Ard, 1983 as cited in Swales, 1990, p. 110). This style gradually began to fade especially after the spread of the rhetorical theory which created a new genre that was entirely different from letter writing origin (Swales, 1990).

Owen (2007) described the first SRAs as being short and subjective; academics resorted to their personal experiences to make their experiments and observations. Moreover, the style of SRAs was casual prose and there was no specialized scientific language (Owen, 2007).

There are many other distinctive features of early SRAs are considered by Biber and Conrad (2009) who maintained that most articles published in the Royal Society journal were highly descriptive and they focused more on empirical rather than philosophical discussions;

however, scientific experiments were used only to describe natural phenomena. Bazerman (1983) explained the development of scientific experiment between the period 1665 - 1800 and its role to shape modern concept of experiment. He stated that, “the definition of experiment moved from any made or done thing, to an intentional investigation to a test of a theory, to finally a proof of, or evidence for, a claim” (Bazerman, 1983, p. 85). Because early articles were written in a letter form (letter-articles), they usually began with the salutation like “Sir” and ended with a formulaic closing like “Your humble servant” (Biber & Conrad, 2009).

Despite the fact that many researchers thought that the first SRAs had no unique form, the scientific treatises written by Robert Boyle gave first insight into how to structure a RA. Boyle was the first who explained the relationship between “doing a research and writing about that research” (Swales, 1990, p. 112). At Boyle’s time, most SRAs offered theoretical explanations of observational facts (see Table 9).

Genre	English		French	
	%	n	%	n
Experimental	12	6	10	5
Theoretical	20	10	12	6
Methodological	4	2	6	3
Observational	36	18	20	10
Observational/theoretical	14	7	34	17
Experimental/theoretical	2	1	8	4
Mathematical	6	3	10	5
Other	6	3	0	0
Total	100	50	100	50

Note. From “Communicating science: The scientific article from the 17th century to the present,” by Gross et al., 2002, Oxford University Press, p. 50.

Gotti (2005) summed up Boyle's characteristics of scientific language in the following points:

- Brevity: sentences should be as concise as possible with no space given to unnecessary details.
- Lack of assertiveness: there is no need for the author to arrive at definite conclusions or to systematize the results obtained. Scientists, therefore, should report the data as they are observed, present only the bare fact.
- Perspicuity: rhetorical embellishment should be avoided. The function of experimental writing is to provide information as clear a way as possible.
- Simplicity of form: imposes the use of simple verb-forms and sentence-constructions. The voice most commonly used in the 17th century experimental essay was the active, thus highlighting the role and importance of the scientist and his/her function as subject. Nevertheless, the passive voice could be employed to underline unexpected results or to report how certain procedures were carried out.
- Objectivity: use of modal auxiliaries and verbs like *seem* and *appear* to show the author's uncertainty. Such an attitude makes it easier for the reader to see the scientist as a reliable person and as a witness to the events reported. (Gotti, 2005 as cited in Moessner, 2006, p. 63)

In the 18th century, writing RAs has become more sectioning. Bazerman (1983) explained the structure of articles in terms of three sections. The first section introduces the research problematic; the second section presents a series of claims enhanced by a set of experiments. The last section is the conclusion which discusses the consequences of claims addressed earlier. The idea of sectioning adopted by Bazerman (1983) provided new inspiration for researchers and scientists to organize their scientific manuscripts. The development of this model later contributes to shape current format of SRAs.

Gross et al. (2002) covered the development of SRAs from the 17th to the 21st Century. According to them, the evolution of scientific articles took three rhetorical directions:

- **Style:** refers to the appropriate use of text's syntactic features as well as the choice of words.
- **Presentation:** accounts for the way the scientific article is organized and how its data is displayed.
- **Argument:** factual data the scientist uses to enhance his/her claims.

Gross et al., (2002) referred to the characteristics of modern RAs as being impersonal and objective in terms of style. Nominalization is perhaps the most distinctive linguistic characteristic of modern RAs that is considered, "the predominant semantic drift of grammatical metaphor in modern English" (Martin, 1992, p. 406). Moreover, syntax becomes simpler in terms of length and clausal destiny. The presentation of SRAs is guided by two elements: formal elements are used to display complex information (headings, figure captions, a numbering system for citations and visuals, etc.) and substantive elements which are important to assist readers' comprehension (e.g., introductions that contextualize a research problem or niche). In general, modern RAs embodying, "a style that represents science as an objective enterprise, foster more efficient communication, and produce stronger, more flexible argument strategies" (Gross et al., 2002, p. 231). These three rhetorical directions are useful devices to overcome common problems encountered in scientific publishing. The occurrence of the three components in the RA would facilitate the role of editors and reviewers to determine the scientific quality of the article.

Types of Scientific Research Articles

The general meaning of a RA is a piece of writing which offers a report of research investigations made by a researcher. In the literature, the term RA has received many definitions. Swales (1990) considered RAs as an end product made by authors to gain acceptance. He developed the following definition,

The research article or paper is taken to be a written text (although often containing non-verbal elements), usually limited to a few thousand words, that reports on some investigation carried out by its author or authors. In addition, the RA will usually relate the findings within it to those of others, and may also examine issues of theory and/or, less typically, in an edited book-length collection of papers. (Swales, 1990, p. 93)

Hyland (1998a) considered RAs as, “the major vehicle for knowledge in academic cultures and an artefact central to the legitimation of a discipline and the reputation of its practitioners” (p. 7). Hyland (1998a) torn away from the traditional meaning of RA as a transmitter of facts and he assumed that RAs are typically concerned with confirming claims. Scholarly journals include three types of SRAs: experimental (empirical) RAs, review RAs and theoretical RAs.

Experimental Research Articles

The experimental article is the only long-lived type of articles which occurred in the 16th century by a group of authors includes Christiaan Huygens and Denis Papin in addition to Robert Boyle (Atkinson, 2009). During this time, narrative and theoretical articles were the most common types of experimental article. The growing interest in biology and physics in 1775 led to the prominence of quantitative method of research which became the most suitable method to describe experimental results (Atkinson, 2009). Giannoni (2010) turned back the popularity of experimental article to its quantitative prevalence in scholarly serials.

Atkinson (2009) described the 17th century experimental article conventional structure as follows: *Implicit introduction* → *experiments* → *theoretical implications*.

During the 18th century, scientists became more accurate when describing experiments and discussing results. The experimental article has reached its peak point of prestige in the 19th century to become the most prominent means of scientific investigation. By this time, articles were structured as follows: *theory* → *experiment* → *discussion* (Atkinson 2009). Although this structure has undergone some change, it remains the only format that determines the structure of experimental articles. Bazerman (1988) believed that the successful spread of experimental articles in scholarly serials is the outcome of bringing theory into practice. For him, “The experimental article has found ways of bringing to bear on any particular argument the literature of the field, the currently accepted theory, deductive reasoning, representations of method, and representation of empirical evidence” (Bazerman, 1988, p. 327).

Glasman-Deal’s (2010) structure of experimental article was: Introduction-Methods-Results-Discussion (IMRD). However, scientists may resort to other structures chosen from several alterations are illustrated in the following table:

Option 1	Option 2	Option 3	Option 4
Results or Data Analysis	Results or Data Analysis	Results and Discussion	Results or Data Analysis
Discussion	Discussion	∅	Discussion and conclusion (s)
Conclusion(s)	∅	Conclusion(s)	∅

Note. From “Science research writing *for non-native speakers of English*,” by Glasman-Deal, 2010, Imperial College Press, p. 91.

Examining Table 10 clearly shows that results and discussion are obligatory sections in the experimental article where the scientist presents his/her research findings. The choice

between the discussion and conclusion sections is optional and sometimes they are displayed in one section.

Review Research Articles

A special type of SRAs that is written by SRs in order to discuss and compare findings of different researches and suggest further improvements (Noguchi, 2006). For Giannoni (2009), review articles are written to stick up “for what is right or wrong, certain or uncertain, desirable or undesirable in their (researchers) field” (p.17). Hyland (2016) explained the role of review articles to evaluate scientific knowledge and keep the community members up to date with contemporary research.

In fact, the use of review articles increased over time due to the flow of scientific research and publishing. According to Swales (1990), “The need for review articles is growing as a result of increasing specialization, the chronological lengthening of many research strands in the field, the proliferation of publishing outlets, the pressure to publish, and the consequent increasing numbers of active participants” (Swales, 1990, p. 208).

Review articles are supervised by prominent experts usually journals’ editors whose role is verifying the language of the review article and preserving its prestigious form. According to Noguchi (2006), writing review articles differs from writing other types of articles in many ways; authors adhere to explicit instructions to write review articles. Unlike other RAs, review articles are very fluid that the content and organization are left up to authors’ choices who unfortunately have “little indeed on ‘how to write a review’” (Noguchi, 2006, p. 246).

Review articles follow the abstract, introduction, body section, conclusion (AIBC) structure. The introduction and conclusion are elementary sections in review articles. Yet, the body section is divided into subheadings which are an effective “roadmap’ for the article (Cargill & O'Connor, 2013). The current structure of review articles poses many problems for

JRs who are less likely to follow AIBC structure. For this reason, the review article type of RAs is considered extremely rare comparing with experimental articles.

Theoretical Research Articles

A type of articles in which the author tends to advance or criticize a theoretical concept or develop a new theoretical perspective (Aurini et al., 2016). Belcher (2009) argued that the quality of theoretical articles is associated with the nature of research as well as the field of research. Generally, theoretical articles are rarely published because they have no concrete evidence and they are solely confined to exploring the weaknesses and strengths of a given theory.

Kilduff (2006) offered three recommendations for authors to improve their theory-writing endeavors. First, the theoretical papers should offer big and original ideas that stimulate new research questions. Kilduff (2006) quoted, “The route to good theory leads not through gaps in the literature but through an engagement with problems in the world that you find personally interesting” (p. 252). Second, a special attention should be given to the structure of the article to ensure a logic and seamless flow of ideas. Criticizing and revising the article is the third step before submitting theoretical articles. To be on the safe side, authors should adhere to experts’ comments that help them to expand and clarify some points in their original drafts.

Harmon and Gross (2010) maintained that the structure of theoretical articles is not strictly determined as experimental articles; however, there are six main elements that characterize a theoretical article: the title, the abstract that recounts authors’ theory or some supporting arguments, a thorough introduction that states a conceptual problem and authors’ approach to solving the problem. Moreover, the body of theoretical article composed of two components: a theoretical solution to the problem and a proof deduced from a comparison of

theoretical predictions and experimental findings; Usually, the article ends up with a conclusion, references and then the acknowledgements.

Although it is well known that all types of SRAs address different types of knowledge, reality shows that almost all authors are interested in writing experimental articles which offer an impressive body of empirical knowledge that undergoes rigorous testing and evaluation. Therefore, results deduced from this type of articles are more credible, accurate and trustworthy.

Objectives of Scientific Research Articles

There are often conflicting views on the main objectives of SRAs which become a source of confusion for many researchers. Arguably, the main purpose of a RA is to communicate scientific knowledge. Owen (2007) considered SRAs a communication medium through which scientists document their research and report their results. Articles are useful devices to exchange scientific knowledge and to expand the boundaries of scientific research.

Tyagi and Misra (2011) considered the importance of RAs to ensure the visibility of new research findings. They identified four main objectives of a scientific article:

- It seeks to present research findings objectively.
- It gives visibility to new findings.
- It adds to the existing body of knowledge.
- It records scientific information and conveys to the people with scientific bent of mind. (Tyagi & Misra, 2011, p. 138)

These objectives have been accompanied by a set of distinctive features which rest on the tenet that SRAs are distinct genre of academic writing. These features are summed up in the following points:

- It has a logical structure that helps in gradual and step-by-step progression on the topic.

- The author is able to communicate logically, uniformly and methodically.
- The reader can understand the research from different viewpoints.
- The reader can follow the development of research topic and focus on the individual portions of the paper.
- The reader can skim through different sections of the paper.
- It gives the sources of references in the research undertaken. (Tyagi & Misra, 2011, p. 139)

The publication process is deemed necessary to evaluate the quality of articles and to determine whether articles meet the following basic academic goals:

- to continue or detail earlier research pieces in the journal,
- to challenge thinking and invite new discussion,
- to contribute to the intent and scope of the journal. (Kawa-Jump, 2001, p. 53)

Yeong (2014) argued that, “the central objective of publishing scientific research articles is to disseminate findings from experimental work so as to extend the knowledge in the field” (p. 17). This implies that the quality of articles is measured by the range of knowledge articles add to a given field. Yeong (2014) ascertain the relationship between the article and the scope and the standards of the journal. He emphasized three main criteria for article’s acceptance including: a) the significance of the data to the field, b) the technical quality of the data, c) the strengths of the conclusions based on the data described and the novelty of the work. (Yeong, 2014). The three criteria provide a basis for evaluating articles as well as the progress of research. More important, there is an inherent harmony between the author, editor and reviewers to assess knowledge of scientific articles. Cargill and O'Connor (2009) stated that, “the correspondence between the author, reviewer, and editor is part of a collective sense-making process used to test that new information is worth knowing and acting upon” (p. 74).

Yeong (2014) provided a general overview of the publication process and the different tasks assigned to authors, editors and reviewers (see Figure 11).

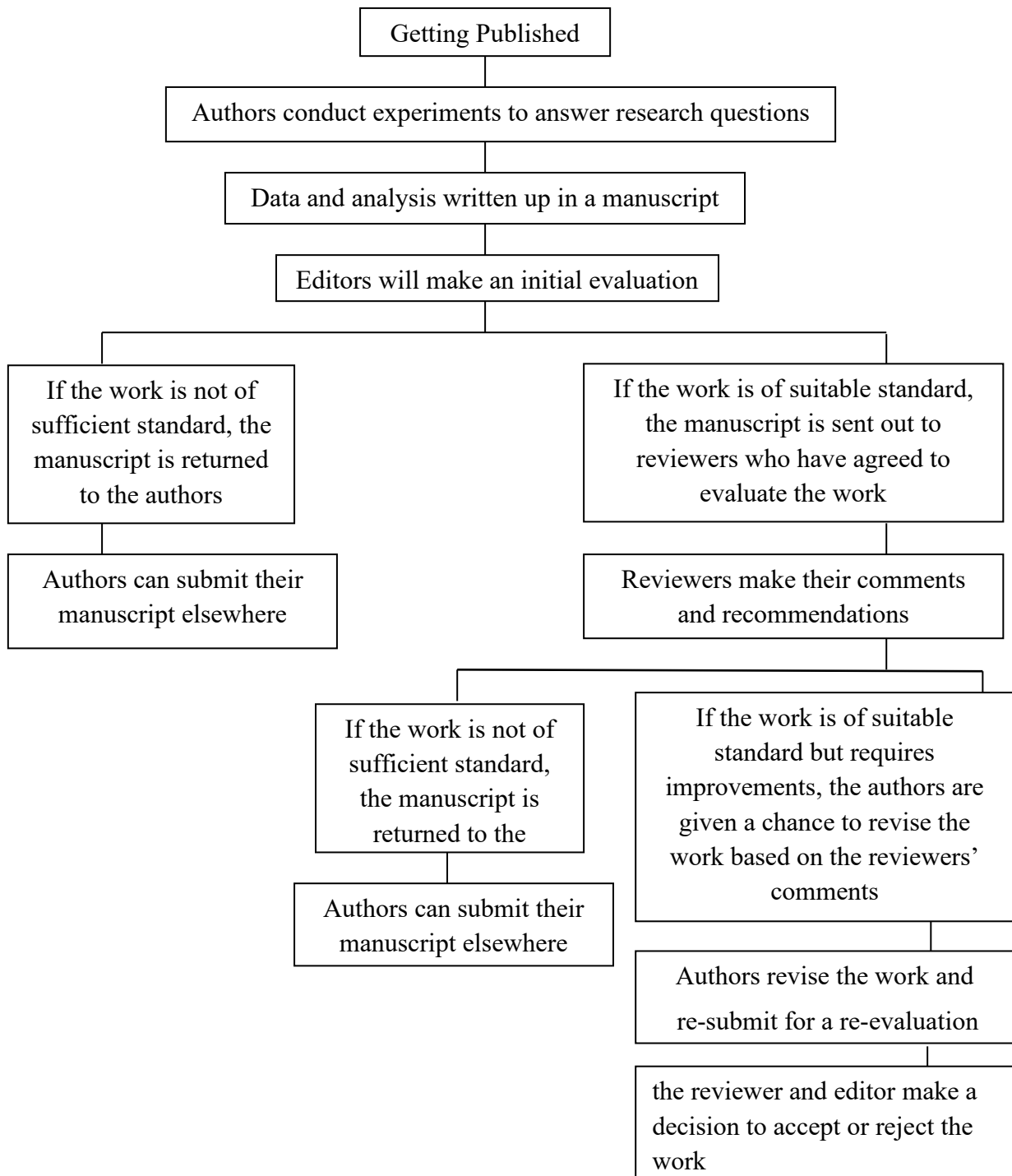


Figure 11. Overview of the publication process (Adopted from Yeong, 2014, p. 20)

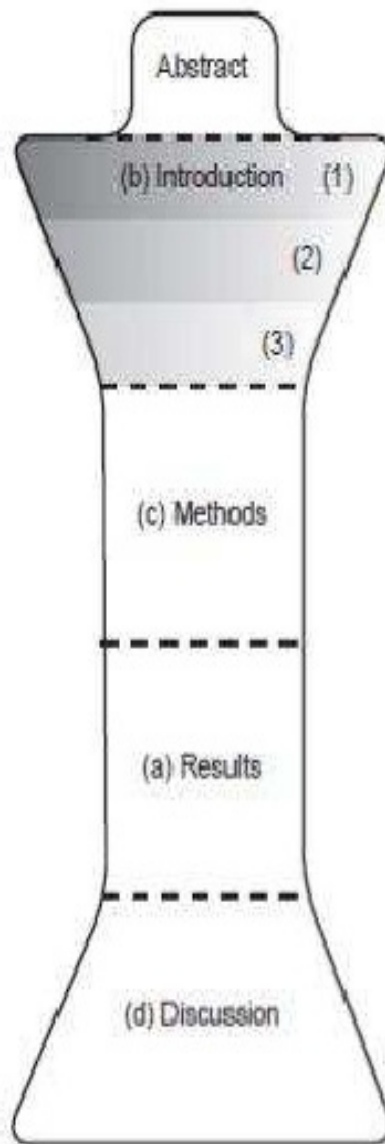
International Format of Scientific Research Articles

For the sake of delivering scientific information successfully, there was a keen desire to create a generic structure which underlies the form of RAs and helps authors to present their findings in an orderly and logical way. The structure of RAs has noticed a continuous change since 1665. The hourglass format has been developed by Roy Peter Clark as the standard format for writing SRAs in 1983. Clark was inspired by the shape of a story written in his morning newspaper which he called hourglass i.e., the bottom bigger than the top. Lynch (2013) defined hourglass style as, “a combination of the narrative and inverted pyramid styles” (p. 101).

The hourglass style is also known as the Abstract; Introduction; Materials and Methods; Results; Discussion; Conclusion; and References (AIMReDCaR) format. According to Pardede (2012), AIMReDCaR format of RAs is an effective way to communicate scientific findings and offer different reading levels that help readers to understand what they read and determine where to find specific type of information. Lynch (2013) claimed that Clark’s hourglass writing style is divided into three parts:

- **The top:** is the beginning which supplies readers with essence of the story news that shape their understanding of the story.
- **The turn:** the transitional phase which is characterized with its storytelling style.
- **The narrative:** the bottom part of the story that concludes the events of the story chronologically from the beginning to the end.

Cargill and O'Connor (2009) explained the hourglass basic format in the following diagram:



- (a) The whole structure is governed by the Results box; everything in the article must relate to and be connected with the data and analysis presented in the Results section.
- (b)(1) The Introduction begins with a broad focus. The starting point you select for your Introduction should be one that attracts the lively interest of the audience you are aiming to address: the international readers of your target journal.
- (3) The Introduction ends with a focus exactly parallel to that of the Results; often this is a statement of the aim or purpose of the work presented in the paper, or its principal findings or activity.
- (2) Between these two points, background information and previous work are woven together to logically connect the relevant problem with the approach taken in the work to be presented to address the problem.
- (c) The Methods section, or its equivalent, establishes credibility for the Results by showing how they were obtained.
- (d) The Discussion begins with the same breadth of focus as the Results – but it ends at the same breadth as the starting point of the Introduction. By the end, the paper is addressing the broader issues that you raised at the start, to show how your work is important in the ‘bigger picture.’

Figure 12. AIMRaD: The hourglass “shape” of a generic scientific research article and key features highlighted by this shape (Adopted from Cargill & O'Connor, 2009, p. 10)

▪ Abstract

It is the first section of the article that is written in one block paragraph consists of 150 to 250 words. The abstract offers a summary about the main points the paper addresses including the objectives, materials, methods, results and conclusions. Yang (1995) defined the abstract as, “a mini-paper that is understood on its own without reference to the paper proper. The

abstract should provide maximum information with minimum words” (p. 53). For Cargill and O’Connor (2009), the abstract’s typical information elements are:

Some background information	B
The principal activity (or purpose) of the study and its scope	P
Some information about the methods used in the study	M
The most important results of the study	R
A statement of conclusion or recommendation	C

The abstract ends up with a set of keywords that serve as reference points for the RA (Picardi & Masick, 2013). Overall, the abstract maps the content of the article as well as the direction of the research.

b. Introduction

The second section of RAs which provides all information necessary to understand the rationale for the study. Introduction is concerned with the scope of the problem, main questions, hypotheses in addition to literature review. Weissberg and Buker (1990) identified five stages of introduction that contribute to make predictions about the expected outcomes of the study. Though introduction stages were generated from extensive research that has been done on experimental articles, Cargill and O’Connor (2009) have clearly confirmed that those stages can meet the requirements of other existing fields of scientific research. They stated, “The five broad stages give us a useful framework that is flexible enough to be applicable in most contexts” (p. 41). The diagram in figure 13 explains the different stages of introduction and the purpose of each stage.

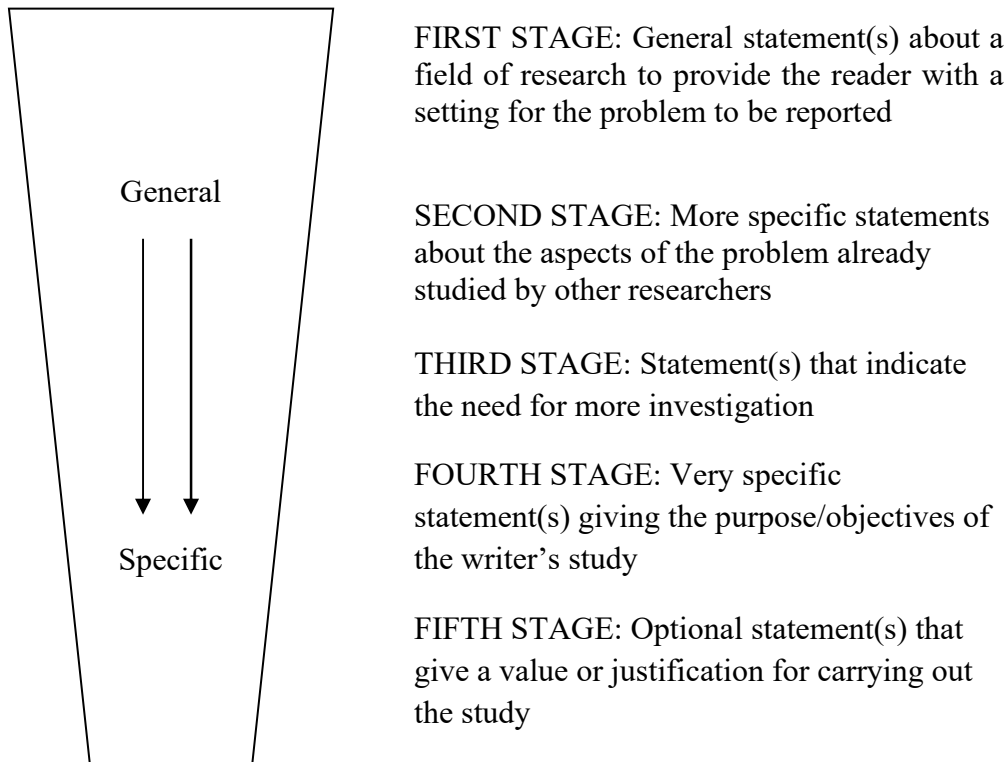


Figure 13. The five stages of the introduction (Adopted from Weissberg & Buker, 1990, p. 22)

As far as introduction's stages are concerned, there is an overwhelming agreement that all these stages are important to construct a right setting of the article. Yet, the order of the stages will remain optional. Authors can go through stages in different orders depending on the aspects of data they want to emphasize.

c. Materials and Methods

This section is also entitled methodology and it accounts for the procedure employed by researchers to establish the credibility of the conclusions based upon their analysis (Englander, 2013). Journal of Young Investigators (2005) maintained that methods and materials section carries the following information:

- Subjects used (animals, plants, humans) and their pre-experiment handling and care (anything that might affect the results must be included)

- Sample preparation techniques.
- Origins of samples and materials.
- Description of the field site (if applicable) including physical and biological features, and exact location (include a map, if applicable)
- Protocol for collecting data - how were the procedures carried out?
- Statistical analysis techniques used.
- Information on computer programs used or written.
- Descriptions of equipment set-up and function. (Journal of Young Investigators, 2005, p. 25)

Cargill and O'Connor (2009) emphasized the relationship between methods section and results section. According to them, there are two strategies to link methods section to results section:

Strategy 1: Use identical or similar subheadings in the Methods and the Results sections.

Strategy 2: Use introductory phrases or sentences in the Methods that relate to the aims.

(Cargill & O'Connor, 2009)

Pardede (2012) believed that methods section is relevant to measure the quality of research by the readers. He explained the role of the author in the methods section as follows, "The author must describe, in painful detail, exactly what he/she did: what experiments were carried out and how they were conducted, what equipment and material were used and how they were used, how much, how often, what, where, when, and why" (Pardede, 2012, p. 24).

The methods and materials section is the backbone of SRAs. All the details concerning scientific methods and procedures are presented so thoroughly. Therefore, this section is tightly associated with authors' discourse competence to explain their research procedures adequately.

a. Results

This section reports the findings obtained from data analysis. According to Yang (1995), “Results are general statements that interpret the raw data obtained from experimental measurements” (p. 63). The results section relies heavily on the use of figures (tables, graphs and diagrams) which make “the results speak for themselves” (Englander, 2013, p. 48). For Englander (2013), there are three activities that shape the significance of data in the results section are illustrated in the following diagram:



Figure 14. Three activities an author must perform in the results section in order to highlight the data (Adopted from Englander, 2013, p. 48)

Overall, the results section acts as a bridge between methods and discussion sections. It shows how scientific method (s) impact (s) research findings and what conclusions can be drawn from data analysis.

d. Discussion

The discussion section is a sequel to results section. It is an attempt to interpret and evaluate the data reported in the results section and examine its future implications (Yang, 1995). Typically, the discussion section begins by restating questions about problematic, and then it addresses the relationship between the results obtained in current research and those obtained in past research. Discussion section is the focal point of any research paper. It offers a credible explanation of scientific phenomena and the effects of past and current exposures. Peat et al., (2002) developed a template for writing discussion section involves four standing paragraphs are presented in figure 15:

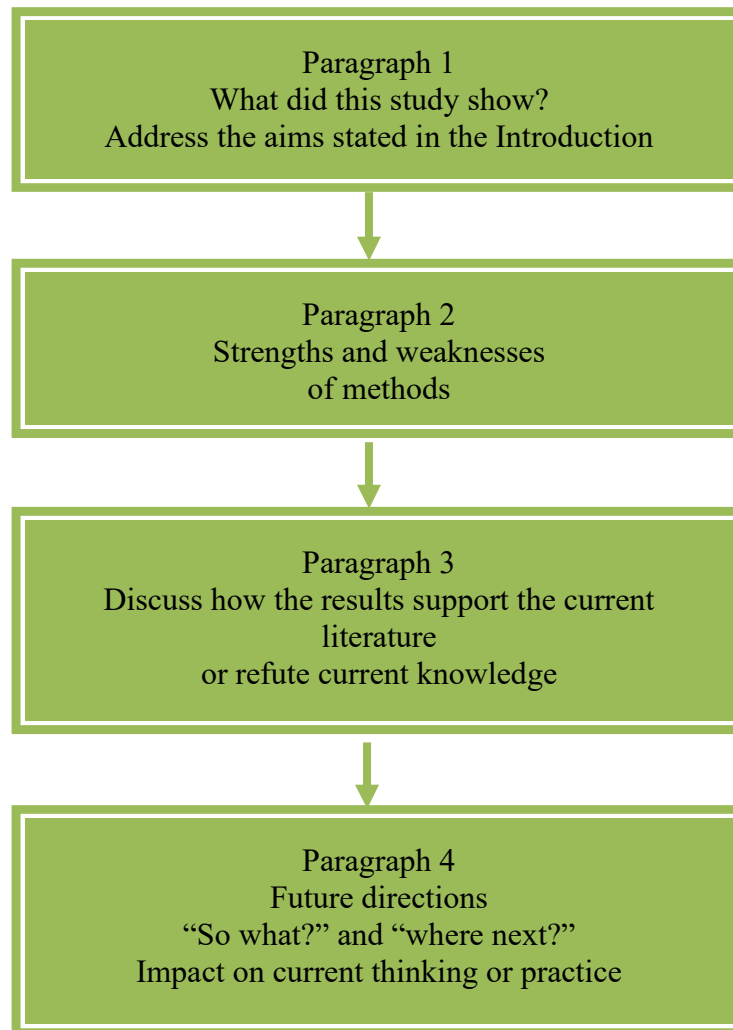


Figure 15. Template for the discussion (Adopted from Peat et al., 2002, p. 87)

- **Conclusion**

It offers a summary of the findings and their corresponding recommendations. Research conclusions should be matched up with the initial predictions and aims outlined in the introduction. Lebrun (2007) identified two purposes of the conclusion; the first is restating the contribution, with a particular emphasis on what it allows others to do while the second is proposing new research directions to prevent duplication of effort or to encourage collaboration.

▪ References

Documenting external sources of information is a key ethical principle to maintain scientific credibility. Pardede (2012) distinguished between bibliography and references. Bibliography refers to sources that an author may have read but were not cited in the text, whereas, references is the section found in most scientific journal-style manuscripts where all sources should be listed.

Linguistic Features of Scientific Articles

As far as linguistic analysis is concerned, there is a general consensus that SRAs have distinct linguistic characteristics that set it apart from other language registers. Halliday's (1993b) interpersonal meta-function contributes a great deal to understanding writers' language choices and their realizations in academic texts. Halliday (1993b) explained the role of the interpersonal component of the grammar as follows,

This (interpersonal component) builds up into a rich array of speech functions, modalities, personal forms, keys, and various dimensions of force and attitude by which the speaker enacts immediate social relationships, and more broadly, the whole pattern of the social system with its complexity of roles, statues, voices and the like. (p. 107)

Because academic writing is governed by readers' expectations, a great deal has been said about the role of linguistic features to convince academic readers belonging to multiple discourse communities. Hyland (1998b) said,

While often considered predominantly propositional and impersonal, the act of convincing an academic audience of the veracity of one's arguments involves making linguistic choices, which that audience will conventionally recognize as persuasive. That is, the effectiveness of these choices lies in their cognitive and cultural value to a community. (p. 438)

For Hyland, meta-discourse aspects play a significant role to forge the relationship between writer, text and reader. He defined meta-discourse as, “those aspects of the text which explicitly refer to the organization of the discourse or the writer's stance towards either its content or the reader or is more narrowly confined to the elements of textual organization” (Hyland, 1998b, p. 438). In other words, meta-discourse refers to writers’ linguistic and rhetorical manifestations in the text that weave textual relationships.

Pho’s (2012) study about the prototypical features of articles’ abstract demonstrated that the distribution of linguistic features serves different textual functions and that “it would be an overgeneralization to simply state that certain features are typical of the whole section of an article” (Pho, 2012, p. 288). Pho (2013) summarized the feature of authorial stance in RAs as follows:

- Feature 1: self- reference words
 - Type 1: first person pronouns and other self- reference words (e.g. I, me, my, we, us, our, the author(s), the researcher(s))
- Feature 2: modal auxiliaries and semi-modal verbs
 - Type 2: obligation/necessity modal verbs (e.g. must, should, need, have to, ought to)
 - Type 3: possibility/ability modal verbs (e.g. can, could, may, might)
 - Type 4: volition/prediction modal verbs (e.g. will, would, shall, be going to)
- Feature 3: verb tense and aspect
 - Type 5: present simple
 - Type 6: past simple
 - Type 7: present perfect
 - Type 8: past perfect
- Feature 4: voice
 - Type 9: agentless passive
 - Type 10: by- passive
 - Type 11: active
- Feature 5: stance adjectives, adverbs, and nouns
 - Type 12: attitudinal stance words (e.g. interestingly)
 - Type 13: epistemic stance words (e.g. possible)
- Feature 6: that- complement clauses
 - Type 14: that- complement clauses controlled by adjectives (e.g. It is clear that ...)

- Type 15: that- complement clauses controlled by verbs (e.g. We argue that ...; It should be noted that ...)
- Type 16: that- complement clauses controlled by nouns (e.g. The conclusion that ...)
- Feature 7: controlling word types
 - Type 17: none-motive (e.g. He said that ...)
 - Type 18: positive strong (e.g. He pointed out that ...). (Pho, 2013, p. 34-35)

Halliday and Matthiessen (2014) emphasized the idea that grammar should offer a comprehensive picture of the relationship between the choice of the words and the choice of the grammatical categories. They made a fundamental distinction between two actions of grammar are: giving information or demanding information. Therefore, four basic speech functions came into existence: offer, command, statement and question. These functions can be realized through three types of clauses: declarative, interrogative, and imperative (Halliday & Matthiessen, 2014). They added that mood system is more likely to form a distinct grammatical system. The mood component consists of the Subject, which is a nominal group, and the finite operator, that is part of a verbal group presented in terms of three grammatical features: tense, polarity, or modality.

Linguistic Analysis of Research Articles: Register Analysis Vs Genre Analysis

Linguistic analysis is a stepping stone towards understanding the nature of academic texts. Halliday and Hasan (1976) claimed that linguistic analysis is not concerned with evaluating texts, rather, “It is an explanation of how and why it is valued as it is” (p. 328). Biber and Conrad (2009) stressed the importance of understanding texts’ linguistic varieties representing multiple discourse communities. They stated,

Text varieties and the differences among them constantly affect people’s daily lives. Proficiency with these varieties affects not only success as a student, but also as a practitioner of any profession, from engineering to creative writing to teaching. (Biber & Conrad, 2009, p. 4)

Ferguson (1996) distinguished between two types of linguistic analysis: register analysis concerned with the study of language variations and genre analysis or the study of discourse types.

For Halliday and Hasan (1985), register is a semantic notion which refers to “a variety of language, corresponding to a variety of situation: a concept of the kind of variation in language that goes with variation in the context of situation” (p. 38). According to Halliday and Hasan (1985), interpreting situations requires a conceptual framework made up of three factors: field (what is going on), mode (the relationship between the participants) and tenor (method of communication, written or spoken). Therefore, the more accurately the context of the situation is described, the more specifically the properties of the text will be predicted.

Biber’s multi-dimensional (MD) approach to register analysis demonstrates how critically to analyze texts based on statistical techniques that are more likely to provide a general description of text’s linguistic properties. The primary aim of MD analysis is, “to identify the functional dimensions of linguistic variation among texts and to provide an overall description of relations among genres with respect to these dimensions” (Biber, 1988, p. 56). There are two steps of MD analysis:

- Identifying the salient linguistic co-occurrence patterns in a language, in empirical/quantitative terms;
- Comparing spoken and written genres/registers in the linguistic space defined by those co-occurrence patterns. (Biber et al., 2007).

Biber’s MD approach provides three dimensions that identify linguistic variations among English texts:

- **Interactive vs. Edited texts**

Interactive texts are marked by authors’ high personal involvement besides low explicitness in the expression of meaning. Moreover, this type of texts is characterized by the

use of subordination and interactive features. Conversely, edited texts have explicit lexical content and they allowed for little authorial involvement (Biber, 1986).

- **Abstract vs. Situated Content**

Besides its highly formal learned style, abstract content is distinguished by its nominal content created by “the features with positive weights (nominalizations, prepositions, passives, specific conjuncts, it-clefts” (Biber, 1986. p. 395). In return, situated content relies on concrete and informal style. According to Biber (1986) situated content is indicated by, “high reference to the temporal and physical situation-by means of place and time adverbs and reduced surface form, through deletion of relative pronouns and subordinator *that*” (p. 396).

- **Reported vs. Immediate style**

Reported style refers to a narrative context which emphasizes features with negative weights such as present tense and adjectives. Meanwhile, immediate style has non-narrative emphasis besides the frequent use of present tense.

Cummins (2000) stresses the importance of Biber’s dimensions to draw the distinction between conversational and academic aspects of proficiency. He believed that, “Biber’s research shows clearly that the general distinction that has been proposed between conversational and academic aspects of language has linguistic reality that can be identified empirically” (Cummins, 2000, p. 65).

Register analysis determines the degree of texts’ formality based on lexicon and grammatical complexity. High registers require wide use of academic lexicon and complex grammatical structures. Low registers, in return, are characterized by their modest vocabulary governed by simple grammar (Celce-Murcia & Olshtain, 2000). Overall, registers are determined by three components: the situational context, the linguistic features in addition to the functional relationship between these components (see Figure 16).

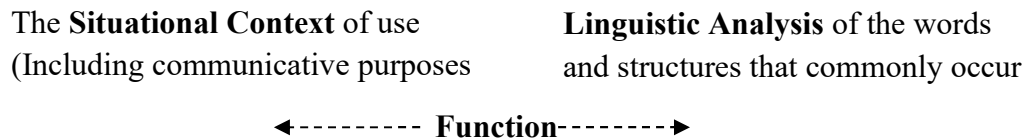


Figure 16. Components in a register analysis (Adopted from Biber & Conrad, 2009, p. 6)

The concept of genre is a well-established concept in discourse studies. It is defined as a social process used by participants within a culture to fulfill certain communicative purposes. Unlike register, genre requires a set of specific conditions that govern the discourse structure of texts rather than their linguistic variations. Couture (1986) explained the difference between register and genre in the following way,

While registers impose explicitness constraints at the level of vocabulary and syntax, genres impose additional explicitness constraints at the discourse level. They define conventional patterns of linguistic structure of a complete discourse, and they are intertextual that is, they are defined by their capacity to evoke other texts. (p. 82)

The definitions of register and genre reveal that the two terms are different but they are not separate. Texts' analysis requires both the linguistic analysis and the analysis of discourse structure. This means that register and genre are complementary concepts in academic discourse. Swales (1990) model of genre analysis provides a formal framework for describing RAs in which he focused on "rhetorical action and on the organizational and linguistic means of its accomplishment" (Swales, 1990, p. 82). Swales' framework was one of the dramatic changes in genre studies which raised many issues related to the analysis of academic discourse. Devitt (2004) considered genre analysis a rhetorical and dynamic phenomenon that combines form and meaning, product and process, individual and society. Meanwhile, Wang (2006) concerned genre analysis with the study of generic superstructures and rhetorical functional analyses, such as 'moves', 'stages', 'schematic' or 'generic' structure. Biber and Conrad (2009) added that register-genre variation is universal because all cultures use

language to respond to different situations for different communicative purposes. This means that the two concepts are influenced by situational characteristics and communicative purposes that impose special discourse structure and grammatical properties (see Table 11).

Table 11 <i>Situational Characteristics of Registers and Genres</i>
<p>I. Participants</p> <p>A. Addressor (s) (i.e. speaker or author)</p> <ol style="list-style-type: none"> 1. single/plural/institutional/unidentified 2. social characteristics: age, education, profession, etc. <p>B. Addressee</p> <ol style="list-style-type: none"> 1. single/plural/un-enumerated 2. self/other <p>C. Are there on-lookers?</p> <p>II. Relations among participants</p> <p>A. Instructiveness</p> <p>B. Social roles: relative status or power</p> <p>C. Personal relationship: e.g., friends, colleagues, strangers</p> <p>D. Shared knowledge: personal and specialist</p> <p>III. Channel</p> <p>A. Mode: speech/ writing/singing</p> <p>B. Specific Medium:</p> <p style="padding-left: 20px;">Permanent: taped/ transcribes/ printed/ handwritten/ e-mail/ etc.</p> <p style="padding-left: 20px;">Transient speech: face-to-face/ telephone/ radio/ TV/ etc.</p> <p>IV. Production circumstances: real time/ planned/ scripted/ revised and edited</p> <p>V. Setting</p> <p>A. Is the time and place of communication shared by participants?</p> <p>B. Place of communication</p> <ol style="list-style-type: none"> 1. Private/ public 2. Specific setting <p>C. Time: contemporary, historical time period</p> <p>VI. Communicative purposes</p> <p>A. General purposes: narrate/ report, describe, exposit/ inform/ explain, persuade, describe, how-to/ procedural, entertain, edify, reveal self</p> <p>B. Specific purposes: e.g., summarize information from numerous sources, describe methods, present new research findings, teach moral through personal story</p> <p>C. Factuality: factual, opinion, speculative, imaginative</p> <p>D. Expression of stance: epistemic, attitudinal, no overt stance</p> <p>VII. Topic</p> <p>A. General topical “domain”: e.g., domestic, daily activities, business/workplace, science, education/academic, government/legal/politics, religion, sports, art/ entertainment, etc.</p> <p>B. Specific topics</p> <p>C. Social status of person being referred to</p>

Note. From “Register, genre and style,” by Biber & Conrad, 2009, Cambridge University Press, p. 41.

Bathia (2014) extended the definition of genre analysis beyond the boundaries of textual analysis to incorporate the context of the text (institutional or professional) relevant to achieve specific disciplinary goals. Bathia (2014) concluded that “genres often operate in what might be viewed as tactical space that allows established members of discourse communities to exploit generic resources to respond to recurring or often novel situational contexts” (p. 23).

Disciplinary Variations in Research Articles

Arguably, the complexity of academic discourse is a matter of disciplinary variations which generate differences between SRAs. Becher (1981) defined disciplines as “cultural phenomena: they are embodied in collections of like-minded people, each with their own codes of conduct, sets of values and distinctive intellectual tasks” (p. 109). Becher (1981) emphasized the idea that writing RAs requires understanding the disciplinary sub-cultures to raise awareness of distinct forms of academic writing as well as their functions. He quoted,

A powerful reason for coming to understand more about disciplinary differences and transdisciplinary similarities could be that this would help create a climate in which policies were better-informed and more in tune with the working context of higher education than—in ignorance of any such considerations--they seem to be today.

(Becher, 1981, p. 122)

Bazerman (1988) claimed that articles differ in terms of subject representation, the literatures, the structures, the audience and the authors. He argued that, “Each article speaks to its own moment and own intellectual space; each actively realizes its own goals in that moment and space” (Bazerman, 1988, p. 47).

Becher (1994) introduced the notion of disciplinary grouping which refers “to kind of correlation...between the knowledge of domains and the nature of associated disciplinary cultures” (p. 243). This correlation occurs at the level of individual disciplines and it highlights common disciplinary characteristics are summed up as follows:

Table 12 <i>Knowledge and Culture, by Disciplinary Grouping</i>	Disciplinary grouping	Nature of knowledge	Nature of disciplinary culture
Pure science (e.g. physics) 'hard-pure'	Cumulative; atomistic (crystalline/tree-take); concerned with universals, quantities, simplification; resulting in discovery/explanation	Competitive, gregarious, politically well-organized; high publication rate; task-oriented	Individualistic; pluralistic; loosely structured; low publication rate; person-oriented.
Humanities (e.g. history) and pure social sciences (e.g. anthropology): 'soft-pure'	Reiterative; holistic (organic/river-like); concerned with particulars; qualities; complication; resulting in understanding/ interpretation.	Entrepreneurial; cosmopolitan; dominated by professional values; patents; substitutable for publications; role oriented.	Outward-looking; uncertain in status; dominated by intellectual fashions; publication rates reduced by consultancies; power-oriented.
Technologies (e.g. mechanical engineering): 'hard applied'	Purposive; pragmatic (know-how via hard knowledge); concerned with mastery of physical environment, resulting in products/techniques.	Functional; utilitarian (know-how via soft knowledge); concerned with enhancement of [semi-] professional practice; resulting in protocols/procedures	
Applied social sciences (e.g. education): 'soft-applied'			

Note. From "The significance of disciplinary differences," by Becher, 1994, *Studies in Higher Education*, p. 154.

Flowerdew (2002) argued that academic genre exhibits two types of variation. The first type occurs across linguistic and cultural boundaries like the size of the discourse community while the second type occurs across disciplinary boundaries and it is part of linguistic and cultural factors. However, most studies in the literature focused on cross-linguistic differences in academic discourse.

Hyland (2009) considered a discipline a common term “used to describe and differentiate knowledge, institutional structures, researchers and resources in the working world of scholarship” (p. 58). Hyland (2009) believed that writing SRAs is associated with the academic discipline which requires authors to adjust their style to the circumstances of the academic discipline. Similarly, Gray (2015) reached the conclusion that disciplines are the most important characteristic feature of RAs that maps linguistic variations. With this respect, understating disciplinary variations is deemed important in the linguistic analysis of RAs. Gray (2015) identified two types of disciplinary variations in academic journal articles:

- a) Variation along disciplinary lines which occurs whether along individual disciplinary lines (e.g., philosophy versus applied linguistics) or those which respond to the parameters of traditional discipline groupings (such as the humanities, social sciences, and hard sciences).
- b) Variation occurs irrespective of discipline and it is concerned with situational parameters such as the purpose of the research.

The two types of disciplinary variations indicate that SRAs can be analyzed in terms of their individual parameters determined by the nature of the discipline or some situational parameters that affect articles’ linguistic and rhetorical choices. Overall, disciplinary variations offer an adequate explanation of the differences witnessed between RAs and prove the claim that writing for natural sciences is different than writing for human sciences and social sciences.

Evaluating the Quality of Scientific Research Articles

Evaluating RAs should be scrutinized by objective methods that ensure the scientific quality of the articles. Undoubtedly, the reputation of scientific journals has a great potential for evaluating SRAs. Authors agree that high quality journals would accord the latter greater prestige due to their high-standards of publication (Thyer, 1994).

Although journals' impact is of paramount importance, more attention has been paid to the value of the article itself which determines the value of the discipline. To this end, a great deal of discussion has been devoted to the issue of evaluating RAs and what could be considered as being a 'good' RA. Granville and Johnson (1957) identified six sources for evaluating RAs are mainly considered as criteria for evaluating RAs written by students at graduate and undergraduate levels to increase the quality of articles and at the same time to improve students' academic writing skills (see Table 13). In a similar context, Finlay (1997) maintained that a good RA combines the following three main qualities:

- It accurately reflects and describes the research.
- It enables readers to follow what has been done and what led to the conclusion.
- It stimulates thought, discussion and debate

Garfield (2002) argued that the quality of the article can be measured in terms of the language of publication determined by the number of readers who are part of the discourse community. The fact that most readers develop a positive attitude toward reading in English justifies "Why has publishing in English become synonymous with international prestige and high quality" (Garfield, 2002, p. 368).

Table 13 <i>Evaluation of Research Article</i>		
Source		
I. Problem	<u>Statement</u> : (is it clear?)	
	<u>Significance</u> : (will results contribute to solution of problems of a particular or theoretical nature?)	1-2-3-4-5 1-2-3-4-5
II. Materials	<u>Quantity</u> : (adequate references, sources, tests?)	1-2-3-4-5
	<u>Quality</u> : (are references from authoritative sources? Are tests reliable, valid, suitable?)	1-2-3-4-5
III. Subjects	Quantity: (are the samples large enough?)	1-2-3-4-5
	Quality: (is sample adequate from problem?)	1-2-3-4-5
IV. Method of procedure	<u>Suitability</u> : (Are techniques suitable for the problem?)	1-2-3-4-5
	<u>Arrangement</u> : (Is the arrangement orderly and systematic? Is the design adequate?)	1-2-3-4-5
	<u>Objectivity</u> : (Is the solution of the problem arrived at objectively?)	1-2-3-4-5
V. Results	<u>Treatment of Data</u> : (Are proper and modern techniques of treatment employed?)	1-2-3-4-5 1-2-3-4-5
	Logically Derived: (Are the conclusions logically drawn from the results?)	1-2-3-4-5
Total Score		_____

Note. From A “method for evaluating research articles in education.” By Granville & Johnson, 1957, *Journal of Educational Research*, 51, p.150.

Hirsch’s (2005) H-index offered a distinct way to evaluate the quality of articles basing on the number of citations the scientist has received on his/her RA. Unlike the impact factor, H-index does not account for journal prestige, rather, it evaluates individual papers according to their occurrence in other works. In return, the “free ride” hypothesis assumed that publication in high impact journals positively impacts the quality of the articles (Kanthraj, 2006). Citations play a guiding role to enhance the readability of articles. Therefore, Journals’ Impact Factor (IF) is deemed most appropriate for selecting scientific journals. It is a system created by Eugene Garfield in 1961 to judge the scientific quality of journals taking into consideration citation frequency of the published articles. Cargill and O’Connor (2009) explained, “The Journal Impact Factor for a given year is the average number of times articles published in the journal in

the two previous years have been cited in that year” (p.70). Calculating the impact factor can be done using the following formula:

$$\text{Impact factor} = \frac{\text{Number of citations to articles in a journal in one year}}{\text{Number of articles published in that journal in the previous 2 years}}$$

Betz (2011) accounted for the need of peer review process to offer in-depth evaluation of scientific articles. According to him, there are three quality criteria of publication are: validity, novelty, and contribution. Peer reviewers have a very critical role to judge the quality of RAs and recommend their publication. Betz (2011) suggested that peer-review evaluation process adheres to four essential procedures:

- Peer review for publication of scientific articles
- Peer review in selection of research projects to fund
- Peer review is oversight of research project management
- Peer review in reviewing research program performance.

Kenneth et al., (2012) went further to assume that the quality of RAs is determined by authors' ability to show the significance of articles' sections and the interrelationship between them. They continued that evaluating RAs is also associated with authors' wide access to journal articles. For them, “the more one reads journal articles, the more familiar one will become with the different components of articles, and the easier it will become to evaluate research studies” (Kenneth et al., 2012, p. 262).

Although scholars held contradictory views on evaluating the quality of RAs by considering different evaluation criteria including the quality of journal, the quality of the article, authors' competence, the academic community as well as peer review process, it is agreed perfectly that the quality of the articles enhances the reliability and perceived credibility of scientific research.

Conclusion

Overall, publishing articles is a complex process which encompasses many factors including the standards of academic journals, the nature of academic disciplines as well as the requirements of discourse communities. Most publishing debates are associated with the quality of language which can mask the academic merit of articles. The fact that language represents a tough challenge for most researchers especially non-native English researchers makes journal's evaluation process a keystone to enrich their writing experience particularly attuned to readers' expectations.

GENRE ANALYSIS OF RESEARCH ARTICLES INTRODUCTION

Chapter 4: Genre Analysis of Research Articles Introduction

Introduction	107
The Growth of Genre Approach to Academic Writing.....	107
Objectives of Genre Analysis.....	111
Approaches to Genre Analysis	113
The Australian School of Systematic Functional Linguistics (SFL).....	113
The North American New Rhetoric School	114
The ESP Approach	115
Move Analysis of Research Articles	116
Create a Research Space Model for Article Introduction	117
The Distribution of Linguistic Features across Introduction Moves.....	122
Factors Influencing Research Articles' Introductions.....	128
Linguistic Differences	128
Cultural Differences	128
Disciplinary Variations.....	129
Criticism against Create A Research Space Model.....	130
Conclusion.....	131

Introduction

Chapter four is devoted to genre theory and its impact on scientific writing. The chapter covers the growth of genre theory, its objectives and approaches. Because move analysis occupies the foreground of genre studies, a great deal of emphasis has been placed on Swales' move analysis of RAs and his Create a Research Space (CARS) model of journal article introductions. More interest is given to the occurrence of linguistic features and main characteristics of RAs introduction. Finally, the chapter addresses the criticism of CARS and main arguments against the use of this model.

The Growth of Genre Approach to Academic Writing

The term *genre* has received wide interest among academic researchers who used this term to refer to different things in different domains. The term is from the French word originally meaning "le genre" which means sort, type or kind. Hymes (1974) considered genres as speech events or activities "that are directly governed by rules or norms for the use of speech" (p. 52). For Hymes (1974), genres and speech events should be treated independently that one genre can occur in different situations or events. Another definition was developed by Martin (1985) stating that,

Genres are how things get done, when language is used to accomplish them. They range from literary to far from literary forms: poems, narratives, expositions, lectures, seminars, recipes, manuals, appointment making, service encounters, news, broadcasts and so on. The term genre is used here to embrace each of the linguistically realized activity types which comprise so much of our culture. (p. 250)

Swales (1990) provided a technical definition of the term genre as being a faculty of communicative events, members and communicative purposes that distinguish a particular text or discourse type. Swales (1990) stated,

A genre comprises a class of communicative events, the members of which serve 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 constraints choice of content and style. (p. 58)

In linguistics, the term genre is used to refer to the gender of words (Rosenthal, 2010). Many definitions considered genre as a communicative event that aims to accomplish social purposes, or a structurally-determining characteristic of texts that encompasses two functions: communicative purpose of the texts and its social function (Taboada, 2004). Riazi (2016) considered genre as a language phenomenon that is guided by cultural and disciplinary procedures. Therefore, genre can be defined as a communicative activity that is very receptive to disciplinary variations.

Historically speaking, genre analysis was stemmed from the Traditional Greek Rhetoric in order to help ordinary people to argue their claims in the court and convince authorities and decision-makers (Bathia & Nodoushan, 2015). In the 1970s and 1980s, genre analysis becomes part of the broad field of discourse analysis to share its insights later with ESP studies.

According to Gajda (1993), genre has gone through two periods of growth: the universalist stadium and scientific stadium. The first period (from antiquity until the 19th century) took a nominative approach that was built upon some philosophical and logical assumptions which compel writers to treat genres according to a set of strict rules that define the topic, the composition and the style of the text (Gajda, 1993, as cited in Tereszkievicz, 2010, p. 15). The second period (from the 19th and 20th century onward) stuck to the descriptive approach which accounts for the social and cultural aspects of genres instead of their textual regularities (Gajda, 1993, as cited in Tereszkievicz, 2010, p. 15). The two

periods of growth marked the shift from a surface analysis of genre to more deep analysis that based on the pragmatics of the academic text.

According to Yayli (2011), genre analysis has been traced back to Hallidayan functional linguistics which explains variation in the use of language according to the situation in which language is used. Halliday (2007) explained the relationship between language communities and language use in terms of two varieties: varieties according to the users are called *dialects*; and varieties according to the use of language or *registers* which play a crucial role in determining the nature and functioning of language. He explained the role of register, “by reference to the various situations and situation types in which language is used that we can understand its functioning and its effectiveness” (Halliday, 2007, p. 18).

Moreover, Halliday (2007) distinguished between three dimensions of language registers: the field of discourse, mode of discourse and style of discourse. The field of discourse is concerned with “the area of operation of the language activity” (Halliday, 2007, p. 19). In other words, field of discourse refers to the field of research where language is used and it takes whether technical or non-technical form. The mode of discourse is defined as the medium or the role played by the language in a given situation and it can be spoken or written mode. The style of discourse is the last dimension which accounts for the relationship between participants and it imposes whether the use of colloquial or polite style. The three dimensions can be studied separately but they are all important to enhance register’s delicacy.

The New Rhetoric view of genre marked a turning point in the study of genre where interest has been made on the context and social nature of genres (Yayli, 2011). This view arose out of Bakhtin’s (1986) notion of dialogism which refers to the interaction occurs at the level of speakers’ utterances and its relationship with listeners’ utterances. Bakhtin’s (1986) explained his view as follows,

Any speaker is himself a respondent to a greater or lesser degree...he presupposes not only the existence of the language system he is using, but also the existence of preceding utterances - his own and others' - with which his given utterance enters into one kind of relation or another... Any utterance is a link in a very complexity organized chain of other utterances. (p. 69)

Bakhtin (1986) differentiated genres in terms of the social situation and position as well as personal interrelation of the participants which are more likely to make generic forms more, flexible, plastic, and free (Bakhtin, 1986). Hence, the new rhetoric approach views genres as social actions that focus on the action the discourse aims to accomplish instead of the form of the discourse. Yayli (2011) considered ESP genre studies the last period of growth which is characterized by Swales' (1981, 1990, 2004) discursal works on academic English.

Although the terms register and genre have been used interchangeably, Martin (1985) gave two reasons that make genre a system that underlies register are:

- Genres constrain the combination of register's variables of field, tenor and mode in a particular society.
- Genres offer verbal means that help to achieve social purposes and thus understanding communicative goals of texts.

Overall, Swales (1990) claimed that register is a well-known term in linguistics that gained wide interest among academic researchers, meanwhile, genre is seen as an additional term that is now considered as, "valuably fundamental to the realization of goals, and thus acts as what they expect others will want to hear" (p. 57).

Objectives of Genre Analysis

Genre analysis offers an analytical framework of the linguistic and social situation of texts and their communicative purposes. For Fang (2012), the ultimate goal of genre analysis is explaining the relationship between text's form and function.

According to Bhatia (1997), the role of genre is “not to find out how genres are written but why they are written the way they are” (p. 207). For him, genre analysis allows moving from a surface linguistic description of genres to deeper functional description (Bhatia, 1997). This reveals that the main aim of genre is to study the internal properties that shape the social and linguistic conventions of a particular discourse.

Henry and Roseberry (2001) assigned the role of genre to a sequence of moves that determines the macro-textual structure of texts. They argued that,

The general aim of a genre analysis is to identify the moves and strategies of a genre, the allowable order of the moves, and the key linguistic features. The next step is to explain why these features were chosen by expert users of the genre to achieve their communicative purpose. (Henry & Roseberry. 2001, p. 154)

Move analysis became the widely used definition of genre analysis among discourse analysts since the 1980s. Vergaro (2004) defined *move* as, “A meaningful unit represented in linguistic (lexical-grammatical) forms and related to the communicative purposes of the activity in which members of the community are engaged” (p. 182). According to Vergaro (2004), move analysis is crucial to determine the pragmatic function as well as the schematic structure of academic texts. Accordingly, Swales (2004) defined the word *move* in genre analysis as, “A discoursal or rhetorical unit that performs a coherent communicative function in a written or spoken discourse” (p. 228). He explained the purpose of genre analysis in terms of the strategic choices of moves and how moves are built by strategic lexico-

grammatical choices. On this basis, move represents the smallest segmentation unit by means of which genres are developed and analyzed.

In his genre pedagogy, Hyland (2004a) specified genre analysis with “explicit and systematic explanations to the ways writing works to communicate” (p.6). According to him, genre analysis facilitates students’ understanding of the knowledge structure of target texts (Hyland, 2007).

In return, Tardy (2011) held different perspective on genre analysis which revolves around describing features of socially recognized forms and actions of the text to explain language in relation to the context in which it is used. This comes as opposed to Barron’s (2012) perspective which claims that genre analysis is concerned with the description of the linguistic behavior and communicative conventions of genres.

For Garzone (2015), genre refers to a special type of discourse that has its own form, content, purpose, and social action. For this reason, language can be seen as the main aspect that distinguishes one genre from another i.e., different genres require special type of language. Garzone assumed that genre analysis aims, “at highlighting the specificities and regularities in social practices, text construction, and language use that characterize discourse production in recurrent situations and make communicative events promptly recognizable, enabling researchers to assign them to genres” (Garzone, 2015, p. 1).

Overall, the aim of genre analysis ranges from describing the formal properties of discourse to the analysis of social rules shaping communicative events. Yet, genre analysis can be considered as a cluster of linguistic and social variables that identify writers’ generic choices.

Approaches to Genre Analysis

The study of genre has been approached in various ways by different theorists who developed three distinct approaches to genre analysis are: The Australian School of Systematic Functional Linguistics, The North American New Rhetoric School and English for Specific Purposes.

The Australian School of Systematic Functional Linguistics (SFL)

The functional linguistic frame of genre analysis has been adopted by many researchers like Halliday (1985, 1994) and Martin (1992) who played a pioneering role in the development of genre in textual analysis and language teaching. The Sydney school operates from the premise that language responds to social and cultural context to shape its social meaning. According to Eggins (2004), Halliday’s (1978) functional semantic approach considers language use as functional, semantic, contextual and semiotic. Halliday’s description of genre is based on “a discrete network of options” (Halliday, 1978, p. 113) known as ideational, interpersonal and textual meta-functions of language. These functions are conditioned by three strata of language: semantic, lexico-grammatical and phonological/graphological stratum (Eggins, 2004).

Table 14 <i>Levels or Strata of Language</i>		
	Folk Names	Technical Terms
Content	Meanings	(discourse-) semantics
	wordings (words and structures)	lexico-grammar
Expression	sounds/ letters	phonology/graphology

Note. From “An introduction to systemic functional linguistics,” by Eggins, 2004, Frances Pinter, p. 19.

The main distinction drawn by SFL has been between register and genre. Register is a semiotic system that determines meaning according to the type of the situation. Halliday (1978) believed that the linguistic system is determined by the situational factors and that the

peculiarities of vocabulary, grammar and pronunciation are consistent with the situation in which language is used. In return, genre refers to the schematic structure described through a set of stages that help to fulfill the rhetorical functions of texts. In SFL, genre is considered as a further parameter that shapes the semiotic frame of the text besides field, tenor and mode (Halliday, 1978).

The North American New Rhetoric School

The new rhetoric school of genre analysis is predominantly associated with the names Miller (1984) and Bazerman (1988) who expounded the pragmatic nature of genre and how recurrent social actions contribute to shape genre regularities. Miller (1984) rhetorical view of genre accounts for the action the discourse aims to accomplish rather than the form of discourse; this action represents “a point of connection between intention and effect, an aspect of social action” (Miller, 1984, p. 153). Moreover, Bazerman (1997) stated that, “The rhetorical concept of genre has from classical times associated the form and style of the utterance with both the occasion or situation and the social action realized in the utterance” (p. 3). This means that the choice of particular utterances adheres to certain circumstances.

The new rhetoric tradition fosters both the pedagogical perspective of genre that improves learners’ academic writing as well as the communicative perspective which stands for genre knowledge acquisition in academic and professional settings (Garzone, 2015). Therefore, rhetorical genre studies shifted from SFL broader understanding of genre analysis as being a cultural resource to more social situated understanding in specific professional settings.

New rhetoricians explained genre’s inter-textual relations in terms of a diachronic/synchronic relationship reflected through the concepts genre repertoire and genre system. Genre repertoire is an umbrella term that describes the communicative events of a particular community or activity. Orlikowski and Yates (1994) defined genre repertoire as “the set of genres routinely enacted by a particular community” (p. 7).

Genre system is the interaction between a set of communicative actions aimed at attaining particular goals. According to Bazerman (1994), genre system represents a full interaction of speech events that weaves the relationship between current acts and prior acts. In fact, the notions of genre repertoire and genre system are two sides of one coin. While the former studies the general properties of genre, the latter accounts for the interaction of these properties in a given activity. Erickson (2000) explained the fusion of genre repertoire and genre system as follows,

It seems useful to combine these two notions. Beginning with the idea of genre repertoires, that a community or organization can possess (and expand) a set of genres for engaging in collective activity, we add in (a softer) notion of the interdependence and triggering expressed in the concept of genre systems, which we express in terms of properties of conversational genres. (p. 12)

The ESP Approach

ESP approach to genre analysis was initiated by John Swales in the 1980s in order to provide NNSs with basic principles of scientific writing. Genre analysis is a sophisticated method of text's analysis in which Swales highlighted the importance of discourse community that shares a general level of knowledge and determines people's communicative goals and genre conventions (Zhu, 2005). In fact, discourse community is the defining criterion of genres. The more authors are aware of the social and cultural conventions of their communities, the more they become skillful writers.

The concept of move analysis is a revolutionary concept in the history of discourse analysis. It attempts to describe the communicative purposes as well as the rhetorical strategies used to realize these purposes (Askehave & Nielsen, 2005). For Samraj (2005), identifying the series of moves that make up genres is important for genre relatedness, genre evolution and genre variation.

Move Analysis of Research Articles

Writing academic research papers becomes an uphill struggle for researchers who seek to create a form of communication between them that facilitates knowledge exchange. Swales' move analysis addresses the need of NNS to write RAs (Kanoksilapatham, 2007). It offers an explicit account of the function, structure, as well as linguistic realizations of RAs. In his theory, Swales (2004) claimed that RAs are made up of four basic sections: introduction, method, results and discussion; each section has a specific function and purpose.

Swales model of move analysis is based on a rank scale system made up of a set of units (article, section, move and step) which overlap to form the structure of the discourse. Therefore, researchers will most likely have a rubric that highlights the steps needed to write an article. Yang (2011) argued that, "Swales' genre model can be said to be multi-stratal, enabling an analysis of text structure both "from above" and "from below" (p. 27).

Yet, the interaction between steps and moves in move analysis is arguably the most fruitful interaction to realize the communicative functions and determine the textual boundaries of scientific texts. Swales (1990) considered moves as discursual units which serve functions for both the writer and the community. Dudley-Evans and St John defined a move as, "a unit that relates both to the writer's purpose and to the extent that s/he wishes to communicate" (Dudley-Evans & St John, 1998, p. 89). Henry and Roseberry (1997) identified three main reasons for move study:

- Identifying the rhetorical structure of genre and its communicative purpose taking into account the social context.
- Identifying the linguistic features relevant to a specific communicative purpose.
- Clarifying the relationship between the text and the linguistic choices of social context.

Swales (1990) distinguished between two types of moves: obligatory and optional. Obligatory moves are mandatory to achieve the communicative purpose of texts, meanwhile, optional moves enhance the effectiveness of communication without changing the purpose of the text. Li and Ge (2009) explained the role of obligatory and optional moves as follows, “The ‘obligatory’ moves constitute the limits of a genre and give a pattern of communication its identity, without which a genre would lose its integrity, while the ‘optional’ moves are available choices authors or speakers may choose to use” (p. 94).

Steps are the building blocks of moves. They are defined as, “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” (Salmani-Nodoushan & Montazeran, 2012, p. 3). Research on genre analysis emphasized the significance of moves and steps to map SRAs structure as well as linguistic patterns characterizing their different sections.

Move analysis has been widely used among NNS writers who have less exposure to articles’ rhetorical structures and linguistic features. In support of this view, Charles and Pecorari (2015) said that “the popularity of move analysis is due to the fact that for those genres with a sufficiently stable move structure, it offers an explicit account of this structure, along with its linguistic realizations, thereby providing a useful tool for teachers and students” (p. 51).

Create a Research Space Model for Article Introduction

Create a Research Space (CARS) is the move structure model for RAs introduction that was developed by Swales in 1990 in order to identify the rhetorical structure prevalent in articles’ introductions. In fact, introduction offers a complex body of knowledge on research theories, hypotheses and findings. Swales and Najjar (1987) stated, “writing an introduction to a research article is not simply a wrestling with words to fit the facts, but is also strongly modulated by perceptions of the anticipated reactions of peer-colleagues” (p. 175). This

means that the role of introduction is not restricted simply to presenting new perspectives and new research insights, rather, it stimulates communicative exchange among the members of discourse community.

A couple of studies adopted CARS model to offer an extensive research on the structure of introductions and how the academic discipline impacts this structure (Swales, 1990, Nwogu, 1997; Anthony, 1999; Samaraj, 2002; Swales, 2004, Futasz, 2006; Swales & Christine, 2008; Afful, 2009; Atai & Habibie, 2009) . Swales (2004) justified the world-wide success of his model as follows, “It (CARS) was relatively simple, functional, corpus-based, sui-generis for the part-genre to which it applies and, at least in its early days, perhaps offered a schema that had not hitherto been widely available” (p. 226).

Introduction is the main part that explains the scope of the article. Getting through introductions is by no means easy; however, readers should understand from the outset author’s tone and research direction; therefore, they will be more likely to understand author’s project. Typical CARS model (see Figure 17) consists of three types of moves which summarize the whole content of the introduction. The first move is called *Establishing a Territory* in which authors provide background information on the topic of the research (Swales, 1990). Basically, this move sets the stage for the context of the study and it involves three basic steps:

- Step 1: Claiming Centrality

It is a common way to open a RA by indicating the significance or the relevance of the study. According to Swales (1990), this step occurs in social sciences and humanities more than physical sciences.

- Step 2: Making Topic Generalizations

It accounts for stating current knowledge about the field and reporting what is known about the topic (Swales, 2004).

- Step 3: Reviewing Previous Items of Research

Its aim is citing previous studies to enhance the quality of the research. According to Thompson (2013) the main function of literature review is “to establish a strong case for the writer ’s own work on which he or she is to be evaluated” (p. 287).

The second move is known as *Establishing a Niche* in which authors argue that there is a research gap (niche) to be filled (Swales, 1990). This stage is an attempt to extend previous knowledge sufficiently to develop further research questions. The second move involves the following steps:

- Step 1A: Counter-Claiming

It is a way authors use in order to challenge previously accepted research findings. At this stage, the author tries to develop a critical attitude toward past research.

- Step 1B: Indicating a Gap

This step demonstrates that earlier research does not cover all details and it fails to address certain pressing questions.

- Step 1C: Question-Raising

The author raises questions that support his/her work and respond to further challenges.

- Step 1D: Continuing a Tradition

The author uses this step to show that his/her research is a continuation of earlier research.

The third move is *Occupying the Niche* in which authors shape their own research by turning the niche in Move 2 to a research space that indicates the objectives, structure as well as the findings of the research. According to Swales (1990), the third step shows, “how this niche in the wider ecosystem will be occupied and defended” (p. 142). The third move is made up of three basic steps including:

- Step 1A: Outlining Purposes

The author determines the main purposes of the article. This step can reveal a great deal about author's goal for writing the article.

- Step 1B: Announcing Present Research

This step describes current research discussed in the article. It is more likely to indicate the novelty of the research.

- Step 2: Announcing Principle Findings

The second step presents research outcomes that allows readers to shape their own conclusions about the research (Swales, 1990). This step is extremely important to provide the basis for all that follows.

- Step 3: Indicating the Structure of the Research Article

This step gives information on the structure of the whole article and the way it is organized.

Swales (2011) explained the function of move three to suggest ways for crossing the gap and propose possibilities to extend the research. Swales (2011) distinguished between two groups of move 3: Group A is called *Teleological* in which authors ought to state the purposes of research. This group of statements is characterized by the use deictic references like *this* and *the present* which are the key signals of the third move in addition to the expressions of purpose which indicate the end of the introduction and lexical items like *aim* and *purpose*. Group B is known as *Ontological* refers only to the products of the authors rather than the authors themselves. Group B is divided into two subtypes: collapsed and un-collapsed. According to Swales (2011), the collapsed structure of introduction includes a locative and an agent (e.g., in the present analysis, we utilize the notion of...). The present tense is a key signal in this group besides variety in the use of lexical items (Swales, 2011). In return, the

un-collapsed structure is made up of preliminary prepositional phrases starting with *in*. *The narrative form* can be considered as a predictive element of this structure.

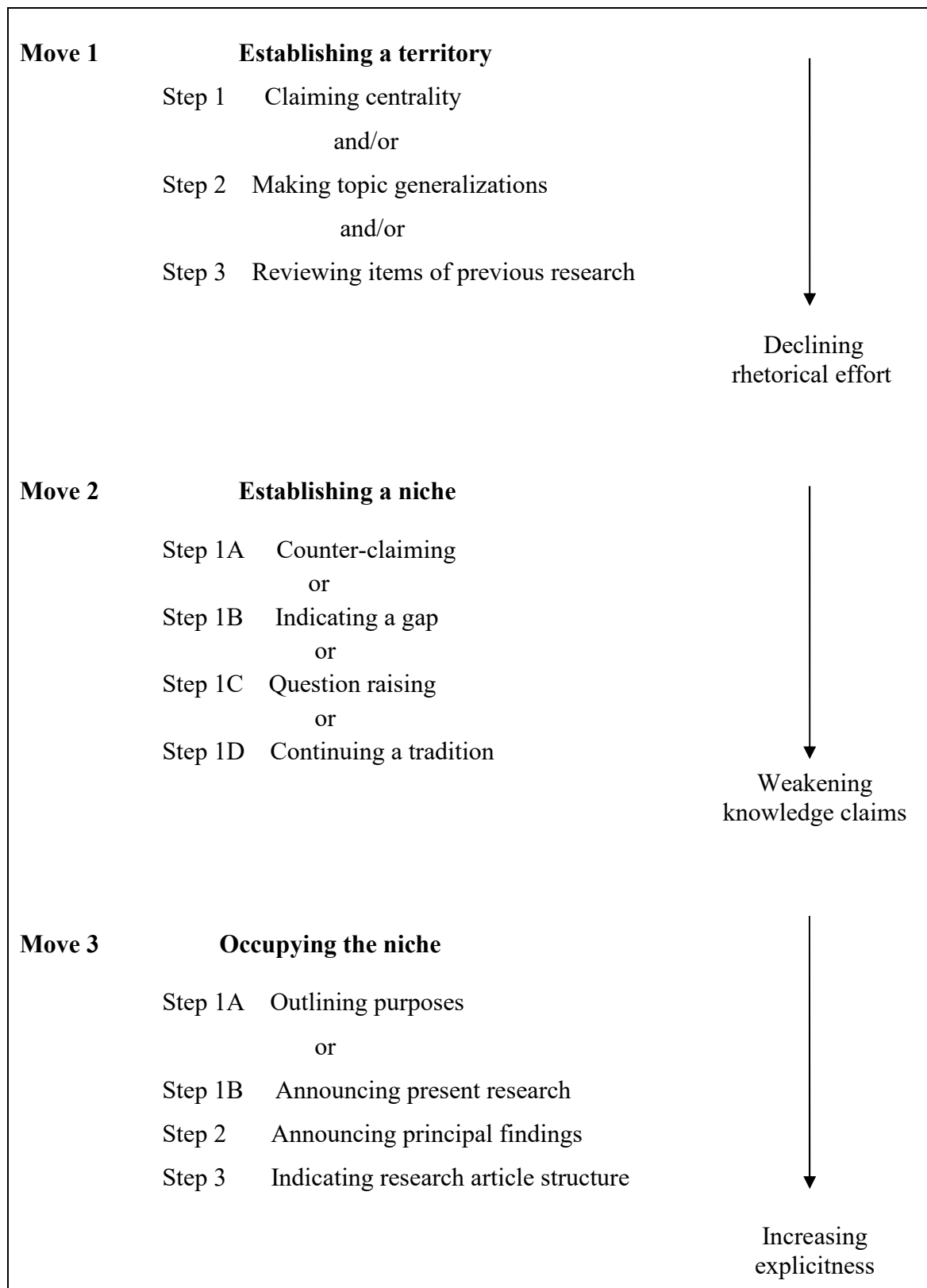


Figure 17. CARS model for article introductions (Adopted from Swales, 1990, p. 141)

As far as CARS moves are concerned; it is widely believed that move two and move three are the most important moves to create a research gap and reach relevant knowledge that fill in this gap. Lyda and Warchal (2014) described the two moves as “rhetorical movements which serve to demonstrate the significance of the research problem for a given field of knowledge, to indicate the place the present research claims in the field” (p. 2). In general, CARS moves emerge from the occurrence of information in texts manifested through different rhetorical functions. Livnat (2012) summed up the model as follows,

When creating a research space, the author should mark out territory within which the study will be carried out, with a considerable emphasis given to the centrality of this territory, and a description of a niche in which the current study will be able to present its new argument. (p. 73)

The Distribution of Linguistic Features across Introduction Moves

There is an overwhelming agreement that the analysis of rhetorical moves is associated with their linguistic features. Understanding how moves are realized linguistically is deemed important for authors to segment their articles. According to Bhatia (2014), there are three aspects characterizing move analysis: linguistic aspect, sociological aspect and psychological-cognitive aspect.

The linguistic aspect is concerned with the linguistic description of texts. Through linguistic analysis, authors try to associate specific features of language to certain types of writing styles. Bhatia (2014) proposed three levels of linguistic analysis: identifying predominant features of the lexico-grammar, describing text-patterning or form-function correlations and determining cognitive move structures. The misuse of linguistic features means misrepresenting the communicative purpose of genres as well as the relationship between the participants who take a major role in the linguistic activity.

The sociological aspect accounts for the social and cultural standards and their effects on texts' construction. Bhatia (2014) stated,

This aspect (the sociological aspect) of genre analysis emphasizes that text by itself is not a complete object possessing meaning on its own; it is to be regarded as an ongoing process of negotiation in the context of issues like social roles, group purposes, professional and organizational preferences and prerequisites, and even cultural constraints. (p. 18)

The psychological-cognitive aspect refers to the tactical choices or strategies made by authors in order to accomplish their intentions. The cognitive structuring of genre is crucial to sustain the communicative purposes of texts. According to Bhatia, text's cognitive structuring "reflects accumulated and conventionalized social knowledge available to a particular discourse or professional community" (Bhatia, 1993, p. 62).

Bhatia's aspects of genre analysis have a significant contribution to construct and understand genres. Analyzing the linguistic, sociological and psychological properties of texts would inevitably offer a mere description of academic genres taking into consideration both the communicative goals of the discourse community as well as authors' individual strategies to achieve these goals.

Swales' (1990) study of linguistic differences reveals a great deal about the distribution of linguistic features across articles' sections which he described as being "both striking and indicative" (Swales, 1990, p. 135). Swales paid more attention to the study of linguistic variations across academic disciplines. He claimed that moves are functionally "flexible in terms of linguistic realization..." (Swales, 2004, p. 229). He gave a thorough description of some essential linguistic features in genre moves is summarized in Table 15 below.

Feature	I	M	R	D
Movement (Hill et al.)	outside-in	narrow	narrow	Inside-out
Reporting Statements (West)	high	very low	low	High
Present Tense (Heslot)	High	Low	low	High
Past Tense (Heslot)	fairly low	very high	very high	High
Passive Voice (Heslot)	Low	High	variable	Variable
Authorial Comments (Adams Smith)	High	very low	very low	High

Note. From “Genre Analysis: English in Academic and Research Settings,” by Swales, 1990, Cambridge University Press, p. 137.

Additionally, Swales (1990) provided a list of linguistic signals that distinguish the different moves of introduction. He began his analysis with the first move, establishing a territory, where authors *claim centrality* by using some typical linguistic components are shown in the following examples:

Recently, there has been a spate of interest in how to....

In recent years, applied researchers have become increasingly interested in....

The possibility...has generated interest

Recently, there has been wide interest in ...

The time development...is a classic problem in fluid mechanics. (Swales, 1990, pp. 144)

The second step of *topic generalization* takes two different forms. The first is statement about knowledge or practice that is illustrated as follows:

The aetiology and pathology of...is well known.

There is now much evidence to support the hypothesis that...

The...properties of...are still not completely understood.

The second form is a statement about phenomena which takes a variety of linguistic forms like:

...is a common finding in patients with...

An elaborate system of...is found in the...

English is rich in related words exhibiting 'stress shifts' (Swales, 1990. p. 146)

The second move of establishing a niche involves some key linguistic signals including the use of sentence connectors indicating contrast (however, yet, but...), the use of negative words (no, little, few, limited...) besides the use of direct and indirect questions (Pho, 2012).

Below are some examples of the linguistic features characterizing move 2:

However, the previously mentioned methods suffer from some limitations...

The first group ... cannot treat ... and is limited to ...

Both ... suffer from the dependency on ... (Swales, 1990, p. 154)

Move 3 is mostly characterized by the use of deictic elements such as *this*, *the present*, *we here*, *now* (Swales, 2004). Swales gave the following examples that illustrate the linguistic signals of move 3:

This paper reports on the results obtained

The aim of the present paper is to give ...

In this paper we give preliminary results of ... (Swales, 1990, p. 160)

Swales' linguistic signals fulfill two main functions: the first is establishing a two-way link connecting the linguistic features with the rhetorical function of moves, and the second is defining clear-cut boundaries between moves. Berkenkotter and Huckin (1995) claimed that linguistic forms assume an important status in genre analysis. They stated,

Forms by themselves have little meaning; it is only when they are seen as serving certain functions that they become meaningful. But often one cannot detect these

functions without first noticing a pattern of forms, and often such a pattern cannot itself be detected without looking across genres and across time. (Berkenkotter & Huckin, 1995, p. 43)

Henry and Roseberry (1996) introduced the notion of move-register which refers to “the language and linguistic patterns of a move” (p. 473). Move-register is a teaching approach that accounts for the language of individual moves rather than the language of genre. Henry and Roseberry (2009) provided four ways on how move-register contributes in language teaching and learning are summed up in the following points:

- It provides teachers with information on what to teach and when to teach.
- It enhances the development of learners’ ethnographic skills that help them to develop their cultural competence.
- It helps to investigate cross-cultural misunderstandings of genres.
- It raises learners’ awareness of linguistic choices available to them when writing even an uncomplicated syntactic structure.

In fact, move-register covers new interesting stream of research that incorporates linguistic characteristics which have a strong impact on understanding variations across genres. Thereby, the linguistic analysis of texts becomes an object of study not only for move analysts but also for teachers who seek to develop a teaching framework that highlights the linguistic patterns of academic texts across different disciplines.

Biber (2007) considered corpus linguistic research the first approach to discourse analysis that deals with the study of language use. According to Biber (2007), linguistic devices are the ‘glue’ to provide textual cohesion and govern the communicative function of moves. Corpus linguistics occupies an important position in genre studies. Corpus linguistics has two main usages in genre analysis. First, it “permits an overall characterization of text or genre” (Biber & Finegan, 1991, p. 212). The second usage of corpus linguistics permits

identifying the distinctive characteristics of specific sub-genres and texts. It accounts for the linguistic characteristics of individual genres rather than the shared characteristics across genres.

Although most studies asserted that linguistic features vary across sections but not moves, Pho's (2008) investigation of the distribution of linguistic features across the different moves of abstract section reveals that writing abstract requires knowing the prototypical moves of the abstract and how they can realize moves linguistically. In her study of genre performances, Devitt (2015) described the beauty of genre analysis in terms of the powerful blend of linguistics and rhetoric. According to her, Swales' rhetorical-linguistic version has played the most revolutionary role in genre studies. Devitt (2015) acknowledged, "Today, genre studies encompass both rhetoric and linguistics, thanks in part to Swales having made such powerful links between the linguistic patterns of genre and communicative purpose, discourse community, and rhetorical moves" (p. 2).

There is no doubt that linguistic analysis is an absolute requirement for genre analysis. For this reason, Swales believed that most discourse analysts are still attached to the notion of register rather than genre, although "linguistics as a whole has tended to find genre indigestible" (Swales, 1990, p. 41).

Factors Influencing Research Articles' Introductions

A growing body of literature focuses on describing RAs introductions. Despite the fact that Swales CARS model provides a good schema to write introductions, there are other factors that are more likely to explain differences among introductions belonging to the same genre category. According to Fredrickson and Swales (1994), there are two main factors that influence RA introductions: linguistic factors and cultural factors.

Linguistic Differences

Generally, authors employ different linguistic features to organize their introductions. Swales (1990) has shown a keen interest in the relationship between genre and linguistic analysis. He believed that “genre analysis acts as a determinant of linguistic choices” (Swales, 1990, p. 42). Similarly, Cleuziou and Poudat (2007) admitted that linguistic properties have turned out to be quite efficient to identify and even contrast genres. However, evidence shows that linguistic analysis can be taken for granted if analysts ignore the influence of cultural influences. Thus, one has to address the question of the extent to which authors' language succeeds to reflect their culture.

Cultural Differences

Genres are considered as social actions affected by the complexity and diversity of society. These actions reflect the social conventions and cultural norms of the discourse community. According to Miller (1984), “Genres can serve both as an index to cultural patterns and as tools for exploring the achievements of particular speakers and writers” (p. 165). In fact, the social interpretation of genre carries out the shift from genre as a form to genre as an action. Paltridge (1997) used the term culture as a way to distinguish between genres which actually represent the cultural context and register mediated by the social situation.

Disciplinary Variations

Besides linguistic and cultural differences, disciplinary variation is another dimension which adds to the complexity of genre. According to Samraj (2002), differences in the rhetorical organization manifested in RAs are confined to the nature of the field which takes three forms: applied or theoretical, young fields or fields with historical depth and interdisciplinary or disciplinary fields. To this end, it becomes hard for analysts to stick to “a single organizational framework for a particular genre/ sub-genre” (Samraj, 2002, p. 16). Similarly, Bhatia (2004) pointed out that genre theory is very sensitive to disciplinary variations which may influence generic boundaries within academic discourse.

An interesting piece of research on disciplinary variations has been made by Swales (2004) who discussed disciplinary differences in humanities and science and engineering fields. He speculated that humanists are more “text conscious’ than scientists and engineers who are “much more picky about words and phrases than their humanities colleagues” (Swales, 2004, p. 271). Swales added that humanists are more likely to align their research to their preferred intellectual schools and scholarly traditions instead of disciplines; therefore, disciplinary variations are less noticeable in humanities (Swales, 1990). This claim has been verified by Hyland’s (2006) study of soft knowledge domains and hard knowledge domains led him to the conclusion that, “Disciplines are neither monolithic nor unitary, but loose collectives of specialisms with diverse views, procedures and values, inhabited by individuals with assorted experiences, interests, and influence” (p. 38).

Criticism against Create A Research Space Model

CARS model for RAs introduction gained wide acceptance among academics. The fact that the model is a simple, functional and corpus-based makes it accessible to all researchers, especially novice researchers. Swales (1990) stated that, “It (CARS) primarily reflects research in a big world, in big fields, in big languages, with big journals, big names, and big libraries” (Swales, 2004, p. 226).

Arguments in favor of CARS increase over time and it continued to occupy an important corner of academic discourse. Almost all researchers who adopted CARS model in their studies (Crookes, 1986; Swales, 1990; Lakic, 1997; Shim, 2005; Samraj, 2002, etc.) agreed that this model exhibits a greater degree of flexibility to manage introductions’ linguistic features and rhetorical patterns .

Despite this wide spread-discussion of CARS, a basic criticism has been made by Crookes (1986) who claimed that Swales conclusions are restricted only to those articles that contain reports of previous research. Therefore, his results cannot be generalized to all articles. Moreover, CARS model is based on purely subjective analysis of what Swales himself recognizes. Another debated issue is related to the absence of moves in some introductions which causes a great deal of confusion about the occurrence of obligatory and optional moves (Crookes, 1986). This may threaten the objectivity of the model.

Flowerdew (2014) went further to assume that the three moves developed by Swales do not follow a single progression, rather, they are cycles that are sequenced in recursive ways. This raises doubt about researchers’ ability to use moves in an appropriate way. Flowerdew (2014) discussed another problem concerning the difficulty of distinguishing between moves particularly move 1 and move 2. This view has been supported by Bhatia (2014) who believed that this problem becomes more complicated when Swales (2004) combined the two moves together in his 2004 framework.

Section boundary issues are ranked among the most common problems in CARS model. The fact that there is no explicit way of identifying section boundaries makes it hard for researchers to use this framework (Pho, 2013). Swales did not elaborate whether section division is based on the content itself or on labels used by the authors (Pho, 2013). To this end, coding the text becomes a hard task for analysts in order to distinguish between introduction's moves and steps. Additionally, Bhatia (2014) argued that literature review is a separate part of introduction that provides background information about previous research and should be distinguished by functional aspects of language. He claimed, "If it is true that literature review has conventionally acquired an independent status in research writing, and I strongly believe that it has, then the solution to the problem of distinguishing move 2 from move 1 does not lie in combining the two moves, but in finding adequate linguistic criteria to separate them" (Bhatia, 2014, p. 85).

Although CARS model offers important devices for researchers to understanding and achieving text coherence, some researchers believed that the model still in its infancy and it lacks sufficient details on how researchers can alternate between moves and steps. In light of these inadequacies, it becomes possible to assume that the communicative goals introduced by Swales remain unachievable.

Conclusion

Overall, genre theory has proved useful for analyzing RAs introductions. The rhetorical preference of move analysis of RAs introduction allows to internalize the communicative protocols governing the construction of knowledge in different disciplines and deploy the favored rhetorical strategies resourcefully. Moreover, the focus on linguistic analysis contributes a great deal to identify the communicative purposes and rhetorical boundaries for the realization of introductions moves.

Chapter 5: Research Methodology

Introduction	133
The General Framework of the Study	133
The Interaction Between Qualitative and Quantitative Research Methods	134
Research Methods	137
Discourse Communities	139
Data Gathering Tools	139
Corpus of Academic Research Articles Introductions	139
Description of the Corpus.	140
Corpus-Based Approach to Move Analysis.....	141
Linguistic Features and Discourse Markers.....	144
Researchers' Questionnaire	145
Sample.....	145
Piloting and Validation.	146
Questionnaire Design.....	147
Editors Interview	148
Description of the Interview.	150
Analysis of the Interview.....	151
Conclusion.....	152

Introduction

So far, the study provides a full knowledge about the theoretical background of RAs and their analysis in the light of genre theory. The present chapter discusses the research methodologies and design used in the study. It provides in-depth explanation of the general framework of the study, research methods, research communities and data gathering tools. Besides, the chapter discusses data analysis procedures that are pertinent to evaluate genre theory.

The General Framework of the Study

RA introduction has received considerable interest among researchers and an extensive number of studies is carried out to analyze this writing genre. The fact that introduction reflects researchers' interests and their own research methods makes it the most challenging part of RAs to write. Furthermore, this section requires a complex rhetorical structure that reveals right away the essence of the article. Consequently, there is a keen desire among researchers to come up with a new model that provides useful framework to map introductions with highly sophisticated rhetorical structure.

The present study attempts to examine the structure of RAs introductions published in Algerian journals of scientific research. The investigation is guided by Swales' (1990) CARS model to identify the moves and steps characterizing introductions. The study is important to evaluate the rhetorical structure and linguistic characteristics of introductions produced by Algerian researchers.

In fact, the practical part of the study is an extension to the theoretical framework. It provides data relevant to research questions and objectives addressed earlier in the introduction. Because the main aim of RAs introduction is clarifying the scope of the research, researchers ought to pay more attention to the structure of this part and the kind of knowledge produced

through it. There is a consensus that the best introduction is the one which adheres to rigorous writing standards with respect to structure, language and content.

For the sake of obtaining convenient data that allow to draw more general conclusions to this research, attempts have been made to extend the framework of the study from one discipline to include more detailed considerations of two different academic disciplines. Thereby, the study examines areas of research in Applied Linguistics (representing soft sciences) in comparison to Physics (representing hard sciences) to explore the role of CARS model to capture disciplinary variations.

The Interaction Between Qualitative and Quantitative Research Methods

The combination of qualitative and quantitative methods of research occupies the interest of researchers across social science disciplines. Traditional research was confined to one of these research approaches, whereas, mixing research methods is thought to be of high degree of complexity.

Currently, qualitative approach becomes an adjunct to quantitative approach. Merging the two methods allows a robust and reliable data dissemination. For Foss and Ellefsen (2002), “Qualitative and quantitative approaches provide different, noncompeting knowledge and that different sets of knowledge have equal importance and weight” (p. 247). According to Verhoef (2012), mixing research approaches is important to extend research to include wide array of new and exciting methods of data analysis. Verhoef (2012) put forward five reasons for mixing qualitative and quantitative approaches are:

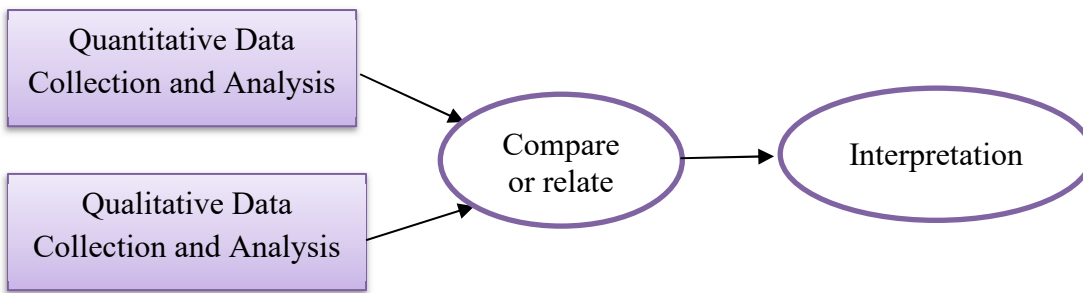
- Confirmation: examine whether qualitative and quantitative data on the same phenomenon coverage, and thus confirm the findings.
- Complementarity: examine whether data from one method elaborate, enhance, illustrate, or clarify the results of the other method.

- Development: use results from one method to help develop or inform the other method. Development broadly includes sampling and implementation, as well as measurement decisions.
- Initiation: seek contradiction, inconsistencies, and new perspectives, rather than consistency, to increase the breadth and depth in inquiry. This is usually applied in areas in which little is known.
- Expansion: extend the range of inquiry by using different methods to broaden the scope of the study.

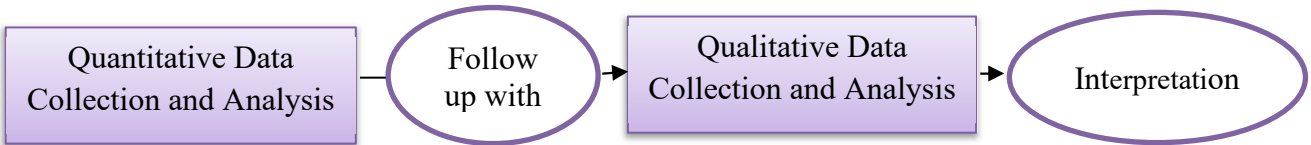
Creswell and Plano (2011) provided six designs of mixed methods research for researchers to organize their research (see Figure 18). The choice of the appropriate design depends on research questions and the type of data needed to address those questions.

The present study adopts the explanatory sequential design (b) which starts with collecting and analyzing quantitative data gathered from corpus-analysis and researchers' questionnaire, then, attention is shifted towards qualitative data gathered from editors' interview. This sequence ensures systematic organization of data, i.e., results of the second phase helps to explain the results obtained from initial quantitative analysis.

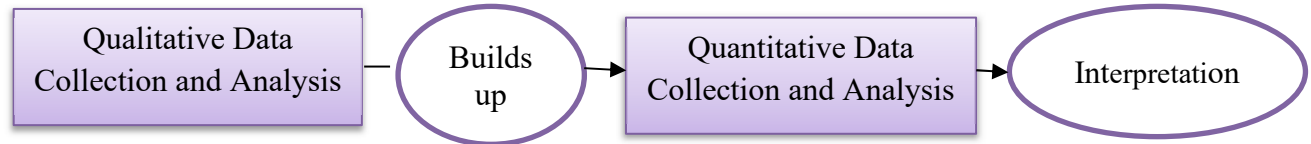
(a) The convergent parallel design



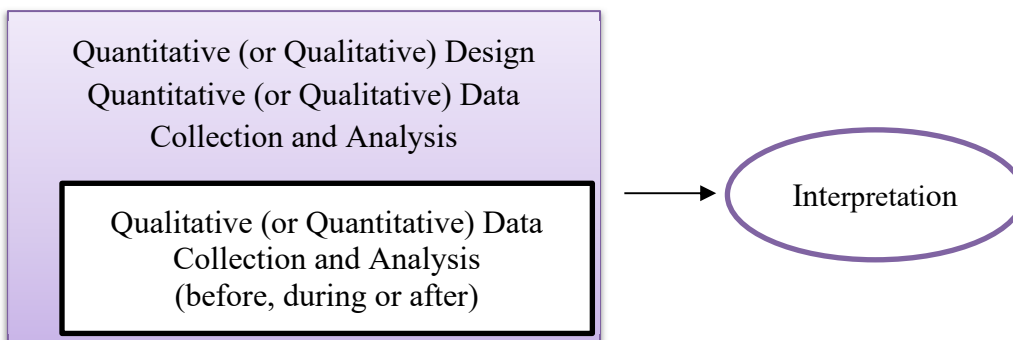
(b) The explanatory sequential design



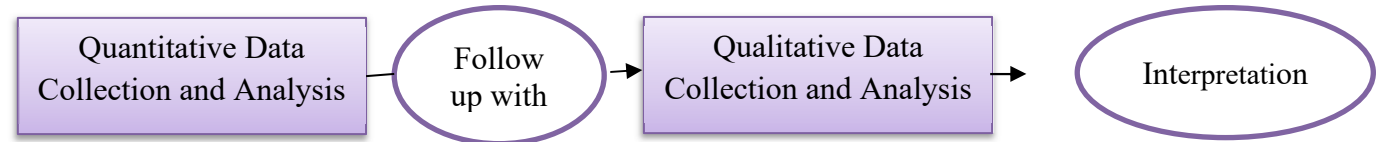
(c) The exploratory sequential design



(d) The embedded design



(e) The transformative design



(f) The multiphase design

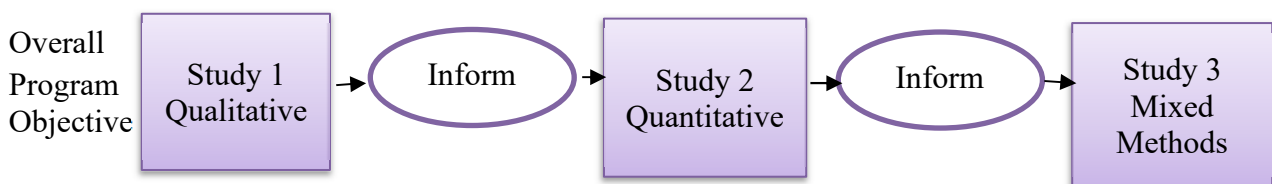


Figure 18. Prototypical versions of the six major mixed methods research designs

Research Methods

The data are subjected to quantitative and qualitative analysis inspired by comparative method of research. Allardt (1990) considered comparative social research as a different type of research stemmed from different and/or particular societies and cultures at different periods of time. According to Esser and Vliegthart (2017), “Comparison allows for the testing of theories across diverse settings and for the evaluation of the scope and significance of certain phenomena, thereby contributing to the development of universally applicable theory (generalization)” (p. 2). In this study, comparison is used to explore cross-disciplinary differences between RAs introductions in applied linguistics and physics in terms of: frequent move sequences, disciplinary descriptions of moves as well as the newly found moves and steps. This helps to identify the main rhetorical units in each discipline and useful expressions researchers adhere to. Moreover, comparison allows to gain insight into the frequently used linguistic markers including logical connectives, hedges, boosters, citations and authorial stance striving to know which discipline is written with less demanding linguistic requirements.

Numerous studies emphasized the idea that the rhetorical structure of RAs introductions is related to the discipline it belongs to, the linguistic as well as the cultural norms according to which it is written (Swales, 1990, Ozturk, 2007, Pho, 2008, Loi & Evans, 2010; Kanoksilapatham, 2011; Saboori & Hashemi, 2013; Behnam & Golpour, 2014). According to Basturkmen (2012), variations in the generic structures of different disciplines could not be identified by the mere comparison of the moves and steps and how they are combined, he stated, “Analysis at this level may be a means to identify distinctions in disciplinary norms in genres which outwardly display similarity but may be less relevant when genres are obviously dissimilar across disciplines” (Basturkmen, 2012, p. 143). A different view adopted by Khamkhien (2015) who considered cross-disciplinary description of rhetorical structure and the characterization of moves as authentic materials in writing for publication. For him,

“Disciplinary variations can lead to the uniqueness of the organizational patterns of each discipline” (Khamkhien, 2015, p. 120).

Soodmand Afshar et al., (2018) fostered the idea that move sequences and their supporting linguistic features contribute a great deal to the dependability of the results obtained through genre analysis of RAs introduction. In their *Genre Analysis of the Introduction Section of Applied Linguistics and Chemistry Research Articles*, Soodmand Afshar et al., (2018) reached the conclusion that, “these differences in the generic structure of the two disciplines can be ascribed to the different requirements, expectations, and norms of the two academic disciplines defined and specified by the members of each community of practice” (p. 207). Latest research on cross-disciplinary genre analysis confirms the possibility to develop different move models for analyzing RAs introduction instead of one model. Motlagh and Pourchangi (2019) concluded that, “The complexity of written genres and even the level of writers in each discipline based on their abilities in writing skill in academic circumstances and environments are determinative factors to the flexibility of moves and steps in functional schematic and rhetorical move structure analyses” (2019).

Initially, the present study follows a corpus-based comparative method. The corpus created here contains two sub-corpora consist of 140 introductions are extracted from articles published in 11 Algerian journals of scientific research between 2011 and 2017. In this research, the choice has been made to study applied linguistics and physics as disciplines. The rationale behind choosing these two disciplines is that a vast number of RAs are published in English language. Therefore, these articles have a higher probability to be read and cited in other works. Moreover, the focus on the two disciplines could potentially help to gain insight into main characteristics of RAs introduction in soft and hard sciences. The results of corpus analysis will be extended by investigating the outcomes of researchers’ questionnaire which would complement the findings of the initial data analysis. Therefore, the questionnaire is of

paramount importance to address Algerian researchers' awareness of the structure of RAs introduction. Additionally, a semi-structured interview is conducted with three editors of Science and Technology Journal, New Materials and Technology Journal and Review of Human Sciences. The interview aims to elicit information about problematic aspects of writing RAs introduction and the impact of introduction on articles' approval. Moreover, the interview reveals some facts about journals' policy analysis of introduction section.

Discourse Communities

Two discourse communities are involved in the construction of texts of this study corpus. The first discourse community encompasses applied linguistics researchers belonging to different English language departments, while the second discourse community includes researchers in physics from different Algerian universities. The research has general objectives that appeal to applied linguistics and physics researchers who differ in terms of their academic background, public goals, and attitudes. Such differences create a great distinction in the writing conventions of the genre under investigation.

Data Gathering Tools

In order to provide a thorough understanding of research problem, the research involves the use of both quantitative and qualitative data collection tools. The results are firstly presented as an analysis of data obtained from corpus-analysis and researchers' questionnaire followed by the analysis of data recorded by the semi-structured interview. Yet, data analysis tools are complementary and they provide in depth explanation of current research.

Corpus of Academic Research Articles Introductions

Corpus analysis is used in this study as a major research data source to identify the degree to which Algerian researchers make use of move-analysis in their introduction writing process. Corpus-analysis is a methodology of discourse analysis that provides a ready data pool to see how a particular language features are used in the text (Braithwaite, 2011). It is a descriptive

and empirical method of research that is distinguished by four main characteristics including: the use of large amount of authentic materials; data-driven, probabilistic computational models; automatic or semi-automatic text analysis and language use in context (Chang & Kuo, 2011).

Arguably, combining quantitative and qualitative methods is emerging as an important methodology in discourse analysis to investigate linguistic phenomena. According to He and Yang (2015), “Corpus analysis qualitative and quantitative linguistic research is becoming a mainstream paradigm in the study of languages. Qualitative research is the basis of quantitative research, and quantitative research makes qualitative research more accurate” (p. 55). Therefore, the two methods have complementary role of qualifying and quantifying research. As far as move-analysis is concerned, Thomas and Chambers (2012) underlined the importance of using corpus-analysis in move analysis to obtain more generalizable description of corpus. The present study aims to add the combination between quantitative and qualitative methods to the analysis of CARS model to reach important conclusions about the implementation of this model.

Description of the Corpus.

RAs (Appendix A, Appendix B) are selected from the archives of Algerian journals of scientific research published by Algerian Universities (see Table 16). The choice of the corpus depends on the class of scientific journals and it includes articles submitted in Algerian Scientific Journal Platform (ASJP). In order to obtain a balanced corpus for the analysis, a random choice of an equal number of articles for the years between 2011 and 2017 was made.

The size of the corpus is limited to 140 RAs introduction taken from different issues. Each of the two sub-corpora comprises of 70 introduction extracted from RAs in applied linguistics and physics. Corpus 1 represents RAs introductions about applied linguistics (Appendix C), meanwhile corpus 2 contains introductions of physics RAs (Appendix D). In fact, the number

of articles is restricted to 70 articles to each discipline which is the maximum number of articles found in ASJP archives especially the archives of physics journals which are very poor.

Applied Linguistics		Physics	
<u>Journal</u>	<u>University</u>	<u>Journal</u>	<u>University</u>
Revue Sciences Humaines	Frères Mentouri Constantine 1	Sciences et Technologie	Frères Mentouri Constantine 1
Al- Athar	Kasdi Merbah Ouargla	Annales des Sciences et Technologie	Kasdi Merbah Ouargla
Social and Human Sciences Review	Hadj Lakhdar Batna 1	Journal of Scientific Research	Bechar University
Revue des Sciences Sociales	Mohamed Lamine Debaghine Setif 2	Journal of New Materials and Technologies	Larbi Ben Mhidi – Oum El Bouaghi
El-Tawassol	Badji Mokhtar Annaba	Synthèse	Badji Mokhtar Annaba
		Courrier de Savoir Scientifique et Technique	Mohamed Khider Biskra

Corpus-Based Approach to Move Analysis.

Corpus analysis is used as a means to present data in an intelligible and interpretable form that fits research aims. Swales' CARS model has been adopted as a research framework for the analysis of the rhetorical structure of applied linguistics and physics introductions. The model serves as a point of departure for NNS researchers particularly novice researchers to construct their research papers and identify its main parts. Moreover, the model boosts researchers' understanding of their professional genre and its requirements.

Corpus-based approach to move analysis is used to show the frequency of occurrence of rhetorical moves in the two sub-corpora and their linguistic realizations. The analysis is based

on Swales' (1990) three-move structure for NNS of English. The basic unit of identifying moves is the sentence. The data are analyzed through counting and tabulating the frequency of occurrence of each move and steps/sub-steps. The analysis procedure consists of four main steps. Initially, articles are scanned for the presence of introduction section. Then, the corpus is inspected, by means of multiple readings to understand introductions rhetorical patterns. Next, introductions are coded independently. The coding scheme of introductions is applied by using the following move-step abbreviations:

Moves	Steps	Abbreviations
Move 1: Establishing a Territory	1. Claiming centrality and/or	1-1
	2. Making topic generalization(s)	1-2
	3. Reviewing items of previous research	1-3
Move 2: Establishing a Niche	A Counter-claiming or	2-1A
	B Indicating a gap or	2-1B
	C Question-raising or	2-1C
	D Continuing a tradition	2-1D
Move 3: Occupying the Niche	1. Outlining purposes or	3-1A
	B Announcing present research (no reference to aim or purpose)	3-1B
	2. Announcing principle findings	3-2
	3. Indicating RA structure	3-3

Note. From "Genre Analysis: English in Academic and Research Settings," by Swales 1990, Cambridge University Press, p. 141.

After coding procedures, the results are written in a table in a way that the comparison between the two coding move patterns can be seen. This allows to generate differences between introductions and determine the move-structure of each discipline. The last step is corpus analysis that identifies introductions' moves and steps and how researchers include them in a

sequence. This step offers a general analysis of the occurrence of moves and the frequency of use of moves-analysis in the two corpora which is calculated as follows:

$$\bar{X} = \frac{\sum xi ni}{\sum ni}$$

\bar{X} = Move

xi = occurrence of steps in moves

ni = occurrence of steps in introductions

In order to further elucidate the structure of introductions, the corpus is subjected to a deeper analysis of the constituent steps of each move and the meta-linguistic features of each step. At this stage of analysis, calculations are made using the following formula:

$$X = \frac{n}{\sum n} \times 100$$

X = Step/ feature

N = step/feature occurrence of step/feature

\sum : Total

Findings are evaluated basing on Swales CARS framework as well Kanoksilapatham (2005) cut off frequency in which a move or step is defined as obligatory as having a frequency of above 60% while if a move or step occurs less than 60% of the corpus, it is considered as optional.

Basing on Swales' CARS model, corpus analysis procedure follows the following steps:

Step 1: General Analysis of Introductions

Step 1 provides a summary and analysis of moves occurrence, number of moves, sequences, order as well as the occurrence of obligatory and optional steps. In fact, this step paves the way for the analysis of all the subsequent sections.

Step 2: Analysis of Establishing a Territory

The analysis of step 2 focuses on highlighting statements that give an insightful view into the topic, its significance and the theoretical framework mapping research problem and

objectives. Also, attempts are made to investigate the relationship between the lexical and grammatical choices characterizing this section.

- Step 3: Analysis of Establishing a Niche

The analysis of step 3 is mainly done to indicate the extent to which researchers succeed to identify a research gap using one of the four options developed in CARS model. Furthermore, the analysis aims to check how language is used to serve the communicative purpose of this section that is weakening or completing prevailing assumptions.

- Step 4: Analysis of Occupying the Niche

The analysis of the last step measures researchers' ability to increase research explicitly. The analysis draws upon the relationship between the lexico-grammatical characteristics and the context in which it is used.

Linguistic Features and Discourse Markers.

This study looks at the structural organizations of RAs introductions (macro level), as well as the linguistics features representatives of these structures (micro level). Basing on Swales' (1990) summary of previous research on linguistic features, eight (08) main categories of linguistic features have been recognized: verbs, tenses, conjunctions, quantifiers, negatives, questions, reporting statements, contrastive statements and authorial comments. Citations are recognized as another linguistic feature for introductions' move evaluation. Corpus-analysis focuses on two types of citations are the integral and non-integral citations. Integral citations is the first type where the name of the author occurs in the actual citing sentence. Usually, this type is used to indicate an explicit grammatical role in the sentence that carries out writers' purpose. In return, non-Integral citations are placed between parentheses and they have an implicit grammatical role in the sentence to diminish the confrontational tone of the paper.

This study summarizes the distribution of linguistics features in genre moves of applied linguistics and physics introductions and how these features interact to perform its communicative goals. In fact, linguistic analysis of introductions is essential to raise researchers' awareness of the distinction between introduction section and other sections of the article. Moreover, the analysis allows to identify the distinctive linguistic features of introduction in soft and hard sciences.

Researchers' Questionnaire

Questionnaire is one of the principle data collection tools that collects quantitative data about thoughts, experiences and attitudes. Researchers' questionnaire is administered via e-mail to reach a large number of participants across the two disciplines (see Table 18). In fact, questionnaire administration is the major challenge for this research. The fact that meeting and handing out the questionnaire to all researchers remains unattainable goal, email facilitates the process of contacting researchers and collecting some of their individual responses.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Cost-effective • Efficiency in reaching large samples • Access to hard-to-reach people • Self-administered- no interviewer bias • Limited use of exhibits is possible 	<ul style="list-style-type: none"> • Low return rate • Nonreturn bias: those who return a mail questionnaire may not present the sample as a whole • No control of who fills out the questionnaire • No ability for sequential disclosure of information • Slow-response • Hard to pretest • Question limitations

Sample.

The study was operationalized in Physics and English departments at different Algerian Universities. Thirty (30) researchers participated in this research (see Table 19). The first group involves fifteen (15) researchers specialized in applied linguistics and the second group

encompasses fifteen (15) researchers in physics. Due to the unknown representation of the population, researchers are selected randomly as representatives of the discourse community they belong to.

Group 1		Group 2	
<u>University</u>	<u>Number of Researchers</u>	<u>University</u>	<u>Number of Researchers</u>
Abdelhamid Mehri University -Constantine 2-	3 researchers	Hadj Lakhdar -Batna 1-	3 researchers
University of Algiers 2	2 researchers	Ferhat Abbas -Setif 1-	2 researchers
Mostafa Ben Boulaid-Batna 2-	2 researchers	Badji Mokhtar -Annaba-	1 researcher
Mohamed Lamine Debaghine -Setif 2-	2 researchers	Frères Mentouri -Constantine 1-	1 researcher
Larbi Ben M'Hidi -Oum Elbouaghi-	1 researcher	Saad Dahlab -Blida-	1 researcher
Abderahmane Mira -Bejaia-	1 researcher	Abderahmane Mira-Bejaia-	1 researcher
Abbes Laghrour -Khenchela-	1 researcher	University of Algiers 1	1 researcher
Abou Bekr Belkaid -Tlemcen-	1 researcher	Mouloud Mammeri -Tizi Ouzou-	1 researcher
Kasdi Merbah -Ouargla-	1 researcher	Kasdi Merbah -Ouargla-	1 researcher
Mohamed Khider University -Biskra-	1 researcher	Hamma Lakhdar-EL Oued-	1 researcher
		Mohamed-Boudiaf El Mnaouar -Oran-	1 researcher
		Larbi Tébessi -Tebessa-	1 researcher

Piloting and Validation.

Ideally, every questionnaire should undergo a pilot study to verify the acceptability, clarity and validity of questions. Before starting actual data collection, a full pilot has been carried out with 12 doctoral students in the department of English at Batna 2 University and Physics

department at Batna 1 University. Because face-to-face questionnaire provides the opportunity for questions to be clarified and verified, the pilot study is carried out at Batna University to ensure close contact with researchers and to identify practical problems in implementing the questionnaire. The participants are requested to read the questionnaire carefully then answer the questions and highlight difficult questions. This step of questionnaire analysis allows to identify problems like unclear questions, unfamiliar words, ambiguous syntax, missing words and unwanted answers. On this basis, many questions have been added (Q3, Q6, Q23), others have been reworded (Q5, Q9, Q11, Q13) while some questions have been deleted.

Questionnaire Design.

Researchers' questionnaire (Appendix E) comprises 23 questions divided into six sections; each section includes questions pertaining to the structure of introduction and its main features, besides some general information and researchers' attitudes towards their RAs Introductions. Section one accounts for researchers' general information including their degree (Q1), number of published articles (Q2) and number of citations (Q3). Section two is entitled Background to Research Articles (RAs) Introductory section and it seeks to gather information about the most difficult section of RAs (Q4), researchers' understanding of the general purpose of introduction (Q5) in addition to its structure and the basic steps constructing RA introductions (Q6 and Q7). Another question (Q8) aims to identify obligatory steps in RAs introductions in the two fields of Applied Linguistics and Physics besides their main characteristics (Q9). The third section is devoted to Introduction Opening Statements including the use of statements of significance (Q10), general statements (Q11) and literature review (Q12). Additionally, attention is placed on lexical categories and linguistic exponents utilized by researchers in each discipline (Q13). The wording of research problematic was the subject matter of section four which seeks to explore the occurrence (Q14) and the reason of integrating a research problem statement in the introduction (Q15). Another question (Q16) asks about the nature of problematic statement in

addition to the type of data used in deriving problematics (Q17). Section five is devoted to ending statements (Q18 and Q19) and the position of purpose statement in the introduction (Q20). The last section gives insight into researchers' attitudes towards RAs introductions (Q21), the impact of academic discipline on writing introduction (Q22) as well as difficulties researchers encounter when writing introductions.

Editors Semi- Structured Interview

Interview is another research tool for collecting qualitative data and checking the accuracy of the impression researchers have gained through observation. The most satisfying definition of interview was developed by Patton (1991) who stated,

We interview people to find out from them those things we cannot directly observe. The issue is not whether observational data is more desirable, valid, or meaningful than self-report data. The fact of the matter is that we cannot observe everything. We cannot observe feelings, thoughts, and intentions. We cannot observe behaviors that took place at some previous point in time. We cannot observe situations that preclude the presence of an observer. We cannot observe how people have organized the world and the meanings they attach to what goes on in the world... The purpose of interviewing, then, is to allow us to enter into the other's person's perspective. (p. 196)

For He (2013), interviews are time-consuming data gathering processes to gain access to inaccessible data. The expert plays a vital role in the organization of opportunities that allow him/her to extend the area of research and obtain information from people who share the same scientific background. He (2013) identified three phases of the interview. The first phase is known as behavioral interview that examines candidates' experience in addition to research summary. The technical interview is concerned with candidates' technical ability to solve some coding interview problems and finally, the Q/A time which gives candidates the opportunity to ask some questions that show their interest in the topic.

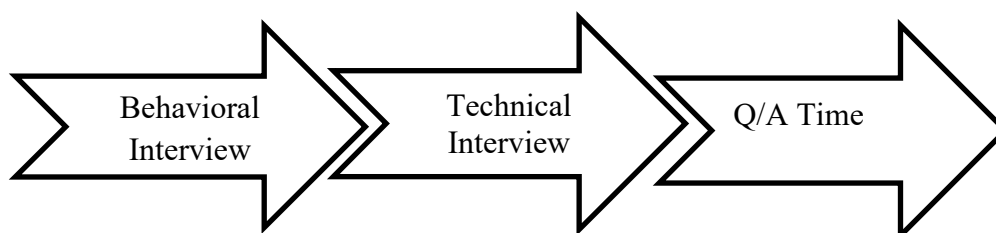


Figure 19. Three Phases of a Round of Interview (Adopted from He, 2013, p. 3)

Interviews take different forms. They can be structured, semi-structured or unstructured. Differences between the three types of interviews are clarified by Laws et al., (2003) in the following table:

Structured	Semi-structured	Unstructured
Useful when research questions are very precise and quantified answers are needed.	Useful when some quantitative and some qualitative information is needed.	Useful to help set the research focus and explore new or sensitive topics in depth.
Questions must be asked in a standard way.	Questions may be asked in different ways but some questions can be standard	More like a conversation, no standard questions, just topic areas.
All questions must be asked.	Questions can be left out and others added.	
Most questions have present answers to choose between.	Include a mix of questions- some open and some closed.	Follow or ask the respondents to establish what is important to discuss.
Results are easy to analyze	Analysis is fairly straightforward.	Avoid questions which can have response as a simple "Yes", "No".
Follow many of the same rules a questionnaire.		Analysis requires time and skill.
		Follow many of the rules as focus groups.

Note. From "Research for development: A Practical guide," by Laws et al., 2003, Sage, p.101.

The choice of semi structured interview for this study is determined by the objective of research that is collecting in-depth perspectives of editors' assessment of the writing process of

introductions in the two disciplines as well as main problems Algerian researchers encounter with this section.

Description of the Interview.

The interview (Appendix F) is conducted with two editors of two science journals for and one editor of social sciences journal about 45 minutes. Because of a lack of free time due to a demanding full-time job, only three editors (out of six) agreed to give half to an hour from their busy schedules to set up the interview. Basing on their editorial experience, competence and thoroughness, editors' contribution to this research stands squarely on their responsibility to evaluate the content of scientific manuscripts basing on reviewers' critical comments and decide about their disposition, i.e. accept, revise or reject. The contribution of editors in this study is necessary to highlight main challenges encountered by researchers in the two disciplines when writing RAs introduction and the extent to which researchers are familiar with generic structure of RAs introduction in their academic discipline. Responding to the request of two editors who said that they may feel most comfortable expressing their ideas in French or Arabic languages rather than English language, the interview is held in French with the first interviewee, the editor of a Science and Technology Journal. Meanwhile the second editor of New Materials and Technology Journal prefers to answer in English and to send the answers via mail because of his work obligations (Appendix G). The third interviewee, the editor of Review of Human Sciences, sticks to the Arabic language. The two interviews made in French and Arabic languages are translated latter into English to be used as part of data analysis.

Editors are asked to answer eight questions pertaining to writing RAs. They are first asked about main difficulties encountered Algerian researchers when writing scientific articles (Q1). The second question deals with editors' opinion about the most problematic sections of RAs (Q2). This question paves the way to know about the relative difficulty of

introduction's section in the two disciplines. Another question (Q3) accounts for problems of writing in English language and its impact on articles' evaluation. The fourth question (Q4) asks about the objectives of introduction and the extent to which it reflects the content of articles (Q5). Question six aims to elicit information about reviewers' critical comments on RAs introduction. Additionally, attention is drawn to the impact of academic discipline on researchers' language (Q7). Finally, editors are asked to provide practical recommendations to avoid erroneous introductions (Q8).

Analysis of the Interview.

The analysis of the interview entails seven steps proposed by Kvale (1996) who attempts “to give an overview to an entire interview investigation, to outline the interactions among these stages, and to trace the interconnectedness of the practical issues of method and the philosophical conceptions of knowledge and truth” (p. 89). The ordered sequence of stages below helps to frame data and adjust the questions and the direction of the interview.

- **Thematizing:** the theoretical investigation of the theme and investigates the purposes of the investigation. It addresses three main questions are: why (purpose of the study); what (pre-knowledge of the subject matter) and how (method).
- **Designing:** research plan and its methodological design. This step helps to select the population taking into consideration the intended knowledge as well as the moral (ethical) implications of the study.
- **Interviewing:** basing on a reflective approach to the knowledge sought and the interpersonal relations of the interview situation.
- **Transcribing:** the transition from oral speech to written text. The amount of transcribing depends on the nature of knowledge as well as time factor which is affected by the quality of the recording as well as the typing experience of the transcriber.

- **Analyzing:** the method of analysis is based on the topic and purpose of investigation. Kvale (2008) developed two approaches of the analysis of interviews are coding and categorizing. While coding refers to keywords or short sequences that permit identification of a statement, categorization is used to reduce the number of long interview statements to few categories presented quantitatively in tables and figures.
- **Verifying:** the generalizability, reliability and validity of interview findings.
- **Reporting:** presenting the findings of the interview taking into consideration the ethical aspects of the investigation. (Kvale, 1996)

Kvale (2008) added that interview questions can be evaluated in terms of thematic and dynamic dimensions. The thematic dimension is concerned with knowledge production. It is related to the question *What* of an interview. For Kvale (2008), the choice of research questions and the way of asking them is very important to conduct an interview. Spontaneous situations are more likely to obtain unexpected answers from the interviewee; whereas, structured situations are more appropriate for defined structures and processes. Dynamic dimension is related to the interpersonal relationship in the interview that answers the question *How* of an interview. This dimension is presented through positive interaction and trusting communication which motivate the interviewee to speak in untroubled fashion (Kvale, 2008).

Conclusion

The present chapter is devoted to the research methodologies of the study placing special emphasis on research methods as well as research tools. The main concern of the chapter is to clarify the choice of research methods and how the interaction between them would serve research objectives and outcomes. Moreover, attempts are made to offer a practical framework for applying knowledge presented in the literature to obtain convergence results.

DATA ANALYSIS AND DISCUSSION

Chapter 6: Data Analysis and Discussion

Introduction	155
Corpus Analysis	155
General Analysis of Introductions	155
Analysis of Move 1	160
Analysis of Move 2	181
Linguistic Indicators of Gap	187
Analysis of Move 3	204
Researchers' Questionnaire	219
Analysis of Section One: General Information	219
Analysis of Section Two: Background to Research Articles (RAs) Introductory Section	223
Analysis of Section Three: Introduction Opening Statements	231
Analysis of Section Four: Writing a Research Problem	237
Analysis of Section Five: Introduction Aims and Structure	241
Analysis of Section Six: Researchers' Attitudes towards RAs Introductions	244
Editors' Interview	248
Difficulties in Writing RAs	248
Problematic Sections	250
Language Problem	250
Objectives of Introduction	252
Introduction and Articles' Content	253
Reviewers Critical Comments	254
Language and Academic Discipline	255
Editors Recommendations	257
Comparison and Discussion of the Results	260

DATA ANALYSIS AND DISCUSSION

Conclusion..... 264

Introduction

Because any research requires identifying problems in current practice, the present chapter offers in-depth analysis and interpretation of quantitative and qualitative data. First, the chapter concerns itself with the statistical analysis and comparison of data obtained from corpus investigation. Then, attention is shifted to the results obtained from researchers' questionnaire to examine researchers' awareness of the structure of RAs introduction and the extent to which their answers are compatible with the findings of corpus analysis. Finally, the chapter accounts for the qualitative analysis of three experienced editors verbally reported views on RAs introduction.

Corpus Analysis

Corpus analysis is divided into four sections. The first section offers an analysis of the general structure of introductions in the two disciplines. This is followed by the analysis of move 1 (M1), its steps and linguistic features. The third section is devoted to the analysis of the rhetorical structure and linguistic patterns of move 2 (M2) then, the last section is devoted to the analysis of move 3 (M3).

General Analysis of Introductions

Move	Applied Linguistics Corpus 1		Physics Corpus 2	
	Occurrence	% (\approx)	Occurrence	% (\approx)
M1	104	50	136	67
M2	59	28	68	22
M3	57	82	69	75

The comparison of RAs introduction written by applied linguistics and physics researchers shows fairly similar results of moves occurrence. The examination of Table 21 above reveals that 50% of applied linguistics introductions use M1 in comparison with 67% of introductions in physics. Surprisingly, data show low usage of move 2 in the two corpora (28 and 22%, respectively). Meanwhile, move 3 has the highest percentage of occurrence in corpus 1 (82%)

and it sets to 57% in corpus 2. The analysis of move occurrence indicates that the only obligatory move in corpus 1 is M3 comparing with M1 and M3 in corpus 2 (>60%).

Table 22 <i>Frequency of Moves-analysis Use</i>							
Corpus 1				Corpus 2			
<u>Number of Articles</u>	<u>Moves Occurrence</u>	<u>% (≈)</u>	<u>Number of Articles use Moves-analysis</u>	<u>Number of Articles</u>	<u>Moves Occurrence</u>	<u>% (≈)</u>	<u>Number of Articles use Moves-analysis</u>
70	220	53	37	70	273	54	38

Table 22 illustrates the overall number of articles which opted to move-analysis of introduction. There are 53% of introductions in corpus 1 which incorporate move system (translating into 37 introductions out of 70). Comparatively, 54% of introductions (translating into 38 introductions out of 70) in corpus 2 use move analysis. Yet, corpus-analysis reports that almost half of articles in both disciplines are based on move structure of RAs introduction. In fact, the number of articles which do not use move analysis raises doubt about researchers' adherence to a particular writing model in writing introductions.

Table 23 <i>Number of Moves</i>				
<u>Categories</u>	Corpus 1		Corpus 2	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
One Move	06	08.57	08	11.42
Two Moves	21	30	32	45.71
Three Moves	41	58.57	28	40
No Introduction	02	02.85	02	02.85
Total	70	100	70	100

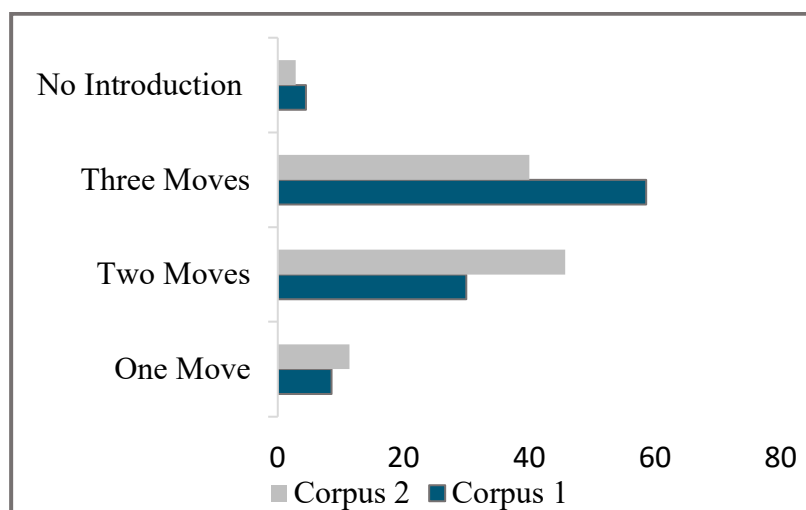


Figure 20: Number of moves

The analysis of corpus 1 shows that most introductions consist of three moves (58.57%). The number of introductions consisting of two moves is 30%. Only 8.57% of introductions are made up of one move and 2.58% of articles without introduction (see Figure 20). In contrast, results reveal that most introductions in corpus 2 (45.71) involve two moves and a fairly similar number to those which have three moves (40%). A Low rate represents one move (11.42%) and no move introductions (2.85%). The frequency of moves occurrence clearly indicates that there is a significant difference in terms of move use across the two disciplines. Most researchers opted to three-move schema as a dominant move structure for applied linguistics introductions and two-move schema for physics introductions.

Move Sequences			
	<u>Corpus 1</u>		<u>Corpus 2</u>
M1+M2+M3	25	M1+M2+M3	16
M1+M3+M2	07	M1+M3+M2	01
M2+M1+M3	03	M2+M1+M3	01
M1+M2	15	M1+M2	07
M1+M3	04	M1+M3	24
M2+M3	01	M2+M3	00
M3+M1	01	M3+M1	01
M1	02	M1	07
M2	02	M2	00
M3	02	M3	01
M1+M2+M3+M2	05	M1+M2+M1+M3	05
M1+M2+M3+M2+M3	01	M1+M2+M3+M1	05
No Introduction	02	No Introduction	02
Total	70	Total	70

As far as move sequences are concerned (Table 24), the analysis of the two corpora shows that the optimal sequence of moves is found to be M1+M2+M3 in corpus 1 (16 introduction). Additionally, a considerable number of introductions in the same corpus follows the sequence M1+M2 (15 introduction). This comes as opposed to corpus 2 where sequence M1+M3 is fairly common (24 introduction). Although the sequence M1+M2+M3 is the commonly move

patterns in both disciplines, it is clearly shown that a good number of introductions in corpus 2 does not register the occurrence in M2.

<u>Categories</u>	<u>Corpus 1</u>		<u>Corpus 2</u>	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Yes	43	61.42	30	42.85
No	25	35.71	38	54.28
No Introduction	02	02.85	02	02.85
Total	70	100	70	100

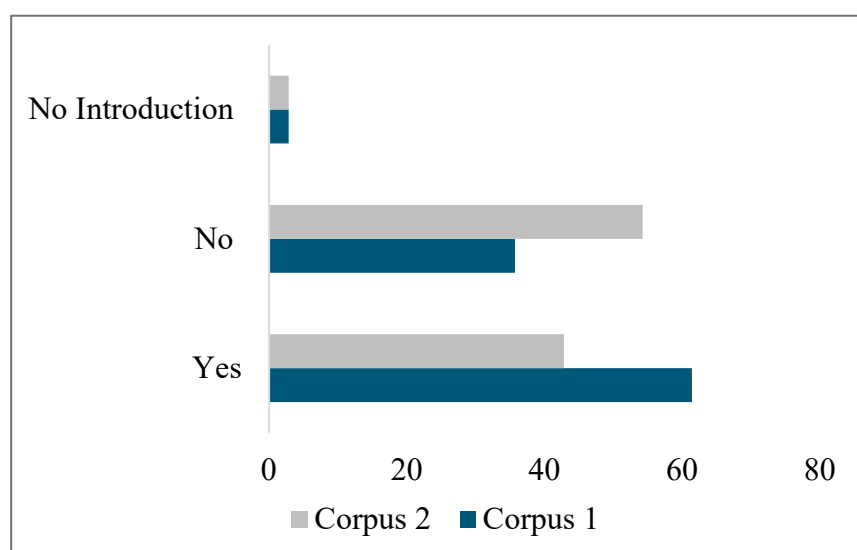


Figure 21. Order of moves

Figure 21 shows that 61.42% of introductions in corpus 1 are executed in the proper move order of CARS model while 35.71% of them do not adhere to the expected order of moves. Corpus 2 has a comparatively low rate of introductions (42.85%) which maintain move sequence scheme; the latter which has been violated in 54.28% of the corpus. Finally, both corpora have equal ratios of articles without introduction (02.85%). In fact, the absence of M2 in most physics introductions impacts the distribution of moves across corpus 2. This move has a significant role to determine cyclical pattern which emphasized the explicitly rhetorical nature of introductions.

Steps	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Obligatory Steps	05	07.14	11	15.71
Optional Steps	28	40	15	21.42
Both	35	50	42	60
No Introduction	02	02.85	02	02.85
Total	70	100	70	100

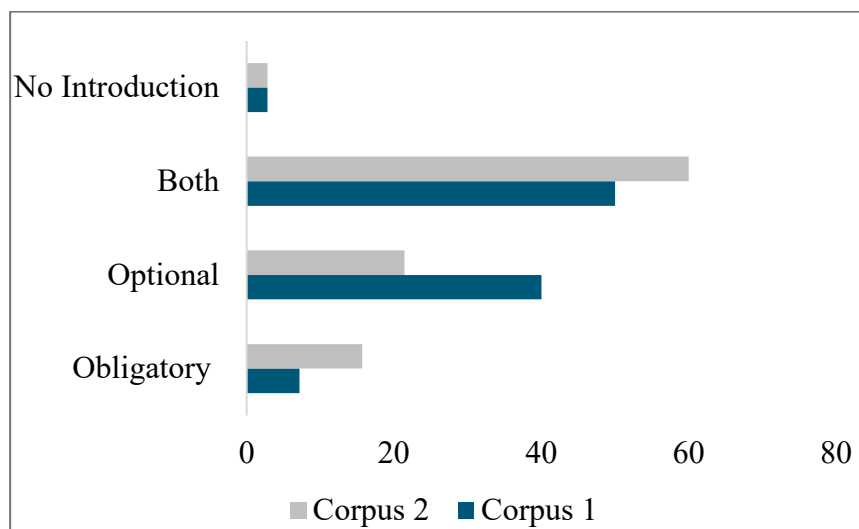


Figure 22. Occurrence of obligatory and optional steps

As far as the occurrence of optional and obligatory steps is concerned, the two corpora yield different results (see Figure 22). 50% of introductions in corpus 1 consist of both obligatory and optional steps, 40% of them are made up of only optional steps and 7.14% have only obligatory steps. Correspondingly, 60% of introductions in corpus 2 include both obligatory and optional steps, 21.42% of them use optional steps and 15.71% are realized via obligatory steps. The alternation between optional and obligatory moves in the two corpora reflects the wide variety of expressions used by researchers to accomplish the rhetorical purpose that each move serves. Unlike corpus 2, the high occurrence of optional steps in corpus 1 reveals a great deal about researchers discourse competence to process language at a level beyond of a single sentence.

Analysis of Move 1

<u>Steps</u>	<u>Corpus 1</u>		<u>Corpus 2</u>	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
1.1	31	44.28	33	47.14
1.2	39	55.71	40	57.14
1.3	34	48.57	63	90

As far as M1 steps are concerned, corpus analysis reveals that step 1.2 is the widely used step in corpus 1 (55.71%), then step 1.3 with an average of 48.57% and finally step 1.1 (44.28%). Conversely, it is clearly illustrated in table 27 that step 1.3 gained more relevance in corpus 2 (90%) comparing with step 1.2 (57.14%) and step 1.1 (47.14%). Yet, results show noticeable differences in the choice of steps in the two disciplines which affects the rhetorical pattern of introductions in each corpus. Moreover, results indicate that there is no obligatory step in corpus 1 for M1 (>60%), however, step 1.3 is the only obligatory step in corpus 2 that occur in more than 60% of introductions.

<u>Statements</u>	<u>Corpus 1</u>		<u>Corpus 2</u>	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Interest	09	29.03	12	36.36
Importance	11	35.48	07	21.21
Topic Prominence	06	19.35	08	24.24
Standard Procedure	05	16.12	06	18.18
Total	31	100	33	100

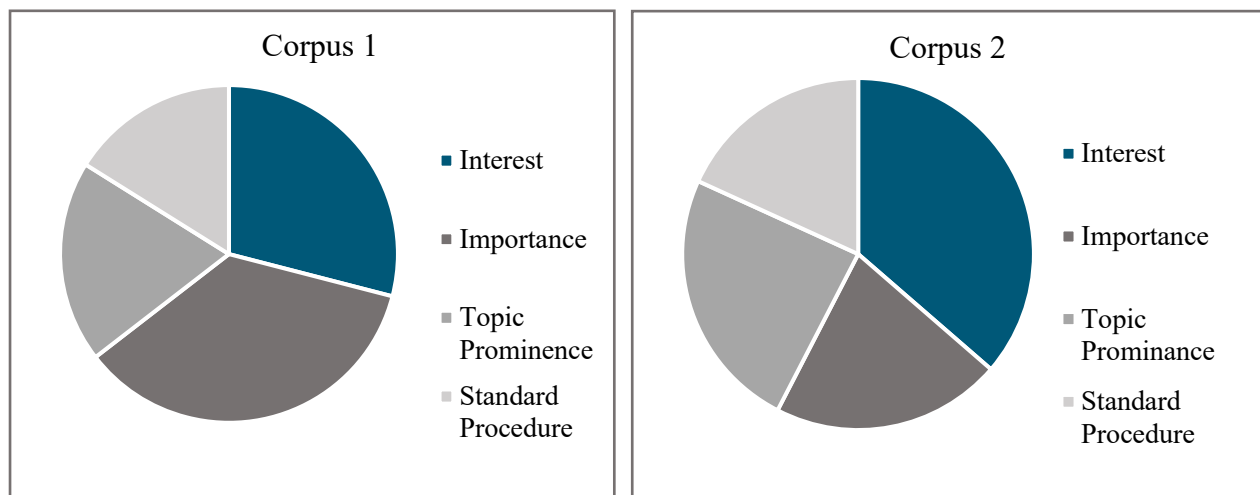


Figure 23. Occurrence of claiming centrality statements

Although step 1.1 has a modest use in both corpora comparing with the other steps, this step is generally used to show the significance of the topic and its contribution to the progress of the discipline (see Figure 23). The analysis of corpus 1 shows that most applied linguistics introductions begin whether by indicating topic importance (35.48%) like in statements a, b, c, d or topic interest (29.03%) such as statements e, f, g, h.

- a. The English language enjoys *a great importance* as a world language. It is spoken now by more than 508 million people. No one can consider himself as part of this globalization if he does not master two things: English and computing. (Article 27)
- b. The development of education depends on the development of studies that keep pace with the modern era. School *has become the most important* educational institution after the family because it bears the responsibility of social upbringing. (Article 32)
- c. In the field of teaching and learning the foreign language, some issues *are vital* from the learning process... (Article 33)
- d. Nowadays, in a world where English is used almost in every field because of the *communicative importance* it represents, teachers in all educational institutions mainly

in secondary schools have to move forward toward a more developed and updated teaching process. (Article 53)

- e. Gathering together as teachers, students and educationalists is always a good opportunity to **raise issues and questions of common interest** to generate debate and discussion. (Article 21)
- f. Greater than ever before, in the 21st century, people escalating access to the World Wide Web, the growth of contacts between people from different cultural and linguistic settings by means of advances in technology and the increasing mobility of people worldwide *have resulted in a growing recognition* for the need for an intercultural focus in language education as a necessity rather than an option. (Article 34)
- g. Sequencing became *an explicit research interest* in English language teaching (ELT) after the methodological changes brought about under Communicative Language Teaching (CLT) against the structural approaches. (Article 50)
- h. Early in my teaching career I was swept along by the communicative language teaching approach (CLT) with its focus on providing learners with opportunities for authentic communication, and *was very concerned with the issue* of grammar instruction for me time. (Article 59)

It is noticed that the opening statements of applied linguistics introductions is of such a broad and general nature that brings awareness of some topics which are rarely or superficially addressed. Step 1.1 is often extended over several sentences (1 to 3 sentences).

Topic prominence and standard procedure statements have usually been modest in corpus 1 (19.35% and 16.12%, respectively). Topic prominence statement (Statements i, j) is mainly used by applied linguistics researchers to indicate that there is a knowledge base or a general conviction shared of the whole discourse community.

- i. *It is commonly believed* that each of these trends is contributive to the establishment of an applied metacognition. (Article 1)
- j. Despite the fact that the new triggers of technology have introduced multiple means into the classroom settings and allowed teachers and learners to make use of them and reach a fruitful interaction, *published textbooks are still the most commonly used* source for most instructional situations. (Article 42)

Statements indicating standard procedure (K, l) are used solely to indicate that a particular method is adopted and followed routinely.

- k. Nowadays, *the wide spread use* of technology and the net have resulted in a generation that is completely different from the old generations in terms of their life style. (Article 45)
- l. Two *dominant modes of translation have been used* in the distribution and consumption of filmic productions worldwide, naming dubbing and subtitling. (Article 5)

In corpus 2, a good number of introductions (36.36%) begins by indicating topic interest to call readers' attention to subtle details (see Table 28). Unlike corpus 1, the opening statements in corpus 2 are more precise and direct. Examples of statements indicating interest are cited below:

- m. The biological or chemical water pollution *has been an alarming increase in the last 50 years* due to the intensification and diversification of industries. (Article 11)
- n. Photocatalysis *has attracted much interest* because of its potential application in clean energy sources to degrade organic pollutants from water. (Article 14)
- o. In recent years, renewable energy *regains serious interest* in most developed countries. (Article 18)
- p. Among the oxides, ZnO *has gained substantial interest* in the research community. (Article 19)

- q. Heat and mass transfer driven by natural convection along a surface *have received considerable attention in recent years* because of their importance in wide range of scientific field such as biology, oceanography, astrophysics, geology, chemical processes and crystal-growth techniques. (Article 42)

Table 28 shows that indicating topic prominence is the second common opening statement used by physicists to indicate topic familiarity (24.24%). Topic prominence statements emphasize the idea that the topic is based on extensive research and previous feedback like:

- r. Films and devices based on a wide band gap tin oxide semiconductor *are largely studied* due to its several properties. (Article 10)
- s. Laminar mixed convection between two concentric pipes *has been studied* by several workers. (Article 34)
- t. *Based on latest researches*, transparent conductive oxides (TCO) films of semiconductor materials *have used in various applications in science and technology*. (Article 53)

Indicating importance occupies weak position in corpus 2 (21.21). Only few opening statements are used to indicate topic importance (Statements u, v, w).

- u. Heat and mass transfer and fluid flow induced by double diffusive natural convection in fluid saturated porous media have been the object of considerable efforts *owing to their practical importance in many engineering applications* such as the migration of moisture through air contained in fibrous insulations, chemical reactors and transport of contaminants in saturated soil and electrochemical processes. (Article 39)
- v. During the last few years, noncommutative (N.C.) Seiberg-Witten (S.W.) space-time geometry *has played an important role* in understanding various phenomena for example in particle physics and cosmology. (Article 40)

- w. The contact between silicon and metal *plays an important role* in integrated circuit technology. (Article 58)

Statements indicating standard procedure (Statements x, y) have also a low average number of occurrences (18.18%) comparing with the other statements. Corpus 2 analysis shows that identifying standard procedures is not common in physics' introductions. Rather, researchers are more concerned with studying complex phenomena which are extremely questionable.

- x. The use of baffles and fins in channels *is commonly used* for passive heat transfer enhancement strategy in single phase internal flow. (Article 6)
- y. The lead zirconate titanate materials $\text{Pb}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3$ (PZT) of a perovskite-type represented by the formula ABO_3 , *have been extensively used* for the piezoelectric applications such as capacitors, sensors, actuators and other high piezoelectric devices. (Article 59)

Statements	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Statement about Knowledge or Practice	11	28.20	08	20
Statement about Phenomenon	28	71.79	32	80
Total	39	100	40	100

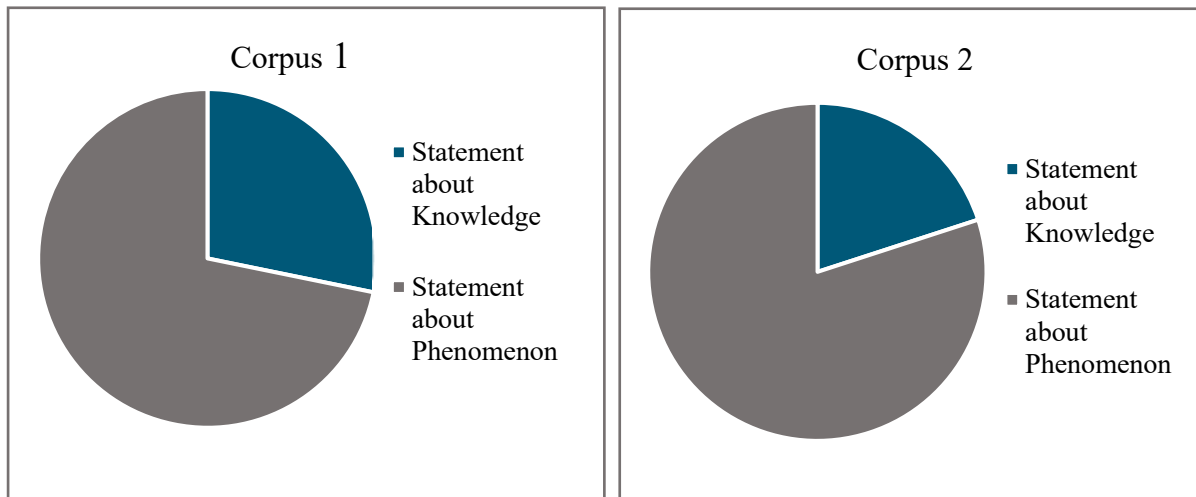


Figure 24. Occurrence of topic generalization(s) statements

Step 1.2 gained substantial interest in corpus 1. Usually, this step allows the author to use a kind of neutral wording to fully gain ground in the topic. Most introductions in corpus 1 (71.79%) use this step to express a strong tendency for a given phenomenon and emphasize its complexity. Examples:

- a. **Text selecting** for literary reading in foreign languages context is to some extent **a very crucial issue** for both teachers and learners. (Article 30)
- b. **Writing** is perceived as **a complex skill** involving a number of steps as well as linguistic and non-linguistic components. (Article 49)
- c. With the advent of technological devices, **cheating has become omnipresent in our classrooms**. This academic misbehavior, though considered illogic, immoral, and even sinful for some students, has invaded schools and is destroying the ethics of education. (Article 52)

- d. **British English**, which is the original variety from which other forms have developed, is **currently be challenged** by American English. (Article 64)

In return, Figure 24 shows that few introductions (28.20%) use step 1.2 to give an insight into the state of the topic and its contribution in current research like:

- e. Most **current tests of oral proficiency** have the same deficiencies, and many of the measures used by the teachers share the problem of subjectivity. (Article 38)
- f. The use of **Social Network Sites** especially **Facebook**- has become a feature of the secondary and university learners. (Article 45)
- g. Introducing translation officially in distinct exercises within English textbooks **over the Algerian middle and high school cycles in current use** has definitely been done not only deliberately but purposefully as well. (Article 66)

Unsurprisingly, Figure 24 shows that 80% of introductions in corpus 2 are devoted to describing scientific phenomena and their complexity (Statements h, i, j, k, l, m, n) more than displaying their current state.

- h. **Vermiculite is a layered phyllosilicate** (type 2:1 or TOT), its sheet is an octahedral layer (type of Mg, Al and Fe) sandwiched between two tetrahedral layers (type of Si and Al). (Article 8)
- i. **III-nitrides compound semiconductors (GaN, InN, AlN)** and their alloys have excellent physical properties, mainly, good thermal conductivity and high stability under extreme conditions of irradiation. (Article 12)
- j. According to the source of radiation, there are two types of radiation sources, natural and artificial. **The natural radiations** also classify into cosmic and terrestrial radiation, all of them, cause internal and external exposure to the environment. (Article 26)
- k. The most widely used supercritical fluid is **carbon dioxide** because it is nontoxic, nonflammable and relatively inexpensive, and possesses reasonable critical properties

($T_c=30^\circ\text{C}$ and $P_c = 72\text{atm}$) as well as a high solvent power for a wide range of nonpolar and intermediately polar organic compound. (Article 29)

- l. ***A Solar Power Plant System (SCPPS)*** is a natural driving power generating system. It can convert solar energy first into thermal energy then into kinetic energy finally into electrical power. (Article 33)
- m. ***Plasma*** is a medium in which a number of neutral molecules is ionized creating a sufficient number of free charge carriers to affect electromagnetic properties of the gas. (Article 41)
- n. ***Mercury Cadmium Tellurium (MCT-HgCdTe)*** has been proposed as a material with favorable properties for use in infrared photo-detectors, which represent a physical process with huge number of applications: night vision, civilian and medical imaging, etc. (Article 51)

Statements about current state of knowledge are certainly less prominent in corpus 2 (20%). It is apparent that introduction of physics' articles does not contribute a great deal to the current state of knowledge on the topic (Statements o, p), rather, researchers are more interested in presenting topics as distinct physical phenomena.

- o. ***More recently there has been intense interest*** in using the micro-pulling-down method for the growth of shaped crystals fibers in a wide variety of domains, especially for laser, medical and optical application. (Article 9)
- p. ***In recent years***, the Plasma Display Panels (PDP) are replacing the conventional color television. ***In phosphor area today***, top priority is to replace the high performance expensive rare earth activated phosphors with cheaper equivalent materials. (Article 50)

Citations	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Integral	06	17.64	07	11.11
Non-Integral	14	41.17	40	63.49
Both	14	41.17	16	25.39
Total	34	100	63	100

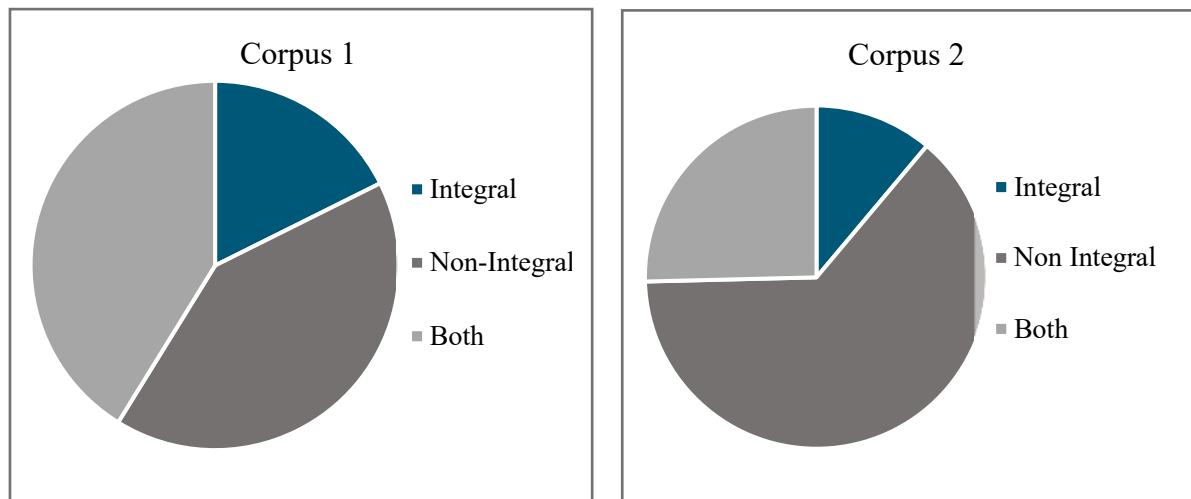


Figure 25. Occurrence of citations

Step 1.3 is incorporated in some introductions in corpus 1 (48.57%) to provide conceptual background for topics. Usually, literature review is known for its extensive use of citations mapped in Figure 25 which shows that 41.17% of introductions in corpus 1 use both integral and non-integral citations (Statements a, b, c, d, e). An equal percentage of non-integral citations has been recorded (41.17%) while integral citations represent 17.64%.

- a. Since then, foreign language practitioners' debates have shifted towards reading fluency, especially after determining that fluent reading is the key indicator of L2 highly skilled readers (*Grab, 2010:72*). Though EFL studies investigating this field are limited, *Nation's (2014)* continuous writing for more than two decades about the importance of developing fluency in ESL/EFL context inspired few researchers to dig deep in this area. (Article 4)

- b. *Yopp, Yopp and Bishop (2009)* argued: “For many years we have known that vocabulary knowledge is a good predictor of academic success” (p. 5). The importance of vocabulary makes it a reach area of investigation and several studies attempted to describe and analyze the different strategies learners use to acquire vocabulary (*O’Malley & Chamot, 1990; Oxford, 1990, 1993; Cohen, 1998; Schmitt, 2000*). (Article 12)
- c. Successful language learners use a wide range of strategies that show their active involvement in learning². Moreover, *Wallace (1998)* argues that “... successful learners do apply specific strategies to the task of learning” (p. 157). (Article 35)
- d. Because of these different learning styles, teachers should incorporate in their curriculum activities related to each of these learning styles and consequently give an equal opportunity to their learners to succeed in their classes (*Warren, 1997*). *Cuaresma (2008)* claims that while we use all of our senses to take in information, we each seem to have preferences in how we learn best and in order to help all students learn, we need to teach to as many of these preferences as possible. (Article 44)
- e. Recent estimates indicate that most of the students all over the world cheat to some extent and the number of cheaters is rising more and more (*Paton, 2010*). In the USA, the cradle of education development and innovation, is also suffering from this phenomenon. *A CNN investigation (2012)* has found that for years, doctors around the country taking an exam to become board certified in radiology have cheated by memorizing test questions, creating sophisticated banks of what are known as ‘recalls’. (Article 52)

Corpus 1 analysis clearly shows that non-integral citations occur more between parentheses (statements f, g) rather than superscript numbers (Statement, h).

- f. Curriculum development as one way of educational reform, continually undergoes review, revision, and constant change (*Johnson, 2001*). (Article 46)
- g. With the new education reform taking place in the Algerian schools, students, as well as teachers, find themselves torn between a new paradigm to education and an old-fashioned one (*Ministry of Higher Education and Scientific Research, 2007*). (Article 55)
- h. Additionally, there has been a growing awareness that linguistic competence does not ensure an adequate level of successful communication¹. Consequently, they have made a shift from linguistic to communicative objectives as it is recognized that “through the process of learning a FL at school, learners are also encouraged to get involved in the construction of the world around them”². (Article 51)

In most integral citations found in corpus 1, the author’s name is used as a subject of an active sentence (Statements i, j) rather than a passive agent (Statement k) or a possessive noun (Statement l) which rarely appear throughout the corpus.

- i. *Shore et al. (1991)* stated that talented pupils suffer from the constant pressure exerted on them to keep up and respond to the traditional experiences and educational programs they face. (Article 32)
- j. *Dornyei & Csizer (1998)* investigated teachers’ interpretation of their own impact on learner motivation and carried out a nation-wide survey study among Hungarian teachers of English from diverse contexts to learn about their attitudes toward various motivational techniques and the frequency with which they implemented them in their own teaching practice. (Article 47)
- k. The taxonomy of CSs (Communications Strategies) adopted in this study was based on existing taxonomies most notably those *suggested by Margolis, Oxford, Khanji and Chen* but modified slightly for the purpose of our analysis. (Article 67)

1. *In Kramersch's (2009) own words*, “the goals of traditional language teaching have been found wanting in this new era of globalization”. (Article 34)

In Corpus 2, ample literature is available to set the background and identify other relevant works in the topics. Obviously, step 1.3 involves a large number of non-integral citations which represent the highest proportion of citations (63.49%). Unlike corpus 1, superscripted citations are mainly the most dominant form of non-integral citation in corpus 2.

- m. Such diodes have attracted many researchers and find applications in optoelectronics and sensor devices [1-2]. Lately, researchers have requested that SnO₂ could exhibit many qualities in opto-electrical applications. Further, these properties are improved when it is doped with metallic cations like aluminum, indium, antimony, zinc and iron [3-8]. (Article 10)
- n. Surface albedo, defined as the ratio of reflected to incoming radiation fluxes, is acknowledged to be one of the dominating factors of the Earth's radiation budget [4]. Snow and ice have the highest albedo of all surface type on the Earth. Variations in the surface albedo of the Arctic region have a large effect on the radiation budget of the earth atmosphere system and thereby on the global climate [5]. (Article 15)
- o. ZnO is a n-type compound semiconductor with a large exciton binding energy of 60 meV at room temperature and a wide direct band gap of 3.37eV, and high transmission in the visible range, which provides it the potential application in various optoelectronic applications such as optical sensors and light emitters, etc. [1-2]. During the last years, in order to enrich the potential application in devices, ZnO has been adopted with many different kinds of elements, such as Al, Ga, In, and Sb to enhance the optical/electrical properties [3-5]. (Article 17)

- p. Zinc sulphide (ZnS) is an important (II-VI) semiconducting material with a wide direct band gap of 3.65eV in the bulk [1], a high refractive index (2.35) and high dielectric constant [2]. (Article 24)

Unlike corpus 1, few introductions in corpus 2 include both integral and non-integral citations (25.39%). The statements below are some examples of the use of the two forms of citations.

- q. It was found that hydrogen-terminated SiNWs exhibited better photocatalytic activity than Pd-, Au-, Rh- or Ag- modified SiNWs in the degradation of rhodamine B [4]. Also, *Magouda et al.* reported high performance of H-SiNWs and SiNWs coated with metal (Ag, Cu) nanostructures for the photodegradation of Rhodamine B under UV and visible light irradiation. (Article 14)
- r. First investigations of a binary oxide system consisting of ZnO and TiO₂ introducing a phase diagram were conducted by *Dulin and Race (1960)*, who reported that there are three compounds exist in the ZnO-TiO₂ system, including Zn₂TiO₃ (hexagonal) and Zn₂Ti₃O₈ (Cubic) [1-2]. (Article 22)
- s. Pressuremeter, invented by *Louis Menard (1955 and 1959)*, which falls into the category of tests in- situ became a fixture massively used today in foundation projects [2], [3]. (Article 43)

The overall number of introductions containing integral citations in corpus 2 is 11.11% (see Figure 25). All citations begin with the author name which acts as a subject of the sentence (Statements t, v).

- t. *Haaf et al.* provided fundamental investigations for the Spanish prototype system in which the energy balance, design criteria, and cost analysis were discussed. (Article 33)
- u. *Yablonoitch* designed the first three-dimensional photonic crystal with a band gap in the microwave. (Article 45)

Citations	Corpus 1						Corpus 2					
	+R	%	-R	%	Both	%	+R	%	- R	%	Both	%
Integral	04	66.66	02	33.33	00	00	00	00	01	14.28	06	85.71
Non-Integral	01	07.14	06	42.85	07	50	03	07.5	25	62.5	12	30
Both	00	00	01	07.14	13	92.85	00	00	03	18.75	13	81.25

The results of table 31 show that both reporting (+R) and non-reporting (-R) verbs have a high frequency of use in both corpora. In corpus 1, 92,85% of mixed citations introductions are constructed with +R and -R verbs (Statements a, b, c), 50% of non-integral citations contain both types of verbs (Statement d, e); meanwhile, a greater use of +R verbs (66.66%) has been reported in integral citations (Statement f).

- a. The analysis of students' needs *is* a prerequisite in any curriculum development process (Richards, 2001). Curriculum development has to regard needs assessment as a central step within the planning phase. Many data gathering sources are identified in curriculum development literature, yet Pratt (1980) *warns* about the pitfalls of moving the planning process too far from the learners. (Article 10)
- b. The enhancement of the role of the learner, under the heading of the communicative approach, *has contributed* to the emergence of the concept of "learner autonomy" in the field of language education (Holec). Benson *stresses* that all the innovations that have occurred over the last thirty years in language teaching theory and methodology bear the basic ideas of autonomy... (Article 62)
- c. Humour *is* "...any communication which is perceived by any of the interaction parties as humorous and leads to laughing, smiling, or a feeling of amusement" ⁽¹⁾ ... The Oxford English Dictionary *defines* humour as that quality of action, speech, or writing, which excites amusement; oddity; jocularly, facetiousness, comicality. (Article 70)

- d. Research on communicative classroom context, and grammar-free foreign language's (FL) programmes **have shown** that CLT- trained students have significant shortcomings in the accuracy of their language ⁽¹⁾; they continue to have trouble with grammatical accuracy in their oral and written production. ... Furthermore, there **is** no clear agreement on definitions and procedures to implement this attention to form ⁽²⁾. (Article 48)
- e. Various studies ⁽¹⁾ **report** that practically, most of the learners who were taught via this method could not communicate fluently in the target language. ... Undoubtedly, there **is** a greater focus on the learner, and on the development of communicative, as opposed to simply linguistic, competence ⁽²⁾. (Article 60)
- f. Bialystok **claims** that the variety of taxonomies proposed in the literature differs primarily in terminology and overall categorizing principles rather than in the substance of specific strategies. ... Badawy **believes** that the study of disengagement strategies is important; it highlights the crucial role played by CSs in enhancing communication by diminishing the learners' reduction behavior which is a major obstacle against language development. (Article 67)

Similarly, corpus 2 analysis indicates a frequent use of +R and -R verbs especially with integral citations (85.71%). A roughly equal percentage (81.25%) of these verbs used with both forms of citations. In return, 62.5% of -R verbs occur with non-integral citations. The practical examples of the occurrence of +R and -R verbs in integral citations are demonstrated below:

- g. Designers seek economical alternatives to minimize losses by thermal conduction and especially the coupling between convection and radiation. The most significant thermal losses **happen** through the glass cover, Benkhalifa A. (1998), Ghoneim (2005). ... Youcef-Ali et al. (2008) **showed** that the installation of a rectangular cell positioned above a solar absorber is an effective device for lowering losses by natural convection. (Article 5)

- h. The study of heat transfer by natural convection, in the annular spaces formed by elliptic cylinders with horizontal axes centered or eccentric, has given rise to many works include such as Zhu et al. (2004) who *have made* a numerical study into the annulus between two centered elliptic cylinders, using D.Q (Differential Quadrature) method to solve their equations. Djeddar et al. (2004), (2005) and (2006) meanwhile, *have studied* numerically natural convection in an annulus formed by two elliptical cylinders and horizontal axes confocal using the formulation in primitive variables, ... (Article 30)
- i. Similar works *has been done* numerically by Kumar, and Chung et al., Nouar, where the ratio D_o/D_i was considered. In the work of Habib et al, the inner cylinder *subjected* to a non-uniform heat flux, while the outer surface *is* adiabatic, the change in axial Nusselt number in this work is in good agreement that of a numerical study under the same condition. (Article 34)
- j. Bottemanne (1971) *has considered* simultaneous heat and mass transfer by free convection along a vertical flat plate only for steady state theoretical solutions with $Pr=0.71$ and $Sc = 0.63$. Gebhart and Pera (1971) *made* a general formulation of the vertical two- dimensional boundary layer flows. (Article 42)

The following are some examples of the use of +R and -R verbs in integral and non-integral citations:

- k. Later on, a number of research groups *have utilized* the perforated baffle concept for internal cooling augmentation both experimentally [15] and numerically [16-18]. ... Laminar periodic flow and heat transfer in a two-dimensional horizontal channel with isothermal walls and with staggered diamond-shaped baffles *was investigated* numerically by Sripattanapipat and Promvonge. (Article 6)
- l. For instance, $SrFeO_{2.5}$ unlike $CaFeO_{2.5}$ compound *shows* the possibility of the electrochemical intercalation of oxygens [2, 24, 27]. It *seems* that the order of the FeO_4

tetrahedra plays an important role in explaining the chemical reactivity in Brownmillerite compounds according to Paulus et al. (Article 64)

Examples on the use of -R verbs in non-integral citations are listed below:

- m. Many growing techniques *have been used* to grow this material such as Czochralski (CZ) [5,6], Heat exchanger method (HEM) [7] Kyroupolos (KY) [4] and pulsed laser deposition (PLD) [8,9]. ... The geometry, the shape and the quality of crystals *play* an important role in the choice of the growing technique [10]. (Article 9)
- n. It (zinc sulphide) *has* potential applications in optoelectronic devices such as blue light emitting diodes [3] ZnS can also be used for light emitting diodes in the blue ultraviolet region because of its wide band gap. ZnS *is also used* as the base materials for cathode-ray tube luminescent materials, crystals, electroluminescent devices, and UV semiconductor lasers for optical lithography [4-5]. (Article 24)
- o. Several dyes *may be* toxic to some aquatic life due to the presence of aromatics and metals (aquatic plants, microorganisms, fish...) [11-12]. It *can also cause* damage to human beings such as the brain respiratory diseases and central nervous system [13]. (Article 28)

Verb Position	Corpus 1	Corpus 2
Weaker	/	/
Neutral	Claim, suggest, state, believe, find, consider, show, investigate, report, propose, define, explain, advocate	Investigate, study, present, report, believe, describe, show, conclude, find, consider, define, discover, demonstrate, acknowledge, assume, suggest, understand, examine, analyze, observe
Stronger	Warns, support, assert, argue, highlight, stress	Argue

Table 32 offers a list of commonly used forms of +R verbs in the two corpora. In corpus 1, researchers use +R verbs to express a neutral position. This group of +R verbs is often used to express believing (claim, believe), explanation (explain), presentation (define, show, state, report), evaluation and examination (investigate, consider), suggestion (suggest, propose, advocates,) and conclusion (find). Another group of +R verbs which exhibits strong attitude is divided into four categories are: evaluation and examination (warn, stress), suggestion (assert), emphasis (highlight) and argument and persuasion (support, argue).

Corpus 2 displays the overuse of +R verbs which reflect neutral attitudes towards the veracity of the literature. These verbs are categorized according to their meaning as follows: evaluation and examination (investigate, consider, understand, examine, analyze), presentation (define, study, describe, report, show, present, demonstrate. observe), suggestion (suggest, assume), conclusion (find, discover), believing (believe) and agreement (acknowledge). In return, only one +R verb (argue) is used across corpus 2 to express strongest and most persuasive arguments.

<u>Tense</u>	<u>Corpus 1</u>		<u>Corpus 2</u>	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Simple Past	02	05.88	07	11.11
Simple Present	16	47.05	09	14.28
Present Perfect	01	02.94	03	04.76
Modal	00	00	01	01.58
Two Tenses	14	41.17	27	42.85
Three Tenses	01	02.94	11	17.46
Four Tenses	00	00	05	07.93
Total	34	100	63	100

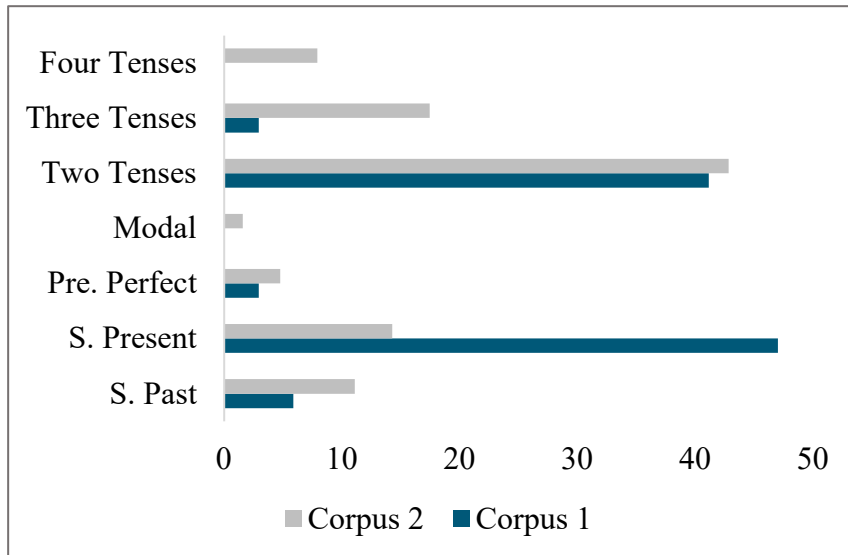


Figure 26. Occurrence of tenses

When comparing the results in Figure 26, it is observed that applied linguistics and physics researchers have different preferences regarding the use of verb tense in M1. On the throughout examination, the highest frequency of verb tense in corpus 1 goes to simple present tense (47.05%). It is also reported that 41.17% of introductions have two tenses in M1 are mainly simple present and present perfect or simple past and simple present (see Table 34 below). The final ratings would be 05.88 % for simple past, 2.94% for present perfect and an even equal percentage (2.94%) for three tenses (Simple past + Simple Present + Present Perfect).

Number of Tenses	Tense combinations
Two Tenses	Simple Present + Present Perfect Simple Past + Simple Present Simple Past+ Present Perfect Present+ Modal verb
Three Tenses	Simple past + Simple Present + Present Perfect

A further analysis shows the general tendency in M1 for corpus 2 is either simple past and simple present or simple present and present perfect (42.85%) (see Figure 26). Combinations of three tenses occur less frequently like simple past and present perfect and simple present

tense (see Table 35 below). 17.46% of introductions utilize the three tenses simple past, present perfect and modal verbs; simple present, present perfect and modal verbs or simple past, simple present and present perfect. 14.28% of introductions use simple present tense, 11.11% use simple past tense; 7.93% make use of four tenses (simple past, present perfect, simple present and modal verbs); 4.76% for present perfect and only 1.58% for modal verbs. Results related to tense usage in the two corpora indicate that researchers in physics rely on different tense combinations are used to refer to situations holding at more than one point in time. The fact that step 1.3 registered high occurrence in this corpus justifies researchers use of those tense combinations to mark different events in the past, present and even future.

Number of Tenses	Tense combinations
Two Tenses	Simple Past + Simple Present Simple Present + Present Perfect Simple Past+ Present Perfect Simple Past + modal verbs Simple Present +Modal verbs
Three Tenses	Simple Past + Present Perfect+ Modal verbs Simple Present+ Present Perfect+ Modal Verbs Simple Past+ Simple Present+ Present Perfect
Four Tenses	Simple past+ Present Perfect+ Simple Present + Modal verbs

Analysis of Move 2

Steps	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
2-1A	03	04.28	07	10
2-1B	24	34.28	21	30
2-1C	22	31.42	00	00
2-1D	10	14.28	07	10
No Move 2	09	12.85	33	47.14
No Introduction	02	02.85	02	02.85
Total	70	100	70	100

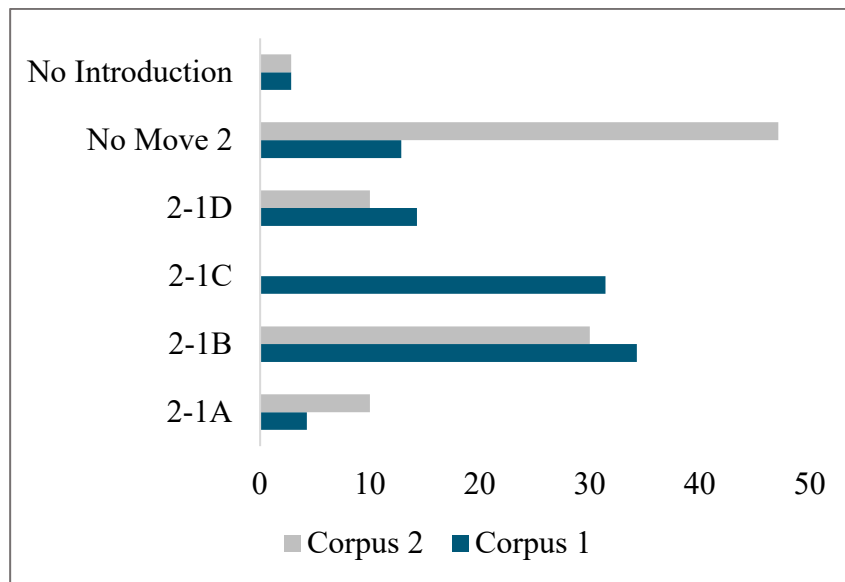


Figure 27. Summary of M2 steps identified in RAs introduction section

Table 36 shows that there is no obligatory step for M2 in both corpora. Obviously, all steps belonging to this move have an average percentage less than 60%. In corpus 1, M2 is achieved primarily through step 2-1B which takes about 34.28% of the space of this move (see Figure 27). This step appeared as a preferred means of presenting a new research problem. Below are some examples illustrating gap indicating statement in this corpus:

- a. However, even at the level of the university, as teachers of written expression, we incessantly *criticize the passive accumulation of knowledge and lack of awareness* on the part of our students. We often observe that *very few* of our students develop their

writing competence easily. The great majority deems this skill as *the most difficult, the most challenging* to be acquired and mastered; *they are unmotivated*; their passion for writing frequently seems *to minimize and they go through a slow and sterile process of writing*. (Article 3)

- b. However, many EFL students encounter *problems* in the use of cohesive devices, namely the logical/adverbial connectors. Generally, these students *fail* in using them appropriately at many levels because *they do not possess* an awareness of the stylistic, semantic and syntactic variations of such connectors. (Article 7)
- c. Low performance in the oral aspect of the language, along with psychological and social inhibitions students face, could be cited among those *factors which prevent students* from the attempt to freely express themselves in a foreign language they do not master. (Article 40)
- d. Because of the diversity and richness of self-efficacy, theoretical insights and practical evidence towards the positive prediction of EFL learners' performance, *little attempt* has been made to examine the variables of self-efficacy in learning the English-speaking skill in second year EFL student classes. (Article 58)
- e. However, *only a few* studies attested the construction of a theoretical groundwork akin to the usage of computer and the internet technologies in teaching. *This framework requires evidence from quantitative and qualitative research methodology* to explore the multifaceted nature of the teaching/ learning process. (Article 60)

Corpus 1 analysis shows that step 2-1C is one of the prevailed steps in M2 (31.42%). Questions are used to seek more details about the topic. Table 37 shows types of questions used in corpus 1.

<u>Questions</u>	<u>Occurrence</u>	<u>%</u>
Direct	10	45.45
Indirect	09	40.90
Both	03	13.63
Total	22	100

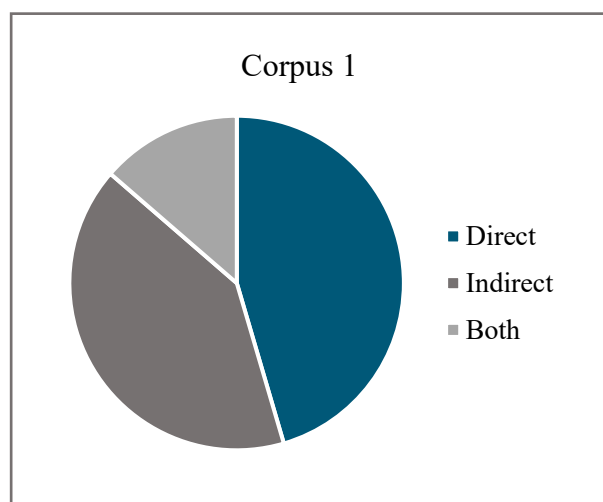


Figure 28. Types of questions Used in Corpus 1

Figure 28 shows that direct questions represent 45.45% of the total number of questions in corpus 1 (Statements f, g). Indirect questions have a fairly high percentage (40.90%) (Statements h, i); whereas 13.63% of introductions rely on both types of questions (Statements j, k). The alternation between direct and indirect questions in corpus 1 leaves little room of misinterpretation whilst establishing a research niche.

f. Competence in easy writing will help students pass all their academic courses successfully, and enable them to be proficient teachers and action researchers in the future. Thus, the current study attempts to find answers to the following questions:

- 1) What common problems do university students of English encounter in easy-writing at the levels of coherence and organization which hinder the students' writing effectiveness?
- 2) How can such problems be minimized? Can coherence be taught? (Article 25)

- g. The questions to be asked are: “What error correction techniques do university teachers use while correcting students’ papers? Do they apply the formative assessment? And are learners part of the error correction process? (Article 57)
- h. This idea has given rise to the question *whether it is the world culture that should be taught to learners of English rather than any specific culture in the language classroom*. (Article 37)
- i. If learners are to benefit from alternative approaches to grammar instruction form-focused instruction, as professionals, we need to better understand when and *how focus on form occurs in the classroom*. (Article 59)
- j. In Algeria, the teacher training curriculum, in general and the teaching methodology curriculum, in particular provide little information about *how their content has been selected and organized*. ... The ultimate question is: *To what extent does a curriculum succeed in achieving its goals in the absence of data about the students?* (Article 10)
- k. We will see, *how we can use humour in the classroom in the best way to help the learning process takes place in a relaxed atmosphere*. the aim of this research is to show the importance of humour in teaching/learning process and to try to answer to the following questions:
1. Does the use of humour in the foreign language classroom facilitate the students’ learning of the foreign language?
 2. How and where can we use humour and does it influence the students’ general socio-pragmatic skills?
 3. What recommendations can be made for the use of humour in the foreign language classroom? (Article 70)

In corpus 1 (see Figure 27), step 2-1D occurs less frequently in M2 (14,28%).

Generally, this step is used to emphasize a gap in the existing literature:

- l. *For this reason*, promoting learner autonomy is a desirable goal not only in Algerian educational system but in all countries in which English is taught as a second or foreign language. (Article 27)
- m. *Therefore*, guidance and counselling should not only be theoretical, but should also provide opportunities for people of all ages to develop and practice the skills to respect human rights and citizenship through lifelong learning. (Article 55)
- n. *The reason after using this taxonomy* is that it includes both engagement and disengagement strategies as categories of CSs and that both categories present the general possible problem-solving mechanisms in language use. (Article 67)

Step 2-1A seems to be systematically avoided by applied linguistics researchers (4.28%) (see Figure 27). This step is even less often used to discuss opposing viewpoints or identify the weakness in previous studies:

- o. To refine upon previous work on rewards' effects and intrinsic motivation, *this investigating is rather an attempt to gain more insights* into the nature of the relationship between an extrinsic and intrinsic motivation. (Article 26)

Surprisingly, Figure 27 shows that most introductions in corpus 2 do not have M2 (47.14%) while 30% of them incorporate step 2-1B to identify a research gap:

- p. The remark drawn from this literature review is that for similar cavities with flat plate solar collectors, *the conditions applied to the limits do not reflect the actual operating conditions of the solar collectors*. The geometry dimensions in our study are real and are subject to a flow imposed on absorber taking into account the losses by radiation and convection to the outer face of the solar flat plate collector. The partition conductivity is taken into account for a comprehensive study of the phenomenon. (Article 5)

- q. This was decided after literature research has revealed that *no work has been reported* on the computation of the flow in L-baffled rectangular channels. (Article 6)
- r. Although Lithium Nowotny-Juza compounds are studied elsewhere, to the best of our knowledge *there has been missed investigation of NaZnAs compound* in terms of electronic, structural NaZnAs compound. (Article 13)
- s. In spite of recent advances in the investigation of the scaling properties of hydrological fields, *very few studies from different geographical areas have been made* to determine invariance properties of the meteorological observations. (Article 69)

Also, results show very modest use of step 2-1A across corpus 2 (10%). This step is reflected in the examples below:

- t. *However, these models are very time consuming* and the vast majority of simulations have been done within the scope of the drift diffusion approximation (hydrodynamic models) and the calculations of steamer propagation have been performed in two dimensions. (Article 41)
- u. *However, this ceramic has drawbacks* such as high conductivity and large coercive field, which cause problems during poling. This compound also possesses low piezoelectric and electromechanical properties and K_p coupling coefficients. (Article 55)

Similarly, step 2-1D has been little used in corpus 2 (10%). Its use is restricted to extending previous research and considering new possibilities for conducting research. Examples:

- v. The work proposed in this article is an extension of [7]. It concerns the study of on-of control system using a feedback via a second order filter including the load. (Article 18)
- w. Therefore, it is important to provide the ZnO community with a preliminary evaluation of the BeZnO potential as a LED material. (Article 57)

Unlike corpus 1, the frequency of occurrence of step 2-1C in corpus 2 is 0%, while the number of articles without introduction represents 02.85% which is similar to the number of articles without introduction to corpus 1 (see Figure 27).

Linguistic Indicators of Gap

<u>Statements</u>	<u>Corpus 1</u>		<u>Corpus 2</u>	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Contrastive Statement	27	38.57	14	20
No Contrastive Statement	32	45.71	21	30
No Move 2	09	12.85	33	47.14
No Introduction	02	02.85	02	02.85
Total	70	100	70	100

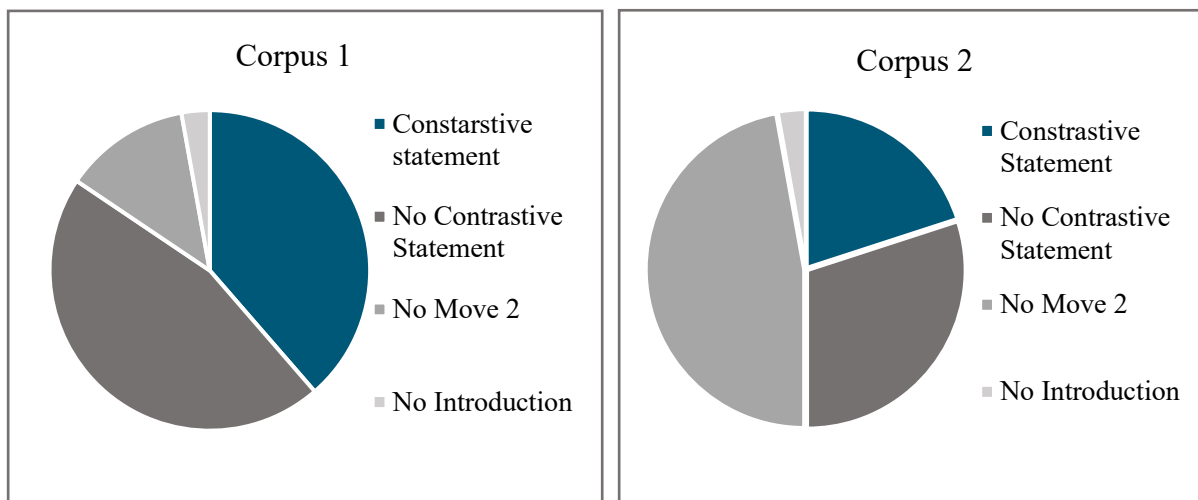


Figure 29. Occurrence of contrastive statement in M2

Table 38 shows that contrastive statements are over-shadowed in corpus 1 (38.57%) rather than corpus 2 (20%). Still, the number of introductions which do not use contrastive statements in corpus 1 represents 45.71%; 12.85% of introductions do not contain M2 and 02.85% of articles without introductions. In return, 30% of introductions in corpus 2 do not use contrastive statements, 47.14% of introductions do not incorporate M2 at all and 02.85% of articles without introductions. The use of contrastive statements in corpus 1 reflects researchers’ successful transition from M1 to M2 and their ability to draw the rhetorical boundaries of each move.

<u>Contrastive Conjunctions</u>	Corpus 1		Corpus 2	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
However	20	74.07	05	35.71
Nonetheless	01	03.70	00	00
Though	02	07.40	00	00
Although	02	07.40	03	21.42
Unfortunately	00	00	01	07.14
In spite	01	03.70	01	07.14
Unlike	01	03.70	00	00
Whereas	00	00	01	07.14
But	00	00	03	21.42
Total	27	100	14	100

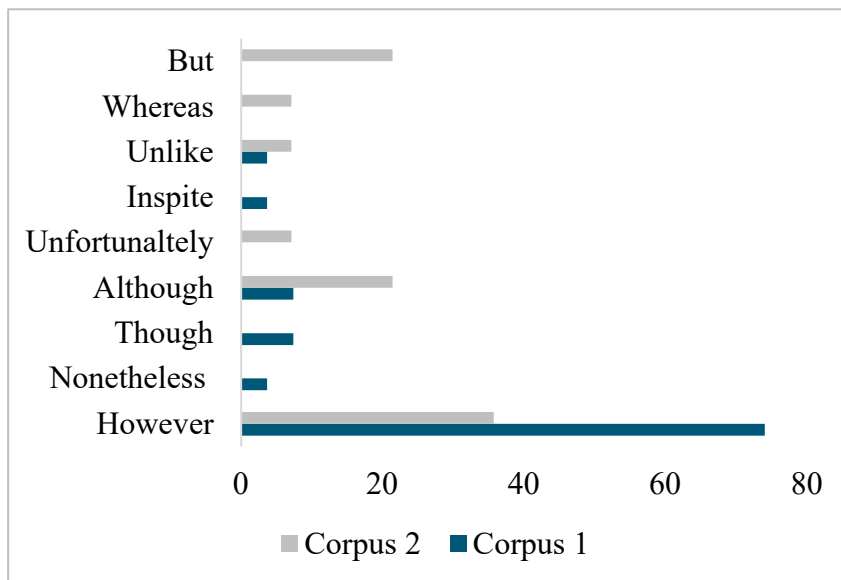


Figure 30. Occurrence of conjunctions of contrast

Figure 30 shows that the conjunction *However* seems to be the obvious indicator to establish the gap in the two corpora (74.07% in corpus 1 and 35.71% in corpus 2). This conjunction is used in corpus 1 to state the nature of the research regarding authors’ experiences or general perceptions like:

- a. However, technology integration particularly Web 2.0 tools, differ because of multiple factors primarily teachers’ extent of awareness and perceptions about its integration.

The main cause that led the researcher to tackle this issue of Web 2.0 technologies integration is to explore whether Algerian University teachers are aware of the Web 2.0 technologies and the affordances it provides for education, and to thoroughly canvass their perceptions and attitudes towards Web 2.0 integration in their classrooms. (Article 43)

Other statements use the conjunction *however* to state the limitations on undertaking research:

- b. However, the use of rewards in learning settings *remains contentious*. (Article 25)
- c. However, all along our teaching experience in a secondary school we have noticed that teaching as a profession and teachers of EFL in secondary schools of the targeted location have remained almost peripheral to the used strategies and methods of more than a past decade, and that the techniques to improve the teaching process *have been restricted to seminars* that chewed the same idea. (Article 53)

In corpus 2, *however* statement is used to provide an alternative model or usage of a given material (see Figure 30).

- d. However, *the ceramic which are synthesized by a solid-state reaction require high temperature* and the resulting powders exhibit many undesirable characteristics: large particle size and wide particle size distribution. (Article 22)
- e. However, *to improve the performance of the already existing low-cost phosphors require better materials*. One such material being strontium cerate, phosphors based on this material were synthesized and characterized using photoluminescence. (Article 50)

The conjunctions *Nonetheless*, *In Spite of* and *Unlike* have only few occurrences in corpus 1 (03.70%) while corpus 2 does not imply any occurrence of these conjunctions (0%). Apparently, these three conjunctions are used in corpus 1 to show clear-cut cases or phenomena which require extensive investigation:

- f. *Unlike* the above last view, in English department at Constantine University 1, it is unusual to make out *this association practiced in the classrooms*. In other words, writing has a prominent position in the design of foreign language teaching programs, while reading is absent almost totally in writing and completely as an official program, and therefore most students tend to apply their perception of learning Arabic to write in English. (Article 14)
- g. *In spite of* the numerous teaching theories, methods and techniques that sprang out within the last decade, university teaching seems to be locked in the *traditional lecturing Mode*. (Article 16)
- h. *Nonetheless*, English language teachers in Algeria still teach in that *traditional way* either in general contexts or specific ones. It is affected by the traditional teaching contrary to discourse-based approaches which have proved very effective. (Article 17)

The conjunction *Unfortunately* is used only in corpus 2 (07.14%) to show authors' attitudes towards a given phenomenon.

- i. *Unfortunately*, the mathematical description of transport under conditions for which space-charge fields play an important role *proves very difficult* to deal with in general. This phenomenon is an element of the lore general subject of space charge dominated transport and a detailed study of the motion of electrons and ions in non-uniform fields is necessary to understand the important mechanism involved. (Article 41)

The conjunction *Whereas* occurs only in corpus 2 (07.14%) to express contrast between equivalent ideas:

- j. In equilibrated chondrites the chemical composition of minerals is homogeneous in all parts of the meteorite; *whereas* in unequilibrated chondrites the metal grains exhibit varied chemical compositions. (Article 61)

Generally, *Though and Although* are used to hedge the weakness identified in the study. Because the conjunction *Though* is deemed to be informal, it does not come into wide use in the two corpora (07.40% in corpus 1 and 0% in corpus 2). In return, the conjunction *Although* has high occurrence in corpus 2 (21.42%) and less occurrence in corpus 1 (07.40%). Below are some examples on the occurrence of the conjunction *Although* in the two corpora:

- k. *Although such immense use has been under attack for it is seen as a waste of time and a reason behind reducing academic achievements*, learners keep using it frequently for different purposes. (Article 45/ Corpus 1)
- l. *Although silicon displays a small energy band gap* (1.1 eV), it is not used in pollution control because its valence band is not positive enough to oxidize. (Article 14/Corpus 2)

The contrastive conjunction *But* is used only in corpus 2 (21.42%) as a denial-of-expectation of preceding claims. Examples:

- m. As a consequence, the system was able to regulate the output voltage w.r.t to the fluctuations of the solar energy. *But* did not regulate the output voltage w.r.t the variation of the load. (Article 18)
- n. The MESFET with a submicron gate has a better treatment of high-frequency signals. *But* this creates a large conductance, a decrease of the transconductance and a change in the threshold voltage V_r . This is called the short channel effect, and it makes the development of a theoretical model very complex. (Article 21)

Lexical Indicators	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Quantifiers	05	08.47	03	08.57
Negatives	11	18.64	03	08.57
Lexical Negation	18	30.50	16	45.71
Causal Conjunctions	08	13.55	05	14.28
WH Words	08	13.55	00	00
More than one Indicator	09	15.25	08	22.85
Total	59	100	35	100

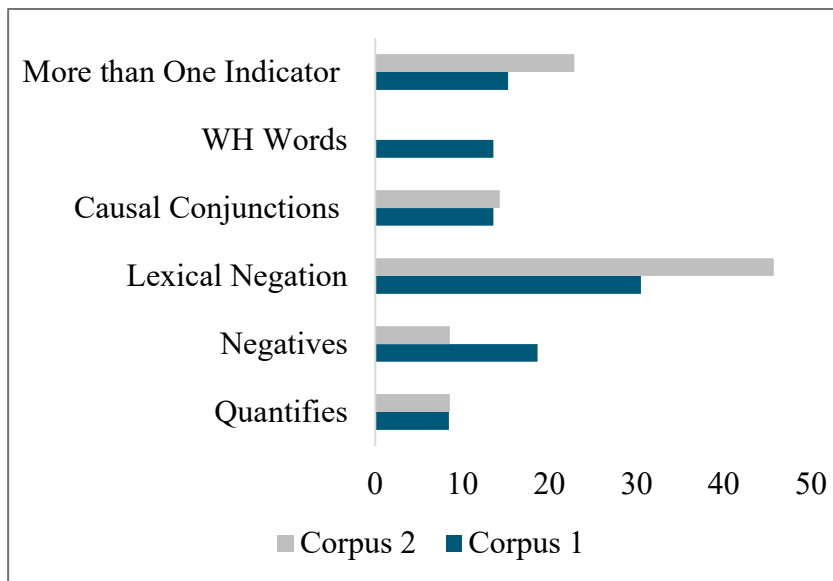


Figure 31. Use of lexical negation indicators

Figure 31 shows that the most widely used way to indicate the gap in the two corpora is through negative verbs and negative adjectives which are used in 30.50% of corpus 1 introductions and 45.71% in corpus 2.

In corpus 1, adjectival negative criticism is mostly used to impute narrow vision phenomena like:

- a. The great majority deems this skill as the most *difficult*, the most *challenging* to be acquired and mastered; they are *unmotivated*, their passion for writing frequently seems to minimize, and they go through a *slow* and *sterile* process of writing. (Article 3)

- b. These changes and ever-widening range of career opportunities and new courses have made it *impossible* for students, parents and teachers to maintain a current information base of options. (Article 55)

Meanwhile, negative verbs are used to express trenchant fail in applying a given approach or method:

- c. Generally, these students *fail* in using them appropriately at many levels because they do not possess an awareness of the stylistic, semantic, and syntactic variations of such connectors. (Article 7)
- d. Moreover, the students' needs *seem to be ignored* and the curriculum is built around developers' perceptions of teaching English at the middle school or secondary school. (Article 10)
- e. Low performance in the oral aspect, along with psychological and social inhibitions students face, could be cited among those factors which *prevent* students from the attempt to freely express themselves in a foreign language they do not master. (Article 40)

Obviously, corpus 2 resorts heavily to negative verbs used to express missing actions or new usage:

- f. Although Lithium Nowotny-Juza compounds are studied elsewhere, to the best of our knowledge *there has missed investigation* of NaZnAs compound in terms of electronic, structural. (Article 13)
- g. We *investigate a new effect* that can be in origin of supplementary redshift contributing with the one of cosmological origin to the total observed redshift of galaxies. (Article 36)
- h. In fact, it (analysis) *neglects* many possible effects that cause non-ideality in the diode I-V characteristics and, in general, reduce the barrier height. (Article 58)

Negative adjectives are also used in corpus 2 to share negative information. The most frequent negative adjectives in corpus 2 are: *toxic, difficult, low, unexplored, new, confusing,*

surprising, dangerous, tedious, fleeting, scattered, time-consuming, not comprehensive, not satisfactory, not clear, not sufficient. Examples:

- i. However, there are **toxic** hazards with respect to the production and use of the CdS layer. (Article 24)
- j. Since the experimental determination of the solubilities of various solutes in supercritical fluids at each operating condition is **tedious, time consuming** and not reported in literatures, there is a considerable interest in mathematical models that can accurately predict the solubilities of solid solutes in supercritical fluids. (Article 29)
- k. Unfortunately, the mathematical description of transport under conditions for which space-charge fields play an important role proves **very difficult** to deal with in general. (Article 41)
- l. The effect of synthesis conditions on properties of these compounds are essentially **unexplored**. (Article 64)

Besides negative verbs and adjectives, a further linguistic gap indicator occurs in corpus 2 through nominal negative criticism. The most frequent nouns used to carry negative appraisal are: *impossibility, lack, problem, limits, drawbacks, cons, difficulties* and *no discussion*.

- m. The **problems** of contact and friction present several inherent **difficulties** in their non-linear, irregular and multi-scale, making their analytical solution often impossible. The **impossibility** to calculate analytically solutions to **problems** of contact, on the one hand, and development of methods and computational tools, on the other hand, led to the approximate resolution of these **problems**. (Article 49)
- n. However, the ceramic has **drawbacks** such as high conductivity and large coercive field, which cause **problems** during poling. (Article 55)

Negatives are other linguistic indicators used in M2. It is apparent in Figure 31 that negatives receive prominent stress in corpus 1 (18.64%) rather than corpus 2 (08.57%).

Generally, applied linguistics researchers use negatives to refer to phenomena that do not receive sufficient attention from researchers. The most common negative form used in corpus 1 is: *not (only)*.

- o. For this reason, promoting learner autonomy is a desirable goal ***not only*** in Algerian educational system but in all countries in which English is taught as a second or foreign language. (Article 27)
- p. However, even the concept of IC (Intercultural Competence) has received a lot of attention in the literature in the domain and in many language departments overseas (mainly in Europe), it is still ***not*** given its due importance in language departments in our country. (Article 65)

Likewise, the most frequent negative form to indicate the gap in corpus 2 is ***not***.

- q. Although silicon displays a small energy band gap (1.1 eV), it is ***not*** used in pollution control because its valence band is ***not*** positive enough to oxidize. (Article 14)

Many gap statements in corpus 1 (15.25%) use more than one linguistic indicator to establish the gap. The example below represents a gap statement with many linguistic indicators:

- r. Literary reading is considered as a ***difficult*** performance in foreign language, because of its ***archaic*** words, ***chaotic*** syntax and mostly its ***deviation*** from ordinary language. Since the knowledge of norms of correct language is ***not sufficient*** for students to understand and interpret the various genres, students as well as learners need to know the major notions of the reading process also the methods and techniques used in reading and interpreting literary texts. (Article 54)

The number of gap statements with many indicators is higher in corpus 2 (22.85%). These statements are used to increase pressure on a given phenomenon as:

- s. Algiers bay and the littoral of Algiers in general are prone to many sources of *pollution* due to significant volume of domestic and industrial *worn* water *rejected* directly and *without* preliminary treatment in the sea, to the derivative of hydrocarbons related to the harbor activity and to the scrubbing *residues* of the *old* cement factories and careers. *The vulnerability* of the Algiers coast is mainly due to the fact that the Mediterranean Sea is almost *closed* with *little* exchange with the ocean, thus *reducing* the circulation and the renewal of its water. (Article 65)

Causal conjunctions are another category of linguistic indicators occurred in corpus 1 (13.55%). They are cohesive devices used to establish a direct cause-effect relationship between previous and current research. The most common causal conjunctions used in corpus 1 are: *thus, hence, consequently, therefore* and *the reason after*. Examples:

- t. *Thus*, training program was introduced to show learners the significance of understanding and using problem-solving skills within cooperative learning environment as a way to help them see the intertwined link between thinking, practice and cooperative learning. (Article 6)
- u. *Therefore*, it is suggested that investigating learners' motivation levels; responsibility perceptions, beliefs about learning and use of learning strategies are necessary before any attempt to promote learner autonomy. (Article 62)

Causal conjunctions represent 14.28% of linguistic indicators in corpus 2 (see Figure 31). They are used to show the need to test new materials or explain physical phenomena under new conditions:

- v. *Therefore*, it is important to provide the ZnO community with a preliminary evaluation of the BeZnO potential as a LED material. Such applications, in return, require an accurate determination of the structural, electronic and optical properties and of $Zn_{1-x}Be_xO$. (Article 57)

WH words are used as linguistic indicators in corpus 1 (13.55%); whereas corpus 2 does not apply any occurrence of *Wh words* (0%).

Surprisingly, negative quantifiers, the most common way to indicate the gap, have only modest use in the two corpora (08.47% for both). Quantifiers display the shortcomings of previous research that must be altered to accommodate current research. The following are some examples of the occurrence of quantifiers in the two corpora:

- w. However, only *a few* studies attested the construction of a theoretical groundwork akin to the usage of computer and the internet technologies in teaching. (Article 60/ Corpus 1)
- x. A literature review shows that relatively *little* work is available on the case of natural convection in inclined enclosures. (Article 39/ Corpus 2)

<u>Opinion</u>	Corpus 1		Corpus 2	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Surmise	40	67.79	07	20
Substantiated	19	32.20	28	80
Total	59	100	35	100

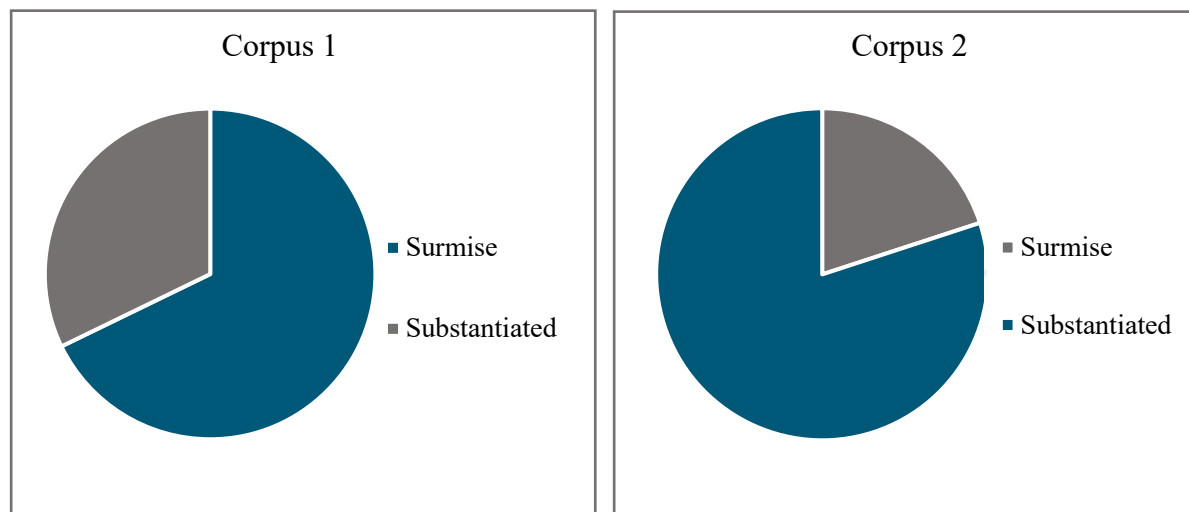


Figure 32. Types of opinion

Figure 32 shows that most gap statements in corpus 1 are established as surmise opinions (67.79%) that reflect authors’ personal views and assumptions more than substantiated opinions

which represent only 32.20% of the total number of gap statements. The statements below display authors' use of surmise opinions in M2:

- a. Because students, or teacher-trainees, in the ENS-C study reading techniques, as an independent subject, during the first two years of the training, *we assume* that the more their reading fluency is in continuous check, the better fluent reading will be. (Article 4)
- b. *It is hypothesized* that the recourse to an interdisciplinary teaching of literature, through the incorporation of methods and techniques advocated by discourse analysis, would contribute into developing their criticality by being exposed to a Language of Possibilities (Article 20)
- c. *We believe we have to move* beyond the classical use of English in fields like: scientific research, industry and business, tourism and diplomacy, and to think of English as a means to prepare Maghrebi students to become global citizens. (Article 21)
- d. As an Algerian EFL university-level teacher with three years of teaching experience, *I noticed* that my learners at the English department of Batna 2 University, even those with a high level of English language proficiency and good knowledge of English culture, still encounter problems when communicating in English. (Article 31)

However, 80% of introductions using gap statements in corpus 2 are substantiated with evidence from previous studies in the literature and their findings (Statements e, f, g). Meanwhile, only 20% of introductions are built on surmise statements (see Figure 32).

- e. Our contribution falls within this context; *it involves the development of the Warner and Boettinger model [6]*, where we consider the Ni-Cu alloys as a real solution by introducing the term of excess energy. (Article 7)
- f. *Analysis of the current-voltage (I-V) characteristics of the Schottky barrier measured only at room temperature does not give detailed information* about the conduction process at the nature of barrier formed at the metal semiconductor interface. In fact, *it*

neglects many possible effects that cause non-ideality in the diode I-V characteristics and, in general, reduce the barrier height. The temperature dependence of the I-V characteristics gives a better picture of various conduction mechanisms and on the validity of various processes involved. Moreover, Schottky diodes with low barrier heights have found applications in devices operating at cryogenic temperatures as infrared detectors and sensors in thermal imaging [5-6]. (Article 58)

- g. Although the main microscopic steps governing nucleation and growth of the films are now understood, detailed characterization of these processes has proven difficult. *Earlier, empirical and theoretical studies* of Pd over single crystals MgO, investigated defect nucleation [10-11] when nucleation centers occupy minority of sites. On the other hand, the results of nucleation kinetics over thin films governed by random nucleation [1-12], each atomic site is potentially a nucleation center. (Article 67)

Judgements	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Qualitative	59	100	13	37.14
Quantitative	00	00	22	62.58
Total	59	100	35	100

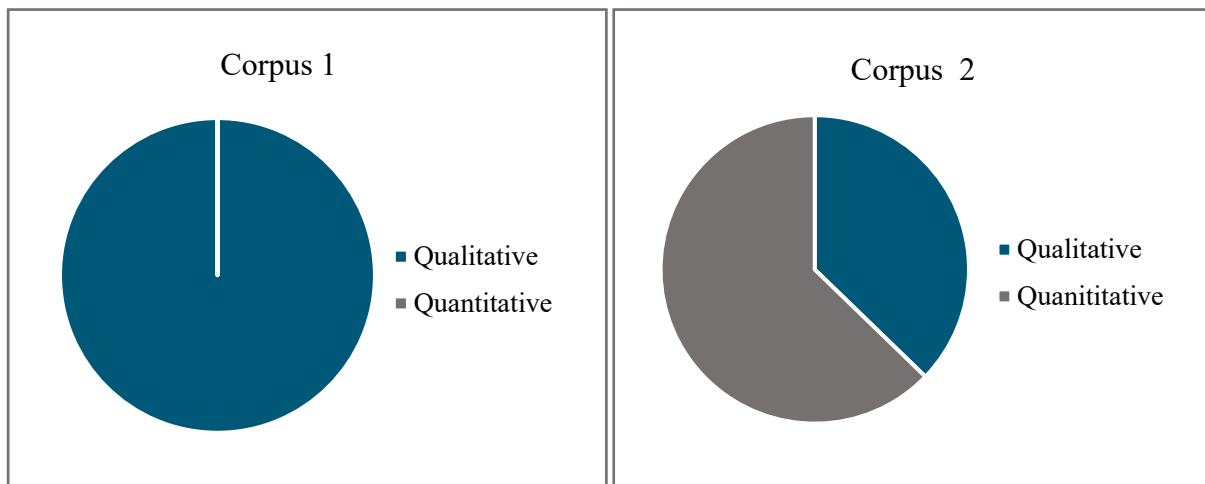


Figure 33. Types of judgements

Figure 33 shows that all introductions in corpus 1 (100%) are subjected to qualitative judgements and researchers' intuition to the way scholars view issues and juxtapose their opinions. In contrast, 62.58% of introductions in corpus 2 are expressed in quantitative terms (Statements a, b) while 37.14% are displayed qualitatively.

- a. He (Yousaf) concluded that the maximum reduction in the average heat *transfer was calculated to be 28% at Ra number equal to 10³* when the sinusoidal roughness elements were located at both the hot and cold walls. The remark drawn from the literature review is that for similar cavities with flat plate solar collectors, the conditions applied to the limits do not reflect the actual operating conditions of the solar collectors. (Article 5)
- b. *We investigate numerically* double diffusive natural convection within a porous inclined cavity with localized heating and salting from below. (Article 39)

Table 43 <i>Frequency of use of Cyclicity</i>				
Corpus 1			Corpus 2	
Categories	Occurrence	%	Occurrence	%
Yes	06	10.16	10	28.57
No	53	89.83	25	71.42
Total	59	100	35	100

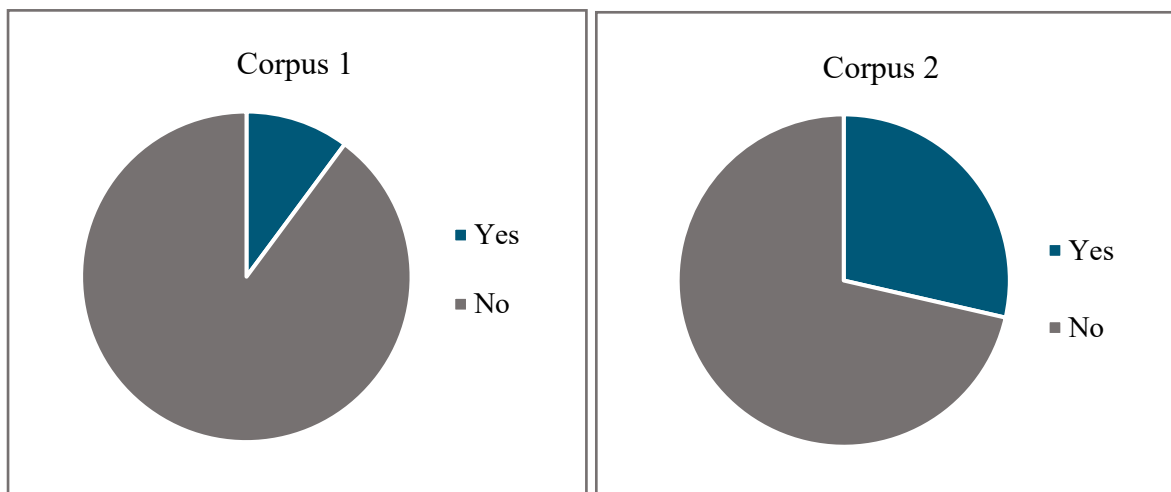


Figure 34. Use of cyclicity

Figure 34 shows that only 10.16% of the discussions of gap statements in corpus 1 are constructed cyclically while 89.83% of introductions do not have this pattern. Similarly, a roughly comparable percentage of introductions in corpus 2 (28.57%) that follow a cyclical pattern for M2 which is absent in 71.42% of introductions. The cyclical pattern of introduction is deemed necessary to distinguish between statements that carry strongest claims that assert the niche and weaker claims that support the niche. Generally, cyclicity is used by skillful writers to accommodate the content of M1 with the content of M2 and M3.

The following are examples of cyclicity in corpus 1:

- a. [Move 1-3] Many language tests follow a psychological rather than linguistic theoretical framework, evidenced by the use of a single modality (such as a paper-and-pencil test that ignores spoken and oral comprehension) (Pray, 2005).

[Move 2-1D] Most current tests of oral proficiency have the same deficiencies, and many of the measures used by the teachers share the problem of subjectivity.

[Move 1-3] This status is sustained by factors such as large classes, teachers' inadequate command of English, and the lack of easy access to support materials and facilities (Ramanathan, 2008; Sook, 2003). Therefore, due to the complicated nature of this skill, testers and language teachers should make use of reliable analyses for the purpose of objectivity.

[Move 2-1D] Testing is, however, necessary in foreign language learning, though language tests are no easy task for practitioners of different skills.

[Move 1-3] Ur (1996) states that "when testing the oral proficiency of learners, we may simply interview them and assess their responses; or use other techniques like role play, group discussion between learners, monologue, picture description and so on" (Article 38)

- b. [Move 1-3] Referring to the thesis that no syllable is neutral (Freire, 1970; Candlin, 1984),

[Move 2-1C] the foreign literature syllable content in the frame of the Algerian Licence of English is, then, questioned.

[Move 1-3] The presupposition is that the syllabus, necessarily, carries a heavy heritage of cultural imposition ⁽²⁾ which is primarily responsible for the ill-match between teaching and learning within ELT. The claim is that designers and practitioners of ELT should revise their orientation as Wikins advances: “The process of deciding what to teach is based on considerations of what the learner should most usefully be able to communicate in the foreign language” (p.19).

[Move 3-1A] The present work is an attempt to pin down the causes of the chronic difficulties that crop up in the transmission of knowledge in literature as it is taught in English at the university level in Algeria...

[Move 2-1C] It, therefore, raises the following questions:

- 1- What are the goals that shape the design of foreign literature syllabus?
- 2- On which ground do canonized texts gain institutional interest?
- 3- What should be the profile of the syllabus designers? (Article 69)

Examples of the occurrence of cyclicity pattern in corpus 2 are:

- c. [Move 2-1A] A sizable volume of evidence has been accumulated showing the importance of streamers or fast ionizing waves to several aspects of electrical breakdown of gases.

[Move 1-3] Several workers [5], [6] have investigated this phenomenon using high speed photographic technique and have explained the results qualitatively.

[Move 2-1A] Unfortunately, the mathematical description of transport under conditions for which space-charge fields play an important role proves very

difficult to deal with in general. This phenomenon is an element of the more general subject of space charge dominated transport and a detailed study of the motion of electrons and ions in non-uniform fields is necessary to understand the important mechanism involved.

[Move 1-3] There have been attempts to stimulate streamer dynamics using kinetics models [7, 8]

[Move 2-1A] However, these models are very time consuming and the vast majority of simulations have been done within the scope of the drift diffusion approximation (hydrodynamic models) and the calculations of streamer propagation have been performed in two dimensions. (Article 41)

d. [Move 2-1A] Despite their excellent ferroelectric & piezoelectric properties these materials contain a large amount of lead (> 60 wt. %) which is toxic.

[Move 1-3] Therefore there is growing interest in developing lead free Ferroelectric ceramics to replace lead based ferroelectric due to toxicity and concern for environmental protection [4]. Among various lead-free perovskite systems, $(\text{Ba}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3)$ (BZT) is expected to be the candidate for lead free piezoelectric materials [5]. The tetragonal-rhombohedral transition corresponds to a transformation from an antiferroelectric to a ferroelectric (FE) state [6].

[Move 2-1A] However, this ceramic has drawbacks such as high conductivity and large coercive field, which cause problems during poling.

[Move 1-3] This compound also poses low piezoelectric and electromechanical properties and K_p coupling coefficients [6-7]. (Article 55)

Analysis of Move 3

Steps	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
3-1A/1B	47	95.91	51	94.44
3-2	02	04.08	12	22.22
3-3	08	16.32	06	11.11
No Move 3	19	27.14	14	20
No Introduction	02	02.85	02	02.85

Table 44 above shows the frequency of occurrence of M3 steps in the two corpora. Results reveal that the highest percentage of occurrence of M3 steps is step 3 (1A/1B) which represents 95.91% of the total numbers of introductions in corpus 1 and 94.44% in corpus 2. This step is recorded as the only obligatory step in M3 that exceeds 60%. Promissory statement can be *Purposive* (3-1A) or *Descriptive* (3-1B). Table 45 below shows the frequency of use of each form in the two corpora.

Types	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
3-1A	31	65.95	23	45.09
3-1B	16	34.04	28	54.90
Total	47	100	51	100

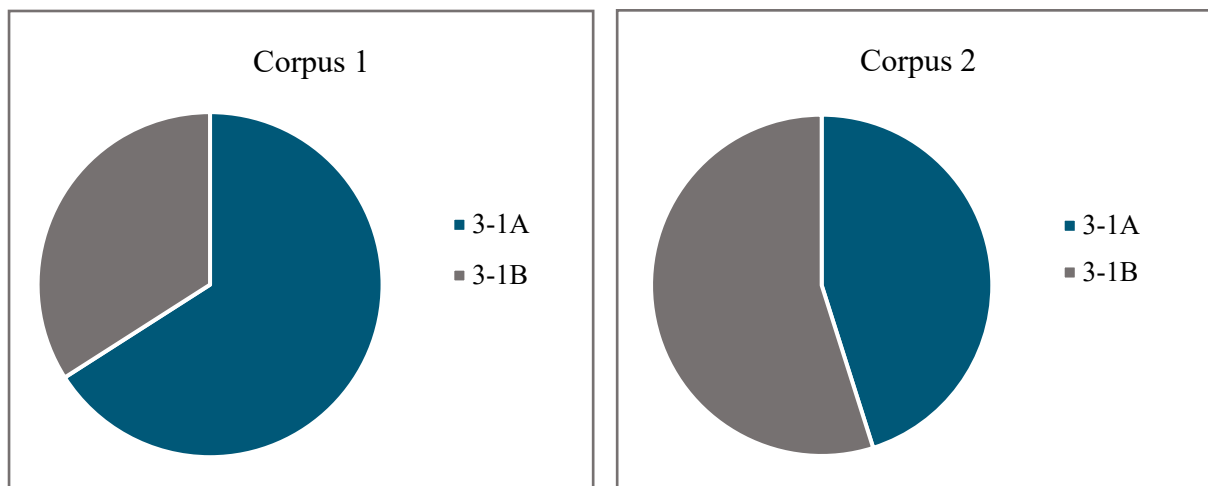


Figure 35. Types of step 3-1

According to Figure 35, purposive statement (3-1A) reflects 65.95% of M3 in corpus 1 (Statements a, b, c) while descriptive statement (3-1B) is comparatively low (34.04%) (Statement d, e).

- a. *The main purpose of this study* is derived from the fact that learners are not aware of the rhetorical features of language as determinants of meaning. (Article 11)
- b. *This study attempts to investigate* the effect of explicit instruction on learning some English complex grammar rules. It seeks to provide insights about how grammatical rules should be presented to learners so as to optimize their learning in second/foreign language classroom. (Article 15)
- c. *The major aim of this study* is to investigate the effectiveness of teaching activities based on the students' learning styles in developing their writing skills. Developing the writing skills requires teachers' and students' awareness and understanding of the different learning styles. (Article 44)
- d. *In this paper, we measure* the rhythmic performance of 20 Algerian learners of English using the rhythm metrics %V and ΔC , in order to classify it into either a discrete rhythmic class or rather in a continuum. (Article 22)
- e. *This paper describes* the teachers' questionnaire conducted at university of Ouargla. It includes the background of the respondents, the description of the instrument used in the study, and the description of how the data are collected and analyzed. (Article 24)

Unlike corpus 1, 54.90% of introductions in corpus 2 use descriptive statements and 45.09% of them are devoted to outlining purposes (see Figure 35). The use of descriptive statements in corpus 2 is extremely effective to show the evolvement of physical realities.

Examples:

- f. *In this work*, Sol-Gel Dip Coating (SGDC) was employed to obtain pure and aluminum (Al) doped SnO₂ thin films at room temperature on glass and Si (100) substrates. (Article 3)
- g. *The present paper reports* thermoluminescence characteristics of Scolecite and Stillbite minerals collected from Bhor Ghats near Sangamalner, Nasik Distric, Maharasta. (Article 47)
- h. *In the present work*, the optical properties of Zn_{1-x}Be_xO have been studied using the pseudo potential plane wave method (PP-PW). (Article 57)

Examples of purposive statements in corpus 2 are presented in the following statements:

- i. *The purpose of this study* is to investigate and examine numerically the turbulent forced-convention heat transfer and flow resistance characteristics for a 2D incompressible flow of a Newtonian fluid (air) in a rectangular channel of rectangular section with staggered cascaded rectangular-triangular fins (CRTFs) at constant surface temperature conditions. (Article 1)
- j. So, *the aim of this study* is to identify the impacts of partitions on the dynamic and thermal phenomena in the air gap of a solar collector. (Article 5)
- k. *The purpose of this paper* is to study the extension of the Klein-Gordon field in canonical non-commutative time-space by applying the result obtained to a hydrogen atom. (Article 37)

Table 46
Frequency of Occurrence of M3 Ending with Step 3-1A/1B

Categories	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Yes	38	77.55	37	68.51
No	11	22.44	17	31.48
Total	49	100	54	100

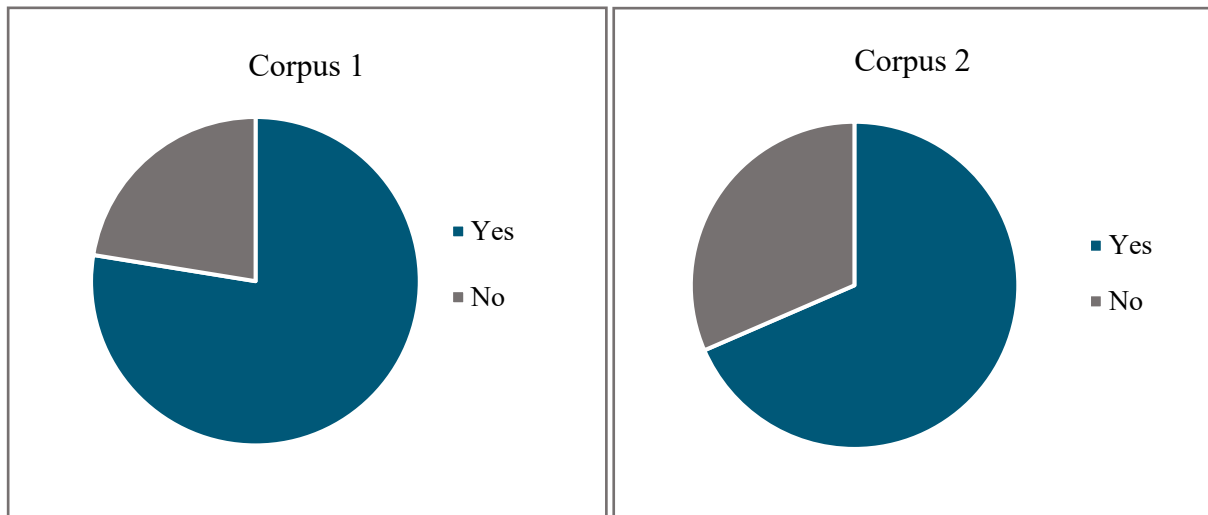


Figure 36. M3 Ending with Step 3-1A/1B

Table 46 above shows that 77.55% of introductions in corpus 1 end with step 3-1A or 3-1B while 22.44% of them include other steps. Similarly, step 3-1A/1B is more prominent in corpus 2 (68.51%) rather than the other two steps (31.48%). This means that researchers agree that the communicative function of M3 is realized by step 3-1.

It is obvious in Table 44 that step 3-2 occurs relatively rarely in corpus 1 (04.08) but is more frequent in corpus 2 (22.22%). Although the low occurrence of step 3-2 in the two corpora makes this step an optional rather than an obligatory step, the benefits stemming from this step in corpus 2 could prove to be quite rewarding when trying to get the results of one’s experiment across.

Examples:

- a. *The results obtained* allowed the positive effect of compressibility on the distributions of pressure and lift coefficients, which are been studied and shown with consideration of the effects of the Mach number, angle of attack and relative thickness profiles of NACA 0012, NACA 0015 et NACA 0018. (Article 35)
- b. The complete system of governing equations is solved numerically and *results are obtained* for a large range of the governing parameters. (Article 39)
- c. *The results*, in comparison with the published data, are in good agreement with the experimental and previous theoretical results. (Article 57)

Step 3-3 exists in 16.32% of introductions in corpus 1 and it represents 11.11% in corpus 2 (see Table 44). This means that step 3-3 is not essential step of every research article.

Examples of step 3-3 in the two corpora are presented below:

- d. This article will begin by first presenting the theoretical, pedagogical arguments for the facilitative effects of form focused instruction and synthesizing findings from research that has investigated two particular options. It will then present an experimental study on the effects of form-focused instruction by comparing a comprehension-based instructional approach to another instructional approach where comprehension and production practice are combined. (Article 48/Corpus 1)
- e. The following sections are organized as follows: the next section presents the methodology to follow; after that, a section to give the results on the non-cosmological redshift contribution, then, one for the foundation and argumentation to compare with previous work, finally, discussion and conclusion sections to suggest some possible evidence and observational contaminations with this new non-cosmological redshift. (Article 36/ Corpus 2)

Categories	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Yes	43	87.75	50	92.59
No	06	12.24	04	07.40
Total	49	100	54	100

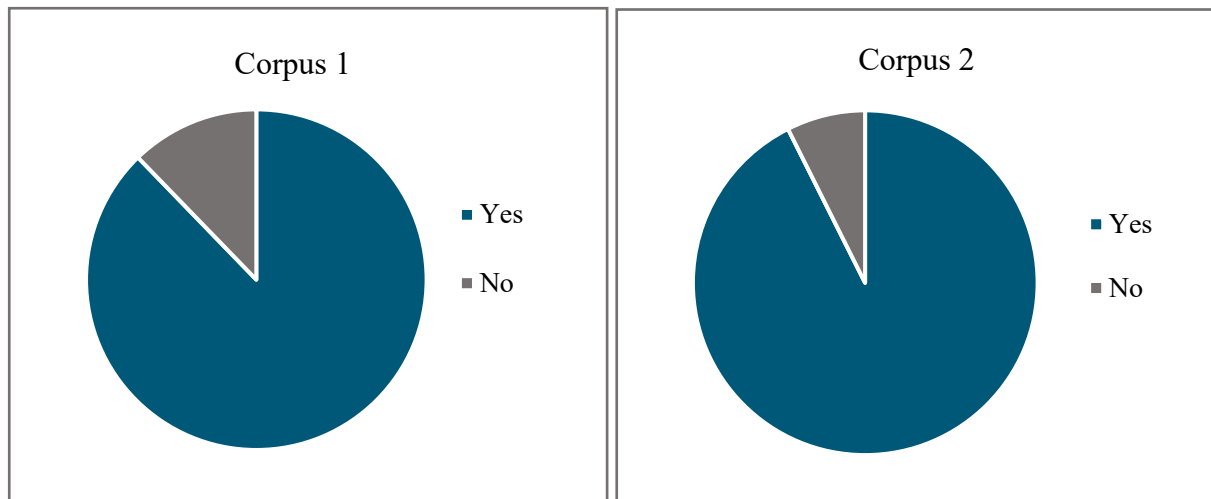


Figure 37. Occurrence of deictic references

Results of Table 47 illustrate that 87.75% of introductions M3 statements in corpus 1 are marked by the use of deictic references meanwhile only 12.24% of introductions do not use them. Likewise, 92.59% of introductions in corpus 2 incorporate deictic references whereas only 07.40% of introductions exclude them. In both corpora, deictic references are marked by the onset of M3.

The most common deictic references used in corpus 1 are: *this paper, this study, this comparison, this article, this investigation, we, our, in this research, I and the present work.*

Deictic references in corpus 2 include the frequent use of the words: *this study, our, this paper, this work, we and this article.*

Deictic expressions are the most frequent signal in M 3 particularly in step 3-1 that translate the uniqueness of research and ensure readers involvement in the research. The form of deictic

references differs from one discipline to another and it depends on the type of promissory statement (purposive or descriptive) incorporated in the text.

Forms	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Collapsed	35	81.39	25	50
Standard Descriptive	08	18.60	25	50
Total	43	100	50	100

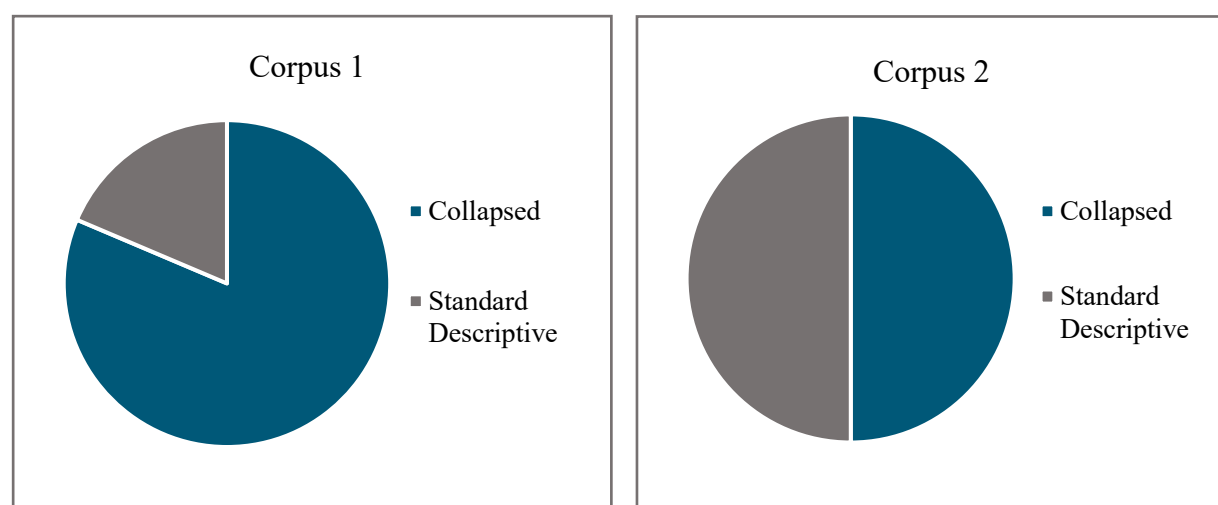


Figure 38. Form of deictic references

Regarding the form of deictic references, it is clear in Figure 38 that applied linguistics researchers prefer to use the collapsed form of references (81.39%) more than the standard descriptive form (18.60%). The analysis of the two corpora shows that most collapsed deictic references are used to express purposes; meanwhile; the standard forms are related with descriptive statements. Examples of collapsed deictic references in corpus 1 are cited below:

- a. As a matter of fact, *this paper explores* participants' views regarding the integration of internet tools and intercultural dimensions in language learning classroom activities. It is also meant to contribute to the development of quality education shedding light on the main factors that hinder a good and meaningful learning embodied in EFL writing and creative skills; a project that encourages

new aspects to support and supplement EFL learning actions and practices.

(Article 39)

- b. ***The purpose of this paper is to highlight*** the merits furnished by the co-existence of English as foreign language (FL) and the pupils' mother tongue (MT) via the adoption of translation exercises within a FL learning environment without averting to reflect on the tacit harms they may call forth. (Article 66)
- c. ***The aim of this research is*** showing the importance of humour in teaching/learning process... (Article 70)

The following are examples of descriptive standard form in the same corpus:

- d. In this article, ***we will try*** to shed some light on how EST is being taught at the department of English, as far as the learners' perceptions and attitudes are concerned by means of a course book entitles "Minimum Competence" in scientific English. (Article 8)
- e. In this paper, ***we measure*** the rhythmic performance of 20 Algerian learners of English using the rhythm metrics %V and ΔC , in order to classify it into either a discrete rhythmic class or rather in a continuum. (Article 22)

In corpus 2, both forms of deictic references occur equally (50%) (see Figure 38). Here, deictic references are highly context-dependent; physicists use them to shift from context to another context that refers respectively to the current position of their research. Examples:

- f. So, ***the aim of this study is to identify*** the impact of partitions on the dynamic and thermal phenomena in the air gap of a solar collector. (Article 5)
- g. ***This study essentially aims to determine*** the relationship between the switching frequency according to system settings and related technological parameters. (Article 18)

- h. *The main purpose of this work was to investigate* the effect of encapsulation with several biopolymers on the viability of a probiotic *Lactobacillus curvatus* B431 isolated from traditional butter. (Article 23)
- i. In this work, *we will focus* on the second technique, which depends strongly on the Earth Matter Effects (EME) on the oscillation of Supernova (solar) neutrinos, trying to reproduce the Earth’s destiny profile assuming that nothing is known about it, and that the only information we have is the neutrinos. (Article 27)
- j. In this work, *we present* an important contribution to the non-commutative approach to the hydrogen atom. (Article 37)
- k. *In* this paper, *we develop* a two-dimensional code in cylindrical coordinates by using differing radii. (Article 41)

Type	Corpus 1		Corpus 2	
	Occurrence	%	Occurrence	%
Genre	20	46.51	13	26
Inquiry	23	53.48	37	74
Total	43	100	50	100

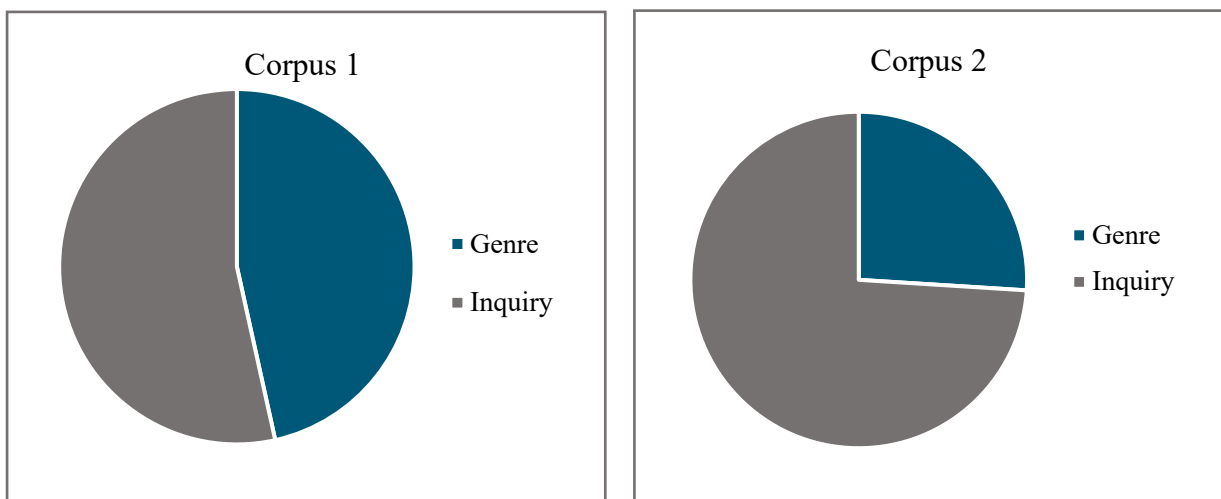


Figure 39. Type of deictic references

Results in Figure 39 show that more than half of introductions in corpus 1 (53.48%) are realized through inquiry deictic form while 46.51% of them are displayed in the form of genre. The first type of deictic references is reflected in the following examples:

- a. Consequently, *research* has heavily concentrated on motivation and motivational research has shifted focus to include the crucial role of the teacher and the various practices and strategies that he or she uses to motivate learners to learn the language. (Article 47)
- b. This *study* aims at enlarging research in the area. Its purpose is to investigate the teachers' attitudes, beliefs, willingness and concerns about the use of the internet technologies in the EFL classroom. (Article 60)

The following are examples of deictic references referring to genre:

- c. The aim of this *paper* is to outline some of the metacognitive strategies and how these skills can influence the students' writing. (Article 1)
- d. This *article* is an attempt to highlight the main causes of this academic misconduct, its causes and suggest some solutions to plummet it. (Article 52)

In corpus 2, much space is devoted to inquiry deictic references (74%) whereas only 26% of introductions display their research as genre (see Figure 39). These are some examples of inquiry references:

- e. In this *study*, we have investigated the effect of various parameters of sonication on the decrease of the thermally exfoliated vermiculite particles size. (Article 8)
- f. The aim of this *work* is to investigate the microscopic mechanisms focusing on the nucleation, growth and coalescence of Pd/thin MgO (100) using Fortran software. (Article 67)

Examples of genre references are:

- g. The purpose of this *article* is to investigate and examine numerically the turbulent forced-convection heat transfer and flow resistance characteristics for a 2D incompressible flow of a Newtonian fluid (air) in a rectangular channel of rectangular section with staggered cascaded rectangular- triangular fins (CRTFs) at constant surface temperature conditions. (Article 1)
- h. In this *paper*, we study the tunneling behavior of spin -1/2 fermions across the event horizon of the Schwarzschild-de Sitter black hole where effects of quantum gravity are taken into account, and using the Hamilton-Jacobi method. (Article 38)

Table 50 <i>Tense of Deictic References</i>				
	Corpus 1		Corpus 2	
<u>Tense</u>	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Present	33	76.74	29	58
Past	05	11.62	13	26
Other Tenses	05	11.62	08	16
Total	43	100	50	100

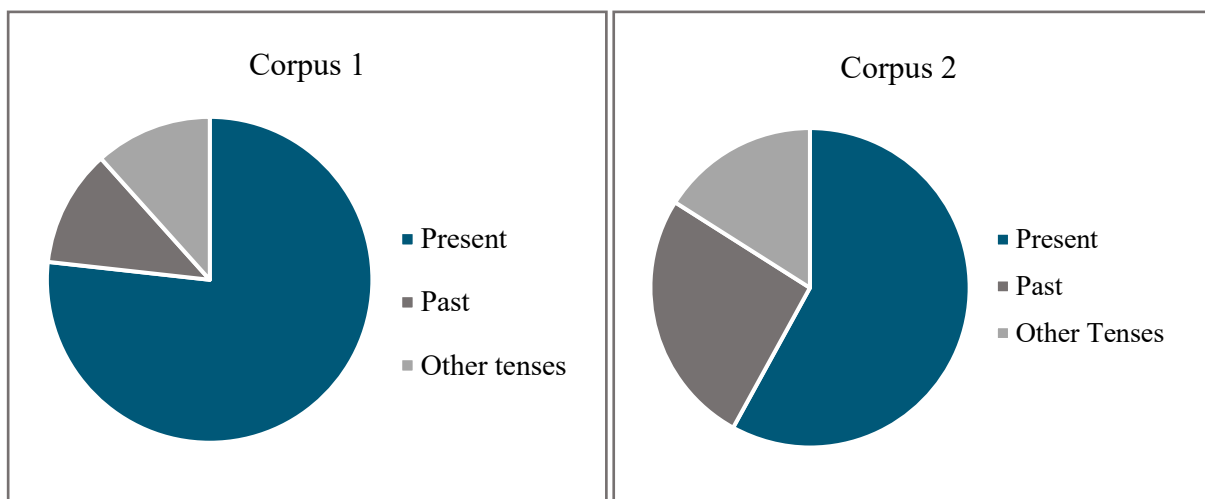


Figure 40. Tense of deictic references

Figure 40 shows that 76.74% of introductions in corpus 1 display deictic references in present tense; 11.62% of introductions are expressed by a verb whether in past tense or other tenses mainly future and present perfect. The use of present tense in M3 carries an implication

that the reported information reflects author's own opinion and view. This tense is associated with generalizations and it is the distinct form of this introduction's section in the two corpora. Although the choice of past simple tense indicates that occupying the niche is carefully selected in the study being reported, only few introductions are performed in this tense. The following are some examples on the use of simple present tense in corpus 1:

- a. Therefore, the present study *aims* to bridge this gap by investigating Algerian EFL teachers' opinions and beliefs and the place of FSs in foreign language teaching as well as their attitudes and practices regarding their inclusion in writing classrooms. (Article 2)
- b. The present paper *attempts* to provide a clear insight into the way professionals in the field deal with culture as a central element in the understanding and transfer of film dialogue, especially at university level. (Article 5)
- c. On this basis, this study *comes out* of concerns about the problem of composing in L2 writing. It *attempts* to examine the composition when the EFL learners at Laghouat University in Alegria. (Article 25)

Examples of the use of simple past tense, present perfect and simple future are listed below:

- d. This study *aimed* to contribute to current understanding of the role of formal classroom construction by extending theoretical and empirical work on the relationship between two grammar teaching options. (Article 48)
- e. Consequently, research *has heavily concentrated* on motivation and motivational research *has shifted* focus to include the crucial role of teacher and the various practices and strategies that he or she uses to motivate learners to learn the language. (Article 47)
- f. In this paper, an attempt *will be made* to define the complex and multifaceted concept of IC so as to remove some of the confusion around it. (Article 65)

Physicists choose present tense to write deictic references (58%); 26% of introductions are expressed in simple past and 16% are expressed in present perfect or simple future (see Figure 40). Examples of deictic expressions in simple present tense are presented below:

- g. The goal of this paper *is* to study the Von Neumann quantum entanglement boson-anti-boson modes created by the dynamics of the noncommutative 2D De Sitter space-time. (Article 40)
- h. Our study *concerns* the finite element modeling of the pressuremeter test. It *presents* a numerical simulation results using code Plaxis in 2D and local computation (Symef) in 1D. (Article 43)
- i. The aim of this work *is* to investigate the influence of the applied current densities on the optical, mechanical and electrochemical properties of Ni-Cr alloy coating. (Article 56)

The following are some deictic statements in simple past, present perfect and future tenses:

- j. The aim of this work *was* to determine the concentration of uranium (^{235}U and ^{238}U), ^{226}Rn , ^{232}Th and ^{40}K in tree inorganic fertilizers (NPK) used in the field of agriculture in the region of Constantine in Algeria. (Article 26)
- k. In the present work the optical properties of $\text{Zn}_{1-x}\text{BQe}_x\text{O}$ *have been studied* using the pseudo potential plane wave method (PP-PW). (Article 57)
- l. In this work, we *will test* the methodology previously used [6] that correlates and predicts the solubility of solids in supercritical carbon dioxide based on the expanded liquid model theory [7-8]. (Article 29)

<u>Categories</u>	<u>Corpus 1</u>		<u>Corpus 2</u>	
	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Yes	23	32.85	30	42.85
No	45	64.28	38	54.28
No Introduction	02	02.85	02	02.85
Total	70	100	70	100

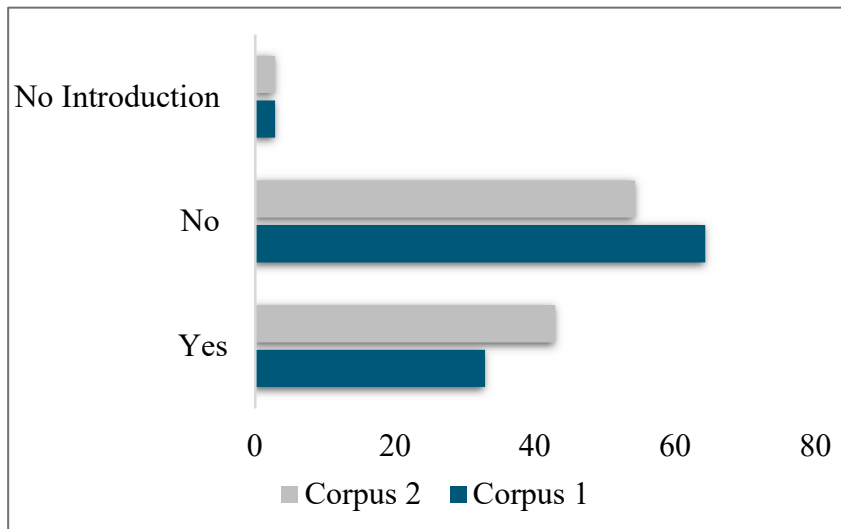


Figure 41. Occurrence of authorial stance

Figure 41 shows that linguistic realizations of authorial stance occur less frequently in the two corpora (64.28% in corpus 1 and 54.28% in corpus 2). In corpus 1, 32.85% of introductions incorporate this linguistic aspect and 42.85% of them in corpus 2. (02.85%) represents the number of articles without introductions. Noticeably, the most frequent personal pronoun reflecting authorial stance in the two corpora is *We* which mostly occurs in M3. The fact that personal pronouns have a clear effect of adding emotional appeal to introductions justifies the low occurrence of this linguistic marker in physics introductions to adhere to objectivity.

Table 52 <i>Frequency of Occurrence of Fronted-Move 3</i>				
	Corpus 1		Corpus 2	
<u>Categories</u>	<u>Occurrence</u>	<u>%</u>	<u>Occurrence</u>	<u>%</u>
Yes	01	02.04	02	03.70
No	48	97.95	52	96.29
Total	49	100	54	100

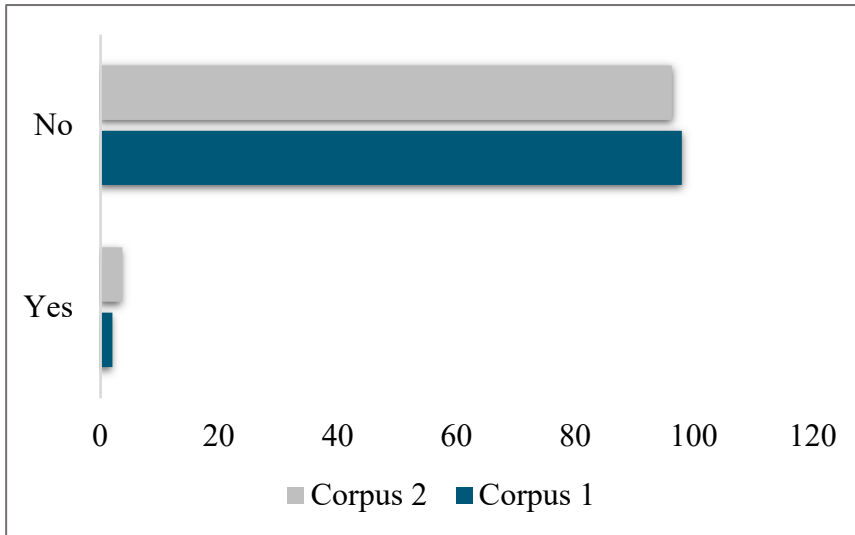


Figure 42. Occurrence of fronted-move 3

Although M3 has been widely used in the two corpora, Figure 42 shows that few researchers in corpus 1 prefer to open their introduction with this move (02.04%). The absolute majority of introductions (97.95%) open with M1 and sometimes M2. Similarly, few introductions in corpus 2 (03.70%) begin with M3 while 96.29% of them do not have M3 at the outset.

Researchers' Questionnaire

The analysis of researchers' questionnaire is divided into six main sections: the first section provides general information about researchers followed by a background section on the structure of RAs introduction. The third section deals respectively with ways of presenting topics in RAs introductions while the fourth section concerns with the development of the research problem statement. Further in the fifth section reflections are made in respect to introduction aims and structure and, finally, section six asks about researchers' attitudes towards writing RAs introductions.

Analysis of Section One: General Information

Question One: Degree

Table 53 <i>Researchers' Degree</i>				
	Applied Linguistics Group 1		Physics Group 2	
<u>Degrees</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Magister	00	00	00	00
LMD Doctorate	07	46.66	06	40
Doctorate Es-Sciences	08	53.33	09	60
Others	00	00	00	00
Total	15	100	15	100

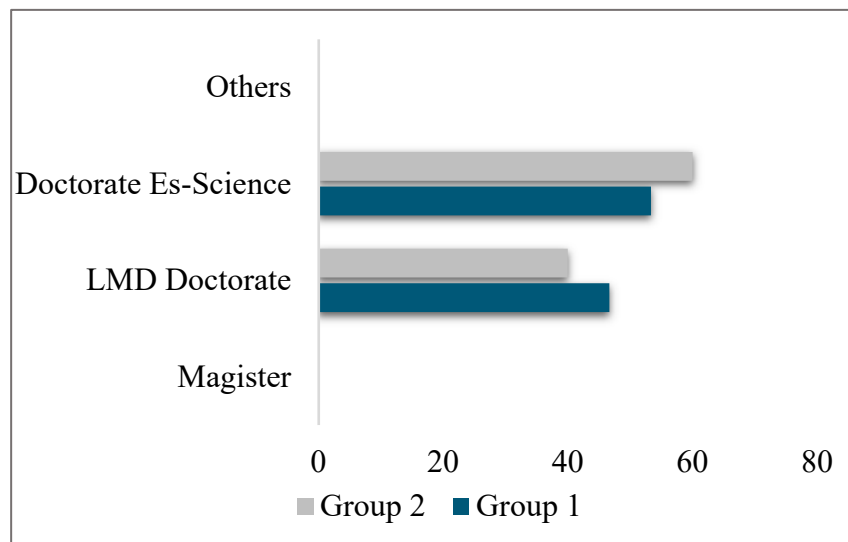


Figure 43. Researchers' degree

As far as researchers' degree is concerned, Figure 43 shows that 53.33% of applied linguistics researchers are holders of doctorate Es-Science while 46.66% of them are LMD doctors. A roughly similar percentage of physics researchers (60%) who hold Es-Science doctoral degree and 40% of them are LMD doctors. The fact that all researchers hold doctoral degree means that they have at least one publication devoted to them.

Question Two: Number of Published Articles

<u>Number of Articles</u>	Group 1		Group 2	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
01	04	26.66	04	26.66
02	03	20	02	13.33
03	01	06.66	00	00
04	01	06.66	04	26.66
05	01	06.66	00	00
06	00	00	01	06.66
08	00	00	01	06.66
09	00	00	01	06.66
15	00	00	01	06.66
16	02	13.33	00	00
20	01	06.66	00	00
25	00	00	01	06.66
28	01	06.66	00	00
33	01	06.66	00	00
Total	15	100	15	100

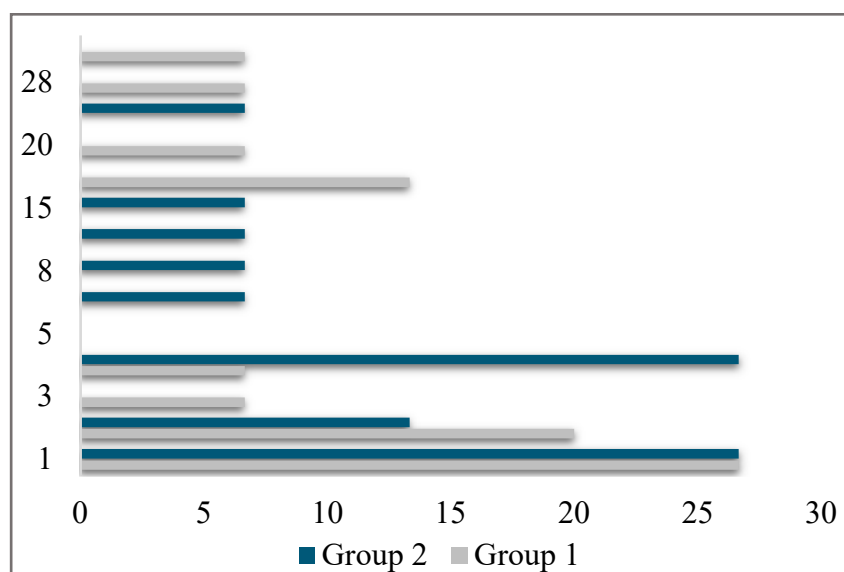


Figure 44. Number of published articles

Results concerning the number of published articles in the fields of applied linguistics and physics show that 26.66% of researchers have published one article in both disciplines (see Figure 44). A similar percentage of researchers (26.66%) who published four articles in physics. For those researchers who published two articles in the two disciplines, the percentages are 20% and 13.33% respectively. 13.33% represents the number of researchers who published 16 articles in applied linguistics and two articles in physics. The lowest percentage (06.66%) represents the number of applied linguistics researchers who published whether 03, 04, 05, 20, 28 and 33 articles. For physicists, the lowest percentage (06.66%) goes to those researchers who published 06, 08, 09,15 and 25 articles. Therefore, the overall number of publications in applied linguistics (135) is higher than the number of publications in physics (88 article).

Question Three: Number of citations for your published article (s)

<u>Number of Articles</u>	Group 1		Group 2	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
00	07	46.66	04	26.66
01	02	13.33	01	06.66
03	00	00	01	06.66
19	01	06.66	00	00
24	00	00	01	06.66
33	00	00	01	06.66
53	00	00	01	06.66
930	00	00	01	06.66
I do not know	05	33.33	05	33.33
Total	15	100	15	100

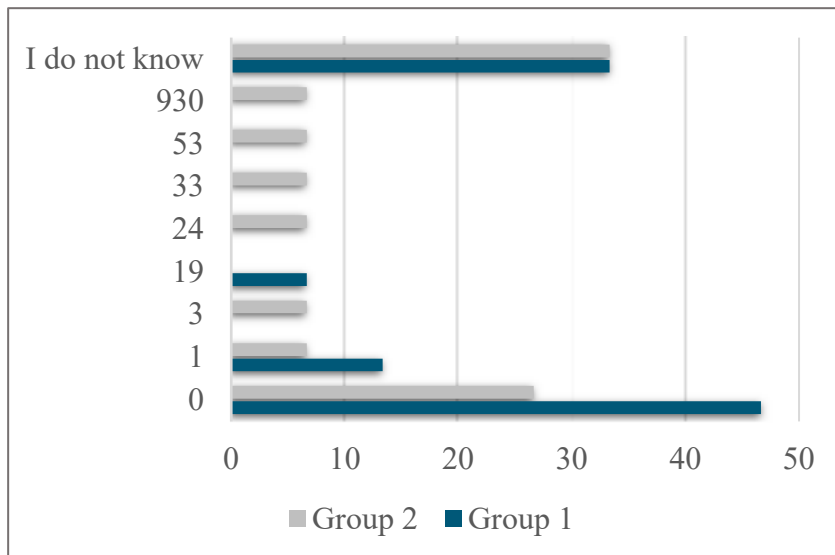


Figure 45. Number of citations

The tabulation of citations shows that the number of researchers who do not yet have citations represents 46.66% in applied linguistics and 26.66% in physics. An equal number of researchers (33.33%) in both disciplines assume that they do not have an idea about the number of citations for their published articles. 13.33% is the percentage of applied linguistics researchers whose articles are cited only once, meanwhile just one case (6.66%) has been reported in physics. The lowest percentage (6.66%) reflects the number of researchers who have 19 citations in applied linguistics. A similar percentage (6.66%) in physics represents those researchers whose total number of citations is 03, 24, 33, 53 and 930 citation (see Figure 45). Despite the noticeable difference in the number of published articles in the two disciplines, citation analysis indicates that the number of citations in physics is higher than the number of citations in applied linguistics.

Analysis of Section Two: Background to Research Articles (RAs) Introductory Section

Question Four: Which section of the RA is implicated in the perceived increased difficulty in writing RAs?

Categories	Group 1		Group 2	
	N	%	N	%
Abstract	02	13.33	00	00
Introduction	05	33.33	07	46.66
Method (s)	03	20	00	00
Results	00	00	02	13.33
Discussion	05	33.33	05	33.33
Conclusion	00	00	01	06.66
Total	15	100	15	100

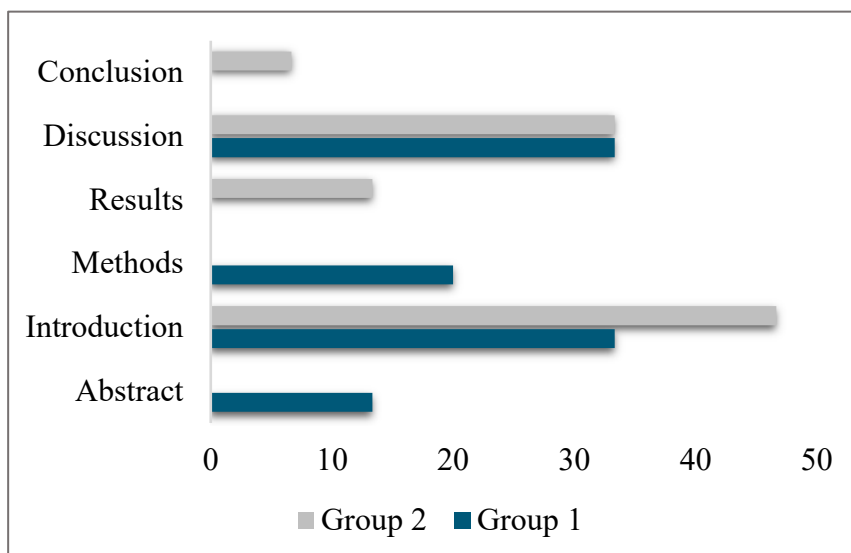


Figure 46. The most difficult section of RAs

The results illustrated in Figure 46 show that 33.33% of researchers in group 1 agree that introduction and discussion sections are the most difficult sections to write in RAs while 46.66% of researchers in group 2 said that it is the introduction section then the discussion section (33.33%). The average number of applied linguistics researchers who have chosen methods section is 20%. 13.33% reflects the number of applied linguistics researchers who settled for the abstract and a similar percentage of physicists (13.33%) who accounted for results section while only one researcher (06.66%) who said conclusion section. Yet, the

analysis of question four reveals that introduction and discussion are the most complicated sections of RAs to write. The following are the main justifications of applied linguistics researchers for their choices:

- Introduction is the most difficult section because researchers are neither trained enough in the writing skills, proofreading nor in engaging one's knowledge which enable them to find appropriate ways to cover meaningfully and coherently this part.
- Introduction requires precision and careful selection of ideas and words that express these ideas.
- Introduction is the part of the article which receives mostly negative feedback from reviewers.
- Introduction is the part which reflects readers' satisfaction or disappointment with the article.

Researchers mentioned two main reasons for the difficulty of discussion section are:

- Discussion is the largest section where findings must be analyzed in the light of present and previous research.
- Discussion is hard because it is based on tentative language that interprets new findings and their future implications.

Concerning methods section, the main claim against this section is the difficulty to find the most applicable research method. However, abstract is considered difficult because it requires high writing accuracy.

For physicists, the main reasons for the difficulty of introduction section are:

- Introduction is the hardest section because it explains the subject and research problem.
- Introduction is the point of departure that needs more attention and concentration.
- Introduction displays all information the researcher needs to motivate his/her research.

- Introduction is mainly based on researcher own language and thoughts to build a research otherwise the other sections are built upon the analysis and interpretation of empirical data.

Physicists, like the first group of researchers, claimed that the difficulty of discussion section lies in the attempt to bridge the gap between new findings and previous findings and check whether their study is in line with previous findings in similar studies. Another reason accounts for the difficulty of identifying physical aspects/ materials and give valid explanation to new-found physical phenomena.

As far as results section is concerned, researchers exhibit difficulties in solving research problem in an empirical method. Meanwhile, conclusion is the section which displays the extent to which researchers succeed to address research problem and questions.

Question Five: According to you, what is the purpose of RAs introduction?

Since introduction is the object of study in this research, it becomes important to investigate researchers understanding of the purpose of this section. The analysis of question five maintained that applied linguistics researchers have a better understanding of the purpose of introduction than physicists.

For applied linguists, there are four common ideas about the purpose of introduction are summed up in the following points:

- Introduction summarizes the most important aspects of research.
- Introduction aims to persuade readers with a new research and new findings.
- Introduction aims to entice the reader to look at the article in more depth and consider its importance.
- The main purpose of the introduction is to clarify the general framework of research placing special emphasis on research problem, objectives and background.

The second group of researchers identified the following purposes:

- Introduction aims to provide an exhaustive summary of the most important milestones in the field.
- Introduction explains the choice of research and its contribution in the field of study.
- Introduction helps readers to review a research and evaluate its relevance.

Question Six: Are there logical steps of writing RAs introduction?

Table 57 <i>General Structure of RAs Introduction</i>				
Categories	Group 1		Group 2	
	N	%	N	%
Yes	12	80	13	86.66
No	03	20	02	13.33
Total	15	100	15	100

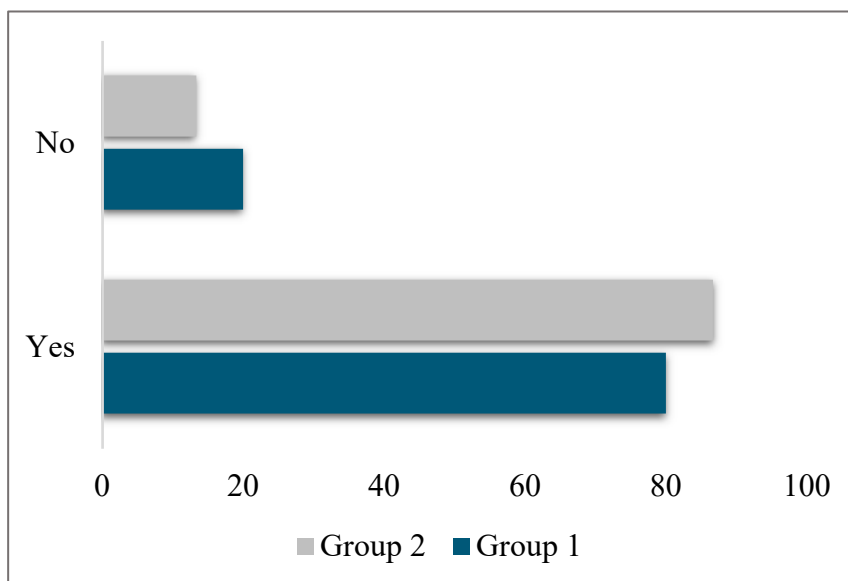


Figure 47. General structure of RAs introduction

This question seeks to identify the number of researchers who said that constructing RAs introduction is based on a set of logical steps. An examination of Table 57 shows that the majority of researchers in the two disciplines believe that writing introduction should adhere to logical steps (80% and 86.66%, respectively). In return, only 20% of applied linguistics researchers and 13.33% of physicists who answered with no. The fact that most researchers

believe that writing introduction adheres to logical steps reveals that introductions in both disciplines are realized by different steps that may correspond Swales’ three-move schema found in RAs introductions.

Question Seven: If yes, how many steps does RAs introduction consist?

Categories	Group 1		Group 2	
	N	%	N	%
One	00	00	00	00
Two	01	08.33	02	15.38
Three	08	66.66	10	76.92
More than Three	03	25	01	07.69
Total	12	100	13	100

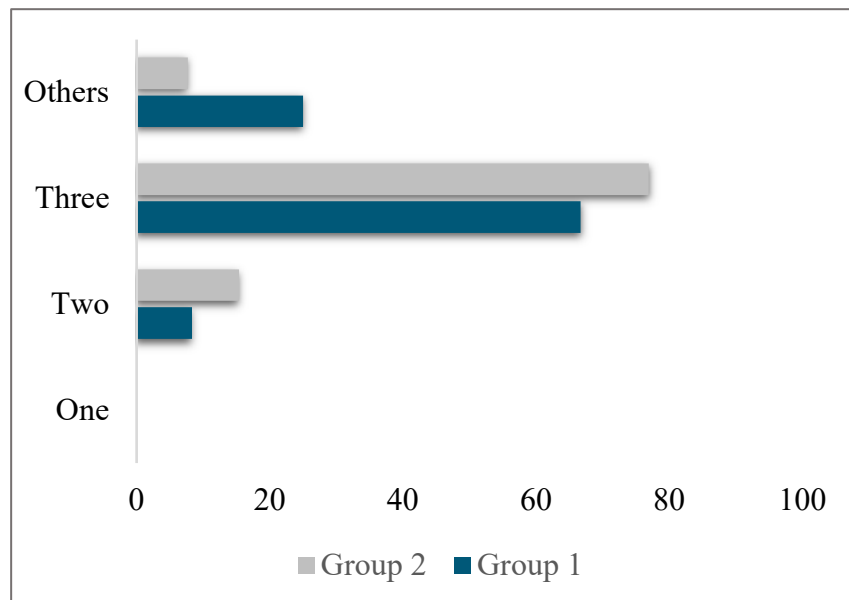


Figure 48. Number of steps

For those researchers who answered with yes to the previous question, 66.66% of them in group 1 think that introduction consists of three steps and approximately the same number of researchers in physics (76.92%) who provide a similar answer. 25% of researchers in the first group said that there are more than three steps in the introduction and 8.33% said that there are only two steps. However, 15.38% of physicists assumed that introduction has two steps;

whereas, the answer being less convincing to researchers in this group is the introduction which consists of more than three steps (07.69%) (See Figure 48).

What are they?

Analyzing researchers' answers on the main steps of introduction show that most researchers in both groups focus on the following three steps:

- Research objectives
- Statement of the problem
- Research background

Some researchers in group 1 claimed that there are five major steps in the introduction are:

- Rational for the study
- Research problem
- Research objectives
- Hypotheses
- Method

Meanwhile, other researchers in group 2 emphasize the importance of two main steps which are:

- Defining phenomena/ materials
- Research problem

Researchers response to the main steps incorporated in introductions shows that there is a relative difference in the choice of steps as well as the order of steps in introduction. While applied linguistics researchers foster the importance of obligatory steps, researchers in physics account for the significance of other steps that does not exist in Swales (1990) framework. This shows that hard science introductions require more accurate description of research rather than

soft sciences. This raises the possibility of including other steps or even moves in RAs introduction corresponding science research.

Question Eight: Which of the following step(s) is (are) *obligatory* in RAs introduction?

Categories	Group 1		Group 2	
	N	%	N	%
1. Identifying the general framework of the topic	00	00	03	20
2. Testing new hypotheses	04	26.66	04	26.66
3. Outlining research purposes	06	40	05	33.33
4. Others	00	00	00	00
5. General Framework + Purposes	05	33.33	01	06.66
6. Hypotheses + Purposes	00	00	01	06.66
7. General framework + Hypotheses + Purposes	00	00	01	06.66
Total	15	100	15	100

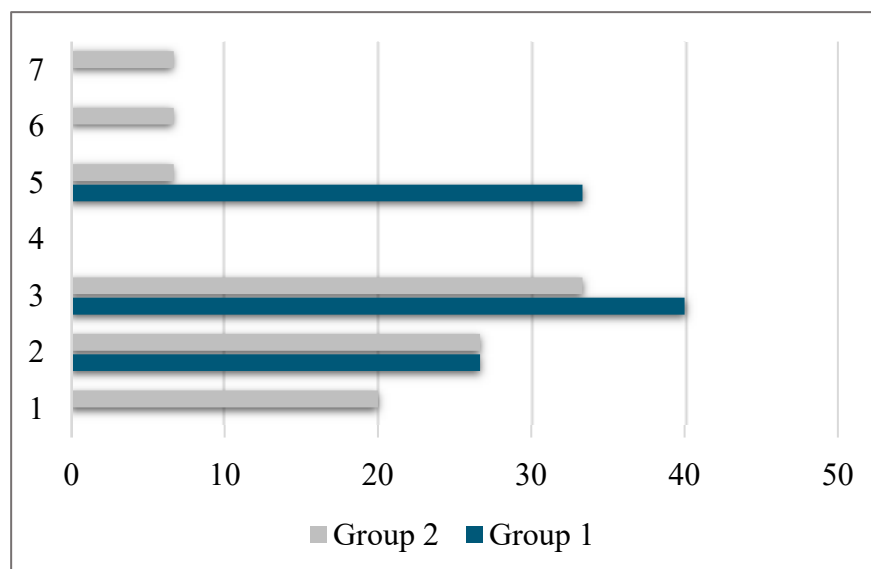


Figure 49. Obligatory steps

Results concerning obligatory steps show that outlining research purposes has gained wide acceptance among both groups of researchers (40% and 33.33%, respectively). However, some applied linguistics researchers (33.33%) emphasize the importance of two steps are: identifying the general framework of the topic and research purposes; whereas, some physics researchers (20%) said that step 1 is the initial and the only obligatory step. 26.66% of researchers give

equal importance to testing new hypotheses. Finally, only 06.66% of researchers in group 2 stressed the importance of combining the general framework of the topic with research hypotheses and/or research purposes (see Figure 49). Therefore, promissory statement is considered as an obligatory step in all RAs introductions regardless the academic discipline.

Question Nine: What are the main characteristics of a RA introduction section in your field?

The results obtained on the characteristics of RAs introduction reveal important differences between the two disciplines. Although the respondents in group 1 gave a range of alternative answers, there are six characteristics that are most emphasized by all researchers are:

- Logical sequencing of information within introduction (From general to specific)
- General
- Conciseness
- Inclusiveness
- Objectivity
- Simplicity
- Direct

In return, five characteristics are suggested by researchers in group 2 including:

- Lengthy introduction
- Detailed
- Scientific (technical) writing style
- Evidential mapping of information
- Precision

The characteristics of RAs introductions indicate that discipline plays a crucial role in mapping the features of introductions. The answers above show that researchers in group 1 develop more holistic and general view regarding introductions characteristics in contrast to

researchers in group 2 who provide more accurate details about the characteristics of introductions in their field.

Analysis of Section Three: Introduction Opening Statements

Question Ten: In RAs introduction, the opening sentences report that the topic is of a lively, significant or well-established research area?

Table 60 <i>Introduction's Opening Statements</i>				
	Group 1		Group 2	
Categories	N	%	N	%
Yes	14	93.33	11	73.33
No	01	06.66	04	26.66
Total	15	100	15	100

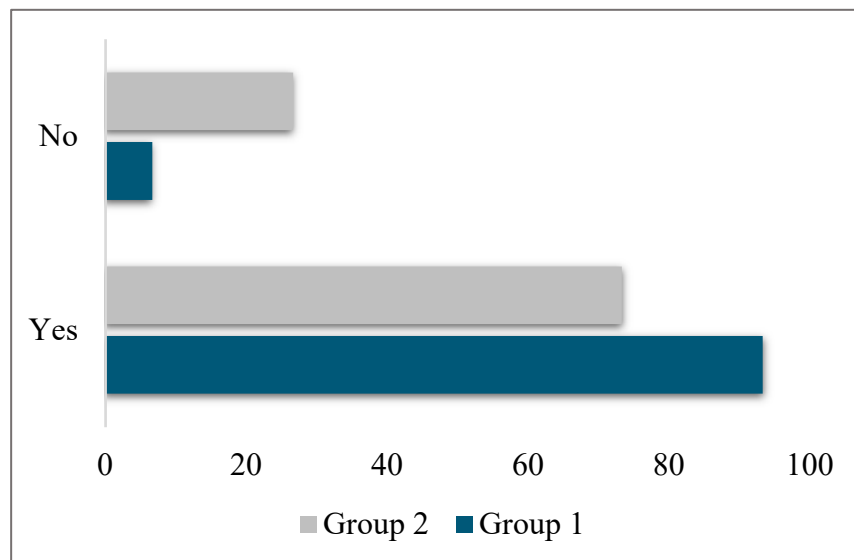


Figure 50. Introduction's opening statements

Examining researchers' responses in the way they prefer to start RAs introduction clearly shows that the majority of researchers in both groups prefer emphasizing the significance of the topic and its contribution in the field. Only 26.66% of researchers in physics oppose this view and 6.66% of researchers in applied linguistics (see Figure 50). According to questionnaire analysis, claiming centrality statement is reported as an obligatory step in both disciplines which comes as opposed to the corpus-analysis results.

Question Eleven: Do you use a general statement that emphasizes the frequency and complexity of your research?

Table 61 <i>Use of Topic Generalization(s) Statement</i>				
	Group 1		Group 2	
<u>Categories</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Yes	07	46.66	10	66.66
No	08	53.33	05	33.33
Total	15	100	15	100

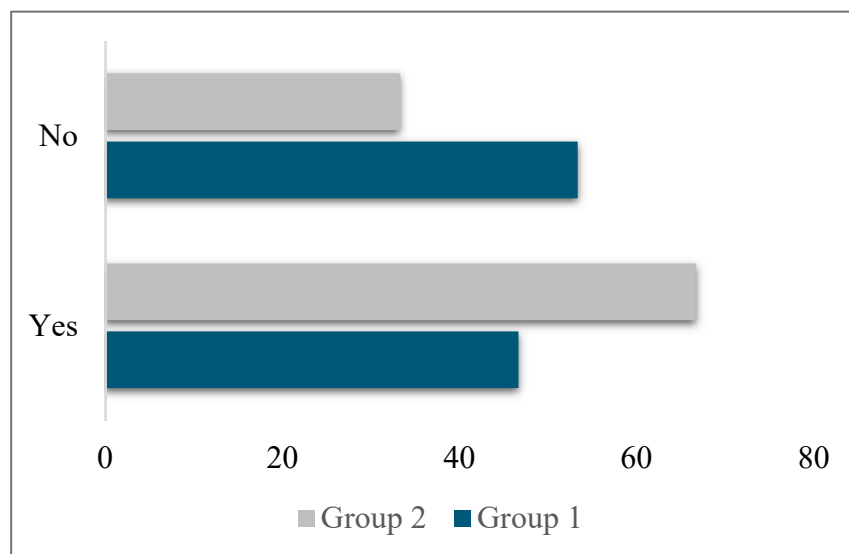


Figure 51. Researchers’ use of topic generalization(s) statement

Figure 51 above indicates that 53.33% of researchers in group 1 disagree with claim that introduction should include a statement that emphasizes research complexity, while 46.66% of them agree. In opposite, 66.66% of physicists answer with yes and 33.33% of them hold the opposite view. As far as topic generalizations statement is concerned, results indicate that this step is considered optional in applied linguistics RAs and obligatory in physics introductions.

Question Twelve: Do you think that synthesizing and reviewing previous work in a literature review is?

Categories	Group 1		Group 2	
	N	%	N	%
Obligatory	10	66.66	11	73.33
Optional	05	33.33	04	26.66
Total	15	100	15	100

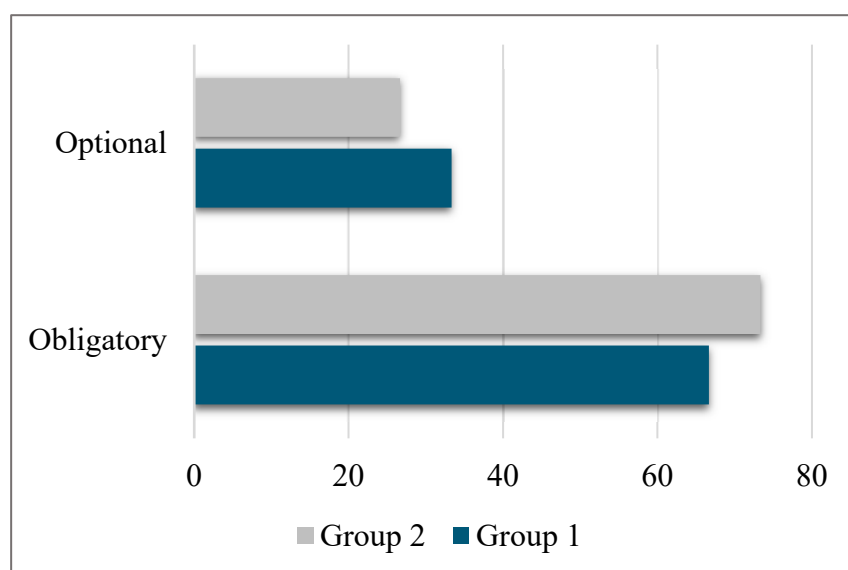


Figure 52. Incorporating literature review in RAs introduction

Investigating researchers' opinion about literature review shows that 66.66% of researchers in group 1 said that reviewing literature is an obligatory step in RAs introduction; whereas, 33.33% of them said that it is an optional step. Similarly, a high percentage of researchers in physics (73.33%) believe that incorporating literature review in introduction is mandatory while 26.66% of them think that it is marginal (see Figure 52). Therefore, reviewing items of previous research is another obligatory step considered by researchers in both disciplines.

Why? Why not?

The main arguments of applied linguistics researchers in favor of the previous question maintain that reviewing existing research is crucial to define and delimit research. Some researchers adhere to the claim that academic research is diachronic rather than being

synchronic; i.e., new research is the outcome of old research and its limitations. Perhaps the main question of researchers' regarding the importance of literature review is: how would researchers cover the topic and elaborate their questionnaires to gather data useful to research purposes without going through previous studies. Another important justification is that reviewing previous research shows what will be added to old research to create a new research gap. Few researchers consider this section optional because it adheres to the nature of research and authors' personal choice. For others, there should be a separate section of the article devoted to reviewing previous research. Introduction is concerned with presenting new hypotheses rather than displaying past studies.

Physicists consider literature review a major section in the introduction to account for the progress of data and provide an overview of prior findings. Moreover, past research might be used as evidence to come up with a new research and add credibility to it. Other arguments consider the importance of literature review to compare results and avoid redundancy.

Question Thirteen: To what extent do you agree or disagree with the following statements?

Use the following scale: Agree (A), Undecided (U), Disagree (D)

Group 1				
<u>Categories</u>	<u>A</u>	<u>U</u>	<u>D</u>	<u>Total</u>
1. Citations	04	05	06	15
%	26.66	33.33	40	100
2. Lexical Categories	09	06	00	15
%	60	40	00	100
3. Linguistic exponents	07	08	00	151
%	46.66	53.33	00	00

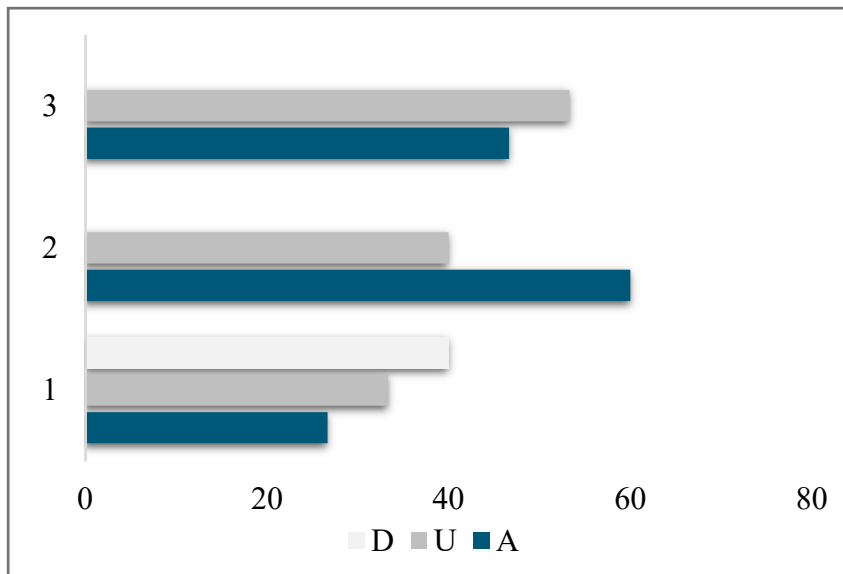


Figure 53. Linguistic choices in RAs introduction (Group 1)

Results on the distinctive linguistic features of introduction section indicate that 40% of researchers in group 1 disagree with the use of integral and non-integral citations; 33.33% hold a neutral view (undecided) while 26.66% of them agree with the statement.

As far as lexical categories are concerned, it is obvious from Figure 53 that the majority of researchers (60%) consider lexical choices important features of introduction. The amount of undecided answers is 40%. Finally, 46.66% of researchers in this group consider the impact of linguistic exponents to strengthen the quality of this section; meanwhile, 53.33% has been recorded for undecided.

Table 64 <i>Linguistic Choices in RAs Introduction</i>				
Group 2				
<u>Categories</u>	<u>A</u>	<u>U</u>	<u>D</u>	<u>Total</u>
1. Citations	11	02	02	15
%	73.33	13.33	13.33	100
2. Lexical categories	09	06	00	15
%	60	40	00	100
3. Linguistic exponents	11	04	00	15
%	73.33	26.66	00	100

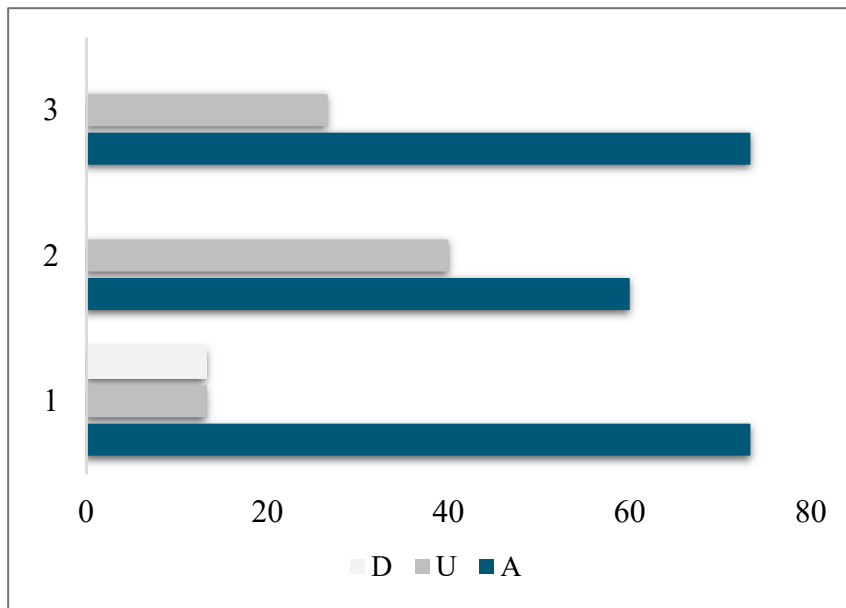


Figure 54. Linguistic choices in RAs introduction (Group 2)

The findings of this question reveal that the absolute majority of researchers in group 2 (73.33%) consider citations an important feature in introduction; 13.33% of them do not bring any actual response to this statement and an equal number of researchers (13.33%) who do not account for the relevance of citations (see Figure 54). The results obtained concerning lexical categories indicate that 60% of researchers agree that lexical categories are vital to distinguish introduction's section while 40% of them answered with undecided. At last, 73.33% of researchers admit that linguistic exponents play a significant role in mapping introductions. Still, 26.66% of them held a neutral view (Undecided).

Results on linguistic indicators show that researchers in the two disciplines emphasize the significance of two different categories of linguistic features (lexical categories for applied linguists and linguistic exponents for physicists). Surprisingly, researchers in group 1 do not consider citations baseline characteristic of introductions.

Analysis of Section Four: Writing a Research Problem

Question Fourteen: Do you state your research problem in RAs introduction?

Table 65 <i>Occurrence of Research Problem's Statement</i>				
	Group 1		Group 2	
Categories	N	%	N	%
Yes	12	80	11	73.33
No	03	20	04	26.66
Total	15	100	15	100

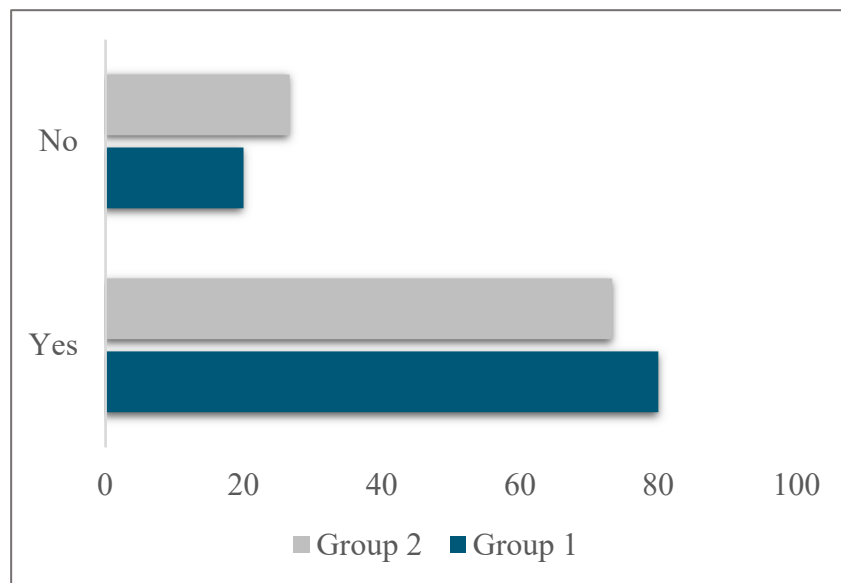


Figure 55. Occurrence of research problem statement

For the sake of investigating researchers' opinion about the occurrence of statement of the problem in the introduction, Figure 55 clearly illustrates that the majority of researchers in both disciplines (80% and 73.33%, respectively) agree that research problem should be clearly stated in the introduction; meanwhile, only 20% of researchers in group 1 and 26.88% of them in group 2 hold the opposite view. Unlike corpus analysis, the identification of research gap is found obligatory in both disciplines, therefore, the difference lies in the way gap statement is presented.

Question Fifteen: If yes, why should a research problem appear in the introduction?

For those researchers in group 1 who responded positively to the previous question, their main reason is that research problem statement is essential to avoid ambiguity and clarify why the researcher is preoccupied with actually conducting the research about a particular topic. Moreover, some researchers considered problem statement the backbone of research objectives and assumptions.

Researchers in group 2 give two main reasons for incorporating a research problem statement, the first is that this statement helps to identify a new problem and situate it within a new research framework. the second most widely stated reason is that statement of the problem is essential to determine research method (experimental or simulation).

Question Sixteen: Generally, how do you word the research problem?

<u>Categories</u>	Group 1		Group 2	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
1. Stating shortcomings, or limitations of earlier work	01	06.66	01	06.66
2. Referring to a research problem in the area of your study	03	20	01	06.66
3. Asking questions	10	66.66	03	20
4. Extending previous research	01	06.66	10	66.66
Total	15	100	15	100

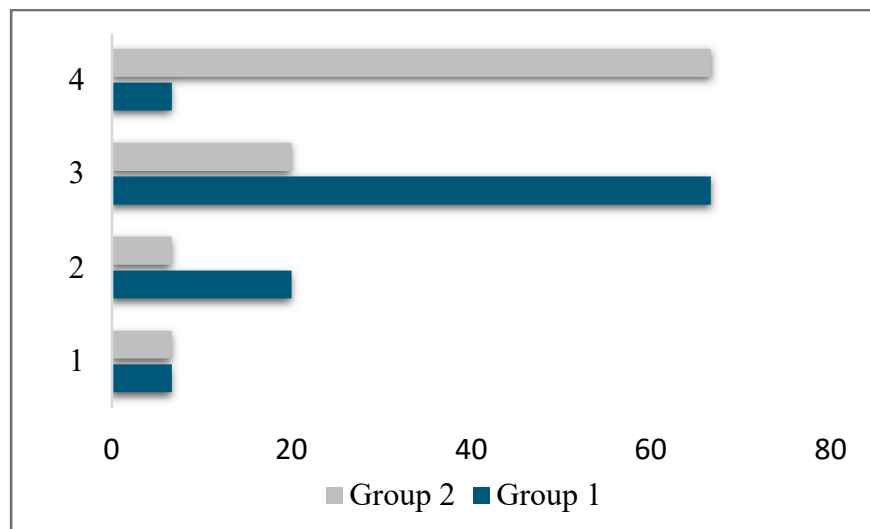


Figure 56. Types of research problem statement

As illustrated in Figure 56, 66.66% of researchers in group 1 prefer to write the problem in a form of question, whereas, the same number of researchers in group 2 (66.66%) found that expanding previous studies is the best way to generate a research problem. 20% of applied linguistics researchers have chosen referring to a research problem in the area of study; however, an equal number of researchers in physics (20%) have chosen asking questions. Only 06.66% of researchers in both groups said that statement of the problem describes limitations and shortcomings of previous studies. Few researchers in group 1 (06.66%) consider the importance of expanding previous research and the same number (06.66%) of researchers in group 2 opted for referring to a research problem in the area of study. Hence, research gap is identified differently by researchers in the two disciplines through two different steps which are question raising characterizing applied linguistics introductions and continuing a tradition for physics introductions. The choice of the two steps comes in line with corpus analysis which shows fairly similar results.

Question Seventeen: In your field, stating a research problem should be amenable to:

<u>Categories</u>	Group 1		Group 2	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
1. Data based on incomplete evidence	09	60	03	20
2. Empirical data	06	40	06	40
3. Both	00	00	06	40
Total	15	100	15	100

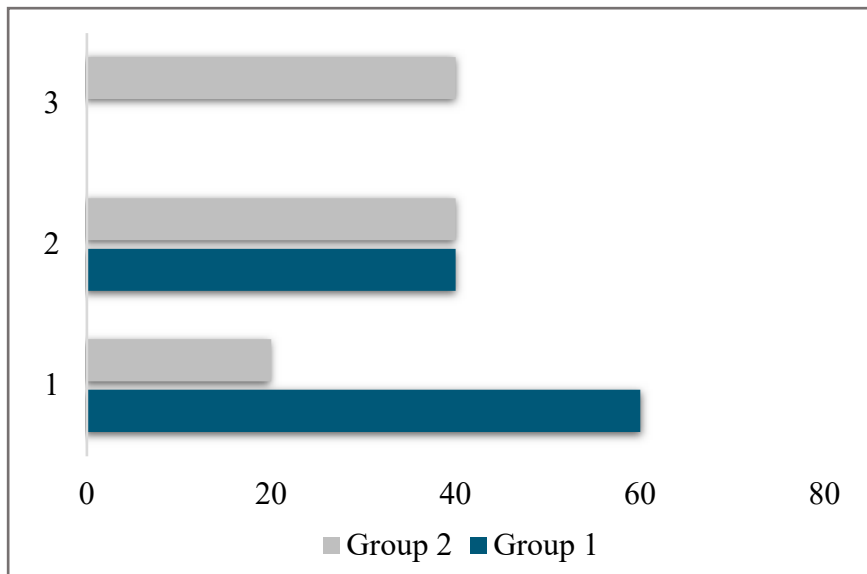


Figure 57. Types of data

The comparison between researchers' choice of data shows that high percentage of researchers in group 1 (60%) said that research problem is derived from data based on incomplete evidence; still 40% of the them who responded by empirical data. In opposite, 40% of researchers in group 2 said that research problem depends on both types of data and an equal number (40%) who stuck to the second choice of empirical data. Only 20% of researchers in this group account for data based on incomplete evidence (see Figure 57). The choice of data in each discipline depends on the nature of research; for example, experimental research in physics requires more empirical data than simulation research. Similarly, descriptive or historical research in applied linguistics is amenable to data based on incomplete evidence in contrast to experimental research that is based on empirical data from experiments or from observations during fieldwork.

Analysis of Section Five: Introduction Aims and Structure

Question Eighteen: According to you, which of the following step (s) should appear at the end of the introduction?

Categories	Group 1		Group 2	
	N	%	N	%
1. Outlining research purposes	03	20	02	13.33
2. Announcing research findings	04	26.66	06	40
3. Indicating the structure of the article	03	20	04	26.66
4. All of them	03	20	03	20
5. Purpose + structure of the article	02	13.33	00	00
Total	15	100	15	100

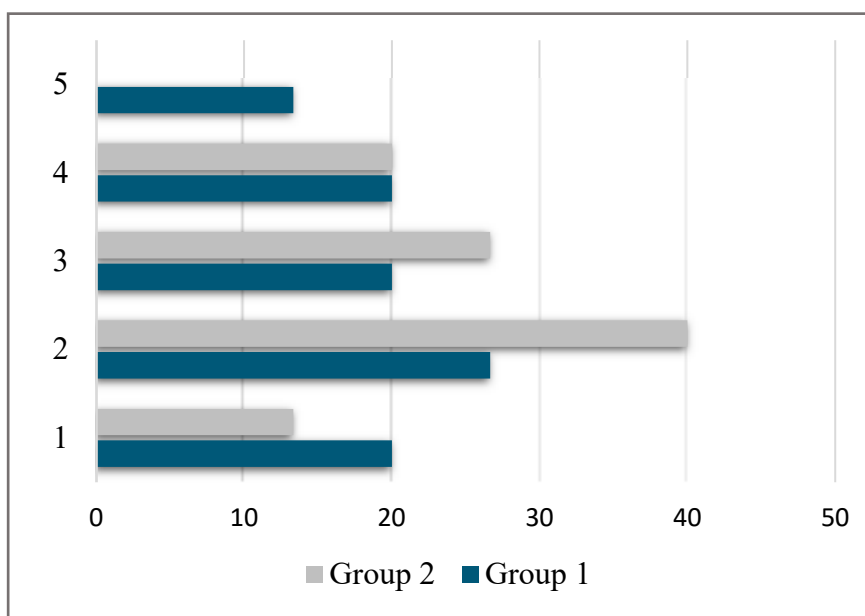


Figure 58. Introduction's last step (s)

The analysis of question 18 reveals that researchers in applied linguistics use various ways to end RAs introduction (see Figure 58). 26.66% of researchers saw findings the most suitable ending to introduction. Some researchers in this group highlighted the importance of outlining purposes (20%) and indicating the structure of research article (20%), while others said that introduction encompasses all of the three steps (20%). Only 13.33% of researchers focus on the combination between research purposes and the structure of the article. Unlike applied linguists, most physicists (40%) consider research findings the only logical step to end the introduction;

26.66% of them account for the structure of the article; 20% said all the steps and 13.33% agree on research purposes.

Question Nineteen: How would you typically evaluate a RA introduction that does not include this (these) step (s)?

As a response to this question, researchers in applied linguistics put forward many judgements about introductions that do not expose these steps by considering them not useful or ill-framed. Researchers added that this type of introductions is incomplete and misleading since it fails to display the content of the article clearly, while others said that it is misunderstood because it does not draw the boundaries of research. Overall, the main judgment shared by all researchers is “poor introduction”.

Physicists have different judgments regarding these steps whose absence would result on disappointing introduction. For others, an introduction that does not display these steps is not an academic introduction; whereas some researchers have a similar judgment like applied linguistics researchers that this type of introductions is ambiguous and misleading.

Question Twenty: Is there allowable variation in where *research purposes* can occur in RAs introduction in your field?

<u>Categories</u>	Group 1		Group 2	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Yes	03	20	07	46.66
No	12	80	08	53.33
Total	15	100	15	100

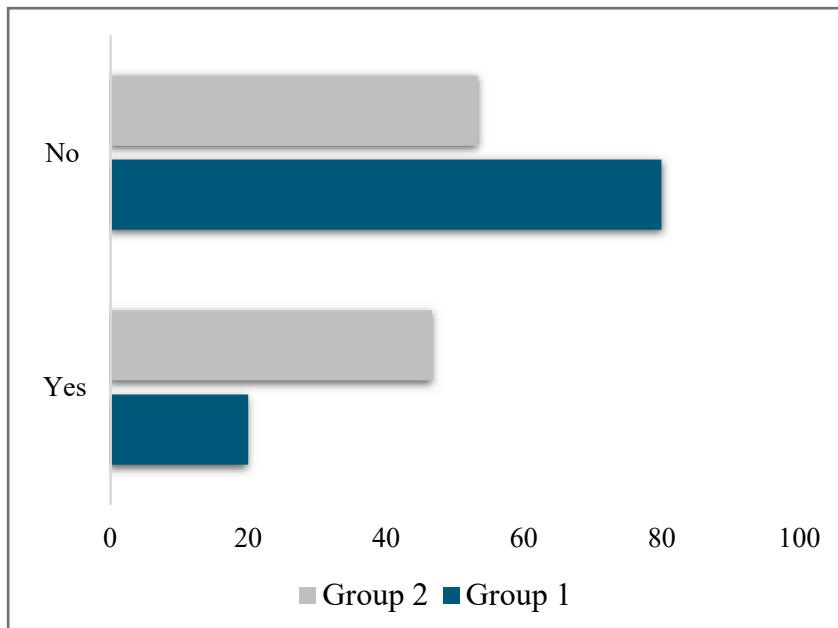


Figure 59. Placement of research purposes

The analysis of this question shows that the majority of researchers in both groups admit that research purposes should be placed at the end of the introduction (80% and 53.33% respectively). Still, 46.66% of physicists said that research purposes can occur at several different places in the introduction; meanwhile, low percentage of applied linguistics researchers (20%) held this view (see Figure 59). These findings are in line with corpus analysis results which indicate that outlining purposes is generally placed at the end of the introduction in both disciplines.

If yes, why?

According to applied linguistics researchers, the placing of research purposes is a matter of researchers' personal choice and their way of seeing things. Therefore, the placement of purposes changes from one researcher to another. Rather, researchers in group 2 believe that placing research purposes depends on authors' emphasis as well as the sequencing of the information in the introduction.

Analysis of Section Six: Researchers’ Attitudes towards RAs Introductions

Question Twenty-One: How would you rate your overall satisfaction with your RAs introduction (s)?

Categories	Group 1		Group 2	
	N	%	N	%
Very satisfied	03	20	02	13.33
Somewhat satisfied	07	46.66	06	40
Somewhat dissatisfied	05	33.33	05	33.33
Very dissatisfied	00	00	02	13.33
Total	15	100	15	100

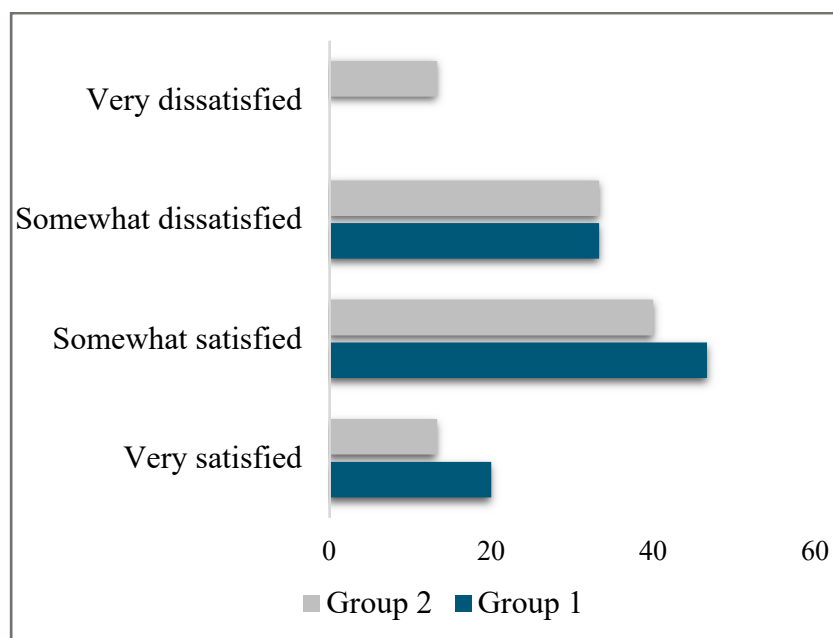


Figure 60. Researchers’ attitudes toward their RAs introductions

Figure 60 shows that the number of researchers in group 1 who said that they are somewhat satisfied with their RAs introductions is 46.66% in comparison with 40% of researchers in group 2. An equal number of researchers in both groups (33.33%) are somewhat dissatisfied. The number of researchers in group 1 who said that they are completely satisfied is 20% in comparison with 13.33% of researchers in group 2. Finally, only 13.33% of physicists who indicate that they are very dissatisfied. The overall number of researchers in physics who express their dissatisfaction with their RAs introductions (46.66%) is higher than the number

of researchers in applied linguistics (33.33%). Previously, researchers’ responses to the structure of introduction implies that all researchers in both disciplines have good knowledge about the different steps incorporated in RAs introduction. However, the problem of language remains the major obstacle to construct articles in general and introduction in particular.

Question Twenty-Two: To what extent do you agree that your research discipline impact the rhetorical and linguistic choices of your RAs introduction (s)?

Categories	Group 1		Group 2	
	N	%	N	%
Strongly agree	04	26.66	06	40
Agree	05	33.33	03	20
Neither agree nor disagree	06	40	03	20
Disagree	00	00	02	13.33
Strongly disagree	00	00	01	06.66
Total	15	100	15	100

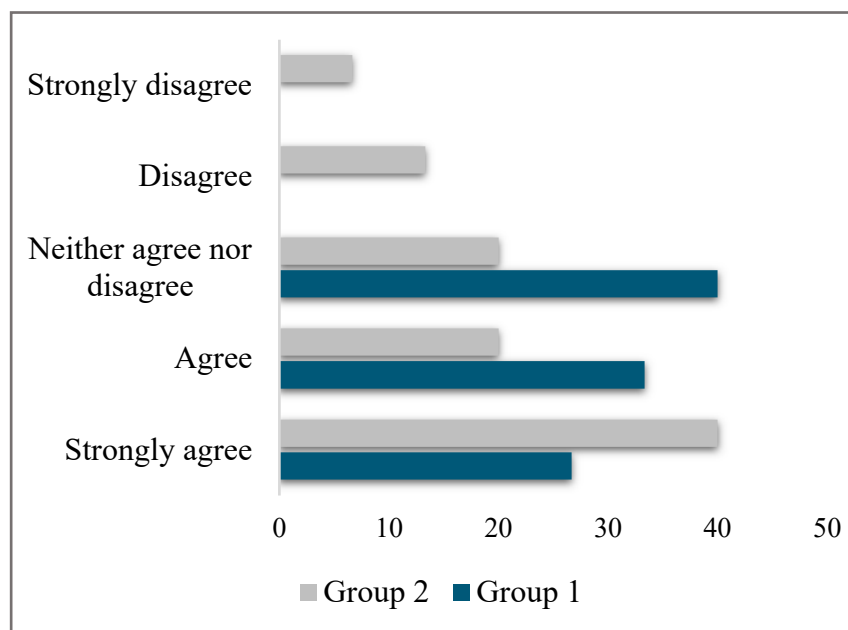


Figure 61. Researchers’ attitudes towards the impact of academic discipline

Researchers’ responses to this question are as follows: 40% of researchers in group 1 do not bring any actual response to the impact of discipline on writing introduction; whereas, a similar number of researchers in group 2 strongly agree. 33.33% reflects the number of applied

linguistics researchers who agree on the importance of academic discipline, and 20% is the number of physicists who held a similar attitude. While 26.66% of researchers in applied linguistics strongly agree with the statement, 20% of them in group 2 answered with neither agree nor disagree; 13.33% said that they disagree whereas 06.66% strongly disagree (See Figure 61). Yet, the overall number of researchers who were perfectly in agreement with the opinion expressed in question 22 represents 60% out of the total number of researchers in each group. This means that there is a strong tendency among researchers that academic disciplines impact the writing conventions of introduction. This claim is verified in corpus analysis which indicates significant differences in the structure of RAs introduction.

Explain, How?

In their attempts to explain the impact of academic discipline on writing RAs introductions, researchers in group 1 propose the following three main explanations:

- Discipline is very important to decide about the style of language (direct or indirect).
- Discipline has a strong impact on selecting tenses, verbs and lexicon of introduction.
- Each discipline has its own writing conventions that are understood by readers of the same discipline.

For physicists, each discipline has different knowledge and different language that construct this knowledge. Most researchers agree that more than 50% of introduction's evaluation is based on the language and the extent it succeeds to explain physical phenomena. Still, some researchers do not account for the relevance of discipline in writing introduction claiming that the latter is written in the same way in all disciplines and that language does not make a big difference.

Question Twenty-Three: What do you find most difficult about writing RAs introductions?

In order to provide a thorough explanation of researchers' attitudes towards writing RAs introduction, the last question affords the opportunity for researchers to indicate main

difficulties in writing introduction. Although many researchers in applied linguistics maintained that they do not encounter any problems, some of them refer to the following difficulties:

- Writing a comprehensive introduction
- Generating research gap and using irrelevant statements
- inappropriate use of lexicon
- Although it seems that writing an introduction is an easy task; however, reviewers have different opinion and many of their comments are about the language of the introduction rather than its content. Yet, language poses a serious problem.

All physicists said that language is the main problem in the course of writing introduction. Researchers expressed their deep dissatisfaction with the use of English language to write RAs in general and introduction in particular. Furthermore, researchers consider the lack of exact or equivalent technical terms in English language which hinders them to generate well-defined research problems.

Editors' Semi- Structure Interview

This section is devoted to analyzing data obtained through editors' interview. It offers an analysis of eight questions about RAs introduction. Basically, the interview intends to elicit information about editors' policy to evaluate RAs introductions in soft and hard sciences considering major recommendations that would help to bring new and upcoming applications to genre theory of introduction in the Algerian context.

Difficulties in Writing RAs

In a response to the first question concerning main difficulties encountered researchers in writing SRAs, the first editor believed that the main problem science students and researchers in general face is lack of reading which is very important to examine various research problematics and know how different articles are structured. He said, "Lorsqu'on lit suffisamment d'articles, on sait comment un article est structure." ("when we read sufficient number of articles, we can recognize how an article is structured."; 1). The same editor added that students think that a scientific article has the same structure as a simple course; however, "Un article c'est différent." ("An article is different."; 1). Articles in science and technology focus on outlining the objectives of the study, describing research problematic, and reviewing previous research. Additionally, they account for explaining research methods and clarifying research data and results. This problem typically occurs because most SRAs are submitted without prior consultation with supervisors, "Généralement ce que on voit, plus de 50% des doctorants viennent de leurs propres chefs et ils ne s'adressent même pas aux promoteurs pour qu'ils lisent un petit peu qu'est-ce qui se passe, est ce que c'est bien structuré ou non? » ("we notice that 50% of doctoral students rely on their own efforts without consulting their supervisors to read, whether their article is or not well-structured?"; 1). To solve this problem, the editor continued, journal's editorial board requires doctoral students to submit their articles accompanied by consent form signed by the supervisor.

The second interviewee said that the degree of difficulty experienced in writing articles differ from one field to another. For him, researchers experience more difficulties in writing RAs in some fields like “renewable energies” and “water quality and environment” which require extensive and precise technical language more than synthesis of new materials and modeling of phenomena RAs which are much less demanding (Interviewee 2).

As far as social and human sciences are concerned, the editor addressed two main problems. The first problem is related to the structure of the article which differs from one researcher to another. According to him, researchers do not present their studies in exactly the order in which other studies are conducted (Interviewee 3). The second problem is related to topics’ novelty and lack of references. Most social science studies are exhausted by overused references that minimize the significance of social science research. He said,

“أغلب الباحثين في العلوم الانسانية والاجتماعية يعتمدون على مراجع مستهلكة، فهناك من يؤسس دراساته على مراجع كتبت في الستينات لا يتجدد منها إلا الطبعة- لغياب الرقابة الأخلاقية في ذلك-، إذ يعتقد الطالب أن المعلومة جديدة رغم أنها قديمة جدا. غير أنه من المعروف اليوم في البلدان المتقدمة، أن المقال الجيد هو ذلك الذي يكتب اعتمادا على مقالات نشرت حديثا، فالمراجع الحديثة ذات الصلة بالموضوع هي ما يزيد من قيمة الموضوع وإلا فسيجد الباحث نفسه أمام إعادة الوصول إلى نتائج تم الوصول إليها من قبل.” (3)

(“most researchers in human and social sciences depend on overused references, for example some researchers build their studies on references for revised versions turn back to the 1960s. This is due to lack of ethical consciousness. Yet, the student thinks that the information is recent despite its oldness. It is now well known in the developed countries that the good article is the one which is written based on newly published articles that increase the quality of the topic; otherwise, the researcher will find himself gives results similar to those previously obtained”; 3).

Problematic Sections

As far as editors' attitudes towards the most problematic sections of RAs, editors did not bring any actual response to this question. Analyzing the first and the second interviews reveals that science and technology researchers have considerable problems with the whole article rather than fragmented parts. However, the interview with editor 3 shows that the most challenging section for social sciences researchers is the introductory section which is,

"في الحقيقة مشكل كبير لا يخص طلبة الدكتوراه فحسب، بل حتى بعض الأساتذة. " (3)

("In fact, a big problem concerned not only doctoral students but even some teachers."; 3)

Language Problem

Language problem occupies a central position in the interview. Editors showed great disappointment towards researchers use of English language. For editor 1, "Le problème de langue est très significatif par rapport aux gens qui font les sciences. Il est un petit peu moindre pour les littéraires" ("The problem of language is very significant for doctoral students in hard sciences. It is less common for soft sciences students."; 1). Unlike social sciences, researchers in science and technology are required to write their articles in English despite the fact that all the courses and instructions they received all along their educational career are whether in Arabic or French. This unfortunately is the biggest challenge researchers face and it threatens articles' visibility and readability that are the main concern of Algerian editors, "Notre soucis est 'la visibilité et la lisibilité'; pour que notre article soit lu et vu par le monde entier. " ("Our interest is 'visibility and 'readability' ; for our article to be read and seen the worldwide." ; 1). Writing scientific articles in English comes gradually starting with the abstract then eventually passed on the entire article (Interviewee 1). Practically, "ça fait pratiquement maintenant cinq ans que tous les articles doivent être en anglais pour les scientifiques. " ("It has been almost five years when hard sciences researchers are required to write their articles in English."; 1).

Surprisingly, the editor confirms that the problem of language does not concern only researchers, even reviewers may have the same problem. Generally, most reviewers in science and technology journals are teachers of English who face difficulties in comprehending the technical language used by researchers. The editor explains his view in the following words

Il y a des difficultés de langue même au niveau des référés. Il y a un problème de compréhension...et les niveaux diffèrent surtout qu'il y a des gens qui ont fait leur cursus en Angleterre et aux états unies, ils maîtrisent mieux la langue que les gens qui ont appris leur anglais en Algérie, donc il y a différents niveaux. (1)

("There are language difficulties even for reviewers. There is a comprehension problem because their language level differs; some researchers who studied in United Kingdom and United States master English better than reviewers who learnt it in Algeria, this means different levels."); 1).

The problem is that the article submitted online should be correct; however, most students and even their supervisors are 'poor' users of English language (Interviewee 1).

Editor of New Technology and Materials Journal considered the language of the article, "An important factor to evaluate the quality of the paper, it represents 20% in the evaluation process." (2). Concerning researchers' English language qualifications, editor 2, as opposed to editor 1, confirms that researchers do not have problems with language and their style is very simple and direct. He quoted, "In general, the language of researchers (English language) in the field of science is well, because they use a simple style (scientific language)." (2).

In a response to this question, the third editor maintained that his journal receives wide number of articles written in Arabic more than articles written in foreign languages. For him, articles' evaluation is made by special experts at the scientific, methodological as well as linguistic level. The latter which plays a vital role for articles' rejection. Concerning articles' written in foreign languages, the editor said that,

"وفي الحقيقة فإن المشاكل التي يواجهها الخبراء تتعلق عادة بالجانب العلمي ولا يتم كثيرا تقديم ملاحظات بخصوص اللغة." (3)

("In fact, the problems facing experts are usefully related to content knowledge and few remarks are made concerning language."); 3)

In social sciences, language problems occur clearly in the abstract, the shared English section between all researchers. Sometimes reviewers are obliged to re-write the abstract instead of correcting it,

"يطرح مشكل اللغة على مستوى الملخص، إذ أصبح اليوم من المفروض على الباحثين ترجمة الملخص إلى اللغة الانجليزية مهما كانت اللغة المكتوب بها، لذا فقد كلفت أحد المساعدين بتصحيح الملخصات وقد يضطر أحيانا إلى ترجمة الملخص بنفسه وذلك لعدم إتقان الباحثين للغة الانجليزية. إذ أن القلة القليلة من الباحثين يتقنون اللغة الانجليزية، التي أصبحت مشكلة تؤرق الباحثين في العلوم الانسانية والاجتماعية." (3)

("Language problem is posed at the abstract level. The translation of the abstract into English language becomes a must whatever the language of the article is. Therefore, I have appointed one of my staff members to correct abstracts and sometimes he has to translate the abstract by his own because researchers exhibit difficulties with English language. The fact that only few researchers master the English language makes this language the main worry of researchers in human and social sciences."); 3)

The first and third editors agreed that there is a gap in the Algerian educational system concerning language that needs to be reviewed and reconsidered by educational decision-makers in Algeria.

Objectives of Introduction

According to interviewee 1, introduction is, "la plus importante partie" ("the most important part"; 1) which "englobe tout le travail." ("covers the whole work."; 1). The first editor outlines three objectives of introduction of science RAs are: stating problematic,

reviewing literature and announcing results. For Editor 2, “the main purpose of introduction is to present the art state, the problematic and the method.”. Meanwhile, introduction of social sciences RAs is used interchangeably with the concept preface in which researchers demonstrate the scientific quality of the research, its objectives and future implications.

"بالنسبة لي هي مدخل الهدف منه تبيين الأهمية والقيمة العلمية للدراسة وتحديد أهدافها وتوضيح تأثير الدراسة -إن كانت الدراسة ميدانية-، أي ماهي المشكلات التي يمكن أن تحلها الدراسة في القطاع الذي تمسه." (3)

(“For me, introduction is a preface which aims to show the importance and scientific quality of the study and to outline its objectives besides clarifying the impact of the study; if it is experimental i.e., what are the problems that can be solved as a result.”; 3).

Introduction and Articles' Content

Editors answers to the question whether all introductions reflect the content of the articles comes as follows: For science researchers, editor 1 confirms that most of them do not know exactly how to write a RA introduction, “il y a des gens qui ne comprennent pas” (“there are researchers who do not understand.”; 1). Researchers focus only on research problematic and they ignore other essential steps like results which, “Il faut le décrire dans l’introduction.” (“It must be mentioned in the introduction.”; 1). These problems and others are detected by reviewers whose main job is to thoroughly review manuscripts and make sure that their content and language are sound. Editor 1 added, “C’est pour ça il y a des référés; c’est pour ça il y a des corrections à faire. C’est pas tout le monde sait décrire une introduction juste dès le premier coup. ” (“That is why there are reviewers; that is why there are corrections to be made. Not everyone knows how to produce a good introduction right the first time.”; 1).

Similarly, the second interviewee claims that not all introductions reflect the content of the article and researchers stay strongly focused on the problem at hand, “No! Some introductions reflect only the problematic of the articles.” (2).

The analysis of interview 3 reveals that introduction is the most difficult part to accomplish. Editor 3 said that RAs introductions are very poor. They often take the form of a general introduction which misses out on many other aspects of research. He confirms that,

"من المفروض أن المقدمة توضح ما سيقوم به الباحث. وهو في الحقيقة مشكل كبير لا يخص طلبة الدكتوراه فحسب، بل حتى بعض الأساتذة." (3)

("Normally, the introduction must clarify the scope of the research. In fact, this is a serious problem which concerns not only doctoral students but even some teachers."; 2)

Because 95% of articles in social sciences are based on applied research, introduction should first review previous studies then present a new fieldwork for the study and its implementations in this field (Interviewee, 3).

Reviewers Critical Comments

Once the reviewer reads the introduction, he checks whether the author covers everything in the study, omits something important or insert extra information; "l'introduction c'est un résumé. Dans l'introduction on résume notre problématique." ("An introduction is a summary. In the introduction we summarize our problematic."; 1). For editor 1, the reviewer plays twofold role; he corrects the form and content. He said,

Donc dans la forme, il voit est ce que c'est bien structurée, est ce qu'il y a pas des fautes ; et le fond c'est le niveau scientifique, c'est-à-dire est ce que c'est un sujet d'actualité et d'une pertinence, est ce que c'est un sujet qui est d'une importance scientifique, on voit s'il y a une valeur à ajouter dans la problématique qu'il traite, il ramène quelque chose de plus. Voilà pourquoi on envoie aux spécialistes qui sont au courant où en sont les résultats. (1)

("Concerning the form, he checks whether it is well-structured and there are no mistakes, and the content deals with the scientific level, it means topic novelty, and relevance. Whether a subject is worth investigating. We see if there is

an additional value or further results worth to the problem. This is why we send works to reviewers who are aware of current results.”; 1)

Editor 2 emphasized two important critical comments received from reviewers concerning RAs introduction are lack of citations of recent references besides the absence of ‘highlights’ or main aspects of the work; however, the editor commented on the good presentation of the problematic (interviewee 2).

Editor 3 highly praised the role of reviewers to improve the quality of articles. For him, reviewers’ comments differ from one article to another. In general, reviewers provide a thorough evaluation of articles’ introduction and methodology in addition to displaying and synthesizing results. The editor has noticed that most reviewers’ critical comments are about introduction which plays substantial role in the article:

"إن المقدمة هي ما يحدد قيمة الموضوع لأن ما يليها هو عبارة عن خطوات تنفيذية." (3)

“It is the introduction which determines the value of the topic because all that follows are just executive steps.”; 3)

Language and Academic Discipline

In his attempt to explain the relationship between articles’ language and the academic discipline, editor of science and technology journal refers again to the problem of language in the Algerian educational context. For him, teaching and learning English for specific purposes becomes an uphill struggle for Algerian researchers and teachers. He cautioned,

"Ecoutez ! lorsqu’un étudiant fait son parcours en arabe, il arrive à l’université et il doit suivre les cours en français (moi je parle surtout des gens qui font les sciences), et puis il arrive à un moment donné où il doit écrire et il doit apprendre l’anglais, donc ça fait beaucoup !" (1)

(“Listen! When a student studies in Arabic, he arrives at university and he has to pursue his courses in French (I am talking about students studying in science

stream), then, at a given time, he ought to write and learn English. So, that's a lot!"; 1)

There is a general consensus that students who studied in French cannot consistently use English language to write scientific articles, "Même nous, on est une génération qui a étudié en français, on réfléchit en français et on essaye d'écrire en anglais. Donc c'est différent!" ("Even us, we are a generation that studied in French; we think in French and we attempt to write in English. So, it is different!"; 2)

This problem is added on to the problem that each discipline has its own language and discourse structure. Technical-scientific English is markedly different from literary English, "ce n'est pas la même terminologie, ce n'est pas les mêmes descriptions des choses." ("It is not the same terminology; things are expressed differently."; 1). Unfortunately, "Toutes les institutions en Algérie ont ce problème -je parle pour les chercheurs. Ce problème-là est crucial." ("All Algerian institutions have this problem; I am talking about researchers. This problem is crucial."; 1). For the editor, researchers can be skillful French users but they will never be skillful English users because "en français ça passe tout de suite parce que je sais ce que je dois mettre, mais en anglais, il y a beaucoup de mots qui font complètement dévier la phrase " ("In French, it goes smoothly because I know what I should write, but in English there are many words that change the meaning of the sentence."; 1). For these reasons, "il faut qu'il y ait des spécialistes en langue anglaise scientifique...Ça c'est un manque." ("there must be experts of scientific English... This is what we miss."; 1).

Editor 2 hold a neutral point-of-view on the relationship between language and the academic discipline and he explicitly stated that, "In my journal, there are no choices of language, English is the only language (obligatory)." (2).

The third editor confirms that this problem is not very common in social and human sciences RAs because researchers have a linguistic background knowledge that fulfills the requirements of their academic disciplines.

مشكل اللغة غير مطروح لأن الباحثين على دراية بما سبق ذكره ولا يمكنهم الكتابة إلا بلغة التخصص... لكن ترد أحيانا بعض الملاحظات على غرار استعمال اللغة الأدبية، إذ يجب على كل باحث استعمال اللغة العلمية الخاصة بالتخصص (3).

("The problem of language is not posed because researchers are aware of this fact and they have an exposure to the scientific language relevant to their academic disciplines.... but, sometimes, there are some remarks concerning the use of literary language. Every researcher must use the scientific language related to his/her discipline."); 3)

Editors Recommendations

As far as editors' recommendations about writing RAs introduction are concerned, editor of science and technology journal emphasized the importance of reading to structure articles and come up with an entire new set of problems. He reported, "Mon conseil au tant que directeur des publications c'est de lire beaucoup les introductions d'articles et voir comment s'est structuré, comment les gens abordent leurs problématiques ; et là lorsqu'on commence à écrire, il y a déjà dans notre tête une structure donnée. " ("My advice, as an editor, is to have intensive reading of articles' introductions to notice how they are structured and how researchers address their problematics... Here, when we start writing, we have a given structure that is already shaped in our mind."); 1). A further recommendation was made that introduction must be written at last to overwhelm all what has been done before.

Par rapport à l'introduction -je me répète-, il faut que ça soit en dernier. On termine et là on peut écrire l'introduction et ça sera quelque chose qui va donner au lecteur une idée sur qu'est ce qu'il va trouver déjà dans l'article. On le prépare. On lui dit qu'on maîtrise notre sujet, et là vous allez voir ça et vous allez voir ça. (1)

The analysis of interview 3 reveals that introduction is the most difficult part to accomplish. Editor 3 said that RAs introductions are very poor. They often take the form of a general introduction which misses out on many other aspects of research. He confirms that,

"من المفروض أن المقدمة توضح ما سيقوم به الباحث. وهو في الحقيقة مشكل كبير لا يخص طلبة الدكتوراه فحسب، بل حتى بعض الأساتذة." (3)

("Normally, the introduction must clarify the scope of the research. In fact, this is a serious problem which concerns not only doctoral students but even some teachers."; 2)

Because 95% of articles in social sciences are based on applied research, introduction should first review previous studies then present a new fieldwork for the study and its implementations in this field (Interviewee, 3).

Reviewers Critical Comments

Once the reviewer reads the introduction, he checks whether the author covers everything in the study, omits something important or insert extra information; "l'introduction c'est un résumé. Dans l'introduction on résume notre problématique." ("An introduction is a summary. In the introduction we summarize our problematic."; 1). For editor 1, the reviewer plays twofold role; he corrects the form and content. He said,

Donc dans la forme, il voit est ce que c'est bien structurée, est ce qu'il y a pas des fautes ; et le fond c'est le niveau scientifique, c'est-à-dire est ce que c'est un sujet d'actualité et d'une pertinence, est ce que c'est un sujet qui est d'une importance scientifique, on voit s'il y a une valeur à ajouter dans la problématique qu'il traite, il ramène quelque chose de plus. Voilà pourquoi on envoie aux spécialistes qui sont au courant où en sont les résultats. (1)

("Concerning the form, he checks whether it is well-structured and there are no mistakes, and the content deals with the scientific level, it means topic novelty, and relevance. Whether a subject is worth investigating. We see if there is

an additional value or further results worth to the problem. This is why we send works to reviewers who are aware of current results.”; 1)

Editor 2 emphasized two important critical comments received from reviewers concerning RAs introduction are lack of citations of recent references besides the absence of ‘highlights’ or main aspects of the work; however, the editor commented on the good presentation of the problematic (interviewee 2).

Editor 3 highly praised the role of reviewers to improve the quality of articles. For him, reviewers’ comments differ from one article to another. In general, reviewers provide a thorough evaluation of articles’ introduction and methodology in addition to displaying and synthesizing results. The editor has noticed that most reviewers’ critical comments are about introduction which plays substantial role in the article:

"إن المقدمة هي ما يحدد قيمة الموضوع لأن ما يليها هو عبارة عن خطوات تنفيذية." (3)

“It is the introduction which determines the value of the topic because all that follows are just executive steps.”; 3)

Language and Academic Discipline

In his attempt to explain the relationship between articles’ language and the academic discipline, editor of science and technology journal refers again to the problem of language in the Algerian educational context. For him, teaching and learning English for specific purposes becomes an uphill struggle for Algerian researchers and teachers. He cautioned,

"Ecoutez ! lorsqu’un étudiant fait son parcours en arabe, il arrive à l’université et il doit suivre les cours en français (moi je parle surtout des gens qui font les sciences), et puis il arrive à un moment donné où il doit écrire et il doit apprendre l’anglais, donc ça fait beaucoup !" (1)

(“Listen! When a student studies in Arabic, he arrives at university and he has to pursue his courses in French (I am talking about students studying in science

stream), then, at a given time, he ought to write and learn English. So, that's a lot!"; 1)

There is a general consensus that students who studied in French cannot consistently use English language to write scientific articles, "Même nous, on est une génération qui a étudié en français, on réfléchit en français et on essaye d'écrire en anglais. Donc c'est différent!" ("Even us, we are a generation that studied in French; we think in French and we attempt to write in English. So, it is different!"; 2)

This problem is added on to the problem that each discipline has its own language and discourse structure. Technical-scientific English is markedly different from literary English, "ce n'est pas la même terminologie, ce n'est pas les mêmes descriptions des choses." ("It is not the same terminology; things are expressed differently."; 1). Unfortunately, "Toutes les institutions en Algérie ont ce problème -je parle pour les chercheurs. Ce problème-là est crucial." ("All Algerian institutions have this problem; I am talking about researchers. This problem is crucial."; 1). For the editor, researchers can be skillful French users but they will never be skillful English users because "en français ça passe tout de suite parce que je sais ce que je dois mettre, mais en anglais, il y a beaucoup de mots qui font complètement dévier la phrase " ("In French, it goes smoothly because I know what I should write, but in English there are many words that change the meaning of the sentence."; 1). For these reasons, "il faut qu'il y ait des spécialistes en langue anglaise scientifique...Ça c'est un manque." ("there must be experts of scientific English... This is what we miss."; 1).

Editor 2 hold a neutral point-of-view on the relationship between language and the academic discipline and he explicitly stated that, "In my journal, there are no choices of language, English is the only language (obligatory)." (2).

The third editor confirms that this problem is not very common in social and human sciences RAs because researchers have a linguistic background knowledge that fulfills the requirements of their academic disciplines.

مشكل اللغة غير مطروح لأن الباحثين على دراية بما سبق ذكره ولا يمكنهم الكتابة إلا بلغة التخصص... لكن ترد أحيانا بعض الملاحظات على غرار استعمال اللغة الأدبية، إذ يجب على كل باحث استعمال اللغة العلمية الخاصة بالتخصص (3).

("The problem of language is not posed because researchers are aware of this fact and they have an exposure to the scientific language relevant to their academic disciplines.... but, sometimes, there are some remarks concerning the use of literary language. Every researcher must use the scientific language related to his/her discipline."); 3)

Editors Recommendations

As far as editors' recommendations about writing RAs introduction are concerned, editor of science and technology journal emphasized the importance of reading to structure articles and come up with an entire new set of problems. He reported, "Mon conseil au tant que directeur des publications c'est de lire beaucoup les introductions d'articles et voir comment s'est structuré, comment les gens abordent leurs problématiques ; et là lorsqu'on commence à écrire, il y a déjà dans notre tête une structure donnée. " ("My advice, as an editor, is to have intensive reading of articles' introductions to notice how they are structured and how researchers address their problematics... Here, when we start writing, we have a given structure that is already shaped in our mind."); 1). A further recommendation was made that introduction must be written at last to overwhelm all what has been done before.

Par rapport à l'introduction -je me répète-, il faut que ça soit en dernier. On termine et là on peut écrire l'introduction et ça sera quelque chose qui va donner au lecteur une idée sur qu'est ce qu'il va trouver déjà dans l'article. On le prépare. On lui dit qu'on maîtrise notre sujet, et là vous allez voir ça et vous allez voir ça. (1)

(“Concerning introduction, I insist, it must be written at last. We finish then we write the introduction. It will be the part that will give an idea to the reader about what he/she will find in the article. We prepare him/her. We show him/her that we handle our topic and, here, readers will see this and that.”; 1)

The second editor acknowledged, “My recommendations for researchers about writing research articles’ introductions are: the introduction must be clear; the problematic must be presented in the best format; the language (English) of the introduction must be simple.” (2).

For the editor of social and human sciences journal, running workshops on the writing of RAs is the best practical solution that allows researchers to touch on RAs writing issues. He promised,

سأتبنى في القريب ورشات لكيفية هندسة المقال خاصة بطلبة الدكتوراه والأساتذة وذلك بسبب عدم قدرتهم على هندسة المقال وتوزيع المعرفة وفق المحاور التي يجب أن يتضمنها. (3)

(“In the coming few days, I will hold workshops for doctoral students and teachers about how to structure an article. This idea is stemmed from researchers’ failure to structure an article and distribute knowledge according its axes”; 3)

The editor continues that the spread of English as an additional language in research publication makes the visibility of Algerian scientific articles a far-reaching goal:

...وقد يعود ذلك أيضا إلى عدم استعمال اللغة الانجليزية التي هي اليوم لغة محورية، إذ أنني عجزت على إدخال المجلة إلى فهارس مواقع المجالات العالمية بسبب عدم استعمال الانجليزية في كتابة المقالات، ذلك أنها تشترط بأن تكون نسبة المقالات المدونة بالإنجليزية لا تقل عن 30 % فمشكل اللغة مطروح ويشترط إعادة النظر في فلسفة التكوين والمنظومة، فحتى الفرنسية اليوم أصبحت عاجزة عن حل المشكل على غرار العربية. (3)

(“...Also, this turns back to the fact that English language, the main language today, is not used in the Algerian context. Because of this, I failed to insert my journal in international publishers’ e-journal databases in which at least 30% of articles should be published in English. Language problem

is crucial and it requires reconsidering the philosophy of the educational system. Today, even French and Arabic languages fail to deal with this problem.”; 3).

Comparison and Discussion of the Results

Move analysis of RAs written by Algerian researchers reveals important findings about writing RAs introductions in soft and hard sciences. In comparing introductions, CARS model is found to be a useful analytical tool to highlight differences related to rhetorical organization of RAs introductions. First, analysis shows that the rhetorical pattern of introductions written by Algerian researchers is not a fully-fledged stage. In terms of the status of moves as obligatory or optional, the comparison of the two corpora shows that the only obligatory move in applied linguistics introductions is M3; meanwhile, physics introductions are made up of two obligatory steps of M1 and M3. The absence of M2 causes a noticeable gap in the rhetorical pattern of moves in each discipline. This implies lack of explicitness in establishing a niche which should be grounded in robust review of past research. The status of steps in introductions meets the requirements of Swales' model which emphasizes the relevance of step 3 for M1 and step 1A/1B for M3., these two steps are highly recommended by researchers and editors in both disciplines.

As regards move sequences, it is found that the sequence (M1+M2+M3) is a likely sequence in applied linguistics; whereas the structure (M1+M3) is partly identified in physics introductions. Although the cycling of moves is evident in Swales CARS model, the use of linear sequences is more frequent in Algerian researchers' introductions in both disciplines. Still, the number of introductions made up of repetitive sequences mainly M1+M2+M3+M2 is slightly higher in physics than applied linguistics. The cyclical patterning of introduction reflects the complex interaction of moves which mainly occurs in native writers' writings who present their thoughts depending on their own schemata and violate the sequential order of movements, however, non-native writers exhibit difficulties with incorporating this aspect.

Establishing a territory is more prominent in physics introductions than applied linguistics introductions. Specifically, introduction in physics RAs is performed by extensive literature

review that makes it more explicit, detailed and precise. This appears to be in accordance with CARS format that M1 must have citation. Despite the fact that most researchers in applied linguistics consider reviewing previous research an obligatory step in RAs introduction, lack of citations in applied linguistics introductions makes them less competitive than physics introductions. In fact, M1 anchored on topic generalization (s) or merely claiming centrality statements without relevant literature would not attract acceptance and recognition for the author of the paper.

Another important finding in relation to M1 is related to the rhetorical function of citations. The main rhetorical function of citations in physics RAs introductions is comparing findings and contextualizing the research within the previous studies; however, citations are used by applied linguists to support claims and present evidence to back up those claims. Although there is no common citation pattern among the two disciplines, the alternation between the integral and non-integral citations was very significant to bring other studies to the fore. In physics, the use of integral citations is accompanied by extensive use of reporting verbs that reflect researchers' neutral view of the cited information. This what makes introductions in this field more objective than introductions of applied linguistics RAs in which reporting verbs are used to situate researchers' position with respect to other similar positions expressed in the past (agreement or disagreement). Non-reporting verbs; however, are extensively used in M1 to represent authors' privet thoughts that are not addressed to anyone.

As for M2 or Establishing the Niche, although all editors and researchers emphasize the importance of stating research problem, the absence of gap statement especially in physics introductions weakens the strength of claims displayed in M1. For those introductions which incorporate M2, analysis indicates that niche rhetorical strategies differ across the two disciplines. Researchers in physics use M2 as a particular kind of criticism to stress insufficient

research on a specific aspect. Meanwhile, M2 in applied linguistics introductions sets up a space by addressing new research questions.

The indication of research gap in applied linguistics introductions was manifested with the utilization of contrastive statements that portray the niche negatively then positively. Contrastive conjunctions play a vital role in M2; particularly the conjunction *however* which gives great energy and force to the established gap. The fact that most researchers in applied linguistics said that research problem takes the form of question was so evident in corpus-analysis. M2 is clearly distinguished by an extensive use of direct questions that usually expect negative responses, besides the use of indirect questions which reflect researchers' affective attitudes towards a given phenomenon. Hence, indirect questions are more likely to express researchers' reflections than direct questions. Lexical negation is a further linguistic feature added to the description of M2 in applied linguistics introductions. The use of negative adjectives (difficult, sterile, challenging) and negative verbs (fail, prevent, ignore) provides more negative semantic orientation that enhances gap indication. Comparatively, contrastive statements are less frequently employed in physics introductions. This fact is definitely true in the light of the answers obtained from researchers' questionnaire in which most researchers said that research problem appears as a continuing a tradition statement rather than a contrasting statement. Despite this, the distinct use of words with negative meaning including verbs like *missed* and *neglects*, adjectives such as *toxic* and *dangerous*, and nouns as *problem* and *drawbacks*, are used to accomplish gap indication in physics.

Physicists answers regarding the type of data fell into two categories, the first supports the use of empirical data while the second combines the two types of data. This is due to the fact that physics is based on two main methods of research: simulation and experimental. Simulation (hypothesis-formation in scientific reasoning) is based on hypotheses or doubtful data (surmise opinions); meanwhile, experimental physics is more substantiated by empirical evidence.

As far as language use is concerned, editors have many reservations concerning the use of English language to write RAs in general and introduction in particular. They consider two main issues:

- The philosophy of the Algerian educational system which requires students to master different languages at different degrees (Arabic then French then English).
- The limited role of reviewers who do not make a sufficiently important contribution to correct articles because they lack adequate scientific knowledge and technical terminology.

The most significant disciplinary variations between applied linguistics and physics RAs introductions are found in the use of M3. In accordance with Swales format, articles' introductions in both disciplines are systematically composed of M3 (1A-1B). Purposive statement is the main rhetorical step that guides occupying the niche in applied linguistics. A different rhetorical function used in physics introductions to descriptively mention the objectives and procedures of the study. Despite its rhetorical provenance, applied linguistics researchers think that the placement of research purposes is a personal choice; meanwhile physicists think that this rhetorical step is placed at last to clarify the choice of research method and procedure. Announcing principal outcomes step is more likely to be observed in introductions related to physics, but it is rarely employed in applied linguistics. The driving rhetorical force behind the incorporation of this step is qualifying research. Similarly, outlining the structure of the article has not been emphasized by researchers and it is rarely observed in introductions.

In both disciplines, deictic references are used as the main linguistic indicator to occupy the niche. However, the collapsed form of deictic references is marked in applied linguistics introductions and it reflects researcher's prominent role in the research. The fact that most researches in both disciplines are based on experimental investigation justifies the choice of

inquiry references to present research. The use of present tense verbs is more prominent in M3 of applied linguistics introductions which succeed more to highlight the significance of current research. Regarding the use of first personal pronouns, data analysis shows that researchers in physics are more likely to use explicit markers of authorial stance particularly personal plural pronouns (we, our) that are generally used to reduce researchers' personal attributions (objectivity). In opposite, researchers in applied linguistics are more likely to couch their personal opinions in first person singular pronoun (I, my) which provides the basis of subjectivity in academic discourse.

Cross-disciplinary analysis of RAs introduction generates significant differences in the generic structure of RAs introductions in applied linguistics and physics including the availability of moves and steps that is governed by two factors: the aspirations of researchers and the conventions of academic discipline. Moreover, linguistic variations are attributed to researchers' linguistic knowledge as well as discipline specific language characterizing genres.

Conclusion

The present chapter describes the results obtained from quantitative and qualitative data analysis. This investigation yields a number of key findings in relation to genre analysis of applied linguistics and physics RAs introduction. Indeed, comparative method of research is deemed useful to explore the rhetorical configuration embodied in CARS model and capture differences among introductions and main disciplinary variations drawing CARS. The interaction between qualitative and quantitative data analysis tools contributes a great deal to verifying results and addressing wide array of questions regarding the writing of introduction in the two disciplines. The explanatory sequential design is better suited to explaining and interpreting relationship between results obtained from quantitative data illustrated through corpus analysis and researchers' questionnaire and qualitative data of qualitative corpus analysis as well as editors' interview. On one hand, quantitative genre analysis contributes to

understanding why researchers in a given field incorporate specific moves or steps than others and how move sequences serve different rhetorical functions essential for persuading audiences. On the other hand, researchers' questionnaire shows that differences in the generic structure of introductions in the two disciplines can be ascribed to different requirements and norms of academic disciplines defined by the members of each community. Additionally, the results obtained through qualitative analysis show that Algerian researchers challenges in writing introductions are attributed to many reasons mainly to the use of English language in writing for publication. Although, the chapter verified the applicability of CARS model to RAs introduction, it indicates that introductions in the two disciplines require more rhetorical work.

RESEARCH IMPLICATIONS AND RECOMMENDATIONS

Chapter 7: Research Implications and Recommendations

Introduction	267
Comparison of the Outcomes and Conclusions of the Research	267
A General Evaluation of Genre Theory in the Algerian Context.....	271
Background to Online Learning	272
Types of Online Courses	273
Correspondence Courses	273
Synchronous Courses	274
Asynchronous Courses	274
The Status of E-Learning in Algeria	274
Online Course Management	276
Course Reference.....	276
Learning Management System	276
Objectives of Online Course.....	277
Course Design.....	277
Sample Online Course	280
Research Implications and Recommendations.....	296
Conclusion.....	297

Introduction

This chapter aims to put forward some pedagogical recommendations which are deemed necessary to write RAs introduction. The outcomes and findings of the study can be used as a database for some suggestions and implications for novice researchers and advanced students in soft and hard disciplines regarding the writing of this academic genre. The chapter offers a description of an online course specially designed to illustrate the writing process of RAs introduction referring to the rhetorical patterns and linguistic devices can be used in each discipline.

Comparison of the Outcomes and Conclusions of the Research

Previously, the cross-linguistic comparison between applied linguistics RAs introduction published in national and international journals shows significant differences in move-structure characterizing articles in each category. Move analysis confirms that M1 is an optional move in applied linguistics introductions written by Algerian researchers but it appears as an obligatory move in international articles and national physics articles (see Table 72). Moreover, the analysis of steps affirms that topic generalizations is an obligatory step is national applied linguistics introductions; meanwhile, researchers in international journals focus on reviewing items or previous research which is also common in physics' RAs introduction.

M1	Articles' Findings		Research Findings	
	<u>National</u> <u>Articles</u>	<u>International</u> <u>Articles</u>	<u>Applied Linguistics</u> <u>Articles</u>	<u>Physics</u> <u>Articles</u>
Occurrence (\bar{X})	59	<u>62.68</u>	50	<u>67%</u>
Step 1.1 (%)	26.26	26.26	44.28	47.14
Step 1.2 (%)	<u>80</u>	<u>66.66</u>	55.71	57.14
Step 1.3 (%)	40	<u>73.33</u>	48.57	<u>90</u>

In fact, the wide use of topic generalizations statements and reviewing items of previous research justifies Swales (2004) transition from three-step move to only one-step move to establish a territory.

Move 1: Establishing a territory (citations required)
via
Topic generalizations of increasing specificity

Figure 62. A revised create a research space for move 1 (Adopted from Swales, 2004, p. 230)

Gap indication is an obligatory move in RAs introduction and the most difficult to accomplish. The rhetorical complexity of this step hinders researchers in both disciplines to generate well-defined research problems (see Table 73). Therefore, gap indication appears as an optional move reflected through step 2-1B in all national articles (applied linguistics and physics) and step 2-1A in international articles.

M2	Articles' Findings		Research Findings	
	<u>National Articles</u>	<u>International Articles</u>	<u>Applied Linguistics Articles</u>	<u>Physics Articles</u>
Occurrence (\bar{X})	33.93	55.40	28	22
Step 2-1A (%)	26.26	40	04.28	10
Step 2-1B (%)	53.33	33.33	34.28	30
Step 2-1C (%)	13.33	26.26	31.42	00
Step 2-1D (%)	00	00	14.28	10

In order to reduce the rhetorical complexity of M2, Swales (2004) minimized the number of steps incorporated in M2 to one obligatory step that is gap indication. At this juncture, the employment of citations is deemed necessary to create a research space for the research about to be describes. (see Figure 63)

Move 2: Establishing a niche (citations possible)
via
Step 1A: Indicating a gap
or
Step 1B: Adding to what is known
Step 2: (optional) Presenting positive justification

Figure 63. A revised create a research space for move 2 (Adopted from Swales, 2004, p. 230)

Occupying the niche is identified as an obligatory move in all articles. Among the three steps of M3, step 3-1 is the only obligatory step that serves two rhetorical functions, the purposive function common in applied linguistics introductions (step 3-1A) and descriptive function drawn in physics introductions (step 3-1B).

M3	Articles' Findings		Research Findings	
	<u>National Articles</u>	<u>International Articles</u>	<u>Applied Linguistics Articles</u>	<u>Physics Articles</u>
Occurrence (\bar{X})	<u>66</u>	<u>67</u>	<u>82</u>	<u>75</u>
Step 3-1A (%)	<u>77.77</u>	<u>60</u>	<u>65.95</u>	45.09
Step 3-1B (%)	22.22	40	34.04	<u>54.90</u>
Step 3-2 (%)	06.66	13.33	04.08	22.22
Step 3-3 (%)	06.66	26.66	16.32	11.11

In fact, M3 steps identified in Swales' (1990) model are enhanced by other optional steps that add some details about research hypotheses, methods and definitions. Researchers, especially in hard sciences, are more likely to insert additional information for the niche to be fully occupied. (see Figure 64)

<p>Move 3: Presenting the present work (citations possible) via</p> <p>Step1: (obligatory) Announcing present research descriptively and/or purposively</p> <p>Step 2*: (optional) Presenting RQs or hypotheses</p> <p>Step 3: (optional) Definitional clarifications</p> <p>Step 4: (optional) Summarizing methods</p> <p>Step 5: (PISF**) Announcing principal outcomes</p> <p>Step 6: (PISF) Stating the value of the present research</p> <p>Step 7: (PISF) Outlining the structure of the paper</p> <p>*Steps 2-4 are not only optional but less fixed in their order of occurrence than the others</p> <p>** PISF: Probable in some fields, but unlikely in others</p>

Figure 64. A revised move 3 structure (Adopted from Swales, 2004, p. 232)

Because current research accounts for the differences between applied linguistics and physics RAs introduction, Table 75 below, lists the main disciplinary variations in the use of rhetorical patters and linguistic markers of introduction in each discipline.

Table 75 <i>Disciplinary Variations</i>	
Applied Linguistics RAs Introduction	Physics RAs Introduction
<p>Short introduction with clearly defined and well stated research topic. Linear pattern of moves.</p> <p>Research niche is clearly stated in a form of a gap that has not been addressed in previous studies:</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Indicating the gap: While X is addressed in earlier studies, Y is not addressed.</p> </div> <p>Contrastive statements and questions are the main linguistic indicators of research gap. Qualitative and personal judgments offer certain amount of surmise in considering what has been said before. Occupying a niche via purposive rhetorical function. Genre and inquiry deictic references are the main linguistic indicators to occupy the niche. Introduction focuses on both obligatory steps and optional steps.</p>	<p>Long introduction with extensive literature review. Cyclic pattern of moves (citation use).</p> <p>Establishing a niche as part of occupying the niche. The transition from reviewing items of previous research (M1) to outlining purposes (M3).</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Indicating the gap: X is emphasized differently in other studies; X has different purposes.</p> </div> <p>Lexical negation is the main indicator of research gap.</p> <p>Synthesizing previous quantitative research provides a substantial evidence base.</p> <p>Occupying a niche via descriptive rhetorical function. Inquiry deictic references are the main linguistic indicator to occupy the niche. Introduction focuses on obligatory and some optional steps.</p>

A General Evaluation of Genre Theory in the Algerian Context

In general, genre theory is proved useful to analyze aspects of RAs introductions and help NNS researchers to imitate the writing procedures of more experienced writers. However, it is important to understand that genre theory alone cannot provide an adequate model for writing RAs in general and introduction in particular, rather, reading has been established as one of the most important strategies to improve academic writing. Extensive reading gives students access to a range of writing strategies and techniques on how to structure their articles.

Although Swales' (1990, 2004) CARS models make significant contribution in the development of scientific writing, the problem of language in the Algerian educational context remains one of the main factors that restricts the applicability of genre theory since "students' performance at university level cannot be treated far from their initial education at the primary, middle and secondary schooling" (Rezig, 2011, p. 1332). Therefore, organizing scientific manifestations (workshops, conferences, study-days etc.) is of paramount importance to raise researchers and students' awareness of scientific writing placing special emphasis on ERPP which becomes now part of the Algerian higher education system and an integral component of new teachers' training whether in soft or hard fields.

More consideration needs to be given to ESP teaching in Algeria that is most likely to explain language variations in soft and hard sciences. ERPP must be used as a form of ESP teaching in all fields to pave the way for writing for publication that is the main task of post-graduate education.

Finally, needs analysis is very crucial to demonstrate the use of genre theory. Identifying the language needs of Algerian students is the prerequisite for designing ESP courses. English language should solve immediate problems of Algerian students with academic publishing.

Background to Online Learning

The growth of technology and internet usage has opened new avenues for online education which has been increased steadily in the mid-1990s. Khan (2005) considered e-learning as an umbrella term that comprises various features and components used to assist learning. He divided e-learning into eight dimensions which provide different zones for e-learning course designers to ensure high course simulation. The eight dimensions listed in table 76 below can be considered as a checklist for course scaffolding to ensure flexible delivery of courses to learners with different linguistic and cultural background.

Dimensions of E-Learning	Descriptions
Institutional	The institutional dimension is concerned with issues of administrative affairs, academic affairs, and student services related to e-learning.
Management	The management of e-learning refers to the maintenance of e-learning environment and distribution of information.
Technological	The technological dimension of e-learning examines issues of technology infrastructure in e-learning environments. This includes infrastructure planning, hardware, and software.
Pedagogical	The pedagogic dimension of e-learning refers to teaching and learning. This dimension addresses issues concerning content analysis, audience analysis, goal analysis, media analysis, design approach, organization, and learning strategies.
Ethical	The ethical considerations of e-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, digital divide, etiquette, and the legal issues.
Interface Design	The interface design refers to the overall look and feel of e-learning programs. Interface design dimension encompasses page and site design, content design, navigation, accessibility, and usability testing.
Resource support	The resource support dimension of the e-learning examines the online support and resources required to foster meaningful learning.
Evaluation	The evaluation for e-learning includes both assessment of learners and evaluation of the instruction and learning environment.

Note. From “E-learning quick checklist,” by Khan, 2005, IGI Publishing, p. 312.

E-learning is a multi-dimensional approach of teaching that is based on the interaction between learners' prerequisites for learning and their acquired competences. Online courses are part of e-learning which provides additional motivation for engaging learners in learning. They play an important role in the development of learners' intrinsic motivation which reflects "students' natural curiosity and interest to energize learning" (Daci and Ryan, 1985, p.245). According to Styer (2009), online learner motivation is stemmed from online learning context and personal control factors like time and place. The motivated online learner is the one who values the online educational experience and its educational outcomes. Conversely, Stavredes (2011) accounted for the negative impact of online courses on learners' motivation which can easily lead to a sense of isolation caused by transactional distance that feeds learners' negative attitudes towards learning. Arguably, learners' feeling of isolation can be reduced by enhancing learners' social presence in e-learning environment. Additionally, the flexibility of learning environment is among the main factors to decrease transactional distance by accommodating individual differences pertaining to learning styles.

Online courses have become widely accepted as an alternative to traditional teaching that breaks down all the financial and locational learning barriers and offers equal opportunities to access quality education for all learners.

Types of Online Courses

Online courses are categorized in terms of their items and time investment into three types are: correspondence courses, synchronous courses and asynchronous courses (Bowman, 2010).

Correspondence Courses

The earliest form of online learning courses occurred during the 1800s. This course has been developed by William Rainey Harper at the Chautauqua College (Maeroff, 2003). Correspondence courses are available to students via print or online. Students sign up and pay the course to receive all course materials whether via mail or post and sometimes they receive

the password-protected access to the materials online (Bowman, 2010). Although time factor is negligible in this type of online courses, this may be seen as a disadvantage since students do not know when to send and receive their materials.

Synchronous Courses

“Synchronous means that things are happening at the same time” (Vai & Sosulski, 2016 p. 14). Synchronous course is the type of courses in which the students and the professor are all online. It is a real time learning which takes place in chat rooms where students can participate, ask questions and interact with their classmates (Bowman, 2010). One disadvantage of synchronous courses is time management. All students need to sit in front of their computers at the same time which may not fit into their daily schedule (Maeroff, 2003).

Asynchronous Courses

The widely used form of e-learning where “things are happening at different times” (Vai & Sosulski, 2016, p. 14). Asynchronous courses follow the daily schedule of both students and the professor. They have a flexible time frame that allows students to adequately complete their assignments and discussions. Asynchronous online learning environment motivates students to learn different subjects at the same time and it facilitates international learning as well.

The Status of E-Learning in Algeria

June 2002 was a turning point in the Algerian educational policy with the integration of Information and Communication Technologies (ICT) within the educational system. Universities and schools are equipped with computer labs, internet access in addition to digital libraries. Hamdy (2007) maintained that each university in Algeria has its own ICT policy that allows it to accelerate the learning process and provides ample opportunities for distance learning. ICT curriculum and textbooks are designed by the Ministry of education besides a training program for teachers includes 30-60 hours accounts for three fundamental components:

- Basic ICT training: basic operations, Windows-based software, e-mail, and Internet.
- Intermediate training: classroom applications, Internet for teaching, and e-mail as a medium for communication and collaboration.
- Advanced training: development and creation of educational software, on-line classes, telecommunication, e-mailing, development of interactive Web sites, production of multimedia presentations, producing creative work (Hamdy, 2007)

Djouidi (2018) claimed that e-learning in Algeria is traced back to the National Centre of Public Learning (CNEG) in 1963 which was the first center in Algeria in charge of distance education. The center used correspondence courses that fit the requirements of students' workplace. Therefore, correspondence teaching was the first form of e-learning in Algeria.

Both public and private sectors have cooperation agreements with foreign institutions like UNESCO's Avicenna project, The European Commission's Eumedis Initiative, Ecole de Formation en Techniques de Gestion etc. Moreover, training programs about distance learning have been administered by many institutes like Centre National d'Enseignement à Distance (Oxford Business Group, 2008).

Although e-learning has been widely welcomed in Algeria, Dhaou and Abdessemed (2009) believed that this method of learning remains at inadequate level of development. E-services in Algeria are not accessible to all universities and they still at the infancy stage; therefore, additional efforts are required to cover some issues that hinder e-learning exploration like lack of awareness among students, lack of adequate number of properly trained staff and lack of availability of e-services. Additionally, Guemide and Benachaiba (2012) insisted that Algerian e-learning system should concentrate on teachers' professional development in order to enhance their pedagogical strategies in online classrooms.

Online Course Management

This section offers a sample online course description to writing RAs introduction that is dedicated to researchers in soft and hard sciences. The course is a guide to aid novice researchers and give them details about the rhetorical and linguistic features of RAs introduction in the two disciplines.

Course Reference

Online course is designed according to genre theory of RAs introduction inspired by Swales' CARS model (1990) and his revised version (2004). The content of course targets the need of Algerian researchers in soft and hard fields taking into consideration publication standards in each field.

Learning Management System

Responding to distance learning programs in Algeria, the present course is planned to be held in **Moodle** (Modular Object-Oriented Dynamic Learning Environment) e-learning platform that is accessible to teachers and learners at all levels (graduate or post graduate). The platform installed on a remote accessible web server of most Algerian universities and it is mastered in e-learning training program for new teachers.

Moodle system is developed in 1999 by the Australian computer scientist and educator Martin Dougiamas at Curtin University of Technology, Australia. According to Lengyel and Herdon (2008), Moodle is a project that is initiated to support the social constructionist framework of education by producing internet-based courses and web sites. The platform is made up of two functionalities classes are: resources and activities (Blin & Munro, 2008). Resources refer to files that are externally created or uploaded like PowerPoint and web-pages; whereas, activities are created via Moodle system to facilitate learner-learner or teacher-learner interaction (chat rooms, wikis, quizzes, surveys, feedback ...). Lopes (2011) believed that the great success of Moodle is due to its open source that allows users to modify and adjust

their knowledge according to their course requirements. Moreover, the system is accessible to all users worldwide since it involves three levels of interaction are shown in the following table:

Role	Function
Administrator	Manages the whole environment
Teacher	Generates events, courses or subjects according to the thematic areas defined Generates training or events which are designed
Student	Accesses and interacts with a specific event and participates in the subjects they are subscribed

Note. From “Teaching with moodle in higher education,” by Lopes, 2011, 5th International Technology, Education and Development Conference Proceedings, p. 972.

The use of Moodle platform in Algeria was not a random choice. University decision-makers found Moodle platform the best innovation policy towards improving the quality of education in the country. Moodle exchange offers a virtual environment to share learning experiences by different discourse communities.

Objectives of Online Course

Online course is addressed to researchers and advanced students in soft or hard sciences. The course offers in-depth explanation writing RAs introduction by emphasizing the difference between the two disciplines. There are three main objectives guiding this course:

- Identifying the different steps of introduction
- Describing the rhetorical structure of introduction
- Giving a series of commonly encountered linguistic features

Course Design

The course is made up of three content pages: The first content page provides an overview of scientific publishing in Algeria casting light on journals' categories as well as publication process. The second page illustrates the structure of RAs while the third content page offers a

description of RAs introduction moves and steps. The overall structure of the course can be presented as follows:

Content Page1: The Process of Scientific publishing in Algeria

Understanding scientific publishing

Lesson Outline

Course Symbols

Classification of Journals and Publication Process

- Assessment Page

Content Page 2: Structure of Research Articles

Content Page 3 : Introduction Section

- Introduction Moves
- Move 1: Establishing a territory
 - Step 1: Claiming Centrality
 - Distinctive Linguistic Features
 - Assessment Page
 - Step 2: Making Topic Generalization
 - Distinctive Linguistic Features
 - Assessment Page
 - Step 3: Reviewing items of previous research
 - Distinctive Linguistic Features
 - Assessment Page

Move 2: Establishing a Niche

- Step 1A: Indicating the Gap
- Distinctive Linguistics Features
- Step 1B: Continuing a tradition

- Distinctive Linguistic Features
- Characteristics of Move 2
- Move 3: Occupying the Niche
 - Step 1A: Outlining Purposes
 - Distinctive Linguistic Features
 - Step 1B: Announcing Present Research
 - Distinctive Linguistic Features
 - Assessment Page
 - Step 2: Presenting Research Questions/ Hypotheses
 - Distinctive Linguistic Features
 - Step 3: Announcing Principle Findings
 - Step 4: Stating the Value of the Present Research
 - Distinctive Linguistic Features
 - Assessment Page

Sample Online Course

Topic: Writing Research Article Introduction

Content Page 1: The Process of Scientific Publishing in Algeria

Understanding Scientific publishing

Academic/scientific publishing is a subfield of publishing that describes academic research. Academic publishing has been undergoing major changes, shifting from traditional paper access to electronic access in an online environment. In the open access publishing model, academic papers are made freely available on the web by the publisher at the time of publication. See the video **here** on producing research articles.



Promote Your Research.mp4

Course Outline

- How to publish a scientific research article?
- The structure of research articles
- The structure of introduction section

Course Symbols

Two symbols are used in this course. The first are those boxes with solid lines _____ which refer to obligatory steps and boxes with dashed lines -----referring to optional steps.

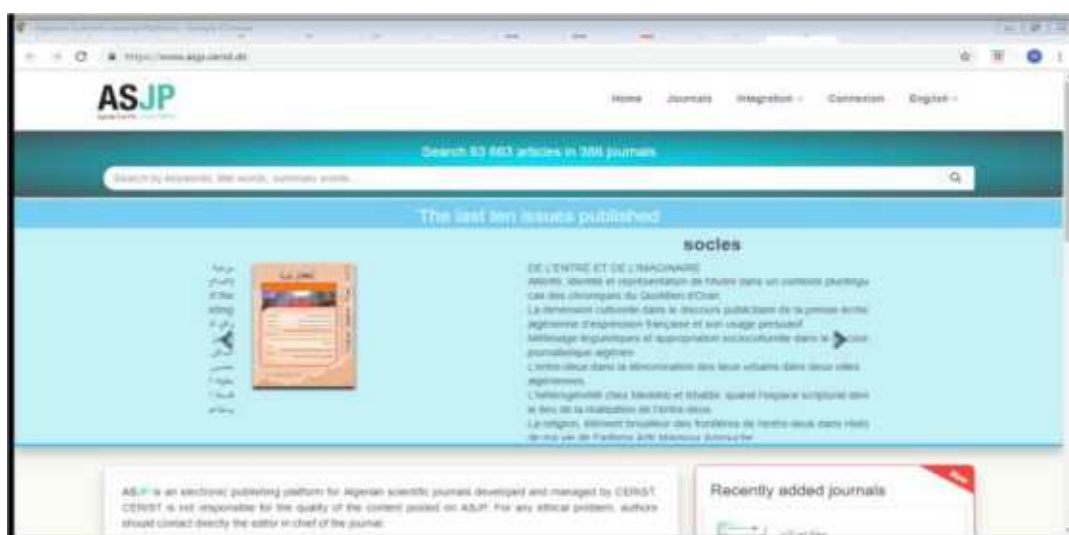
Classification of Journals and Publication Process

The classification of scientific journals is an important indicator of the quality of articles. For this reason, it is important for researchers to know the ranking as well as the different categories of journals convenient to their research disciplines. In the decree N° 393 of 17 June 2014 the Ministry of Higher Education and Scientific Research validated three categories of scientific journals for the attainment of the doctoral degree are presented in the document **here**.

[\(..\..\Catégorisation des revues-DGRSDT.pdf\)](#)

- **A⁺ Class Academic Journals:** scientific journals indexed in Web of Science (WOS) of Thomson Reuters (journals with Impact Factor).
- **A⁻ Class Academic Journals**
Scientific journals indexed in Thomson Reuters' Web of Science (WOS) (with Impact Factor). The list of academic journals' class A is inserted **here** ([..\..\Liste des revues scientifiques de Catégorie A.pdf](#))
- **B Class Academic Journals:** are based on Elsevier's SCOPUS, "All databases" by Thomson Reuters and updated list of European Reference Index for the Humanities (ERIH). The list **here** ([ALL DATABASES.pdf](#)) contains all journals in this category.
- **C Class Academic Journals:** Scientific journals having an ISSN, a reading committee, and whose abstracts are accessible on the net. Click **here** to download the list ([Liste des revues scientifiques de Catégorie C](#))

(C) category journals are concerned with articles' submitted on the Algeria Scientific Journal Platform (ASJP) launched in 2014 by The Directorate General for Scientific Research and Technological Development (RSDT).



Theoretically, publishing in international journals is quite similar to publishing in national journals; however, the difference lies in the impact that each category of journals has on the scientific community. Journals' Impact Factor (IF) is calculated by Thomson Scientific to figure out the average number of times articles published in a specific journal in the two previous years have been cited in that year. IF is calculated using the following formula:

$$\text{Journal Impact Factor Year}_x = \frac{\text{Cites in year } x \text{ to recent articles (Year}_{x-1} \times \text{Year}_{x-2})}{\text{Number of recent articles (Year}_{x-1} \times \text{Year}_{x-2})}$$

Examples of publication Process:

- ❖ **In International Journals:** Publication on Wiley Online Library offers clear explanation of the process of publishing a research paper in international journals check the document **here** ([Track your article through production.pdf](#))
- ❖ **In National Journals:** The main steps of publication in ASJP are clarified in the tutorial for authors **here** ([authorsGuide_17-10-2017_085904 \(1\).pdf](#))

Assessment Page: Yes/No Question

A scientific research article consists of four main sections

Yes

No

Content Page 2: Structure of Research Articles

Scientific research articles are made up of four main sections are Introduction-Method-Results-Discussion (IMRaD). Additionally, there are two sections of equal importance are the abstract and the conclusion. Each section of the article addresses a number of questions that construct the content of the article.

Abstract

It answers the following questions: *What? how? and why?*

Introduction

It addresses one main question is: *What?* (What is the paper about)

Method

It is concerned with the questions *how? and why?* (How the results are generated? why is this method chosen?)

Results

It answers the question *what are the findings?*

Discussion

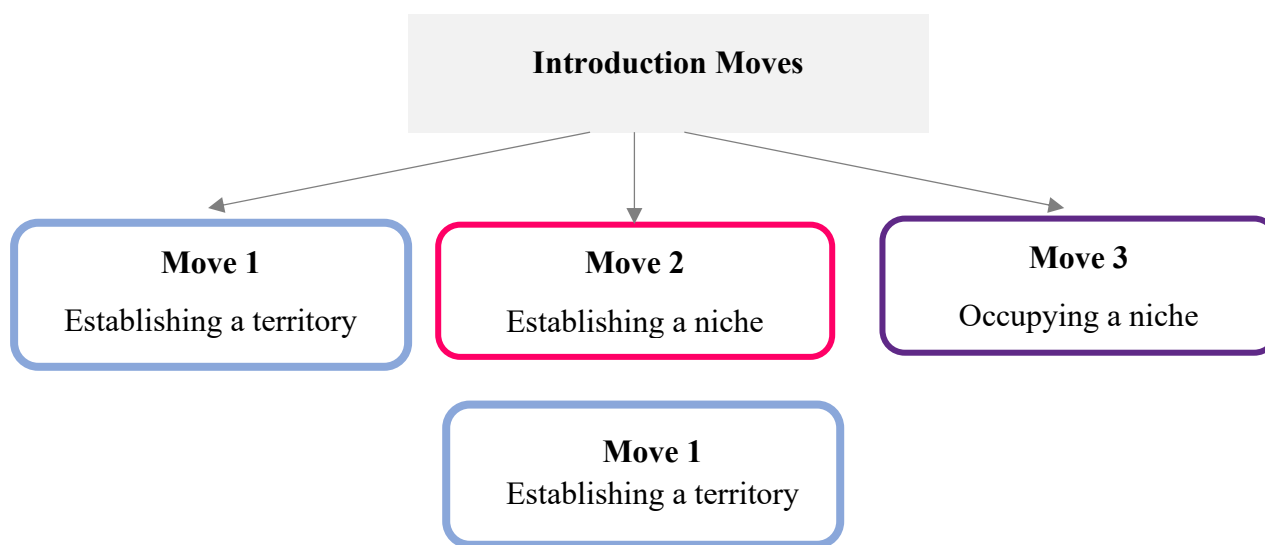
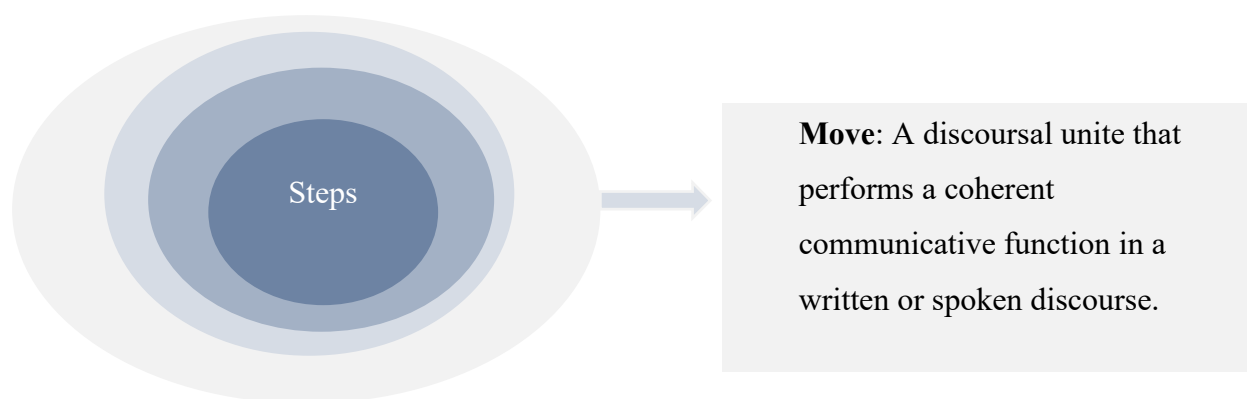
It attempts to answer the question *So what?*

Conclusion

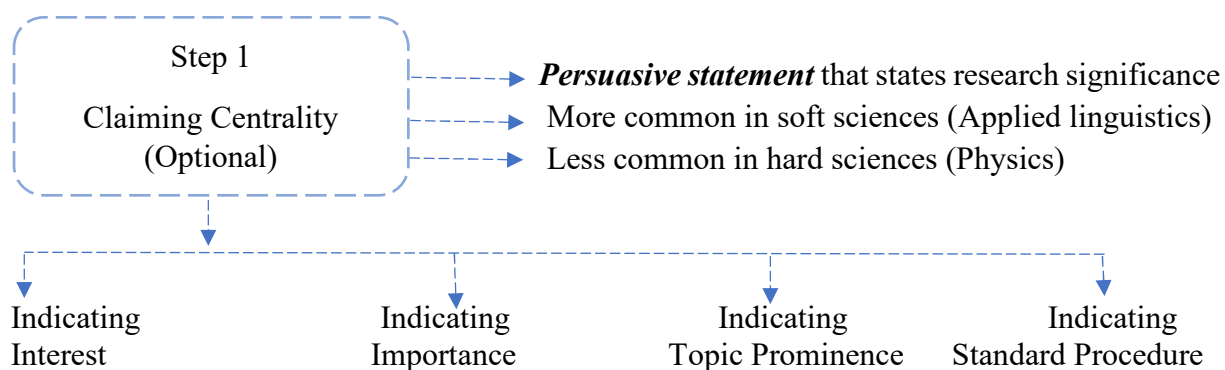
The purpose of a conclusion is to answer research questions

Content Page 3: Introduction Section

Introduction refers to the opening paragraphs of the article that define the scope of the research. Linguistically speaking, a RA introduction involves a set of moves and steps that serve different rhetorical functions.



What is the field of the work, why is this field important, what has already been done?



Distinctive Linguistic Features

Voice

Active

Passive

Tense

Simple Present

Perfective aspect

Emphatic Lexical Items

Impressive, significant, strongly marked, striking, vigorous etc.

Amplifiers

Absolutely, completely, strongly, enormously, thoroughly, highly, fully etc.

Evaluative Adjectives

Different, same, simple, important, difficult, clear, main, straightforward, complicated, easy etc.

Examples:

Interest: Sequencing has become *an explicit research interest* in English Language Teaching (ELT) after the methodological changes brought about under Communicative Language Teaching (CLT) against the structural approaches.

Applied Linguistics

Importance: The English language *enjoys a great importance* as a world language. It is spoken now by more than 508 million people. No one can consider himself as part of this globalization if he does not master two things: English and computing.

Applied Linguistics

Topic Prominence: *It is commonly believed* that each of these trends is *contributive* to the establishment of an applied metacognition.

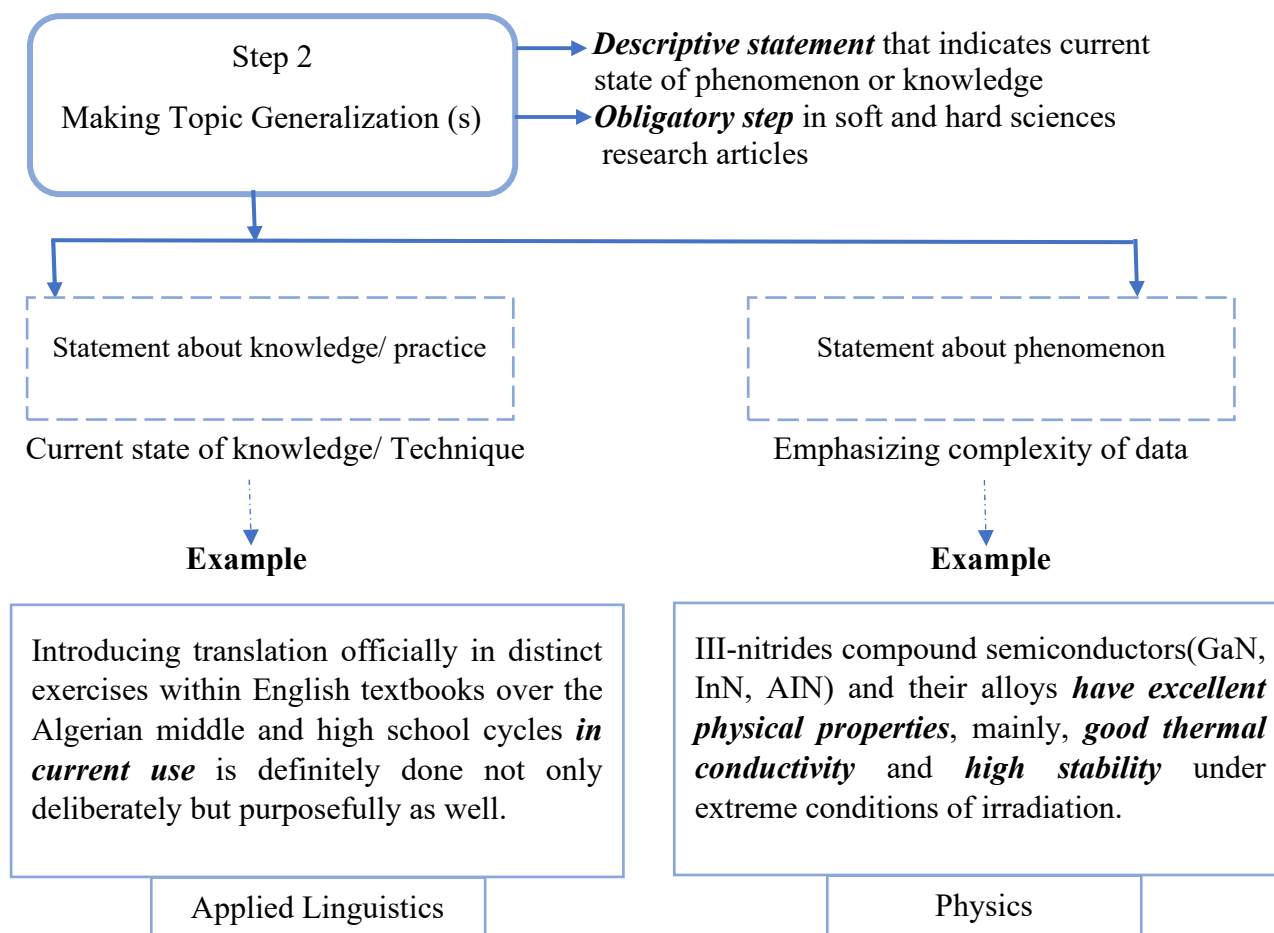
Physics

Standard Procedure: The use of baffles and fins in channels *is commonly used* for passive heat transfer enhancement strategy in single phase internal flow.

Physics

Assessment Page: Essay Question

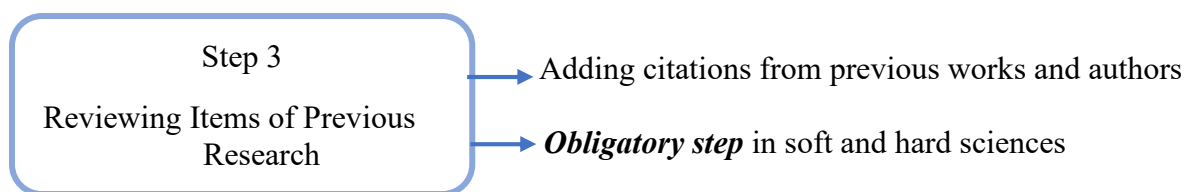
Choose a research topic in your field then write a topic centrality statement using one of the following options: Interest/ Importance/ Topic Prominence/ Standard Procedure.



Distinctive Linguistic Features	
Tense	Simple Present
Voice	Active/Passive

Assessment Page: Essay Question

Write a topic generalization statement that reflects current state of your topic.



Examples:

<p>Successful language learners use a wide range of strategies that show their active involvement in learning² . Moreover, Wallace (1998) argued that “... successful learners do apply specific strategies to the task of learning” (p. 157).</p>	<p>First investigations of a binary oxide system consisting of ZnO and TiO₂ introducing a phase diagram were conducted by Dulin and Race (1960) who reported that there are three compounds exist in the ZnO-TiO₂ system, including Zn₂TiO₃ (hexagonal) and Zn₂Ti₃O₈ (Cubic)^[1-2].</p>
Applied Linguistics	Physics

Distinctive Linguistic Features

Citations					
Integral				Non-integral	
Name of author occurs in the actual citing sentence				Name of author occurs as:	
Subject	Passive Agent	Possessive Noun phrase	Adjunct of reporting	Parenthesis	Superscripted
<p><u>Dornyei & Csizer (1998)</u> investigated teachers’ interpretation of their own impact on learner motivation.</p>	<p>Pressuremeter, invented <u>by Louis Menard (1955 and 1959).</u></p>	<p><u>In Kramersch’s (2009) own words</u>, “the goals of traditional language teaching have been found wanting in this new era of globalization”</p>	<p><u>According to Bottemanne (1971),</u> simultaneous heat and mass transfer by free convection along a vertical flat plate are only for steady state theoretical solutions with Pr= 0.71 and Sc = 0.63.</p>	<p>Curriculum development as one way of educational reform, ... <u>(Johnson, 2001).</u></p>	<p>Such diodes have attracted many researchers and find applications in optoelectronics and sensor devices ^[1-2].</p>

Reporting			Verbs	
Weak Orientation	Neutral Orientation	Strong Orientation	Non-Reporting	Reporting or Non-Reporting
Apologise, guess, hope, comment, speculate, etc.	Discuss, Describe, Outline reveal, show, find etc.	Warn, assert, oppose, highlight, stress, Emphasis etc.	Be, make, have, write, go, start, provide, use, etc.	<i>Find and be associated with</i> X was found by Sang et al. (1972) to be impaired (reporting) X was impaired (Sang et al., 1972) (non-reporting)
Active			Voice	
Simple Past			Tense	
			Perfective aspect	Passive
			Simple Present only with modal verb <i>may</i> that indicates uncertainty	

Assessment Page: Essay Question

Write examples of integral and non-integral citations using the following structures:

Integral citations:

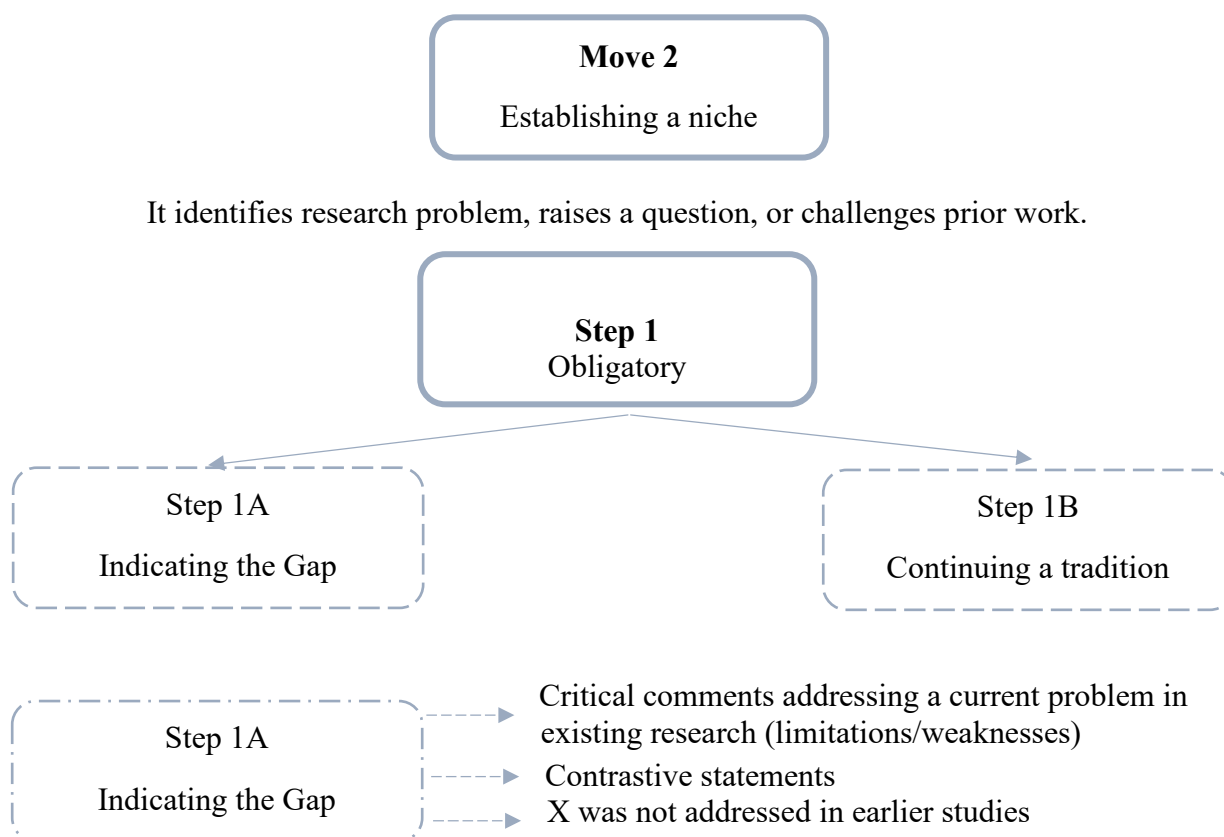
Author name (subject)+Reporting verb (past tense) + active voice

Author name (Possessive Noun phrase) + Non-Reporting verb (Simple present) + passive voice

Non-Integral citations:

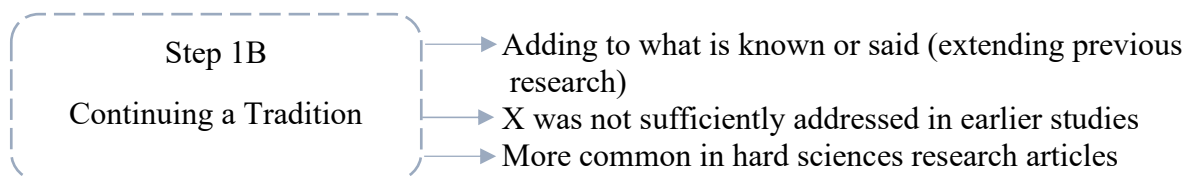
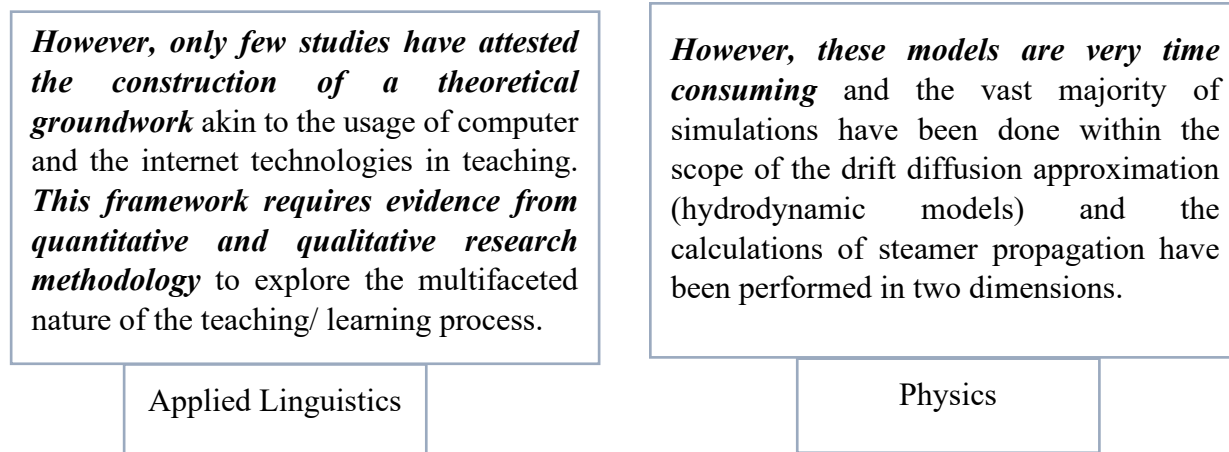
Reporting verb (present perfect) + passive voice + Parenthesis

Non-reporting (past tense) + active voice + Superscripted



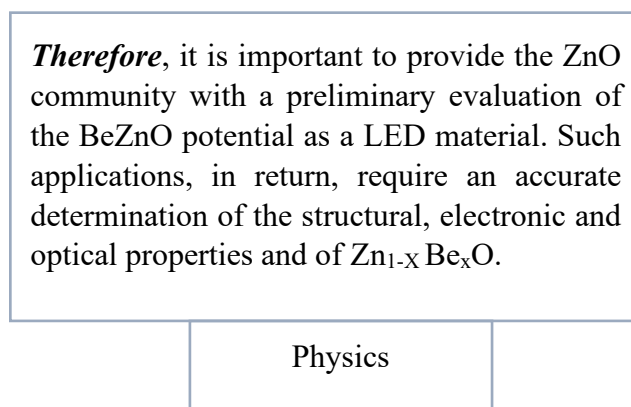
Distinctive Linguistic Features			
Tense			
Simple Present		Present Perfect	
Voice			
Active		Passive	
Contradiction connectors			
However, though, although, but, nevertheless, whereas, still, even (though), in spite of, despite, unfortunately etc.			
Lexical negation			
<u>Verbs</u>	<u>Nouns</u>	<u>Adjectives (NP)</u>	<u>Verb Phrase Negation</u>
Suffer, limited to, lack, constrain, overlook, fail, confuse, miss etc.	Failure, limitation, farce, disaster etc.	Complex, questionable, limited, misleading, elusive, inconclusive time-consuming, difficult problematic, deceptive, etc.	Cannot treat, do not cover, do not agree does not have, not, rarely etc.
Quasi Negative Quantifiers			
Few/very few, little, neither...nor, none, no, any, less, etc.			

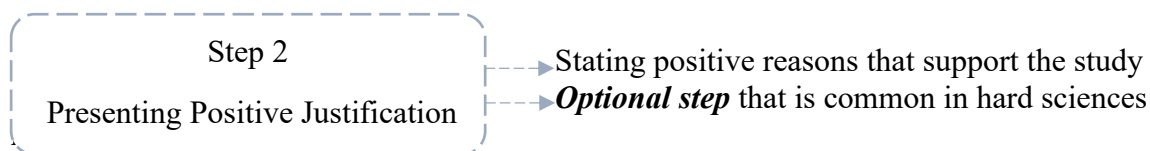
Examples



Distinctive Linguistics Features
Sentence Connectors Showing Results
Therefore, hence, thus, consequently, As a consequence etc.
Verbs Expressing Possibility
Appear, look, expect, seem, suppose, believe, tend, think, promise etc.
Adjectives need/ interest
Keen, desirable, anxious, in need of, in the hope that/of

Example:





Distinctive Linguistic Features		
Tense		
Simple Present		
Positive Lexical Items		
<u>Verbs</u>	<u>Nouns</u>	<u>Adjectives</u>
Affirm, agree, stress, assert, demonstrate, emphasize, make clear etc.	Success, triumph, genius, gain, clarity etc.	Important, significant, strong, clear, effective, main, major, beneficial, valuable, relevant, logical, persuasive, valid unbiased, plausible, useful, essential, etc.

Example:

Considering these studies, examining the components of students’ engagement is *essential* to successfully engage students even if following the school curriculum is required in some schools
 Applied Linguistics

Characteristics of Move 2	
Cyclicity	
Repeating Move 2 in a series of instances throughout the same introduction. Generally, it is embedded as part of Move 1 or Move 3	
Opinions	
<u>Surmise</u>	<u>Substantiated</u>
Opinion based completely on speculation (hypotheses)	Opinion based on fact and evidence
Jugements	
<u>Quantitative</u>	<u>Qualitative</u>
The evaluation of cases on the basis of a set of evidence and with respect to a set of criteria.	The evaluation of cases on the basis of researcher’s intuition and how he/she views issues.

Assessment Page: Essay Question

Write a gap indication statement using step 1A.

Move 3
Occupying a niche

It outlines the purpose of the present research and optionally summarize the results.

Step 1
Obligatory

Step 1A
Outlining Purposes

Step 1B
Announcing Present Research

Step 1A
Outlining Purposes

→ *A purposive statement* which presents research goals
→ More common in soft sciences research articles

Distinctive Linguistic Features

Deictic References

Form

Standard Descriptive
In this paper, we develop a two-dimensional code in cylindrical coordinates by using differing radii

Collapsed
This study attempts to investigate the effect of explicit instruction on learning some English complex grammar rules.

Type

Genre
Paper, report, article, review, etc.

Inquiry
Research, experiment, study, investigation etc.

Tense

Simple Present

Simple Past/Simple present

Demonstrative Adjectives

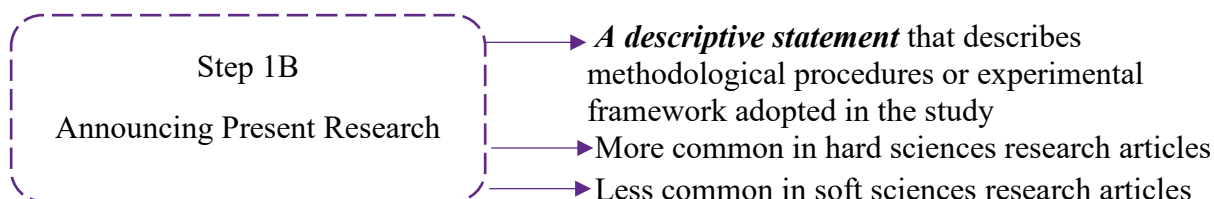
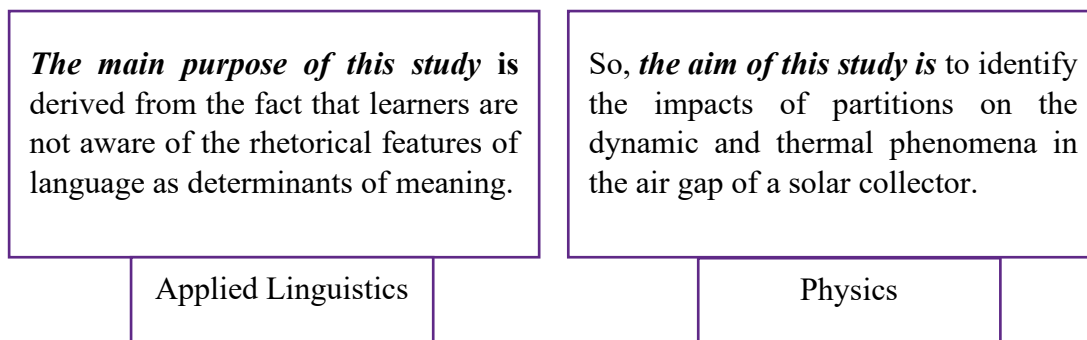
This, that, these, those

Specific Determiners

Definite article
The

Possessives
his, her, your, its, my, our, their, whose

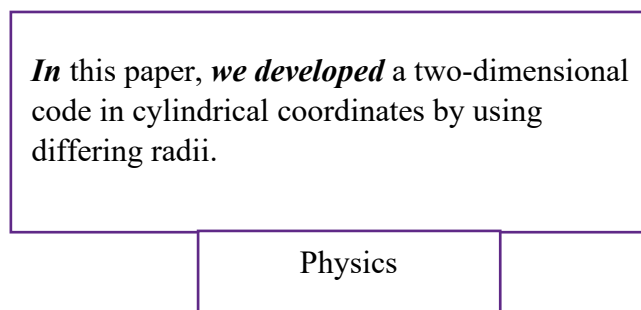
Examples:



Distinctive Linguistic Features

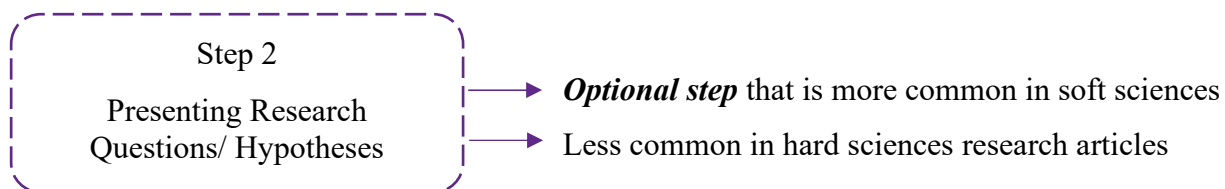
Deictic References	
Standard Descriptive	Collapsed
Activity Verbs	
Develop, grow, work, observe, select, describe, utilize, demonstrate, extend	
Personal Pronouns	
I, we	
Tense	
Simple Present	Simple Past
Voice	
Active	Passive

Example:



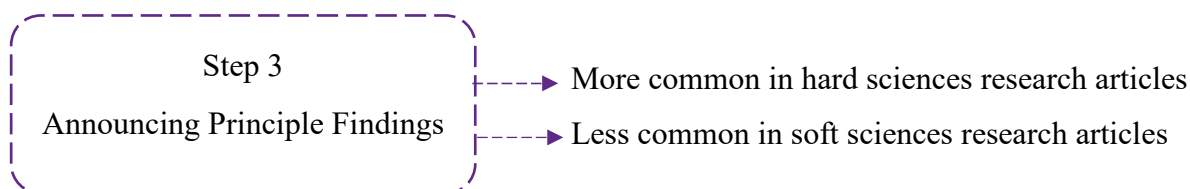
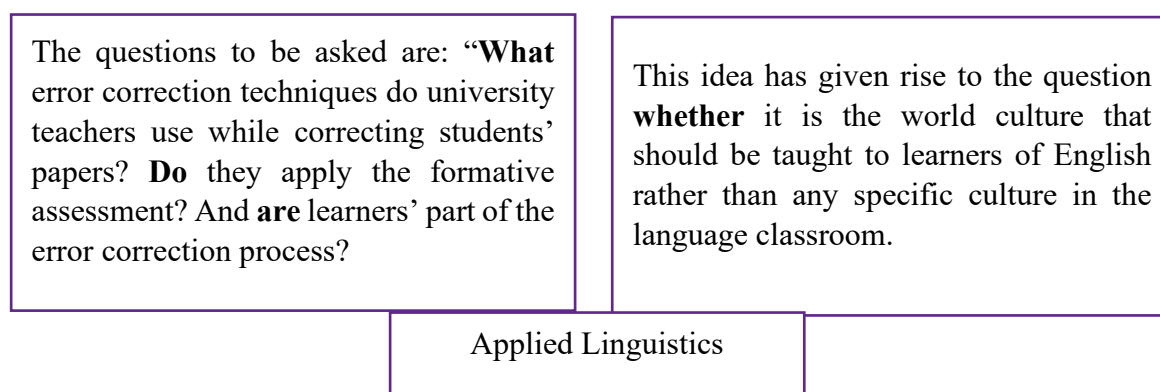
Assessment Page: Essay Question

Write a purposive statement about your topic using collapsed deictic references.

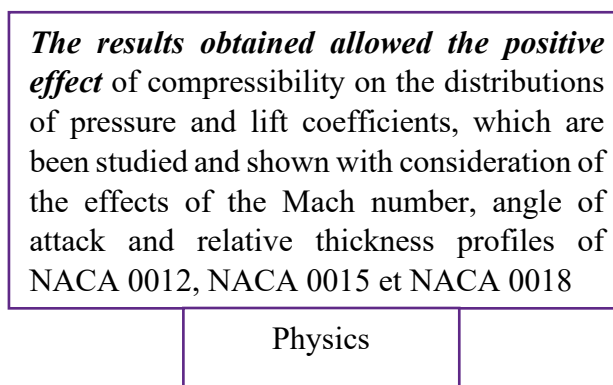


Distinctive Linguistic Features	
Questions	
<u>Direct</u> WH questions	<u>Indirect</u> If/whether

Examples:



Example:





Distinctive Linguistic Features

Cognitive Nouns

Perception, awareness, apprehension, insight, enlightenment, comprehension, understanding

Like-hood Nouns

Hope, promise, possibility, opportunity, feasibility, potential, evidence, convenience etc.

Possibility modals

Can, could, may, might

Example:

The results of this study contribute some empirical evidence in an attempt to raise awareness of a test bias which has been overlooked in many ESL/EFL contexts

Applied Linguistics

Assessment Page: Essay Question

Using the previous answers of assessment pages; write a complete introduction to your research topic.

To what extent have you succeeded in writing the introduction?

0% 25% 50% 75% 100%

Research Implications and Recommendations

Several implications arise from the findings of this study. First, corpus analysis reveals many interesting facts about Swales' CARS model and its role to structure RAs introduction. The fact that the model is based on the cognitive structuring of introduction written by members of a specific discourse community reflects the range of possibilities and choices open to writers in different disciplines.

Although data analysis shows that researchers do not necessarily follow the suggested sequence of moves and steps, it is worth to mention that Swales' CARS model is a descriptive approach rather than a prescriptive approach. This means that researchers may stick to several writing schemas rather than one common structure or sequence.

The model allows researchers to understand the nature of language used in RAs in general and introduction in particular. Although online course description may not fully cover the rhetorical and linguistic characteristics of RAs, attempts have been made to describe the main features of scientific articles' introduction in soft and hard sciences.

In fact, the obligatory and optional movements in the introduction provide researchers great flexibility in the writing process. Notably, the linguistic features associated with particular moves can be used as discourse devices that facilitate researchers' comprehension of introduction's content and structure and make clear cut boundaries between its sections.

In classrooms, Swales' CARS can be used as a model to assess students' cognitive skills and instill some analytical methods of explaining and writing academic genres. Unlike Chomsky's ideal speaker/ listener, Swales' model helps teachers to examine the genre performances of students who are less than ideal and know the language of their discourse community less than perfectly. Therefore, the model provides practical solutions to students' language problems across different disciplines and helps them to move from simple to more complex and sophisticated rhetorical structures.

The findings of this study have unearthed very important recommendations that provide some kind of writing support to teachers and researchers in different disciplines. Genre analysis of RAs introduction paves the way for analyzing different types of academic papers including: dissertations, letters, books, newspapers texts, etc.

The recommendations provided below would primarily help to expand genre research to teaching and learning areas:

- ✓ Teaching genre theory is recommended for ESP students and novice researchers.
- ✓ Since genre analysis is a multi-disciplinary approach, teachers can undertake a process of needs analysis to target the needs of students across different disciplines.
- ✓ Designing task-based genre activities with unique generic structures attributed to specific genres.
- ✓ The objective of these activities is twofold: first, genre-based approach helps students and/or researchers to recognize the differences between the subtle features of academic texts (articles, reviews, letters, etc.). Second, task-based approach helps teachers to design activities that fit students' proficiency level.
- ✓ Analyzing students' academic writings could have greater impact on improving the teaching of academic writing.

Conclusion

The cross-disciplinary review of current research leads to important implications to assist Algerian researchers/students, particularly novice ones, understanding of the linguistic patterns and rhetorical structure of RAs introduction in soft and hard sciences. Genre theory of RAs provides a useful framework for designing courses and setting out fundamental principles for writing different academic genres. There is no doubt that all researchers are hoping to find a course guide to writing academic papers taking into consideration disciplinary variations that play pioneering role in determining its structure.

General Conclusion

One of the important arguments for putting RAs in the foreground of academic writing is attributed to the fact that RAs provide the foundation upon which scientific knowledge is constructed. The rapidly growing number of doctoral students and the increasing need to produce and publish at least one article in indexed journals makes Algeria a good case study to account for the writing conventions of RAs in soft and hard disciplines.

Writing introduction has received ample attention in academic discourse literature. There is a general consensus that writing introduction yields high cognitive skills that allow researchers to provide a simple and accurate description of their topics and research problematics. This comes in line with the findings of this research which confirms the assumption that Algerian researchers found introduction the most problematic section of RAs to write.

Previously, this study postulates the revolutionary role of genre theory and move analysis to capture cross-disciplinary variations across RAs. The assumption that writing introduction is linguistically and rhetorically different in applied linguistics and physics RAs has been verified by Swales (1990) and confirmed in the present study. Although findings show that most articles follow a linear rhetorical pattern of moves; the increasing number of citations in physics RAs introductions shows that physics researchers are keener on seeking cyclicality in their introductions more than applied linguistics researchers. Furthermore, researchers make different claims about the choice of linguistic features which is more successful in applied linguistics introductions than physics introductions.

Finally, on the assumption that researchers in the soft and the hard fields experience difficulties with writing RAs introduction and thereby evoke different writing strategies, research shows that researchers in hard sciences are more likely to experience difficulties with writing introductions than researchers in soft sciences. In fact, the problem of language in

Algeria comes to the fore as a prominent issue in the Algerian higher education that needs more consideration and attention.

References

- Adamson, H. D. (1993). *Academic competence: Theory and classroom practice: Preparing ESL students for content courses*. New York & London: Longman.
- Afful, J. B. A. (2009). Rhetorical analysis of introductions in an undergraduate English Studies course. Retrieved from http://www.esp_world.info/Articles_26/Original/RHETORICAL_ANALYSIS.pdf
- Agnaou, F. (2004). *Gender, literacy, and empowerment in Morocco*. New York & London: Routledge.
- Algeria Research Output overview (2015). *In Taylor & Francis Journals*. Retrived from http://bu.usthb.dz/IMG/pdf/presentation_-_algeria_-_dr_berrouk.pdf
- Allardt, E. (1990). Challenges for Comparative Social Research. *Acta Sociologica*, 33(3), 183-193.
- Allen, J.P.B. & Widdowson, H.G. (Eds). (1974). *English in Focus*. Oxford: Oxford University Press.
- Anderson, G. and Arsenault, N. (1998). *Fundamentals of Educational Research* (2nd ed.). London: Routledge Falmer.
- Anthony, L. (1999). Writing research article introductions in Software Engineering: How accurate is a Standard Model. *IEEE Transactions on Professional Communication*, 42 (1) 38-46.
- Ard, J. (1983). The role of the author in scientific discourse: *The Annual American Applied Linguistics Meeting*. Minneapolis, Minn.
- Artiga León, M. R. (2006). The semantic-pragmatic interface of authorial presence in academic lecturing phraseology. *Ibérica*, 12, 127-144.
- Askehave, I., & Ellerup Nielsen, A. (2005). Digital genres: A challenge to traditional genre theory. *IT & People*, 18(2), 120–141.

- Atai, M. R., & Habibie, P. (2009). Exploring sub-disciplinary variations and generic structure of applied linguistics research article introductions using CARS Model. *The Journal of Applied Linguistics*, (2), 26-51.
- Atkinson, D. (1992). The evolution of medical research writing from 1735 to 1985: The Case of the Edinburgh medical journal. *Applied Linguistics*, 13 (4), 337-374.
- Atkinson, P. (2009). Illness narratives revisited: the failure of narrative reductionism. *Sociological Research Online*, 14(5), 16.
- Aurini, J. D., Heath, M., & Howells, S. (2016). *The how to of qualitative research*. London, UK: Sage.
- Bachman, L. F. & Palmer, A. (1996). *Language testing in practice: Designing and developing useful language tests*. Oxford: Oxford University Press.
- Bakhtin, M. M. (1986). The problem of speech genres. In C. Emerson & M. Holquist (Eds.), *Speech genres and other late essays* (pp. 60-102). Austin, TX: University of Austin Press.
- Barber, C. (1997). *Early Modern English*. Edinburgh: Edinburgh University Press.
- Barron, A. (2012). *Public information messages: A contrastive genre analysis of state-citizen communication*. Amsterdam: John Benjamins.
- Bartholomae, D. (1985). Inventing the university. In M. Rose (ed.), *When a writer can't write: studies in writer's block and other composing-process problems* (pp.134-165). New York & London: The Guilford Press.
- Barton, D. (1994). *Literacy: An introduction to the ecology of written language*. Oxford: Blackwell.
- Basturkmen, H. (2012). A genre-based investigation of discussion sections of research articles in Dentistry and disciplinary variation. *Journal of English for Academic Purposes*, 11, 134-144.

- Bazerman, C. (1981). What written knowledge does: Three examples of academic discourse. *Philosophy of the Social Sciences*, 11, 361-387.
- Bazerman, M. H. (1983). Negotiator judgment: A critical look at the rationality assumption. *American Behavioral Scientist*, 27(2), 211-228.
- Bazerman, C. (1988). *Shaping written knowledge: The genre and activity of the experimental article in science*. Madison: University of Wisconsin Press.
- . (1994). Systems of genres and the enhancement of social intentions. In A. Freedman & P. Medway (Eds.), *Genre and new rhetoric* (pp. 79-101). London: Taylor and Francis.
- . (1997). The life of gender, the life in the classroom. In W. Bishop & H. Ostrom (Eds.), *Genres of writing* (pp. 19-26). Portsmouth NH: Boynton Cook.
- Bazerman, C., & Becher, T. (1981). Towards a definition of disciplinary cultures. *Studies in Higher Education*, 6(2), 109–122.
- . (1994) The significance of disciplinary differences. *Studies in Higher Education*, 19(2), 151—61.
- Behnam, B., & Golpour, F. (2014). A genre analysis of English and Iranian research articles abstracts in applied linguistics and mathematics. *International Journal of Applied Linguistics and English Literature*, 3(5), 173– 179.
- Belcher, D. (Ed.). (2009). *English for Specific Purposes in Theory and Practice*. Ann Arbor: University of Michigan Press.
- Bensaoula, A. (2012). *Country reports 2012: Algeria*. ERA-watch Network.
- Berkenkotter, C., & Huckin, T. N. (1995). *Genre knowledge in disciplinary communication cognition / culture /power*. New Jersey: Lawrence Erlbaum.
- Betz, F. (2011). *Managing technological innovation: Competitive advantage from change* (3rd ed.). John Wiley and Sons, Hoboken, NJ.

- Bhatia, V. K. (1997). Genre mixing in academic introductions. *Journal of English for Specific Purposes*, 16(3), 181-195.
- . (2004). *Worlds of written discourse: A genre-based view*. London: Continuum.
- . (2014). *Analyzing genre: Language use in professional settings* (3rd ed.). London: Longman.
- Bhatia, V. K., & Nodoushan, M. A. S. (2015). Genre analysis: The state of the art (An online interview with Vijay Kumar Bhatia). *International Journal of Language Studies*, 9(2), 121-130.
- Bhatia, V. K. (1993). *Analyzing Genre: Language use in professional settings*. London: Longman.
- Biber, D., & Conrad, S. (2009). *Register, genre and style*. Cambridge: Cambridge University Press.
- Biber, D., Connor, U., & Upton, T. (Eds.). (2007). *Discourse on the move. Using corpus analysis to describe discourse structure*. Amsterdam: John Benjamin.
- Biber, D. (1986). Spoken and written textual dimensions in English: Resolving the contradictory findings. *Language*, 62(2), 384–414.
- . (2007). Discourse analysis and corpus linguistics. In D. Biber, U. Connor & T. Upton (Eds.), *Discourse on the move. Using corpus analysis to describe discourse structure, Studies in Corpus Linguistics* (pp. 1-20). Amsterdam: John Benjamins.
- Biber, D., & Finegan, E. (1991). On the exploitation of computerized corpora in variation studies. In K. Aijmer & B. Altenberg (Eds.), *English corpus linguistics* (pp. 204–220). London: Longman.
- Biber, D. (1988). *Variation across Speech and Writing*. Cambridge University Press.

- Blin, F., & Munro, M. (2008). Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education*, 50(2), 475-490.
- Bogner, A., Littig, B., & Menz, W. (2009). Introduction: expert interviews: an introduction to a new methodological debate. In A. Bongner, B. Littig & W. Menz (Eds.). *Interviewing experts* (pp. 1-13). Basingstoke: Palgrave Macmillan.
- Bouchrika, I., Harrati, N., Mahfouf, Z., & Gasmallah, N. (2016). Evaluating the acceptance of e-learning systems via subjective and objective data analysis. In A. Caballé & J. Conesa (Eds.), *Software data engineering for network e-learning environments* (pp. 199-220). Springer, Cham.
- Boukelif, A., & Mammeria, A. B. (2016). Teaching and learning sustainably with web 2.0 technologies: Benefits, barriers and best practices. *Interactive Technology and Smart Education* 13(1), 1-13.
- Bowman, L. (2010). *Online learning: A user-friendly approach for high school and college students*. Lanhan, MD: Rowman & Littlefield.
- Bruce, I. (2008). *Academic writing and genre: A systematic analysis*. London, UK: Continuum.
- Burns, W. E. (2003). *Science in the Enlightenment: An Encyclopedia* (Vol. 8, 135-38). Santa Barbara, CA: ABC-CLIO.
- Canagarajah, A. S. (1996). From critical research practice to critical research reporting. *TESOL Quarterly*, 29 (2), 320-330.
- Canale, M. (1983). From communicative competence to communicative language pedagogy. In J. C. Richards & R. W. Schmidt (Eds.), *Language and communication* (pp. 2-27). London: Longman.

- Canale, M., & Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics*, 1, 1-47.
- Cargill, M., & O'Connor, P. (2009). *Writing scientific research articles: Strategy and steps*. Oxford, UK: Wiley-Blackwell.
- Cargill, M., & O'Connor, P. (2013). *Writing scientific research articles: Strategy and steps* (2nd ed.). Chichester, UK: Wiley-Blackwell.
- Carter-Thomas, S. C., & Chambers, A. (2012). From text to corpus: A contrastive analysis of first-person pronouns in economics article introductions. In A. Boulton, S. C. Thomas & E. Rowley-Jolivet (Eds.), *Corpus-informed research and learning in ESP: Issues and applications* (pp. 17-44). Amsterdam: John Benjamins.
- Casanave, C. (2002). *Writing games: Multicultural case studies of academic literacy practices in higher education*. Mahwah, NJ: Laurence Erlbaum.
- Celce-Murcia, M. & Olshtain, E. (2000). *Discourse and context in language teaching: A guide for language teachers*. Cambridge: Cambridge University Press.
- Celce-Murcia, M. (2007). Rethinking the role of communicative competence in language teaching. In E. A. Soler & M. P. S. Jorda (Eds.), *Intercultural language use and language learning* (pp. 41-57). Dordrecht, Netherlands: Springer.
- Charles, M., & Pecorari, D. (2016). *Introducing English for academic purposes*. Harlow, UK: Longman.
- Chomsky, N. (1965). *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.
- Cleiziou, G., & Poudat, C. (2007). On the impact of lexical and linguistic features in Genre- and Domain-Based Categorization. *Lecture Notes in Computer Science*, 4394, 599-610.
- Clyne, M. (1981). Culture and discourse structure. *Journal of Pragmatics*, 5, 61-66.

- Couture, B. (2000). Exploring the processes of written language production and interpretation. In B. Couture (Ed.), *In Functional approaches to writing: Research perspectives* (pp. 69-92). London: Continuum.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks, CA: Sage.
- Crookes, G. (1986). *Task classification: A cross-disciplinary view*. (Tech. Rep. No.4). Honolulu: University of Hawaii: Centre of Second Language Classroom Research.
- Cummins, J. (2002). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon: Multilingual Matters.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Devitt, A. J. (2004). *Writing genres*. Carbondale, IL: Southern Illinois University Press.
- . (2014). Genre performances: John Swales' genre analysis and rhetorical-linguistic genre studies. *Journal of English for Academic Purposes*. 19, 44-51.
- Dhaou, I. B., & Abdessemed, F. (2009). E-learning in emerging countries: Case studies of Republic of Tunisia, the Kingdom of Saudi Arabia, and people's Democratic Republic of Algeria. In J. Xu (Ed.), *E-Business in the 21st Century: Realities, challenges and outlook* (pp. 155–169). World Science Publication
- Diamond, J. (1987). Soft sciences are often harder than hard sciences. *Discover*, 8(8), 34-39.
- Djoudi, M. (2018). Algeria. In S. W. Alan & S. Hamlaoui (Eds.), *E-Learning in the Middle East and North Africa* (MENA) Region (pp. 1-25). Switzerland: Springer.
- Dörnyei, Z. (2007) Qualitative data collection. In Z. Dörnyei (Ed.), *Research methods in applied linguistics* (pp. 101–124). Oxford: Oxford University Press.
- Dudley-Evans, T., & St. John, A. M. (1998). *Developments in English for specific purposes: A multi-disciplinary approach*. Cambridge: Cambridge University Press.

- Durkin, P. (2014). *Borrowed words: A history of loanwords in English*. Oxford: Oxford University Press.
- Eggins, S. (2004). *An introduction to systemic functional linguistics* (2nd ed.). London: Frances Pinter.
- El Kenz, A., & Waast, R. (1997) Sisyphus or the scientific communities of Algeria. In J. Gaillard, V. V. Krishna & R. Waast (Eds.) *Scientific communities* (pp.53-80). London, New Delhi: Sage.
- Elbow, P. (1991). Reflections on academic discourse: How it relates to Freshmen and colleagues. *College English*, 53(2), 135-155.
- Englander, K. (2013). *Writing and publishing science research papers in English: A global perspective*. New York, NY: Springer.
- Erickson, T. (2000). Making sense of computer-mediated communication (CMC): Conversations as genres, CMC systems as genre ecologies: *Proceedings of the 3rd Hawaii International Conference on System Sciences (HICSS-33)*. Maui, HI, IEEE Press, Los Alamitos, CA.
- Esser, F., & Vliegthart, R. (2017). Comparative research methods in mass communications: An overview. In D. Caramani (Ed.), *Comparative politics* (pp. 1-35). Oxford: Oxford University Press.
- Euro-Mediterranean Agreement establishing an association between the European community and its members states, of the one part, and the People's Democratic Republic of Algeria, of the other part [2005] OJ L 265/2.
- Fang, Z. (2012). Approaches to developing content area literacies: A synthesis and a critique. *Journal of Adolescent and Adult Literacy*, 56, 103–108.
- Feather, J. (1988), *A History of British Publishing*. London: Croom Helm.

- Ferguson, G. (2007). The global spread of English, scientific communication and ESP: questions of equity, access and domain loss. *Ibérica*, 13, 7–38.
- Ferguson, A. C. (1996). *Sociolinguistic perspectives: Papers on language in society. 1959-1994*. Oxford: Oxford University Press.
- Ferris, D. R. (2009). *Teaching college writing to diverse student populations*. Ann Arbor: University of Michigan Press.
- Finlay, L. (1997). Evaluating research articles. *British Journal of Occupational Therapy*, 60(5), 205 – 207.
- Fløttum, K., Dahl, T., & Kinn, T. (2006). *Academic voices across languages and disciplines*. Amsterdam & Philadelphia: John Benjamins.
- Flowerdew, J. (1999). Writing for scholarly publication in English: The case of Hong Kong. *Journal of Second Language Writing*, 8(2), 123–145.
- . (2001). Attitudes of journal editors to nonnative speaker contributions. *TESOL Quarterly*, 35(1), 121-150.
- . (2002). Genre in the classroom: A linguistic approach. In A. M. Johns (Ed.), *Genre in the classroom: Multiple perspectives* (pp. 91-105). Mahwah, N.J.: Lawrence Erlbaum Associates.
- . (2013). English for research publication purposes. In B. Paltridge & S. Starfield (Eds.), *The Handbook of English for Specific Purposes* (pp. 301–321). Oxford: Wiley-Blackwell.
- . (Ed.) (2014). *Discourse in context*. London: Bloomsbury.
- Flowerdew, L. (2005). An integration of corpus-based and genre-based approaches to text analysis in EAP/ESP: Countering criticisms against corpus-based methodologies. *English for Specific Purposes*, 24, 321-332.

- Foss, C., & Ellefsen, B. (2002). The value of combining qualitative and quantitative approaches in nursing research by means of method triangulation. *Journal of Advanced Nursing*, 40(2), 242–8 38.
- Fredrickson, K., & Swales, J. M. (1994). Competition and discourse community: Introductions from Nysvenska Studier. In B. L. Gunnarsson, P. Linell & B. Nordberg (Eds.), *Text and talk in professional contexts* (pp. 9-22). Uppsala, Sweden.
- Futasz, C. O. (2006). Analysis of theoretical research article introductions written by the undergraduate students: A genre-based approach. *Acta Linguistica Hungarica: An international Journal of Linguistics*, 53(2), 97-116.
- Gajda, J. (1993). *Platońska droga do idei. Aksjologiczny rodowód platońskiej ontologii*. Wrocław: Wydawnictwo Uniwersytetu.
- Garfield, E. (2002). Highly cited authors. *Scientist*, 16(7), p. 10.
- Garzone, G. (2015). Genre analysis. In T. Karen, I. Cornelia & S. Todd (Eds.), *The international encyclopedia of language and social interaction* (pp. 677-393). Oxford: Wiley Blackwell.
- Gee, J. P. (1996). *Social linguistics and literacies: Ideology in discourses* (2nd ed.). London: Routledge.
- Giannoni, D. S. (2009). Negotiating research values across review genres: A case study in applied linguistics. In K. Hyland & G. Diani (Eds.), *Academic evaluation: Review genres in university settings* (pp. 17–33). Basingstoke: Palgrave.
- . (2010). *Mapping academic values in the disciplines*. Bern: Peter Lang.
- Gill, L. E. (2013). *Advertising and Psychology*. Routledge.
- Glasman-Deal, H. (2010). *Science research writing for non-native speakers of English*. London: Imperial College Press.
- Gotti, M. (2001). Cross cultural aspect of academic discourse. *Brno Studies in English*, 2(38), 59-78.

- _____. (2005). *Investigating specialized discourse*. Bern: Peter Lang.
- Graddol, D. (1996). *The future of English? A guide for forecasting the popularity of the English language in the 21st century*. London: British Council.
- Granville, B., & Johnson, Jr. (1957). A method for evaluating research articles in education. *Journal of Educational Research*, 51(2), 149-151.
- Grey, B. (2015). *Linguistic variation in research articles: When discipline only tells part of the story*. Amsterdam: Benjamins.
- Gross, A. G., Harmon, J. E., & Michael. R. (2002). *Communicating science: The scientific article from the 17th century to the present*. Oxford: Oxford University Press.
- Golpour Lasaky, F. (2011). A contrastive study of generic organization of doctoral dissertation acknowledgements written by native and non-native (Iranian) students in applied linguistics. *Modern Journal of Applied Linguistics*, 3(2), 175-200.
- Guemide, B., & Benachaiba, C. (2012). Exploiting ICT and e-learning in teacher's professional development in Algeria: The Case of English secondary school teachers. *Turkish Online Journal of Distance Education-TOJDE*, 13(3), 33-49.
- Guinda, C. S., & Hyland, K. (2012). Introduction: A context-sensitive approach to stance and voice. C. S. Guinda & K. Hyland (Eds.), In *stance and voice in written academic genres* (pp. 1-11). London: Palgrave Macmillan.
- Gupta, R. (1995). Managing general and specific information in introductions. *English for Specific Purposes*, 14(1), 59-75.
- Halliday, M. A. K. (1978). *Language as social semiotic*. London: Edward Arnold.
- _____. (1988). On the Language of Physical Science. In M. Ghadessy (Ed.), *Registers of written English: Situational factors and linguistic features* (pp. 162-178). London, Pinter.

- _____. (1993a). Some grammatical problems of scientific English. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 69-85). Pittsburgh: University of Pittsburgh Press.
- _____. (1993b). Towards a language-based theory of learning. *Linguistics and Education*, 5(2), 93–116.
- _____. (1996). On grammar and grammatics. In R. Hasan, C. Cloran & B. David (Eds.) *Functional Descriptions. Theory in practice* (pp. 1-38). Amsterdam: Benjamins.
- _____. (2007). *Language and education*. London: Continuum. Hawkins, Eric.
- Halliday, M. A. K., & Hasan. R. (1976). *Cohesion in English*. London: Longman.
- Halliday, M. A. K., & Hasan, R. (Eds.). (1985). *Language, context, and text: Aspects of language in a social-semiotic perspective*. Geelong, VIC: Deakin University.
- Halliday, M. A. K., & Martin, J. R. (Eds.). (1993). *Writing science: Literacy and discursive power*. Pittsburgh, PA: University of Pittsburgh Press.
- Halliday, M. A. K., & Matthiessen, C. M. I. M. (2014). *Halliday's Introduction to Functional Grammar* (4th ed.). London: Arnold.
- Hamdy, A. (2007). *ICT in education in Algeria. Survey of ICT and education in Africa, 53 country reports*. Washington, DC: infoDev/ Wolrd Bank. Retrieved from <http://www.infodev.org/articles/survey-ict-and-education-africa-volume-2>
- Hammouti, B. (2010). Comparative bibliometric study of the scientific production in Maghreb countries (Algeria, Morocco and Tunisia) in 1996- 2009 using Scopus. *Journal of Materials and environmental Science* 1(2), 70-77.
- Hamp-Lyons, L. (2011). English for academic purposes. *Journal for English for Academic Purposes*, 10, 2-4.
- Hamp-Lyons, L., & Heasley, B. (2006). *Study writing. A course in written English for academic purposes*. Cambridge University Press.

- Harmon, J. E., & Gross, A. G. (2010). *The craft of scientific communication*. Chicago: University of Chicago Press.
- Haseli, M. S. (2008). Introduction to needs analysis. *English for Specific Purposes World*, 4, 1-27.
- He, H. (2013). *Coding interviews: Questions, analysis & solutions*. Apress.
- He, Q., & Yang, B. (2015). *Absolute clauses in English from the systemic functional perspective: A corpus-based study*. London: Springer.
- Hedges, L. V. (1987). How hard is hard science, how soft is soft science? *The empirical cumulativeness of research*. *American Psychologist*, 42, 443-455.
- Henry, A., & Roseberry, R. L. (1996). A corpus-based investigation of the language and linguistic patterns of one genre and the implications for language teaching. *Research in the Teaching of English*. 30, 472-489.
- _____. (1997). An investigation of the functions, strategies, and linguistic features of the introductions and conclusions of essays. *System*, 25, 479-495.
- _____. (2001). A narrow-angled corpus analysis of moves and strategies of the genre: Letter of application. *English for Specific Purposes*, 20, 153-167.
- _____. (2009). Move registers and language teaching. *The Journal of Asia TEFL*, 6, 101-119.
- Herrando, R. (2013). Is the medical profession in Spain living the culture of “Google It”? In A. Łyda & W. Krystyn (Eds.), *Occupying niches: Interculturality, cross-culturality and aculturality in academic research* (pp. 135-149). Heidelberg, New York: Springer.
- Hirsch, J. E. (2005). An index to quantify an individual’s scientific research output. *Proceedings of the National Academy of Sciences of the United States of America*, 102(46), 16569-16572. Retrieved from <https://arxiv.org/abs/physics/0508025>

- Hunter, M. (1989). *Establishing the new science: The experience of the early royal society*. Woodbridge: Boydell Press.
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes*. Cambridge University Press.
- Hyland, k., & Paltridge, B. (2011). *The continuum comparison to discourse analysis*. London: Continuum.
- Hyland, K., & Jiang, F. (2016). "We must conclude that...": A diachronic study of academic engagement. *Journal of English for Academic Purposes*, 24, 29-42.
- Hyland, K. (1998a). *Hedging in scientific research articles*. Amsterdam: John Benjamins.
- . (1998b) 'Persuasion and context: the pragmatics of academic meta discourse. *Journal of Pragmatics*, 30, 437-65.
- Hyland, K. (2000). *Disciplinary discourses: Social interactions in academic writing*. Harlow: Longman.
- . (2001). Humble servants of the discipline? Self-mention in research articles, *English for Specific Purposes*, 18, 207–226.
- . (2004a). *Genre and second language writing*. Ann Arbor: University of Michigan Press.
- . (2004b). *Disciplinary discourse, Michigan classics edition: social Interactions in academic writing*. University of Michigan Press.
- . (2007). Genre pedagogy: Language, literacy and L2 writing instruction. *Journal of Second Language Writing*, 16(3), 148-164.
- . (2009). *Academic discourse: English in a global context*. London: Continuum
- . (2016). *Academic publishing: Issues and challenges in the construction of knowledge*. Oxford: Oxford University Press.

- Hymes, D. H. (1972). On communicative competence. In J. B. Pride & J. Holmes (Eds), *Sociolinguistics* (pp. 269–293). Harmondsworth: Penguin Books.
- . (1974). *Foundations in sociolinguistics: an ethnographic approach*. Philadelphia: University of Pennsylvania Press.
- International Media Support. Authoritarianism and Media in Algeria, July, 17, 2013.
- Jackson, S. L. (2010). *Research methods: A modular approach*. Belmont, CA: Cengage Learning.
- Johnson, R. K. (Ed.). (1989). *The second language curriculum*. Cambridge: Cambridge University Press.
- Jordan, R. R. (1997). *English for academic purposes: A guide and resource book for teachers*. Cambridge: Cambridge University Press.
- Joseph, R., Lim, J., & Nor, N. (2014). Communicative moves in forestry research introductions: Implications for the design of learning materials. *Procedia Social and Behavioral Sciences*, 134, 53-69.
- Journal of Young Investigators. (2005). Writing scientific manuscripts. A guide for undergraduates. *Journal of Yong Investigators*. Retrieved from <http://www.jyj.org/>
- Kanoksilapatham, B. (2005). Rhetorical structure of biochemistry research articles. *English for Specific Purposes*, 24(3), 269–292.
- . (2011). Language of Civil Engineering Introductions: Textual Structure and Linguistic Characterizations. *The Asian ESP Journal* 7 (2).
- Kanthraj, G. R. (2006). Journal impact factor. *Indian Journal of Dermatology, Venereology & Leprology*, 72(4), 322-325.
- Kawa-Jumps. S. (2001). *How to publish your articles: A complete guide to making the right publication say Yes*. Square One Publishers.
- Kern, R. (2000). *Literacy and language teaching*. Oxford: Oxford University Press.

- khamkhien, T. A. (2015). Textual Organization and Linguistic Features in Applied Linguistics Research Articles: Moving from Introduction to Methods. *-International E-Journal of Advances in Social Sciences 1 (2)*,111-122.
- Khan, B. (2005). *E-learning quick checklist*. IGI Publishing.
- Kilduff, M. (2006). Editors comments: Publishing theory. *Academy of Management Review*, 31(2), 252–255.
- Kleinert, S., & Wager, E. (2010). Responsible research publication: International standards for authors: *The Second World Conference on Research Integrity*. Singapore: World Scientific Publishing.
- Kong, K. C. C. (2006). Linguistic resources as evaluators in English and Chinese research articles. *Multilingua*, 25(1-2), 183-216.
- Kucherenko, S. N. (2013). An integrated view of EOP and EAP. *The Journal of Teaching English for Specific and Academic Purposes*, (1), 3-9.
- Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
- . (2008). *Doing interviews*. London: Sage.
- Labaw, P. (1981). *Advanced questionnaire design*. Cambridge, MA: Abt Books Inc.
- Lakic, I. (1997). Genre analysis of article introductions in economics. *Asp: La revue de GERAS*, 15(18), 409-426.
- . (2015). The Rhetorical structure of Economics research article introductions and its syntactic and lexical exponents. In I. Lakic, B. Zivkovic & M. Vukovic (Eds), *Academic Discourse Across Cultures* (pp. 42- 63). UK: Cambridge Scholars Publishing.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

- Laws, S., Harper, C., & Marcus, R. (2003). *Research for development: A Practical guide*. London: Sage.
- Lebrun, J. L. (2007). *Scientific writing: A reader and writer's guide*. Singapore: World Scientific Publishing Co. Pte. Ltd.
- Lengyel, P., & Herdon, M. (2008). E-Learning Course Development in Moodle: *International Conference on New Research in Food and Tourism*. BIOATLAS.
- Li, L. J., & Ge, G. C. (2009). Genre analysis: Structural and linguistic evolution of the English-medium medical research article (1985-2004). *English for Specific Purposes*, 28(2), 93- 104.
- Livnat, Z. (2012). *Dialogue, Science and Academic Writing*. Amsterdam: Benjamins.
- Llinàs Grau, M. I., & Reeves, A. (1995). *English grammar: An introductory description*. Col.lecció Materials: Servei de Publicacions, Universitat Autònoma de Barcelona.
- Loi, C. K., & Evans, M. S. (2010). Cultural differences in the organization of research article introductions from the field of educational psychology: English and Chinese. *Journal of Pragmatics*, 42(10), 2814-2825.
- Lopes, A. P. (2011). Teaching with moodle in higher education: *5th International Technology, Education and Development Conference Proceedings*. Valencia, Spain: IATED.
- Łyda, A., & Warchał, K. (Eds). (2014). *Occupying niches: interculturality, cross-culturality and aculturality in academic research, second language learning and teaching*. Springer International Publishing, Heidelberg.
- Lynch, L. (2013). *Exploring journalism and the media* (2nd ed.). Mason: OH: South-Western Cengage Learning.
- Maeroff, G. (2003). *A classroom of one: How online learning is changing our school and colleges*. New York: Palgrave Macmillan.

- Martin, J. R. (1984). Language, register and genre. In F. Christie (Ed.), *Children writing: reader* (pp. 21–30). Geelong, Australia: Deakin University Press.
- Martin, J. R. (1992). *English Text: Systems and structure*. Benjamins, Amsterdam.
- _____. (1985). Process and text: Two aspects of human semiosis. In J. D. Benson & W. S. Greaves (Eds.), *Systemic perspectives in discourse: Selected Theoretical Papers from the 9th International Systemic Workshop* (p.248-274). Norwood, H. J.: Ablex.
- _____. (1992). *English text: system and structure*. Philadelphia and Amsterdam: John Benjamins.
- Miller, C. R. (1984). Genre as social action. *Quarterly Journal of Speech*, 70(2), 151–176.
- Miller, J. G. (1984). Culture and the development of everyday social explanation. *Journal of Personality and Social Psychology*, 46, 961-978.
- Millward, C. M. (1996). *A biography of the English language*. Orlando: Holt, Rinehart, and Winston.
- Moreno, A. I. (2011). English for research publication purposes and cross-cultural academic discourse analysis. In M. J. Borham Puyal, G. S. Fernández, B. Bautista Martí n, J. R. Garcí a Rianza, M. J. Ruano Garcí a, & P. A' lvarez Mosquera (Eds.), *Current trends in anglophone studies: Cultural, linguistic and literary research* (pp. 53–69). Salamanca: Ediciones Universidad de Salamanca.
- _____. (2010). Researching into English for research publication purposes from an applied intercultural perspective. In M. F. Ruiz-Garrido, J. C. Palmer-Silveira & I. Fortanet-Gómez (Eds), *English for professional and academic purposes* (pp. 59-73). New York: Editions Rodopi.
- Muangsamai, P. (2018). Analysis of moves, rhetorical patterns and linguistic features in New Scientist articles. *Kasetsart Journal of Social Sciences*, 1, 1-8

- Noguchi, J. (2006). *The Science Review Article: An Opportune Genre in the Construction of Science*. Bern: Peter Lang.
- Nunan, D. (1988). *The learner-centered curriculum: A study in second language teaching*. Cambridge: Cambridge.
- Nwogu, K. N. (1997). The medical research papers: Structure and functions. *English for Specific Purposes*, 16, 119-138.
- Nygaard, L. P. (2015). *Writing for Scholars: A Practical Guide to Making Sense and Being Heard* (2nd ed.). Los Angeles, CA: Sage Publications.
- Oceana Editorial Board. (2011). *CTIA: Consolidated Treaties & International Agreements* (Vol, 2). United States: Oceana.
- Öchsner, A. (2013). *Introduction to scientific publishing: Backgrounds, concepts, strategies*. Heidelberg: Springer.
- Oravec, J. A. (1996). *Virtual individuals, virtual groups: Human dimensions of groupware and computer networking*. Cambridge: Cambridge University Press.
- Orlikowski, W. J., & Yates, J. (1994). Genre repertoire: examining the structuring of communicative practices in organizations. *Administrative Science Quarterly*, 39, 541-74.
- Oster, S., & Cordo, P. (2015). *Successful grant proposals in science, technology and medicine: A Guide to writing the narrative*. Cambridge University Press.
- Ozturk, I. (2007). The Textual Organization of Research Article Introductions in Applied Linguistics: Variability within a Single Discipline. *English for Specific Purposes*. 26(1).
- Owen, M. J. (2007). *The scientific article in the age of digitization*. Dordrecht: Springer.
- Oxford Business Group (2008). *The Report: Algeria*. Oxford Business Group: London
- . (2013). *The Report: Algeria*. FCE.
- Paltridge, B. (1997). *Genre, frames and writing in research settings*. Amsterdam: John Benjamins.

- Pardede, P. (2012). Scientific articles structure: *The Scientific Writing Workshop*. UKI Jakarta.
- Parkinson, J. (2013). English for science and technology. In B. Paltridge & S. Starfield (Eds), *The handbook of English for specific purposes* (pp. 155-173). Malden, MA: Wiley-Blackwell.
- Patton, M. Q. (1990). *Qualitative evaluation methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Peat, J., Elliott, E., Baur, L., & Keena, V. (2002). *Scientific writing: Easy when you know how*. London: BMJ Books.
- Peterwagner, R. (2005). *What is the matter with communicative competence? An analysis to encourage teachers of English to assess the very basis of their teaching*. Münster, Wien: Lit-Verl.
- Petric, B. (2007). Rhetorical functions of citations in high- and low-rated master's theses. *Journal of English for Academic Purposes*, 6(3), 238-253.
- Picardi, C.A., & Masick, K.D. (2013). *Research methods: Designing and conducting research with a real-world focus*. Thousand Oaks, CA: Sage.
- Pho, P. (2013). *Authorial stance in research articles: Examples from applied linguistics and educational technology*. Hampshire UK: Palgrave Macmillan.
- _____. (2008). Research article abstracts in applied linguistics and educational technology: A study of linguistic realizations of rhetorical structure and authorial stance. *Discourse Studies*, 10(2), 231-250.
- _____. (2012). Authorial stance in research articles: a corpus-based study. In C. Gitsaki (Ed.). *Future directions in applied linguistics: Local and global perspectives* (pp. 273-291). Newcastle: Cambridge Scholars Publishing.
- Picardi, C. A., & Masick, K. D. (2013). *Research methods: Designing and conducting research with a real-world focus*. Thousand Oaks, CA: Sage.
- Prasad, T. (2012). *A course in linguistics*. New Delhi, India: PHIL Earning.

- Rampal, K. R. (1996). North Africa. In V. C. Cambridge, J. P. Jeter, C. B. Pratt, & K. R. Rampal (Eds.), *International Afro mass media: A reference guide* (pp. 65-137). Westport, CT: Greenwood Press.
- Rezig, N. (2011). Teaching English in Algeria and educational reforms: An overview on the factors entailing students' failure in learning foreign languages at university. *Procedia-Social and Behavioral Sciences*, 29, 1327 – 1333
- Riazi, A. M. (2016). *The Routledge encyclopedia of research methods in applied linguistics*. New York: Routledge.
- Robinson, P. (1991). *ESP today: A practitioner's guide*. New York: Prentice Hall.
- Rosenthal, S. H. (2010). *All the French you use without knowing It: The stories of some fascinating words*. Tucson, Arizona: Wheatmark.
- Saboori, F., & Hashemi, M. R. (2013). A Cross-Disciplinary Move Analysis of Research Article Abstracts. *International Journal of Language Learning and Applied Linguistics World*, 4(4), 483–496.
- Saenz, F.S. (2000). Halliday's grammatical metaphor: Conceptualization and linguistic construal. *La revista EPOS*, 16, 497-511.
- Salmani Nodoushan, M. A., & Montazeran, H. (2012). The book review genre: A structural move analysis. *International Journal of Language Studies*, 6(1), 1-30.
- Samraj, B. (2002). Introductions in research articles: Variations across disciplines. *English for Specific Purposes*, 21(1), 1–17.
- _____. (2005). An exploration of a genre set: research article abstracts and introductions in two disciplines. *English for Specific Purposes*, 24(2), 141-156.
- _____. (2014). Disciplinary variation in abstract: The case of wildlife behavior and conversation biology. In J. Flowerdew (ed.). *Academic discourse* (pp. 40-56). Harlow, New York: Longman.

- Sapir, E. (1929). The status of linguistics as a science. *Language*, 5, 207–214.
- Saracino, G. M. (2004). *Writing for Scholarly Publication in English. Issues for Nonnative Speakers*. Italy: Manni Editori.
- Scarcella, R. (2003). *Academic English: A conceptual framework*. Santa Barbara, CA: University of California Linguistic Minority Research Institute.
- Selinker, L., Todd-Trimble, R. M., & Trimble, L. (1976). Presuppositional rhetorical information in EST discourse. *TESOL Quarterly*, 10, 281- 290.
- Shahrokhi, M., & Sadeghi, A. (2013). Lexical cohesion patterns in research articles- Hard science Vs. Soft science disciplines. *International J. Soc. Sci. & Education*, 1(4), 196-204.
- Shim, E. (2005). *Explicit writing instruction in higher education context: Genre analysis of research article introductions from the English Teaching and the TESOL Quarterly Journals* (Unpublished doctoral dissertation). University of Minnesota, Minneapolis.
- Shin, J., Jung, J., & Kim, Y. (2013). Teaching and research of Korean academics across career stages. In J. C. Shin, A. Arimoto, W. K. Cummings & U. Teichler (Eds.), *Teaching and research contemporary higher education: systems, activities, and rewards* (pp. 187-191). Dordrecht: Springer.
- Silva, T. (1993). Toward an understanding of the distinct nature of L2 writing: The ESL research and its implications. *TESOL Quarterly*, 27(4), 657–678.
- Singhal, M. (2004). Academic writing and Generation 1.5: Pedagogical goals and instructional issues in the college composition classroom. *The Reading Matrix*, 4(3), 1-13.
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford: Oxford University Press.
- Smith, K., Todd, M., & Waldman, J. (2009). *Doing your undergraduate social science dissertation*. London: Routledge.

- Soled, S. W. (1995). The role of assessment in teacher education. In S. W. Soled (Ed.), *Assessment testing and evaluation in teacher education* (pp. 1-8). Norwood, NJ: Ablex.
- Soodmand Afshar, H., Doosti, M., & Movassagh, H. (2018). A genre analysis of the introduction section of Applied Linguistics and Chemistry research articles. *Iranian Journal of Applied Linguistics*, 21(1), 163-214.
- Stavredes, T. (2011). *Effective online teaching: Foundations and strategies for student success*. San Francisco, CA: Jossey-Bass.
- Styer, A. (2009). Motivating the adult learner online. In P. Rogers, G. Berg, J. Boettcher, C. Howard, L. Justice, & K. Schenk (Eds), *Encyclopedia of distance learning* (2nd Ed.) (pp. 1456–1460). New York, NY: Information Science Reference.
- Suhaily, A. (2016). An analysis of cross-discipline research article introduction structures through a modified Create-A-Research-Space (CARS) model. *Journal of EFL, Linguistics and Literature*, 1(1), 1-16.
- Suomela-Salmi, E., & Dervin, F. (Eds.). (2009). *Cross-linguistic and cross-cultural perspectives on academic discourse*. Amsterdam: John Benjamins.
- Swales, J. & Najjar, H. (1987). The writing of research article introductions. *Written Communication*, 4, 175-92.
- Swales, J. (1985). *Episodes in ESP*. Oxford: Pergamon Press.
- _____. (1990). *Genre Analysis: English in Academic and Research Settings*.
- _____. (2004). *Research genres: Explorations and applications*. Cambridge: CUP. Cambridge [England]; New York: Cambridge University Press.
- _____. (2011). *Aspects of article introductions*. Michigan Classics Edition. Ann Arbor, MI: University of Michigan Press.
- Swales, J. M. and Christine B. F. (2008). *Academic writing for graduate students: Essential Tasks and skills* (3rd ed.). Michigan University Press.

- Taboada, M. (2004). *Building coherence and cohesion: Task-oriented dialogue in English and Spanish*. Amsterdam: John Benjamins.
- Tardy, C. M. (2011). Genre analysis. In K. Hyland & B. Paltridge (Eds.), *The Bloomsbury companion to discourse analysis* (pp. 54-68). London: Bloomsbury.
- Tereszkiewicz, A. (2010). *Genre analysis of online encyclopedias: The case of Wikipedia*, Krakow: Wydawnictwo UJ.
- Thompson, G. (2013). *Introducing Functional Grammar* (3rd ed.). Abingdon: Routledge.
- Thyer, B. (1994). *Successful publishing in scholarly journals*. Thousand Oaks, California: Sage.
- Tyagi, K., & Misra, P. (2011). *Advanced technical communication*. New Delhi: PHI Learning Private Limited.
- Vai, M., & Sosulski, K. (2016). *Essentials of online course design: A standards-based guide* (2nd ed.). New York, NY: Routledge
- Vergaro, C. (2004). Discourse Strategies in Italian and English Sales Promotion Letters. *English for Specific Purposes Journal*, 23(2), 181–207.
- Verhoef, V. (2012). The origins of duality of patterning in artificial whistled languages. *Language and Cognition*, 4(4), 357-380.
- Vygotsky, L. S. (1986). *Thought and language*. Cambridge, MA: The MIT Press.
- Waltman, L., & Yan, E. (2014). Pagerank-related methods for analyzing citation networks. In Y. Ding, R. Rousseau & D. Wolfram (Eds.), *Measuring scholarly Impact* (pp. 83–100). Springer.
- Wang, W., & Yang, C. (2015). Claiming centrality as promotion in applied linguistics research article introductions. *Journal of English for Academic Purposes*, 20, 162-175.
- Wang, Y. (2006). Negotiation of meaning in desktop videoconferencing-supported distance language learning. *ReCALL*, 18(1), 122–145.

- Weissberg, R., & Buker, S. (1990). *Writing up research: Experimental research report writing for students of English*. New York: Prentice-Hall/Regents.
- West, R. (1997). Needs analysis: State of the art. In R. Howard & G. Brown (Eds.), *Teacher education for languages for specific purposes* (pp. 68-97). London, UK: Multilingual Matters.
- Whorf, B. L. (1940). Science and Linguistics. *The Technology Review*, 42, 229-231.
- Widdowson, H. G. (1984). *Explorations in applied linguistics 2*. Oxford: Oxford University Press.
- Wrenn, B., Robert E. S, & David L. (2007). *Marketing research: Text and cases* (2nd Ed.). New York: Best Business Books.
- Yang, J. T. (1995). *An outline of scientific writing for researchers with English as a foreign language*. Singapore: World Scientific.
- Yang, X. (2011). *Modelling text as process: A dynamic approach to EFL classroom discourse*. London: Continuum.
- Yang, R. & Allison, D. (2003). Research Articles in Applied Linguistics: Moving From Results to Conclusions. *English for Specific Purposes*. 22.
- Yayli, D., & Canagarajah, S. (2018). The processes behind RA introduction writing among turkish arts and science scholars. In Y. Kırkgöz & k. Dikilitaş (Eds.), *Key Issues in English for Specific Purposes in Higher Education* (pp. 111-128). Switzerland: Springer International Publishing.
- Yayli, D. (2011). From genre awareness to cross-genre awareness: A study in an EFL context. *Journal of English for Academic Purposes*, 10, 121-129.
- Yeong, F. M. (2014). *How to Read and Critique a Scientific Research Article: Notes to Guide students reading primary literature*. Singapore: World Scientific.

- Yngve, V. H. (2000). The depth hypothesis and the new hard science linguistics. In V. Yngve & Z. Wasik (Eds), *Hard-science linguistics* (pp. 3-13). London, UK: Continuum.
- Zamel, V. (1998). Questioning academic discourse. In Zamel, V. & Spack, R. (eds.), *Negotiating academic literacies: Teaching and learning across languages and cultures* (pp. 187-195). Psychology Press.
- Zapala-Kraj, M. (2010). *The development of early modern English. The influence of Shakespeare on EmodE*. Grin: Verlag für akademische Texte.
- Zhu, Y. (2005). *Written communication across cultures: A socio-cognitive perspective on business genres*. John Benjamins.

Webliography

Algerian Scientific Journal Platform (ASJP). <https://www.asjp.cerist.dz/asjp>

Direction Générale de la Recherche Scientifique et du Développement Technologique

(DRSDT). <http://www.dgrsdt.dz/Fr/>

Journal Selector (edanz). <https://www.edanzediting.com/journal-selector>

Ministère de l'Enseignement Supérieur et de la Recherche Scientifique. <https://www.mesrs.dz/>

Open Source Learning Platform (Moodle). https://moodle.org/?lang=fr_ca

APPENDICES

Appendix A: Applied Linguistics Research Articles

Appendix B: Physics Research Articles

Appendix C: Samples of Applied Linguistics RAs Introductions

Appendix D: Samples of Physics RAs Introductions

Appendix E: Researchers' Questionnaire

Appendix F: Editors' Interview

Appendix G: E-mail of Editor of New Materials and Technology journal

Appendix A

Discipline	Articles	Title	Journal	Vol	Issue	Year	PP
Soft Sciences (Applied Linguistics)	1	A Word-frequency Based Assessment of English as a Foreign Language Master One Students' Written Receptive and Productive Lexical Knowledge	Revue Sciences Humaines Constantine 1 University	B	48	December 2017	25-50
	2	Raising Teachers' Awareness of the Significance of Formulaic Sequences in Writing Proficiency		B	48	December 2017	79-93
	3	The Role of Metacognition and Motivation in Developing the Writing Skill: the Case of Second Year Students of English at University "des Frères Mentouri" Constantine		B	48	December 2017	95-116
	4	The Effect of Fluency Oriented Reading Instruction on EFL Students' Reading Fluency and Comprehension		A	47	June 2017	59-73
	5	Exploring the Transfer of Cultural Specificity in Film Subtitling The Case Study of University Teachers of European Universities		A	47	June 2017	23-37
	6	Enhancing Problem-Solving Skills and Motivation through Cooperative Learning		B	46	December 2016	07-26
	7	Logical Connectors' Use and Writing Quality in EFL Learners and Native Speakers' Essay Writing		B	46	December 2016	27-40
	8	General English Learners' Perceptions of English for Science and Technology: The Case of Third Year Applied Language Studies Learners, University of Constantine		B	46	December 2016	65-72
	9	Requests Politeness Strategies in Algerian Learners of English Academic Emails		B	45	June 2016	05-29
	10	Evaluation of Students' Needs in the Teaching Methodology English Language Teacher Training Curriculum in Algeria		A	45	June 2016	43-62

11	Enhancing Students' Schematic Construction of Authentic-Based Generic Discoursal Structuring	Revue Sciences Humaines Constantine 1 University	B	44	December 2015	15-24
12	The effect of Strategy Training on Algerian learners' use of Vocabulary Learning Strategies		B	44	December 2015	25-41
13	Competency Based Approach between Theory and Practice		A	44	December 2015	07- 19
14	Promoting Aspects of Discourse Macrostructure and Microstructure in EFL Expository Writing through Reading: A Case Study of Second Year Constantine University 1 Students		B	43	June 2015	33- 46
15	The Effects of Explicit Grammar Instruction on the Learning of Simple and Complex Grammar Rules		A	43	June 2015	07- 38
16	Cooperative Learning and Its Efficiency in the University Classroom	Al Athar Kasdi Merbah Ouargla	/	29	December 2017	53-60
17	The Role of Discourse-Based Approaches in English Language Teaching in Algeria		/	29	December 2017	61-66
18	The Integration of Culture in a Second or Foreign Language Classroom through Reading process		/	29	December 2017	67-72
19	Integrating Stylistics in English as a Foreign Language Classes		/	28	June 2017	01-04
20	Teaching Literature as Discourse: A Critical Pedagogy Approach		/	28	June 2017	05-12
21	Rethinking of English Language as A Common Good In the Maghreb		/	27	December 2016	09-15
22	The Rhythmic Classification of Algerian EFL Undergraduates' Interlanguage: A Comparison of two Approaches		/	26	September 2016	79-88

23	The Role of Working Memory in Explaining Reading Comprehension Performance in University Students		/	26	September 2016	89-95
24	ELT Teachers' Attitudes Towards the Literature Courses Taught at the English Language Department of Kasdi Merbah University – Ouargla		/	25	June 2016	21-35
25	Examining Coherence in the Written Compositions of Second-Year Students of English at Laghouat University in Algeria		/	24	March 2016	83-100
26	The Impact of Short Stories as an Extrinsic Reward in an Intensive Reading Environment on Learners' Intrinsic Motivation		/	23	December 2015	01-12
27	Promoting Learner Autonomy in English Language Learning in Secondary Education in Algeria		/	23	December 2015	57-68
28	An Analysis of the Process of Translation		/	22	June 1015	11-14
29	Foreign Language Learning and the Creation of Anxiety in Students: the Case of First Year Students of English in the University of Bejaia ; LMD System Group		/	20	June 2014	23-36
30	Techniques for Selecting and Evaluating English Language Literary Texts		/	19	January 2014	07- 14
Al Athar Kasdi Merbah Ouargla						
31	Explicit Socio-Pragmatic Instruction between Necessity and Reality: Investigating Algerian EFL University-Level Teachers' Perceptions and Classroom Practices		18	37	December 2017	319-340
32	Attention Deficit Hyperactivity Disorder (ADHD) Among Outstanding Pupils .A Field Study in Some Classrooms of the Fourth Elementary Year in the Province of Ouargla		18	37	December 2017	289-318
33	Form-based Feedback Versus Content-based Feedback for EFL Learners' Academic Writing Development: Learners' Perspectives and Preferences		18	37	December 2017	341-358

34	EFL Teachers' Perceptions and Practices of Intercultural Teaching in the Department of English Language and Literature at Batna 2 University The Current Situation and the Way Forward	18	36	June 2017	309-338
35	An Investigation into First Year Students' Learning Strategies in Writing at the Department of English in Batna 2 University: Present Issues and Future Implications	17	35	December 2016	07-26
36	The negative effects of food price inflation on pupils' attainment and performance at school in Algeria	16	33	December 2015	21-42
37	Exploring EFL Teachers' Insights into Culture And Culture Teaching: The Case of the Department Of English of the University of Batna	13	26	June 2012	09-26
38	Testing Oral Language Proficiency of University EFL Students	12	25	December 2011	31-46
39	Internet-based activities and Intercultural Dimensions to Promote EFL Learners' Creative Skills. Case of: Master Two ESP Students, Department of English, University of Bejaia	12	25	December 2011	09-30
40	The Benefits of Group work	12	24	June 2011	19-52
41	Teachers' E-feedback (e-mails) for EFL Students' Academic Writing Development	14	25	December 2017	35-44

52	Cheating in Exams: A Justifiable behavior? A Case Study in Causes and Remediation	Revue des Sciences Sociales . Setit 2 University	10	17	September 2013	05-17
53	Developing the EFL Teaching Process through Electronic Teaching- Portfolios Techniques. Case of: EFL Secondary Schools Teachers in Bejaia		09	15	July 2012	20-40
54	Pedagogical Insights on Teaching Literary Texts A University Perspective		08	14	June 2011	02-18
55	The Algerian Guidance and Counselling Policy with Regard to the Workplace Reform in Education		08	13	January 2011	02-22
56	Learners' Attitudes towards the Online Simulations of the Self and the Other Mustapha Boudjela	El-Tawassol" Baji Mokhtar Annaba University	02	49	March 2017	209-220
57	Correction Techniques for Learners' Written Errors in English		02	49	March 2017	197-208
58	The Effect of Self-Efficacy on Learning the Speaking Skill in English as a Foreign Language		01	46	June 2016	240-252
59	Comprehension and Production Practice in Grammar Instruction: Does their Combined Use Facilitate Learning of English Tense and Aspect?		01	46	June 2016	212-239
60	Internet Use in EFL Classrooms: Teachers' Attitudes and Concerns		01	46	June 2016	253-263
61	EFL Classroom Seating and Anxiety Reduction		01	46	June 2016	264-274
62	Learner Autonomy in an EFL Context: a Study of Undergraduate Learners' Readiness for Autonomous Learning at Bejaia University		03	41	March 2015	183-197
63	Genre Studies of Academic Discourse: Some Implications for Teaching EAP and EST		04	37	March 2014	50-58

64	Teachers' Perceptions and Attitudes towards British and American English								59-68
65	On building FL learners' Intercultural Competence: Why and How?								23-31
66	Translation Exercises in the Algerian English School Textbooks: A Worth or a Hurt?								38-49
67	An Investigation into EFL Algerian Students' Communication Strategies								50-64
68	The Impact of Reflective Journal on Learning Linguistics								71-78
69	Innovation vs. Canonization: Foreign Literature Content in the Algerian Degree of English								58-70
70	Humour in English Foreign Language Teaching								79-88
		EFL-Tawassol™		Baji Mokhtar Annaba University					

Appendix B

Discipline	Articles	Title	Journal	Vol	Issue	Year	PP
Hard Sciences (Physics)	1	Effect of Fin Spacing on Turbulent Heat Transfer in A Channel with Cascaded Rectangular- - Triangular fin	Journal of New Materials and Technology Oum EL-Bouaghi	07	02	December 2017	10-21
	2	Effects of Nickel Substitution on Crystalline Structure and Superconducting Properties of $YBa_2Cu_3O_{7-8}$ Ceramics		07	02	December 2017	22-29
	3	Effect of Al Doping on The Structural and Optical Properties of SnO_2 Thin Films Elaborated by sol-gel Technique		07	02	December 2017	72-75
	4	The Heterostructure $ZnO/Al/SiO_2/Si$ Fabrication for Piezoelectric SAW and BAW Transducers and Sensors		07	01	May 2017	47-52
	5	Mathematical Modelling and Optimisation of a Solar Collector Performances		07	01	May 2017	83-89
	6	Numerical Analysis Of Turbulent Forced - Convection Flow In A Channel With Staggered L- Shaped Baffles		06	02	December 2016	44-55
	7	The Effect of Excess Energy in The Simulation of Dendritic Growth Using The Phase Field Model Coupled With a CALPHAD Database		06	02	December 2016	56-61
	8	Modification of the Thermally Exfoliated Vermiculite by Sonication and Grafting Methods		06	02	December 2016	72-80
	9	Numerical Simulation of the Crystal Growth of $Ti: Al_2O_3$ Material by The μ -PD Technology		06	02	December 2016	102-110

10	The Barrier Height and The Series Resistance of Ag/ SnO ₂ /Si/Au Schottky Diode Determined by Cheung and Lien Methods	05	02	December 2015	24-27
11	Effect of Thin Layer Thickness of Iron Oxide Prepared by sol-gel on The Opto- Electronic Properties of the Material	04	02	December 2014	8-12
12	Simulation Study of InGaN/GaN Multiple Quantum Well Solar Cells	04	01	May 2014	9-10
13	Electronic and Structural Properties of NaZnAs Compound; an ab-initio Study in the Tetragonal and Cubic α Phases	04	01	May 2014	15-18
14	Photocatalytic Degradation of Methylene Blue by Modified Porous Silicon Nanowires	04	01	May 2014	19-22
15	The Effect of Ground albedo on the Performance GaInP and (a- Si: H) of Solar Cells	04	01	May 2014	31-34
16	Temperature Effect on The Vibration Characteristics of Carbon Nanotubes	04	01	May 2014	46-49
17	Fabrication, Structural and Optical Characterization of In Doped ZnO Thin Films Prepared by the Colloidal Method	04	01	May 2014	77-80
18	Analysis of Pulse Width Modulation DC-DC Chopper - On/Off Control via a second order filter-	04	01	May 2014	126-133
19	Theoretical Approach by the ADF-Band of Electronic Properties n in Oxides. Part I: ZnO	04	01	May 2014	143-146
20	Nd: Yag Laser Ablation of Recuprated and Industrial Aluminum Alloys. Study of Threshold Ablation	03	02	December 2013	29-31
Journal of New Materials and Technology Oum EL-Bouaghi University					

Hard Sciences	21	A New Drain Current I–V Model for MESFET with Submicron Gate		03	01	May 2013	28-32
	22	Synthesis of Perovskite Type of Zinc Titanate nano-Crystal Powders via Combustion Technique		03	01	May 2013	33-36
	23	Study on The Use of Different Combined Biopolymers for the Microencapsulation of the Probiotic Bacteria Lactobacillus Curvatus B431		03	01	May 2013	37-42
	24	Height and Feature Parameters Study of Thermally Evaporated ZnS Thin Films By AFM		03	01	May 2013	43-49
	25	Changes of Thermal Conductivity, Optical Conductivity, and Electric Conductivity of Porous Silicon With Porosity		03	01	May 2013	56-60
	26	Assessment of Natural Radioactivity in NPK Fertilizers	Sciences et Technologie Constantine 1 University	/	45	June 2017	17-20
	27	Earth's Tomography With Supernova Neutrinos Oscillation in The LMA Range		/	45	June 2017	21-32
	28	Cationic DYE Adsorption Onto Various Natural Adsorbents		/	44	December 2016	17-26
	29	Modeling of The Solubility In Supercritical Carbon Dioxide of Some Solid Solute Isomers Using the Expanded Liquid Theory		/	44	December 2016	39-44
	30	Effect of Inclination Angle On The Natural Convection In a Closed Enclosure, Delimited By Two Horizontal, Centered Elliptic Cylinders and Two Diametrical Plans		/	43	June 2016	19-28
	31	BETA Decay Half-Lives And Rates of ¹³⁴⁻¹³⁶ SN Nuclei		/	42	December 2015	23-28

43	Numerical Simulation of the Pressuremeter Test	01	07	July 2014	9-13
44	Numerical Simulation of the Flows around two Cylinders of Different Diameters	03	06	December 2013	15-18
45	Finite Element Method Analysis of Band Gap of Photonic Crystals	03	06	December 2013	24-31
46	Analytical and Numerical Study of Mass and Heat Transfer for Gas and Liquids in TCP Flow	02	04	December 2012	25-28
47	Thermoluminescence study of Scolecite	02	03	July 2012	7-9
48	Fluorescence and Thermoluminescence (TL) Studies of Ce doped BaMgAl ₁₀ O ₁₇ Phosphor	01	03	June 2012	10-12
49	Dynamics contact between two Deformable Elastic Bodies	01	01	December 2011	36-41
50	Synthesis and Characterization of Phosphors Doped with Various Rare Earths	01	02	December 2011	48-51
51	Monte Carlo Simulation of The Transport Phenomena in Hg _{0.8} Cd _{0.2} Te: Degeneracy Case	01	01	June 2011	10-14
52	Radiation Heat Transfert in ZrO ₂ -8% Y ₂ O ₃ Electrolyte of SOFC Fuel Cell	01	01	June 2011	24-28

Journal of Scientific Research
University of Bechar

53	The Influence of Indium Doping on Structural, Optical, and Electrical Properties of SnO ₂ : In thin Films Deposited by Spary Technique		/	24	September 2017	137-140
54	Characterization of In-Co Coatings Electrodeposited from Electrolytes with Different Co Concentrations		/	23	June 2017	49-54
55	Elaboration and Structural Characterization of a Composite Material Based on Ceramic /Polymer		/	23	June 2017	137-142
56	Influence of Current Destiny on the Characteristics of NI-CR Alloy Coatings		/	22	January 2017	183-186
57	AB-Initio Calculations of the Dielectric Constant, Optical Absorption and the Refractive Index of ZN _{1-x} BE _x O Alloy		/	20	December 2015	129-132
58	Measurement and Analysis of I-V-T Characteristics of An AUGENI/P-SI Schottky Barrier Diode		/	19	March 2015	55-58
59	Phase Structure, Microstructure and Dielectrics Properties of New Ceramic Material Near the Morphotropic Phase Boundary		/	19	March 2015	125-130
60	The Effect of Annealing on the Properties of ZNO: AL Films Grown by RF Magnetron Sputtering			18	March 2014	41-44
61	The Fe-Ni Metal Equilibrium Temperature of the Unequilibrated Chainpur LL3.4 Chondrite	Annales des Sciences et Technologie Kasdi Merbah University	08	01	Mai 2016	09-15
62	Optimal Processing Parameters of Electrostatic Crude Oil Desalting		07	01	Mai 2015	72-78

Courrier Du Savoir Scientifique et Technique
Mohamed Khider Biskra University

63	Spherical Method of Calculation of the Transport Coefficients for Plasmas in Uniform Electric and Magnetic Fields	06	01	Mai 2014	13-17
64	Effect of Synthesis Temperature on the Structural Behavior of $\text{Ca}_{0.95}\text{Sr}_{0.05}\text{FeO}_{2.5}$ Compound	06	01	Mai 2014	66-73
65	Distribution of the Rare Earth Metals Concentrations in the Sediments of Algiers Bay and Surkouf Area	05	02	October 2013	127-135
66	Half-Metallic Ferrimagnetism in The Mn_2CoAs Heusler Compound	05	02	October 2013	149-155
Synthèse					
67	Nucleation and Growth Kinetics of Palladium Nanoparticles on Thin Films of MgO (100)	/	34	April 2017	10-17
68	A Numerical Study of Momentum and Forced Convection Heat Transfer in a Rectangular Channel with Wall-Mounted Waved Baffles	/	33	October 2016	01 -15
69	Scale invariance properties of rainfall in AMMA-CATCH observatory (Benin, West Africa).	/	33	October 2016	16-25
70	An Experimental Analysis of Fracture Mechanisms by Acoustic Emission of Woven Composite Bolted Assembly	/	32	April 2016	69 -85

Appendix C

Samples of Applied Linguistics RAs Introductions

Article 1

REVUE
HumaineS n°48, Décembre 2017, Vol B, pp25-40

A Word-frequency Based Assessment of English as a Foreign Language Master One Students' Written Receptive and Productive Lexical Knowledge

Abstract:

Learning an adequate knowledge of words is a prerequisite for linguistic mastery. The present study was basically carried out to quantitatively evaluate EFL Master One students' lexical knowledge. Its main objective was to assess and compare learners' receptive and productive written word knowledge as two prominent dimensions of a person's vocabulary knowledge recognised in many lexical researches. The study deployed two well-known frequency-based assessment tools. The first was the Vocabulary Size Test (VST) employed to measure the participants' abilities to recognize and comprehend meanings of forms at different frequency levels within given limited contexts. The second was the Productive Vocabulary Levels Test (PVLVT) primarily used to assess the participants' abilities to retrieve and produce lexical items of varying frequency levels within diverse contexts. The two tests were taken by a randomly chosen sample of 40 first year Master One students at the Department of English at the University of Constantine 1. The results of the VST revealed that the majority of the participants' receptive vocabulary sizes ranged between 3,000 and 8,000 word families, sizes classified as mid-frequency vocabulary. The data collected from the PVLVT, comparatively, revealed a poor mastery of the participants' abilities to use words productively in diverse contexts. Accordingly, the highest scores were achieved only in using the high-frequency vocabulary, and then they sharply decreased at lower frequency levels.

Keywords: lexical proficiency, vocabulary receptive knowledge, vocabulary productive knowledge, frequency-levels, vocabulary size.

Faculty of Letters and Languages
Department of Foreign Languages
University of Mentouri
Constantine

Introduction:

In layman's terms, lexical items are the building blocks of any language. Words make up human communication and learning. Thus, attaining a satisfactory level of lexical knowledge is necessary for anyone to learn a mastery over their language, whether be it first, second or a foreign language.

Wilkins (1972, p. 111) accentuates the importance of vocabulary, as a language component, stating that: "without grammar little can be said; without vocabulary nothing can be said."

ملخص:

يعتبر اكتساب معرفة كافية بالمفردات شرطاً أساسياً للتمكن من اللغة. وقد أجريت هذه الدراسة أساساً للتقييم الكمي للمعرفة المعجمية لدى طلبة اللغة الإنجليزية كتلة أجنبية خلال سنتهم الأولى ماستر. وكانت لتقييم ومقارنة معرفتهم بالمفردات المكتسبة و المفردات المستعملة كتابياً كعدين بارزين. معترف بهما في بحوث المعجمية عند و عليه تم الاعتماد على الاختبارين للمعرفة بالمفردات حسب درجة ترددها في اللغة الأولى، اختبار حجم المفردات، لقياس قدرات المشاركين الكاملة على التعرف على أشكال ومعاني الكلمات على مستويات تردد مختلفة ضمن سياقات محددة و أما الاختبار الثاني فهو لتقييم قدرتهم على تذكر و استعمال المفردات من مستويات تردد متفاوتة في سياقات متنوعة. تم إجراء الاختبارين على عينة اختيرت عشوائياً من طلبة السنة الأولى ماستر بقسم اللغة الإنجليزية بجامعة قسنطينة 1. أظهرت نتائج الاختبار الأول أن أعلى حصائل المفردات المكتسبة لأغلبية المشاركين تتراوح بين 5000 و 8000 عائلة مفردات، و التي تصنف كمفردات ذات تردد متوسط في اللغة. بالمقارنة، كشفت نتائج الاختبار الثاني قدرة المشاركين جد محدودة على استعمال المفردات حيث أن أعلى النتائج المتحصل عليها كانت في استعمال المفردات ذات التردد العالي فقط ثم يتخلف أداء الأغلبية بحددة في استعمال الكلمات ذات التردد المنخفض.

الكلمات المكتسبة: المعرفة المعجمية، استعمال المفردات المكتسبة، المعرفة بالمفردات المستعملة، مستوى تردد المفردات، محصول المفردات.

Nonetheless, it was until the last two decades that vocabulary gained renewed interest in language education research where grammar took priority over all other language components. A growing body of lexical research is currently undertaken to address such major issues as the conceptualisation of lexical knowledge, the architecture of the mental lexicon, the processes of vocabulary learning/acquisition, vocabulary teaching and assessment. In the Algerian settings, a limited repertoire of vocabulary is assumed to be a major problem that affects EFL learners' abilities to comprehend and use the target language. Consequently, the paucity of lexical knowledge remains to be a hindrance to achieve both linguistic and communicative competences. This paper aims at exploring the students' levels of vocabulary comprehension and use by means of the administration of two well-known diagnostic and proficiency vocabulary tests. Firstly, the Vocabulary Size Test (VST) was administered to measure the participants' vocabulary receptive knowledge; particularly, their abilities to recognise and comprehend words within a limited context. Secondly, the Productive Vocabulary Levels Test (PVLTL) was given to assess the participants' productive vocabulary knowledge, notably their levels of proficiency in word use within various contexts. In parallel, the study also intended to make a comparison between the subjects' receptive and productive lexical knowledge.

Altogether, making an estimate of the amount of vocabulary learners know and how well they know it (proficiency), and to determine the level of vocabulary learners should concentrate on (diagnostic) is expected to yield valuable insights about strengths and weaknesses in our learners' vocabulary knowledge.

2. Review of the Literature

2.1 Major Trends in Vocabulary Research

The shift of focus towards vocabulary in the language education arena dates back to the 1980s. Such a revival of interest was motivated by computer-aided research that led to the creation of linguistic corpora where large amounts of both spoken and written language samples are collected and stored in electronic format reflecting a wide variety of language uses in authentic contexts, a sort of linguistic data that did not exist before (Decarrico, 2001). Corpora currently inform research endeavours in a multiplicity of language related disciplines; for instance, they have applications in lexicography, linguistic descriptions, software programming, language teaching and learning; and, particularly, vocabulary research. The prevailing corpora used in applied linguistic research include the British National Corpus (BNC), comprising more than 100 million words; The Bank of English Corpus (COBUILD), with more than 300 million words; The Cambridge International Corpus (CIC), containing more than 100 million words and The Corpus of the Contemporary American English

The Role of Metacognition and Motivation in Developing the Writing Skill: the Case of Second Year Students of English at University "des Frères Mentouri" Constantine 1

Abstract:

Writing has an effective role in learning any language. It is a basic skill that endorses language acquisition, fosters critical thinking and permits students to communicate. Moreover, it becomes an essential competence for the learner to communicate in the globalized world and to achieve academic success. This study is a fulfillment of the urgent need to make students aware of some metacognitive strategies that facilitate the writing task. It seeks to explore the efficiency of implementing metacognitive strategies via the use of the Process Approach in English Foreign Language writing classes to develop the students' written production. Two main tools are used which are the teachers and the students questionnaires, and a quasi-experimental research (pre test and post test). During the experimental study, the researcher used metacognitive strategies and taught the participants in the experimental group how to use them in their writing skill. Through this study, the researcher has attempted to create a motivating environment and aid the learners to write essays following the different recursive stages of the Process Approach as a metacognitive strategy. However, the participants in the control group did not receive any treatment during their writing practice. The results show that the written compositions of the experimental group are highly improved compared to the control group.

Keywords: Metacognition, motivation, strategies, the writing skill, the process approach.

Faculty of Letters and Languages
Department of Foreign Languages
University of Mentouri
Constantine

ملخص:

الكتابة دور فعال في تعلم أية لغة فهي مهارة أساسية تدعم اكتساب اللغة و تعزيز التفكير النقدي و تسمح للطلبة بالتواصل علاوة على ذلك، فقد أصبحت كتابة أساسية للتعلم تمكنه من التواصل في ظل العولمة وتحقيق النجاح الأكاديمي. تلبي هذه الدراسة الحاجة الملحة لرفع وعي الطلبة بالاستراتيجيات فوق الإدراكية التي تسهل لهم عملية الكتابة كما تسعى إلى استكشاف فعالية تطبيق الاستراتيجيات فوق الإدراكية من خلال استعمال "مقاربة المنهج" لتحسين مستوى الكتابة لدى الطلبة في أقسام اللغة الإنجليزية (بوصفها لغة أجنبية) و قد تم اعتماد وسيلتين أساسيتين في هذه الدراسة وهما استبيان خاص بالطلبة و الأستاذة وبحث شبه تجريبي (الاختبار القبلي و اللاحق). ولقد استعمل الباحث في الجانب التجريبي للدراسة استراتيجيات فوق إدراكية و قد تلقى المشاركون في المجموعة التجريبية كيفية استعمالها في الكتابة ، فمن خلال هذه الدراسة، حاول الباحث خلق محيط محفز من شأنه مساعدة المتعلمين في كتابة بنتاج مختلف المراحل العودية لمقاربة المنهج كاستراتيجية فوق إدراكية ، في حين أن المشاركون في المجموعة الضابطة لم تلق "المنهج" خلال مساهمتها للكتابة و يبدو أن مستوى الكتابة في المجموعة التجريبية في المجموعة التجريبية أعلى من أكثر من مستوى كتابة كلتا المجموعتين الضابطة. للعلماء متخصصيه: ما فوق الإدراك، الاستراتيجيات، مهارة الكتابة، مقاربة المنهج

Introduction:

Writing is the way by which students express their ideas via a text. It is considered as the core of language process and constitutes a fundamental part of the curriculum in Higher Education. It is a lifelong skill: students are constantly asked to write in their studies not only in the Written Expression course but also in other courses. It is a basic skill that promotes language acquisition

However, even at the level of the university, as teachers of Written Expression, we incessantly criticize the passive accumulation of knowledge and lack of awareness on the part of our students. We often observe that very few of our students develop their writing competence easily. The great majority deems this skill as the most difficult, the most challenging to be acquired and mastered; they are unmotivated; their passion for writing frequently seems to minimize, and they go through a slow and sterile process of writing. Teachers must actively involve their students in the writing process and serve as facilitator for them. They should guide their learners through all the steps of their writing process by providing them with some metacognitive instructions. Our tenet aim of our study is to show the effectiveness of using instructions as metacognitive strategies to motivate students and promote their writing achievement. Indeed, when students are provided with some metacognitive instructions and guidance, and have an intrinsic motivation to write, they can persevere in developing their writing more and more to achieve a high level of competence. Both Metacognition and motivation contribute highly to develop students' writing achievement.

1. The Writing Skill

Writing has the most effective role in learning any language. It is a basic literacy skill which promotes language acquisition, fosters critical thinking and enables students to communicate. Moreover, it is an essential competence that learners must develop to enable them to communicate in the globalized world and to achieve academic success.

1.1. Definition and Components of the Writing Skill

Originally, Writing was defined as graphic symbols or visual marks. Brown (2001, p. 335) pointed out that "a simplistic view of writing would assume that written language is simply the graphic representation of spoken language". Later, a notion of coherence was added. Hyland (2003, p. 12) explained that writing is "marks on page or screen, a coherent arrangement of words, clauses, and sentences, structured according to a system of rules". These symbols must be arranged according to certain conventions and rules in order to form words, and then sentences to produce complete coherent text that communicates a message and expresses our thoughts and feelings.

Writing is not an easy task, and in order to be performed effectively and successfully, it requires some basic components. Raimes (1983.p. 6) categorized the components of writing, as content, the writer's process, audience, purpose, word choice, organization, mechanics, grammar and syntax.

Enhancing Problem-Solving Skills and Motivation through Cooperative Learning

Abstract:

In the present paper, the goal set to assist learners in the process of strategically seeking as well as applying information is given a major consideration in the realm of education. The advantage of raising awareness of problem solving skills and encouraging learners to apply them are two main requirements which go hand in hand to increase performance throughout learning. For we noticed that being informed about some pieces of information does not inevitably necessitate its application but an active involvement into cooperative problem-solving activities fosters higher-order thinking skills namely deductive and inductive types of thinking within cooperative learning environment. Cooperative learning and teaching approach is adopted to increase learners' academic performance in terms of the space left for them to benefit from the positive interdependence which highlights the mutual exchange of learning experiences skills and leads to meaningful and long-term learning. This research reports the importance of taking recourse to cooperative learning as learning and teaching approach which has a generously positive influence on the enhancement of both thinking skills motivation social and collaborative skills.

Keywords: problem solving skills, deduction and induction, motivation, cooperative learning

Faculty of Letters and Languages
Department of Foreign Languages
University of Mersouine
Constantine

ملخص:

يهدف هذا البحث إلى إظهار أهمية المشاركة الفعالة في التعلم لتعزيز التحصيل الدراسي، من خلال تعريف طلبة الدراسات العليا من قسم الجيولوجيا في جامعة منثوري بفسطاطية إلى برنامج لحل المشاكل و التدريب على التعلم التعاوني ، والذي يتضمن مجموعة من الأنشطة، مثل بناء الفريق، والأنشطة المحفزة على التفكير.

الهدف العام الذي يوجه البحث كله هو أن المتعلمين يتعلمون بشكل أفضل من خلال التدريب العملي على الأنشطة التي صممت خصيصا لتعزيز مهارات حل المشاكل والتعلم التعاوني. و هذا ما أظهره الفرق بين النتائج المتحصل عليها قبل وبعد برنامج التدريب.

Introduction:

Problem-solving skills are the set of thinking skills, which include deductive and inductive reasoning skills, which are used to make sense of different life events. Hence, the progressive process of manipulating data in an organized and logical way, as well as inducing new ideas from a plethora of information which are collected from a variety of resources are the fundamental.

requirements for enhancing the quality of both learning and thinking. By active involvement, learners constantly attempt to make sense of the given activity or task through research, and cooperative interaction. Thus, training program was introduced to show learners the significance of understanding and using problem-solving skills within cooperative learning environment as a way to help them see the intertwined link between thinking, practice and cooperative learning. So, learners learn to think deductively and inductively about information, communicate their thoughts and manipulate learning setting and research tools to their benefits, best of all a learning environment, which underlines positive interdependence, reflective thinking, and engagement into activities.

The choice of cooperative learning as a teaching approach is supported by its promising cognitive, motivational and social advantages, which are brought by the mutual exchange of information, alongside with developing an awareness of life events and solving problems. cooperative learning promises every single student to do her share of the task; exploring, thinking, and employing problem-solving strategies to figure out given problems, suggesting possible solutions, and evaluating the effectiveness of the end result (the goal state), a process which is probably demanding yet makes learning more pleasing and meaningful.

2-Thinking Defined

Trying to define the term thinking is not an easy task which can be fulfilled or taken for granted, contrary to how it may usually sound to a layperson that thinking is any thought that comes into mind. Thinking is given several definitions and perceived differently depending on which angle it is regarded.

According to Moseley (2005:12) the term thinking can be used to describe various mental activities; conscious and semi-conscious such as reflective thinking and daydreaming.

In the realm of psychology, thinking is the mental activity, where data are processed and manipulated to understand and solve problems.

Moreover thinking is viewed to involve a goal to achieve. So, take for example, people who focus their thinking on knowledge obtainment and try to use it proficiently in order to impose their control over their environment. The latter is said to be the goal or a need to meet that is using knowledge to handle daily activities, a process which is identified as thinking.

Thinking is explained as an umbrella term which covers a broad number of mental functions such as memory, problem-solving, decision making, and metacognition.

Given many illustrations of how the word thinking is used, problem solving, memory, decision making, metacognition and reasoning are perceived as different types of thinking, all of which are hypothesized to enhance through

Logical Connectors' Use and Writing Quality in EFL Learners
and Native Speakers' Essay Writing

Abstract:

The study presents an investigation of the writing performance of Algerian third year EFL students at the Department of Letters and the English Language at the University of Constantine to diagnose the issues concerning the appropriate use of cohesive devices. By extension, it is also intended to explore how learners use the logical connectors and the effect of such cohesive devices on their writing quality. For this, we hypothesized that if students have higher writing proficiency, they will use accurately logical connectors, and will better use them semantically and stylistically. The analysis of the findings provided us with a clear picture that there is no correlation between the learners' use of logical connectors and their writing quality. Hence, there is no clear pattern of using connectors in relation to the level of students' writing performance.

Key words: students' essays, logical connectors, and students' writing quality.

Faculty of Letters and Languages
Department of Foreign Languages
University of Mentouri
Constantine

ملخص:

تقدم هذه الدراسة تحقيقاً للأداء الكتابي لطلاب السنة الثالثة لغة الخيرية في قسم الآداب واللغات بجامعة قسنطينة لتشخيص القضايا المتعلقة بالاستخدام المناسب لأداة الربط. وكذلك تهدف إلى استكشاف كيفية استخدام الطلبة للروابط المنطقية وتأثير هذه الأخيرة على نوعية كتاباتهم. وعليه، افترضنا أنه إذا كان الطلاب ذو كفاءة عالية في الكتابة فسوف تستخدم أدوات الربط بدقة أكثر. وعلى نحو أفضل لغوياً وأسويباً. لكن تحليل النتائج قدمت لنا فكرة واضحة ومعاكسة لما وضعنا حيث وجدنا أنه لا يوجد أي ارتباط بين استخدام الطلبة للروابط المنطقية وجودة كتاباتهم. وبالتالي، ليس هناك نمط واضح في استخدام الروابط فيما يتعلق بمستوى الأداء الكتابي لدى الطلاب.

Introduction:

Since writing is a multifaceted skill, there were numerous attempts to illustrate what happen during the process of writing. One important step during the writing process is the careful use of linkers to smoothly and clearly connects ideas to achieve sense. However, many EFL students encounter problems in the use of cohesive devices, namely the logical/adverbial connectors. Generally, these students fail in using them appropriately at many levels because they do not possess an awareness of the stylistic, semantic and syntactic variations of such connectors.

The Role of Working Memory in Explaining Reading Comprehension Performance in University Students

University of Frères Mentouri-1 Constantine (Algerie)

Abstract:

This study investigates the crucial role of working memory capacity in reading comprehension in young adults; it describes readers' working memory abilities and their reading comprehension capacities, and it examines the effect of students' working memory on their reading comprehension. To this end, two tests measuring storage abilities and reading comprehension are administered to one hundred third year English language students. Finally the calculated correlations have shown a very significant relationship between working memory and reading comprehension.

Key words: Reading comprehension, working memory, storage, information processing, correlation

ملخص:

تبحث هذه الدراسة الدور الحاسم لسعة الذاكرة العاملة في الاستيعاب القرائي لدى البالغين من الشباب. والهدف من هذه الورقة هو وصف قدرات الذاكرة العاملة وقدرات الطلاب على الفهم في القراءة من نص مكتوب ومدى تأثير قدرات هذه الذاكرة على قدرات الطلاب على الاستيعاب القرائي. تطبيقا لهذه الغاية أجرينا اختبارين لقياس قدرات التخزين والاستيعاب القرائي لعملة طالب السنة الثالثة. وأمورا يتم حساب الارتباطات بين المتغيرتين المذكورتين سابقا وتحليلها. النتائج تبين وجود علاقة مهمة بين الذاكرة العاملة والقراءة والفهم.

الكلمات المفتاحية: الاستيعاب القرائي، الذاكرة العاملة، التخزين، معالجة المعلومات، الارتباطات

Introduction :

Getting meaning from the text is a hard reading task. Readers might be fluent during the reading course but do not actually understand what they are reading. To find out about what makes text understanding difficult is not an easy task since many components contribute in the process of reading (Dunlosky and Tauber, 2007). Researchers in the field of reading have been focusing, in the last 30 years, on the crucial role metacognition plays in text understanding. Yet recent years have seen relevant progress in the study of the relationship between working memory (WM) and reading comprehension, which leads to a growing recognition of the link between working memory and text understanding (Daneman and Carpenter, 1980; Baddeley, 1997). In this paper, thus, the focus is not on decoding issues or lexical access problems as text comprehension difficulties that are not higher-order comprehension problems (Oakhill and Cain, 2007). It is mainly on the current issues of reading that consider the impact of working memory capacity on the students' reading comprehension: storage and processing function of memory on which reading puts a lot of demand.

Introduction

After decades of parallel, but separated studies on anxiety in clinical psychology, Horwitz, Horwitz and Cope (1986) have built a framework and made a relation between them in FLL. From this perspective, they were the first who introduced the construct of Fear of Negative Evaluation (FNE) to the educational domain. This construct, we label social evaluative anxiety or social anxiety in this paper is our main concern. The concept of FNE is simply referred to as the fear of being laughed at (Brown, 2004). Our target is to test the significance of social relations, interaction and language use in communicative situations as sources of social anxiety. That is, we need first to diagnose the existence of social anxiety and test our hypothesis about the sources we considered of this phenomenon.

Approaching the Concepts of Anxiety, Social Anxiety and FNE

The term anxiety is not specific to language learning, its hybrid (limelight urges us introduce anxiety from a clinical viewpoint; its origin. In our vision, we try to think of FLA as an affective variable. That is; anxiety is considered as psycho-physiological phenomenon where both inherent features and apparent ones make its explanation. Anxiety can have various forms. Our work is more invested in its social nature. That is the reason behind focusing social anxiety. Further, before treating social anxiety from a FLL point of view, we need to introduce its clinical consideration. To begin with, most individuals who suffer from social anxiety described a strong fear that they might do or say the wrong thing (Newth, 2003: 18). That is, they fear from being negatively evaluated when they (or think they) say or do the wrong thing. In this, Ingman (1999: 7) cited that Leitenberg (1990) defines 'social anxiety as feelings of apprehension, self-consciousness, and emotional distress in anticipated or actual social-evaluative situations. She added that this type of anxiety occurs in situations where individuals want to create a favorable impression but have doubts about their abilities to do so. They believe that such situations involve inspection or evaluation by others, and that negative evaluation is a possible and likely outcome (ibid). Social anxiety has many forms. Concepts like shyness, performance anxiety, social phobia, social withdrawal, public speaking anxiety, dating anxiety, and social inhibition are part of it. Concerning social phobia, the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV;* American Psychiatric Association, 1994) defines social phobia as a marked and persistent fear of social and performance situations in which embarrassment may occur. When referring to academic achievement, Storch, Eisenberg, Roberti and Barlas (2003: 411) associated social phobia with significant psychosocial impairment and distress including poor academic achievement. They added that socially phobic youth are at risk to be peer rejected (La Greca and Stone, 1993).

Indeed, social anxiety; also called social phobia, was first introduced by Geen (cited in Idri, 2006: 6). For Borrill (2002), when someone suffers from social anxiety disorder, he tends to be extremely anxious. They added that individuals who have this kind of anxiety worried a lot about what others think of them and how they will be evaluated. Later, Newth (2003) pointed out that individuals who suffer from social phobia might express a strong fear when they say or do the wrong thing. The component of social anxiety was first defined by Watson and Friend (1969) as "an apprehension about others' evaluations, avoidance of evaluative situations and the expectation that others would evaluate oneself negatively" (cited in Kitano, 2001). According to this definition, students who suffer from social evaluative anxiety often keep silent and avoid initiating conversations using the target language. This can be to avoid making any possible mistakes or receiving negative evaluations and criticism from their teachers and peers. As learners fear being worse than others in language studies (Abu-

Introduction

Culture is a universal fact of human life. It is deeply ingrained in a person's ways of acting and being in the world (Damen, 1997)¹. Language, the means of communication among members of a culture, is culture's most visible and available expression (Brown, 1991). In other words, language is much more than just a means of communication; it is a reflection of culture and a major vehicle for the transmission and, in fact, creation of culture.

Teaching English as a foreign language consists of many elements such as grammatical competence, communicative competence, etc. Cultural competence, being considered as the fifth language skill, is one of those elements (Kramsh, 1998)². The shared conventions of language use, which make communication possible, are cultural as well as grammatical. Language creates a discourse which requires a cultural competence in the student in order to be understood. Therefore, cultural instruction seems essential for an in-depth understanding of the language.

As individuals learn to live in an increasingly interdependent and international world, language ability and cultural sensitivity have come to bear a more significant role in creating tolerance among people (Hadley, 2003)³. And so, to communicate internationally inevitably involves communicating interculturally as well, which probably leads us to encounter factors of cultural differences.

This idea has given rise to the question whether it is the world culture that should be taught to learners of English rather than any specific culture in the language classroom. Using this question as a departure point, this study investigates EFL teachers' opinions and beliefs on the concept of culture and the place of cultural information in English language teaching. The study also focuses on exploring the

¹- Damen, L. (1997). *Culture learning: The fifth dimension in the language classroom*. Reading, MA: Addison-Wesley.

²- Kramsh, C. (1998). *Language and Culture* (3). Oxford : Oxford University Press.

³- Hadley, D. A. (2003). *Teaching Language in Context* (3rd ed.). Boston: Heinle & Heinle.

EFL teachers' practices and applications in their teaching related to culture.

Definition of culture

Culture can be defined in many ways. From a general perspective, it is a way of life, a set of social practices, a system of beliefs, a shared history and a set of experiences. Similarly, Lado (1957)¹ describes it as "the ways of a people" which encompasses observable and non-observable circumstances. Brooks (1975)² identified five different meanings of culture: biological growth, personal refinement, literature and the fine arts, patterns of living, and the sum total way of life. He argued that the "least well understood" was the fourth meaning of the word. He defined patterns of living as referring "to the individual's role in the unending kaleidoscope of life situations of every kind and the rules and models for attitude and conduct in them" (P. 210). This is a very vague and hardly usable conceptualization and its further elaboration does not simplify matters:

"What is central in this meaning of culture is the interchange and the reciprocal effect of the social pattern and the individual upon each other ... what one is 'expected' to think, believe, say, do, eat, wear, pay, endure, resent, honor, laugh at, fight for, and worship, in typical life situations" (Brooks, 1975, p.211).

On the whole, for Brooks (1975), the term culture has two major meanings: one as culture as everything in human life and one as culture as the best in human life. Therefore, it is an essential element that should not be ignored in the language teaching process as language and culture go hand in hand in order to build a bridge between individuals and societies.

European Framework refers to culture as the knowledge of the shared values and beliefs which are held by social groups in other

¹ - Lado, R. (1957). *Linguistics across cultures: Applied linguistics for language teachers*. Ann Arbor: University of Michigan Press.

² - Brooks, N. (1975). *The analysis of foreign and familiar cultures*. In Lafayette, R. (ed.), *The Culture Revolution in Foreign Language Teaching*. Skokie, Illinois: National Textbook Company.



Introduction

In the field of teaching and learning the foreign language, some issues are pivotal from the learning process. One of them is improving students' academic writing. As far as academic writing is the matter of debate, responding to students' writing should be the focus. The reason is that responding on students' writing is the way in which they can recognize their errors and then revise them.

Feedback is the most important aspect in teaching writing skill because it helps students to improve, refine and shape their writing ability. Thus, the use of technology in education has removed educational limits, both students and teachers can collaborate in real time using advanced educational technologies so that e-feedback seems to be an effective way of responding to students' writing. Exchanging e-mails can be an enjoyable and useful strategy for both teachers and students in terms of improving academic writing skills. The present study deals with e-feedback in a form of e-mails of the essay-writing course for second year students of English at Batna 2 University.

1. Literature Review

With the development of technology and the use of it in education, teachers now can respond to their students' writing, electronically, through either e-mail or text editing programs. E-mailing comments to students is an appropriate way for students as they work at their computers, they can incorporate the comments that their teacher is providing, or reply questions that are being asked. "These new channels of written feedback offer teachers greater flexibility in their responding practices, but ultimately convenience is likely to be the deciding factor in which are used" (Harmer, 2001, p. 183). In a clearer way, this new way that follows the use of technology in classrooms can help teachers in the process of responding on students' papers.

It is essential for teachers to recognize the nature of feedback in order to reach the appropriate use of e-feedback in assessing students' writing. Assessment is a very important aspect in knowing

what teachers can expect students to achieve and the type of assessment has its effects on students' learning too (Brown et al 1997). Moreover, if teachers did not assess a certain lesson' element, students will probably not learn it (Ashcroft & Palacio, 1996). So that assessment is a core for measuring students' achievement, but the feedback of the assessment is more important. Probst (1989) stated that feedback deemed as a way for in building the importance of students' responses in shaping new meanings.

Many qualities of using e-feedback on developing students' writing have mentioned. Thus, many researchers as (Braine, 1997; MacLeod, 1999; Hewett, 2000; DiGiovanni&Nagaswami, 2001; Tazi, 2004; Guardado& Shi, 2007; Beauvois, 1992; Kelm, 1992; Kem, 1995) have stated the importance of using computers in encouraging foreign language learning and developing student-to-student interaction. In the same respect, researchers as (Chun, 1994; Flores-Estrada, 1995; Itzes, 1997; Van Handle & Cort, 1998) were as consciously aware of the advantages of e-feedback on developing students' performance in academic writing.

E-mail is a pivotal means of social interaction. It belongs to what social constructivism theory calls for as creating an enjoyable way of learning. Social constructivism followed Vygotsky's (1978) work stated that knowledge is first constructed in a social context and is then transmitted to individuals. E-mail is an essential means of motivation and interest, and it supports students to create what we call collaborative work in which they share their thoughts with their teachers particularly in their academic writing skill.

With e-feedback, students takes an active role in their learning. It is a collection of oral and written feedback which is featured by the informality and immediacy of oral communication, the permanency of written communication, the availability at any time, and being a means for encouraging group knowledge and student participation (Warschauer& Ware, 2006). Moreover, it is a kind of feedback that makes students rely on themselves in correcting their errors. It also provides students with more democratic

Cheating in Exams: A Justifiable behavior?

by the academic overload. 50 percent think that way the examinations are designed constitute the main cause of cheating: questions test memory rather than comprehension. The current results might be applicable to students in other academic disciplines..

Introduction

Historically, academic honesty has been a crucial element in the advance of research and education. However, with the advent of technological devices, cheating has become omnipresent in our classrooms. This academic misbehavior, though considered illogic, immoral, and even sinful for some students, has invaded schools and is destroying the ethics of education. Recent estimates indicate that most of the students all over the world cheat to some extent and the number of cheater is rising more and more ([Paton, 2010](#)). In the USA, the cradle of education development and innovation, is also suffering from this phenomenon. A CNN investigation (2012) has found that “For years, doctors around the country taking an exam to become board certified in radiology have cheated by memorizing test questions, creating sophisticated banks of what are known as "recalls". In an article entitled “Today's kids view cheating as part of the path to success” [Dorff \(2012\)](#) wrote that “Students, parents, teachers and administrators complain that there is too much cheating going on in our schools, but they tend to point at each other when asked who should be responsible for fixing the problem”. In UK, the situation is not different at all. According to an investigation by the Independent (2012) “Tens of thousands of students in universities across Britain have been caught cheating in exams and coursework – and the trend is on the rise”.

Almost everybody has succumbed to the use of inappropriate resources to get high grades in exams. Grades have become the major focus of most students. Verily, cheating has turned a big dilemma and has reached epidemic proportions in our schools. It is not stopping. On the contrary, it is skyrocketing. What is wrong with higher education today? How can we remedy?

This article is an attempt to highlight the main causes of this academic misconduct, its causes and suggest some solutions to plummet it.

Research questions

1. What are the main motivations behind cheating in class?
2. What are the factors that influence dishonest academic behavior?
3. What, if anything, should be done to prevent it?

Method

The study was conducted by formulating a survey consisting of twelve multiple choice items pertaining to academic cheating (see appendix). The purpose of these questions was to analyze whether cheating is more common on examinations in the English language department as well as to find out the main motivations behind this academic dishonest behavior. The study stressed confidentiality and the student's anonymity in order to increase students' participation and obtain reliable responses.

The survey was randomly distributed to second-year students in the department of English, during class time. This manner of distribution was an attempt to ensure the participation of most of the students. Out of the 120 surveys distributed only 100 were returned. By combining each student's individual results, we could determine the factors which motivate students to cheat and student's attitude to cheating. Finally, the results were tabulated as percentages and were displayed in three graphs: the first one shows whether cheating on examinations was common on exams, student's attitude to

The Algerian guidance and counselling policy with regard to the workplace reform in education

Ferhat Abbas University –Sétif

As globalization advances, education is increasingly crossing borders, national, regional and institutional. At the same time, guidance and counselling systems are having to respond to other profound changes, such as, the knowledge explosion, the changing interaction between the public and the private spheres, and the rapid development of information and communication technologies. This paper argues in favours of the case. The Algerian reform in Higher Education needs to develop an adequate structure for guidance and counselling being the cornerstone of the educational system and the workforce as a whole.

Keywords: Globalization, the Algerian reform in education, Higher Education, Guidance and Counselling, lifelong learning, ICT.

Avec le progrès de la mondialisation, l'éducation a de plus en plus franchi les frontières, nationales, régionales et institutionnelles. Dans le même temps, le conseil et l'orientation scolaire ont vu des changements approfondis dans l'ensemble des traitements de sa politique déjà mise en place, tels que, l'explosion des connaissances, l'interaction entre l'évolution des sphères publiques et privées, et le développement rapide des technologies d'information et de communication. Ce document plaide en faveur des pré-requis nécessaires pour réussir une réforme éducative homogène avec les changements de la mondialisation. Ainsi, l'enseignement algérien a besoin de développer une structure de conseil et d'orientation adéquate afin de promouvoir le système éducatif, en particulier, et la main-d'œuvre nationale en général.

Mots-clés: Mondialisation, La réforme algérienne du système de l'éducation, l'Enseignement Supérieur, Le conseil et l'orientation scolaire, l'apprentissage à longue vie, TICE.

Introduction

Guidance and counselling help people develop a vision of their life

and enhance education and training goals. In today's world, tailoring services to differing needs is essential. Some people require advising where to get information and how to use it. Some request guidance and support tailored to their unique needs, whereas others need counselling, how to explore, examine and clarify thoughts, feelings, beliefs, values and behaviours, to arrive at plans for action .

With the new education reform taking place in the Algerian schools, students, as well as teachers, find themselves torn between a new paradigm to education and an old-fashioned one (Ministry of Higher Education and Scientific Research, 2007). In such a problematic situation, it is the role of guidance counsellors to intervene as a reassuring agent in this process of change. However, no chain being stronger than its weakest link, guidance and counselling services must, themselves, be readapted to the educational paradigm at hand. The professional and practical demands arising from this understanding of education and of counsellor training make it imperative that the values to which the Algerian Government is committed are informed by fresh research perspectives, particularly, ones that combine empirical knowledge in intricate ways with more qualitative forms of understanding. This creates a wide range of practical dispositions to action.

Therefore, guidance and counselling should not only be theoretical, but should also provide opportunities for people of all ages to develop and practice the skills to respect human rights and citizenship through lifelong learning. This entails that all aspects of school as a living social environment should be given paramount concern. Of late, there has been a continuing shift away from manufacturing industry towards service economy, increase in contractual employment and a lot more part-time, often low-paid, work. These changes and the ever-widening range of career opportunities and new courses have made it impossible for students, parents and teachers to maintain a current information base of options. They are confused by the various reports of encouraging prospects in a few industries and slowed down in others. In this scenario, career counselling and guidance have assumed even greater importance than ever before.

Career development, involving advancement, is determined by numerous factors, or a combination thereof (Allen et al., 1995), having to do with personal interest, knowledge and skills, value systems and, particularly, work or professional ethics. That is why, the present work puts greater emphasis on career development in that the professional life of an individual is not only confined to the period of employment, but incorporates prior phases of decision-making and preparation. The term also incorporates changes in and movement from one professional environment to another. In

Introduction:

Self-efficacy, as a belief, is an essential part of the self-structure central to the understanding of the way learners construct their own personal views on themselves in language learning situations. Because of the diversity and richness of self-efficacy, theoretical insights and practical evidence towards the positive prediction of EFL learners' performance, little attempt has been made to examine the variables of self-efficacy in learning the English speaking skill in second year EFL student classes. Hence, the focal point in the present study is to determine *"the relationship between the perception of self-efficacy by second year LMD EFL students and their learning of the English language speaking skill"*.

This paper will start off with a review of the concepts of self-efficacy and speaking skill. Then, a study conducted at the department of English of Constantine University, investigates the students' attitudes towards their own perceptions of themselves (self-efficacy) in relation to the English language speaking skill. Finally, the results once analyzed would potentially lead to implications and suggestions.

1. The Construct of Self-efficacy:

Psychologist Albert Bandura (1986-1997) has painted a portrait of human behavior and motivation in which individuals' self-beliefs are critical elements. Of all the beliefs that people hold about themselves affecting their day-to-day behaviour, and that stand at the core of "Social Cognitive Theory", are self-efficacy beliefs. Self-efficacy is thus a universal psychological construct that accounts for variance within various domains of human functioning. It is the belief in one's competence to tackle new tasks and to cope with diversity in a broad range of challenging encounters. Broadly speaking, self-efficacy refers to a belief about what one is capable of doing and achieving. According to Bandura⁽¹⁾ self-efficacy is a belief in one's capabilities or skill to attain a particular goal or execute a particular behavior. This means that *"what people feel about their capabilities can be good predictors of the behavior they produce."* In fact, the best prediction of behavior in a specific domain stems from people's self perceptions within that domain. Self-efficacy is more concerned with *"the fundamental view that one has of one's actions."* (Colin)⁽²⁾. This explains why self-efficacy is conceptualized as our expectations bred on our performance across a broad range of situations not only challenging but also requiring both effort and perseverance. Self-efficacy is not intention, in the sense that intention involves willingness to adopt a behavior. Instead, self-efficacy involves a belief that one can adopt a behavior. Self-efficacy is also different from outcome expectancy. As such, the former is founded on the judgments regarding our capabilities, whereas the latter is founded on the judgments regarding the consequences of our behavior. In other words, an outcome expectancy is the *"person's estimate that a given behavior will lead to certain outcomes"* (Bandura)⁽³⁾.

In Bandura's⁽⁴⁾ and Pajares's⁽⁵⁾ proposed models, perceptions of personal efficacy are derived from four principal sources of information being: *"Performance accomplishments, vicarious experience, verbal persuasion, and physiological states"*.

▪ **"Mastery experience" or Performance accomplishments** are the most effective ways of creating a strong sense of efficacy. People judge themselves according to their experiences; success strengthens self-efficacy whereas repeated failures undermine it.

1-Introduction:

Early in my teaching career I was swept along by the communicative language teaching approach (CLT) with its focus on providing learners with opportunities for authentic communication, and was very concerned with the issue of grammar instruction for me time. More recently, given the theoretical and empirical evidence which supports some form of grammar teaching in the classroom, particularly to intermediate to advanced learners, my main concern has shifted to how to teach grammatical structures to EFL students. Acquisition on communicative classroom on context and grammar-free language programmes have shown that CLT-trained students have 'significant shortcomings in the accuracy of their language'⁽¹⁾; they continue to experience difficulties with grammatical accuracy in their oral and written production.

Though few researchers would deny the importance of communicatively-oriented language instruction, many now recognize that it needs to be complemented with some attention to linguistic form. The question remains, however, as to how best to achieve this. The exact nature of this kind of 'attention to linguistic form' and the various forms it can take are still far from clear and studies comparing approaches to grammar teaching are still few and far between. Furthermore, there is no clear agreement on definitions and procedures to implement this attention to form⁽²⁾. If learners are to benefit from alternative approaches to grammar instruction form-focussed instruction, as professionals we need to better understand when and how focus on form occurs in the classroom. This study aimed to contribute to current understanding of the role of formal class-room instruction by extending theoretical and empirical work on the relationship between two grammar teaching options.

This article will begin by first presenting the theoretical, pedagogical arguments for the facilitative effects of form focused instruction and synthesizing findings from research that has investigated two particular options. It will then present an experimental study on the effects of form focused instruction by comparing a comprehension-based instructional approach to another instructional approach where comprehension and production practice are combined. The target grammatical item is tense and grammatical aspect.

2. Formal Instruction and Language Acquisition:

Language Acquisition Research comparing instructed with uninstructed language learning identified clear advantages for formal instruction compared to naturalistic linguistic exposure: a) it speeds up the rate of learning, (b) it affects acquisition processes, leading to long-term accuracy, and (c) it appears to raise the ultimate level of attainment⁽³⁾. In an extensive meta-analysis, Norris and Ortega⁽⁴⁾ summarised findings from fifty-one studies whose data came from four distinct types of instructional environments. Norris and Ortega found that explicit, form-focused instructional environments resulted in more accurate and advanced learning outcomes than those who followed implicit approaches.

The question in SLA is no longer one of justifying the facilitative role of formal instruction, but one of deciding which type of formal instruction is more effective in developing the learner's linguistic system. In addition to perspectives from language acquisition theory, there are also pedagogic reasons in favour of L2 form-focused instruction (FFI) in the language syllabus. As noted in the introductory section, experiential learning approaches growing out of communicative language teaching (CLT) such

Innovation vs. Canonisation: Foreign Literature Content in the Algerian Degree of English

Faculty of Foreign Languages and Literatures
University of Mostaganem

Abstract

The present paper discusses the content of foreign literature syllabus in the frame of the Algerian university degree of English studies raising three questions: What are the goals that shape the design of the foreign literature syllabus? On which ground do canonized texts gain institutional interest? and What should be the profile of the syllabus designers? Not only did the investigation's findings reveal that the syllabus content does not take into consideration the student's future professional needs, but it also demonstrated that most teachers proceed to manoeuvre so as to cope with the students' expectations. Thus, the recommendations from this study are twofold: first, to develop a well structured theoretical frame able to reshape the goals of the foreign literature syllabus; second, to enhance a more beneficial result in teaching this literature.

ملخص

إن أي تحديد لمحتوى ما يدرس بعيدا عن توقعات المتعلم والمعلم يجعل البرنامج مبنيا على أسس غير تربوية وغير هادفة. وفي هذا الإطار تعالج دراستي محتوى برنامج الآداب الأجنبية لدى طلبة الليسانس في اللغة الإنجليزية في الجامعة الجزائرية انطلاقا من الأسئلة الآتية: ما هي أهداف هذا البرنامج؟ ما الذي يبرز للمؤسسة تدريس النصوص الأدبية الأجنبية المغلفة؟ وكيف يجب أن يكون ملمح مصمم البرنامج؟ وعليه فإن توصيات هذه الدراسة تدعو إلى التركيز على الجانب النظري الذي يستوجب التسطير الهادف لبرنامج الآداب الأجنبية، ومن ثمة تبسير استيعابه.

1-Introduction

Before being an educational practice with internal research on important issues like method, syllabus, content, and material teaching, ELT practice remains government prerogative before being designers' one; a truth too often forgotten. A survey of the literature on ELT advances that the latter cannot be considered within the practice of the language solely, rather, it should be seen within a wider socio-cultural and economic context of its use; therefore, it remains an issue from which political interest and power cannot be removed. Referring to the thesis that no syllabus is *neutral*⁽¹⁾ (Freire, 1970; Candlin, 1984), the foreign literature syllabus content in the frame of the Algerian licence of English is, then, questioned. The presupposition is that the syllabus, necessarily, carries a heavy heritage of *cultural imposition*⁽²⁾ which is primarily responsible of the ill-match between teaching and learning within ELT. The claim is that designers and practitioners of ELT should revise their orientations as Wilkins (1976) advances: "The process of deciding what to teach is based on

considerations of what the learner should most usefully be able to communicate in the foreign language." (p.19)

It is only after having placed the learner at the apex of their priorities that they could pretend at pedagogic effectiveness.

The present paper is an attempt to pin down the causes of the chronic difficulties that crop up in the transmission of knowledge in literature as it is taught in English at the university level in Algeria. As there are few supporting studies in the field (L.B.S.M, 2005), the present work will basically proceed from empirical observations⁽³⁾. It, therefore, raises the following questions:

- 1-What are the goals that shape the design of foreign literature syllabus?
- 2-On which ground do canonized texts gain institutional interest?
- 3-What should be the profile of the syllabus designers?

This reflection will progress as follows. It will start by a description of the university context in which foreign literature is delivered and the main objectives that shape the Ministry of Higher Education design of the syllabus. Then, it will unveil the prevailing myth over the teaching of canonical texts to non-natives of the literature. Third, it will attempt to profile syllabus designers' role for the genuine fulfilment of an educative mission. Finally, it will attempt to provide a set of suggestions along with examples on how each suggestion could be used effectively so as to bring over a positive change.

2- The System

All along the preceding eras, the Algerian university maturity and autonomy has been characterised by a set of drastic reforms⁽⁴⁾ which aimed exclusively at quantity at the expense of quality. Therefore, as one of the major institutions whose contribution is unmeasured, the university priorities diverged from the noble objective of equipping young and fresh minds for intellectual challenge and scientific endeavour. On the contrary, a huge number of primary and secondary teachers were needed to confront the crisis thus more students were welcomed by Algerian Universities. (See Table 1).

Table 1: Number of undergraduate students in Algerian universities

1960	1970	1980	1990	2000	2001	2004
1137	12243	57445	181350	466084	552804	700000

Source: Saad, M., Zawdie, G., Derbal, A., Lee, R., (2006). **Issues and Challenges arising from greater role of the university in promoting innovation in developing countries: a comparative study of experiences in Malaysia, Algeria and Ethiopia** available at www.triplehelix5.com.

However, time came where the Ministry of Education could no more afford the creation of new jobs for these young teachers. Their degree of teaching restrained their opportunities in the job market. Thus, in front of another obstacle that university did not expect and for which it did not have immediate solutions, it found itself obliged to direct the target of the degree from a licence of teaching to a licence of 'Arts & Foreign Languages'. Actually, no one is able, at least at the official level, to provide appropriate explanations concerning the major objective of this new licence. The Ministry of Higher Education has proceeded to a set of reforms at the level of the

Humour in English Foreign Language Teaching

Département of English
Université Badji Mokhtar Annaba- Algérie

Abstract

In this paper, we will see the presentation of humour as a genuine communication means and as an interesting teaching means; how we can use it as an important component in foreign language teaching. How the use of humour in foreign language courses in different levels makes classes more enjoyable and reduces the student's stress. It can also contribute to improving students' proficiency.

ملخص

نتناول في هذه الورقة البحثية دور لغة الفكاهة في التواصل والتعليم، ونوضح كيف يمكن استعمالها واستثمارها في تعليم اللغات الأجنبية لكث المستويات، ذلك أنها تمنح المتعلمين راحة وجوية في التعلم و تحفزهم على العمل المستمر. ونوصي أن لهذا الأسلوب نتائج جيدة في مجال تعليم اللغات وتعلمها...

1-Introduction and statement of the problem

1-1 introduction

Humour is "... any communication which is perceived by any of the interacting parties as humorous and leads to laughing, smiling, or a feeling of amusement"⁽¹⁾. In this paper, we will see how we can use humour in the classroom in the best way to help the learning process take place in a relaxed atmosphere; in this respect, we-will see the benefits of humour from both the teacher's and the student's point of view.

Let us start by the definition of humour. The Oxford English Dictionary defines humour as that quality of action, speech, or writing, which excites amusement; oddity; jocularly, facetiousness, comicality.

Also, humour is a performative pragmatic accomplishment involving a wide range of communication skills including, but not exclusively involving, language, gesture, the presentation of visual imagery, and situation management. Humour aims at creating a concrete feeling of enjoyment for an audience, most commonly manifested in a physical display consisting of displays of pleasure including smiles and laughter.

1-2 Statement of the problem

The aim of this research is show the importance of humour in teaching/ learning process and to try to answer to the following questions:

- Does the use of humour in the foreign language classroom facilitate the students' learning of the foreign language?

- How and where can we use humour and does it influence the students' general socio-pragmatic skills?
- What recommendations can be made for the use of humour in the foreign language classroom?

1-3 Research methodology

The present study falls onto the educational research. To fulfil this research, we will describe humour in several domains, several learning levels and how humour can be a very good teaching/ learning means because it offers a relaxed atmosphere and we learn better being relaxed.

2- Humorous discourse

From the time of Aristotle, thinkers concerned the art of communication have considered the element of humour that can be employed to create an environment conducive to effective learning. We can all recall funny and information teachers from our school days.

"In order to take risks, you need a learning environment in which you do not feel threatened or intimidated. In order to speak, you need to feel that you will be heard that what you are saying is worth hearing. In order to continue your language learning, you need to feel motivated. In order to succeed, you need an atmosphere in which anxiety levels are low and comfort levels are high. Issue of motivation and language anxiety are keys to this topic of affect in the second language classroom"⁽¹²⁾.

Humour represents perhaps one of the most genuine and universal, speech acts within human discourse. As a natural consequence then, the use of humour within the context of second language pedagogy offers significant advantage to both the language teacher and learner. Indeed, humour serves as an effective means of reducing affective barriers to language acquisition. This effectiveness is particularly relevant to the communicative classroom, as humour has been shown to lower the affective filter and stimulate the prosocial behaviours that are so necessary for success within a communicative context. In addition to the use of such humour for the creation of a conducive learning environment, great value lies in the use of humour as a specific pedagogical tool to illustrate and teach both formal linguistic features as well as the cultural and pragmatic components of language so necessary for communicative competence.

Humour is a very important concept in today's society. Politicians and their speech writers regularly include instances of humour in their speeches; this shows the place of humour in the speech. Research on humour and its functioning in language has recently developed into a multidisciplinary field of study, especially since the advent of theories on language and context such as pragmatics and applied linguistics. These new disciplines have given proper attention to aspects of language such as humorous communication which, until recently, were considered minor or secondary. The cognitive processes and communicative strategies involved in humorous communication are relevant to our research since it is necessary to understand all the factors involved in human interaction. The existence of "The International Society for Humor Studies" with a yearly conference and the international journal *Humor* indicate the importance of this topic and the fact that it has developed into its own field of study.

Appendix D

Samples of Applied Linguistics RAs Introductions

Article 3

Journal of New Technology and Materials (JNTM)

J. New Technol. Mater.

Vol. 07, N°02 (2017)72-75



Effect of Al doping on the structural and optical properties of SnO₂ thin films elaborated by sol-gel technique

Thin Films and Interfaces Laboratory, Department of Physics, University Frères Mentouri Constantine 1, route Ain El Bey, Constantine 25000, Algeria

Department of Material Science, Faculty of Natural Sciences and Life, University Larbi Tébessi - Tébessa, Constantine Road, 12000, Tébessa - Algeria.

Department of Materials Sciences, Applied and Theoretical Physics Laboratory, University Larbi Tébessi Tébessa, Constantine Road, Tébessa 12002, Algeria

Corresponding author email: mostafabeychiba@gmail.com

Received date: Jan. 01, 2017; revised date: Oct. 11, 2017; accepted date: Dec 16, 2017

Abstract

In this study, the influence of increasing of the Al concentration on the structural and optical properties of SnO₂ thin films were investigated. Pure and aluminum-doped SnO₂ thin films were prepared by sol-gel deposition method on glass and Si (100) substrates at room temperature and then annealed at 550°C in air. The obtained films are characterized by X-ray diffraction (XRD), atomic force microscopy (AFM), and UV-Vis spectrophotometry techniques. A single-phase rutile polycrystalline structure is revealed by XRD. The AFM analysis show that the surface morphology changes with Al concentration. The un-doped and Al-doped SnO₂ thin films are transparent (86% optical transmittance) in the near UV-Vis, and the optical band gap is influenced by Al doping level.

Keywords: Al-doped SnO₂; sol-gel; XRD; AFM; UV-Vis.

1. Introduction

Tin oxide (SnO₂) is one of the most important transparent conductor oxide (TCO) materials, used in numerous applications in modern technologies, such as solar cells [1] as conductive transparent electrode, [2] in transistors, [3] in varistors, [4] and in sensors [5]. This is a result of its attractive properties of a wide band gap semiconductor (4eV in the range 3.5–4.0 eV [6]), high transparency in the visible range (90%) and high reflectivity in the infrared energy range [7].

Different techniques were used to prepare SnO₂ or doped SnO₂ thin films, i.e., spray pyrolysis, [8-9], sol-gel process, [10-12], chemical vapor deposition, [13,14] sputtering, [15,16] gas-sol-layer deposition [17].

In this work, Sol-Gel Dip Coating (SGDC) was employed to obtain pure and aluminum (Al) doped SnO₂ thin films at room temperature on glass and Si (100) substrates. The structural and optical properties of the elaborated Al-doped SnO₂ thin films were studied and the Al effects were investigated.

2. Experimental details

The aluminum-doped tin dioxide sols were prepared by dissolving of SnCl₄ .5H₂O in absolute ethanol. To

achieve Al doping, aluminum nitrate was added to the precursor solution. The doping concentration varied from 0–6 at. %. The solution was stirred at 60°C for 2 h in a closed container for the homogeneous mixing of the solution, i.e. until the solid materials dissolved. The thin films were deposited by the dip-coating technique on glass and Si (100) substrates, which had been cleaned ultrasonically in acetone. The clean glass and Si (100) substrates were dipped vertically and carefully into the sol for a short time, and withdrawn from the bath at withdrawal speeds in the range from 1mm/s to 10 mm/s. This was followed by drying and then sintering of the films at 550°C for 2 h. To obtain uniform thicker films, the sequence of dipping, drying and then dipping again was performed a number of times. However, sintering was done only after the final dipping. The thickness of the films increased, almost linearly [18], with the number of dipping.

The structural properties of the deposited films were studied by means of grazing incidence X-ray diffraction (GIXRD) using CuK α radiation ($\lambda = 1.54056 \text{ \AA}$) from Bruker-AXS.D8 diffractometer. The surface morphology was observed by atomic force microscopy (AFM) Pacific Nanotechnology. The optical transmittance was measured on a Shimadzu 3101 PC UV-visible spectrophotometer.



Modification of the Thermally Exfoliated Vermiculite by Sonication and Grafting Methods

¹ *Laboratoire Pollution et Traitement des Eaux, Département de Chimie, Faculté des Sciences Exactes, Université Mentouri Constantine, 25000, Constantine, Algérie*

² *Laboratoire de Cristallographie, Département de Physique, Université des Frères Mentouri, 25000, Constantine, Algérie, Faculté de Technologie, Université Mohamed Boudiaf-M'Sala, B.P 166 El Bahla, M'Sala, 28000 Algérie.*

Corresponding author: seschomadi@gmail.com

Received date: November 11, 2016; accepted date: December 20, 2016

Abstract

In the present study, the thermally exfoliated vermiculite has been sonicated in order to grafting with the butyl-aminodiazium. A suspension of vermiculite-water with 1% of concentration was sonicated at 20 KHz. This led to the decrease in the size of grains to 16 µm after 2 h of treatment. Increasing of sonication time, presence of HCl, and the increase of the vermiculite concentration have caused an accentuation of sonication effect, this resulted the decreasing of the size to 10 µm. Moreover, a 2% fraction of submicron-sized particles was appeared. The pH of the vermiculite suspensions was increased. The number of the -OH sites was determined by acid-base titration using Grau method. The infrared spectra of the raw and sonicated vermiculites in H₂O or containing HCl were very similar. In the presence of HCl, two bands were observed at 1380 and 1460 cm⁻¹. These are due to the presence of carbonates anions formed during sonication in HCl. XRD spectra showed that the sonication did not affect the vermiculite structure. The grafting was carried out on sonicated samples during 3 h in H₂O. This was realized in two steps. In the first step, we grafted 3-chloropropyltrimethoxysilane instead of the -OH sites. In the second step, we conducted a nucleophilic substitution of chlorine with methyl-aminodiazole. We proved by infrared spectroscopy and Grau method that grafting was real and XRD that this was not an intercalation.

Keywords: clay, vermiculite, sonication, grafting, ionic liquids

1. Introduction

Vermiculite is a layered phyllosilicate (type 2:1 or TOT), its sheet is an octahedral layer (type of Mg, Al, and Fe) sandwiched between two tetrahedral layers (type of Si and Al). Isomorphic substitution of Si⁴⁺ by Al³⁺ leads to the appearance of a negative charge at the sheet that will be compensated by hydrated exchangeable cations (Ca²⁺, Mg²⁺, Cu²⁺, Na⁺, K⁺, H⁺...) [1]. The adjacent sheets are attached by electrostatic forces and combinations of Van der Waals forces. Water molecules can be adsorbed in the interlayer space forming layers with interlayer cations, leading to swelling of the vermiculite. This adsorption depends on the hydrated cations state, which can be dehydrated, monohydrated or bilydrated, corresponding to the intercalation of 0, 1, or 2 plans of water molecules [2, 3].

The interaction of certain organic molecules with vermiculite may occur by adsorption, consequence of its large surface area or by intercalation consequence of swelling power of its interlayer space [4-6].

Vermiculite is also used for the adsorption of heavy metals [7-9]. These properties in addition to its environmental inertia make it a good candidate to be used in the water treatment field. Several scientific studies have been realized for the modification of vermiculite.

The most studied modification is the thermal exfoliation [10-18, 4]. Exfoliation improves certain properties of the vermiculite without diminishing its environmental inertia. This modification of the vermiculite causes a reduction of the apparent density and its thermal conductivity and an increase in its surface area and its melting point. Increasing the surface area of the vermiculite improves its adsorption capacity.

This improvement will be enhanced by decreasing the grains size by simple milling [6] or by sonication [19-26]. Mechanical milling is the simplest technique to reduce the grains size; it can be reduced to 40 µm [19]. However, aggressive milling can damage the vermiculite structure. The use of ultrasound seems to give better results [20].

They allow to obtain lower grains size without destroying the molecular structure of the clay.

Sonication in the presence of hydrogen peroxide for 10 hours can reduce the grains size of vermiculite to 15.5 µm. A size of 0.7 µm was obtained after 80 hours of sonication [24]. A size of 1.7 µm was obtained after 25 minutes of sonication [27]. However, the increase of the sonication time can result aggregation of vermiculite [21, 23]. A finer grains size and higher surface area were obtained by vibration milling, unfortunately this technique can lead to the destruction of the vermiculite structure [28].

The sonication is the most appropriate method for obtaining nanoparticles without denaturation of physical or chemical properties of the material. The scattering of acoustic waves in the suspension of vermiculite-liquid (distilled water, hydrogen peroxide, alcohol ...) until the imploding of formed bubbles generates physical effects leading to fragmentation of the particles and producing smaller particles [29]. Generally, treatment with low-frequency ultrasound (20-100 kHz) has a physical effect on the adsorbents without changes in chemical structures. On the contrary high frequencies (>100 kHz) lead only to chemical effects.

Grafting vermiculite by specific chemical groups was also used to improve its water decontamination capabilities. The vermiculite has been grafted by manganese oxide [30], Fernández et al grafted vermiculite by silane group [31]. This technique gives the best results when the limit to the modification by milling or sonication is achieved. Because generally, the grafting of clays was carried out on the -OH groups located at the edges of the sheets. To increase the yield of grafting, it is essential to reduce the size grains of vermiculite and increase the number of -OH groups at the edges of the sheets.

In this study, we have investigated the effect of various parameters of sonication on the decrease of the thermally exfoliated vermiculite particles size. Knowing that some liquids have a special affinity with metals [32-37]. We grafted the smaller particles of vermiculite with butyl imidazolium so as to increase their capacity for adsorption of heavy metals.

2. Materials and methods

2.1. Clay

The studied vermiculite was provided by the CMMF (Fischer company), originating from Yuh-Chiua, (millimetric plates). Thermal exfoliation was achieved after a thermal shock in an oven at 600°C for 5 min. It was washed with deionized water several times. The insoluble impurities such as sand were precipitated and the exfoliated vermiculite floats on the water surface. After washing, the vermiculite is dried in an oven at 105°C for 12 h and was then milled to obtain a powder (denoted as: raw vermiculite). Its empirical formula is found to be: $(\text{Si,Al})(\text{Mg,Fe,Ti})_2\text{O}_{10}(\text{OH,K,Ca})_2$ [38-39]. It has a cation exchange capacity of 148.6 meq/100 g.

2.2. Characterizations

2.2.1. Infrared spectrophotometry

The samples were conditioned in a pellet form by compressing under 7 tons. 1.5 mg of sample was dispersed in 300 mg of potassium bromide. The infrared spectra were carried out between 400 and 4000 cm^{-1} with a resolution of 2 cm^{-1} with 64 scans by a spectrophotometer Thermo Electron Corporation-Nicolet 380 FTIR spectrometer, brand.

2.2.2. Laser granulometry

Laser granulometry allows us to calculate the average size of the particles and determine the speciation percentage of each size. It is based on the diffraction of light according to the Fraunhofer theory. The used soil is MALVERN-INSTRUMENT brand, Mastersize type, S 22734-60 model. It allows the characterization of particles with diameters ranging from 0.02 to 2000 μm . The concentration of particles suspension must exceed 1 $\text{g}\cdot\text{L}^{-1}$ so that the obscuration ratio will be satisfactory (about 9-10%). Before measurement the sample must be homogeneous in distilled water to ensure good dispersion. If the particles are agglomerated it is imperative to use an ultrasonic container for deagglomerated.

2.2.3. Acid-base titration

The acid-base titration allows us to quantify the -OH groups of clay, which will subsequently be used for grafting of butyl imidazolium. We have used the Gran method [41]. The experiment was carried out under argon atmosphere at 18°C. Clay-water suspension (1 g in 100 ml water (THQ)) was firstly acidified at pH=3 with hydrochloric acid (0.01 M). Then the basic titration was carried out with NaOH (0.01 M) until the pH = 10 [42, 43]. The concentration of electrolyte (NaCl) was adjusted to 1 mol.L⁻¹ to remove the exchange cations that can occur between the H^+ ions and the interlayer cations of the vermiculite. The representation of the function:

$$\begin{aligned} (V_0 + V_{\text{at}} + V_0) \cdot 10^{-\text{pH}} &= f(V_0) \\ (V_0 + V_{\text{at}} + V_0) \cdot 10^{+\text{pH}} &= f(V_0) \end{aligned}$$

for acid side and for the basic side, (V_0 is the volume of clay suspension, V_{a} is the volume of added acid to achieve a pH around 3 and V_{b} is the volume of added base) allowed us to determine the equivalent points V_{eq} and V_{eq} (V_{eq} is equivalent to OH ions that neutralize the excess of H^+ ions in the suspension and $V_{\text{eq2}} - V_{\text{eq1}}$ is equivalent to OH ions which react with acceptor sites of clay) using extrapolations on the two branches of the curve Gran. The concentration of surface sites (CSSA) was calculated by the following formula:

$$\text{CSSA}(\text{mmol}\cdot\text{L}^{-1}) = \frac{[(V_{\text{eq2}} - V_{\text{eq1}})_{\text{sample}} - (V_{\text{eq2}} - V_{\text{eq1}})_{\text{blank}}] \cdot C_0}{V_0}$$

The number of active sites (NSA) was deduced from the above formula by divided the number of moles of active sites surface ($V_{\text{a}}\text{CSSA}$) to the mass of the clay (1g) in the suspension. Sites active number was given by following equation:

$$\text{NSA}(\text{mmol}\cdot\text{g}^{-1}) = [(V_{\text{eq2}} - V_{\text{eq1}})_{\text{sample}} - (V_{\text{eq2}} - V_{\text{eq1}})_{\text{blank}}] \cdot C_0$$

The representations of Gran (below) are plotted as function of V_{a} . Therefore, the second branch of acid-base titration which was used (passage of acid) pH to basic pH). We have performed the acid-base titration for the blank (100 ml of 1M NaCl solution), where: $V_{\text{eq1}} = 2.5$ ml and $V_{\text{eq2}} = 5.7$ ml (Figure 3.6a)

2.2.4. X-ray diffraction (XRD)

The XRD analyses were performed in a Bragg-Brentano geometry using a Bruker D8 Advance



Photocatalytic degradation of Methylene blue by modified porous silicon nanowires

^a Université Mouloud MAMMERI de Tizi-Ouzou

Département de physique, Nouvelle Ville, BASTIYS, Algérie

^b Centre de recherche en technologie des semiconducteurs pour l'énergétique (CRTSE)

2 Bd. Frantz Fanon, B.P. 140 Alger-7 Merveilles, Alger, Algérie

Received: 30 April 2011, accepted 26 May 2011

Abstract

In this paper, the effect of the time deposition of metal nanoparticles on the photodegradation of methylene blue is studied. The modified silicon nanowires were used as heterogeneous photocatalysts for the decomposition of methylene blue under UV light irradiation. The above reactions were monitored by UV-Vis spectrophotometer which shows the positive effect of the time deposition of metal nanoparticles on the photodegradation of methylene blue. 91% of the degradation was observed with the hydrogen terminated porous silicon nanowires and the degradation is about 95% for the modified porous silicon nanowires with Au (80nm) and the same degree was obtained with Pt (120nm) at 200 minutes of irradiation. The rate of the degradation reaches 100% at 30hours of illumination with the decorated porous silicon nanowires with Pd nanoparticles.

Keywords: silicon nanowires, chemical etching, photocatalysis, organic pollutants.

1. Introduction

Photocatalysis has attracted much interest because of its potential application in clean energy sources to degrade organic pollutants from water [1, 2]. Semiconductors are commonly used as photocatalysts because of their wide ranging bandgaps. Among them TiO₂ has been studied the most because of its exceptional stability towards chemical and photochemical corrosion. Silicon is a low cost semiconductor and environmental friendly, which dominates integrated microelectronics. Although silicon displays a small energy band gap (1.1 eV), it is not used in pollution control because its valence band is not positive enough to oxidize

pollutant species. However, earlier reports by Yoneyama et al. showed that plasmaized n-type crystalline silicon and silicon powder are good photocatalysts for formic acid

decomposition [3]. More recently, Chen et al. used one dimensional hydrogen-terminated silicon nanowires (SiNWs), prepared by oxide-assisted-growth, under ultrasonic agitation for the degradation of methyl red. Independently, Shao et al. investigated the performance of hydrogen-terminated SiNWs and noble metal-modified (Pt, Pd, Au, Rh, Ag) SiNWs substrates for the degradation of rhodamine B and oxidation of benzyl alcohol to benzoic acid under visible light irradiation. It was found that hydrogen-terminated SiNWs exhibited better photocatalytic activity than Pt-, Au-, Rh- or Ag-modified SiNWs in the degradation of rhodamine B [4]. Also, Meguid et al. reported high performance of H-SiNWs and SiNWs coated with metal (Ag, Cu) nanostructures for the photodegradation of Rhodamine B under UV and visible light irradiation. In this study, we show that the modified SiNWs by metal nanoparticles (Au, Pt) and Pd with different time's deposition have an important effect on the photodegradation of methylene blue under UV light irradiation.

I. INTRODUCTION

The Solar Chimney Power Plant System (SCPPS) is a natural driving power generating system. It can convert solar energy first into thermal energy then into kinetic energy finally into electrical power. The concept was first suggested by Günther in 1931 and again by Schlaich [1] in 1978. Subsequently a prototype of a solar chimney with a height of 194.6m and collector area of radius 122 m was constructed at Manzanares, (Spain) and data of actual working of the solar chimney was collected [1]. Schlaich reported the nominal electric power output at Manzanares to be 50 KW.

As the solar chimney, power plant systems could make significant contributions to the energy supplies of those countries where there is plenty of desert land, which is not being utilized, and sunlight available in Africa, Asia and Oceania, researchers have made many reports on this technology in the recent few decades.

Haaf et al. [2] provided fundamental investigations for the Spanish prototype system in which the energy balance, design criteria, and cost analysis were discussed. The next year, the same authors reported preliminary test results of the solar chimney power plant [3].

Zhou Xiping [4] presented experiment and simulation results of a solar chimney thermal power generating equipment in China, and based on the simulation and the specific construction costs at a specific site, the optimum combination of chimney and collector dimensions was selected for the required electric power output. Ming et al. [5] presented a thermodynamic analysis of the solar chimney power plant and advanced energy utilization degree to analyze the performance of the system, which can produce electricity day and night. Ming et al. [6] developed a comprehensive model to evaluate the performance of a solar chimney power plant system in which the effects of various parameters on the relative static pressure, driving force, power output and efficiency have been further investigated. The authors supposed the existing models are insufficient to accurately describe all the phenomena occurring in solar chimney power plant. Using the solar chimney prototype of Manzanares, as a practical example, 3D turbulent flow numerical simulation studies were performed to explore the geometrical modifications on the system performance. Results showed a good agreement with the analytical model. The control of the SCPP analytical tools such as dynamic simulation of these systems is essential. Ming et al. [7] to analyze the characteristics of heat transfer and airflow in the solar chimney power plant system with energy storage layer. Different mathematical models for the collector, the chimney and the energy storage layer were established, and the effect of solar radiation on the heat storage characteristic of the energy storage layer was analyzed. Numerical simulation results show that the heat storage decreases firstly and then increases with the increase of the solar radiation from 200W/m² to 800W/m². The static pressure decreases while the velocity increases significantly inside the system with the increase of solar radiation; the average temperature at the outlet of the chimney and the one of the energy storage layer may increase too significantly with the increase in solar

radiation. In addition, the temperature gradient of the storage medium may increase and this results in an increase of energy loss from the bottom of the energy storage layer. Pastoir et al. [8] used the FLUENT software for modeling a solar chimney power plant, geometrically similar to that of Manzanares, with the aim of carrying out an analysis and reporting details on the operating mode and the system efficiency. They confirmed that the pressure drop in the turbine and the mass flow rate, decisive elements on the system effectiveness, cannot be only given by coupling all the parts of a SCPP. Numerical results given by FLUENT software are in good agreement with the results given by a simple model proposed by the authors, which led to the conclusion that it is much easier to use it for parametric studies. Chergui et al. [9,10] simulated a thermohydrodynamic behaviour analysis of the airflow through an axisymmetric system, such as chimneys, with defined boundary conditions.

II. MODELING

a. Geometric Mode

The three-dimensional geometric model of the SCPPS was built in GAMBIT, which is a pre-processor of FLUENT. The grid was also generated in GAMBIT [11]. The collector is 240m in diameter, and the distance between its covering and ground surface is 1.7m, the chimney is 200m in height and 10m in diameter.

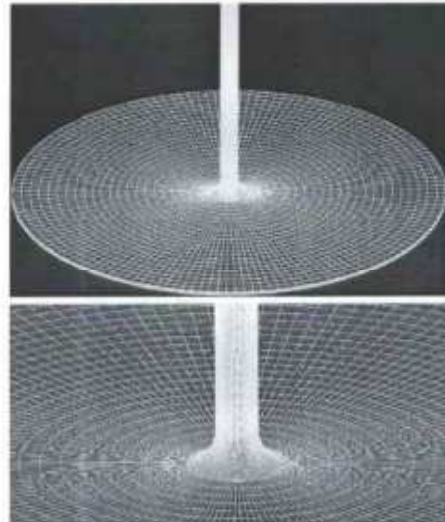


Fig. 1 Grid model of the whole system

III. MATHEMATICAL MODEL

Based on the geometrical dimensions of the prototype Manzanares, a physical model for a solar chimney power plant was built. The basic equations including the models were numerically solved with the help of the commercial

Nd:Yag Laser Ablation of Recuperated and Industrial Aluminum Alloys. Study of Threshold Ablation

Department of Material Sciences, Univ. of Larbi Ben Mvuli, Ouh El-Bouaghi (Algeria)
Department of physics, Univ. of Mila (Algeria)
 Email: khalil_teb@yahoo.fr

Received: 29 September 2013, accepted: 27 December 2013

Abstract

In this work, we used a nanosecond Nd: Yag laser ($\lambda = 532 \text{ nm}$) with a pulse duration of 1.5 ns, and an energy of 30 mJ and, therefore, we studied the threshold ablation of industrial aluminum alloy. The composition of the recuperated aluminum (96 mass) is (72.02 Al, Si 13.05, 6.34 Zn, 4.28 O, 2.08 Mg, 1.75 Cu, 0.48 Ni) and the industrial aluminum is (63.10 Al, 1.66 Si, 4.12 Fe, 2.17 O, 1.20 Mg, 5.47 Cu, 1.74 Mn, 1.79 Pb). For nanosecond lasers, the primary energy is lost by thermal diffusion in the irradiated target, because there is enough time to convert optical energy into thermal energy and heat spread. Fusion and / or evaporation may take place if the surface temperature exceeds the critical point when the energy of radiation is above the ablation threshold. The results shows that the threshold ablation of the recuperated aluminum is lower than that of the aluminum industry, it is about 5 J.cm^{-2} for the recovered aluminum and 10 J.cm^{-2} for the industrial aluminum. The threshold ablation is shifted towards the low values when the number of pulses increases.

Keywords: laser-matter interaction; Laser ablation; Aluminum Alloys

Introduction

Nanosecond laser pulses may produce both thermal melting (as femtosecond and picosecond pulses) or ultrafast nonthermal melting depending on the pulse fluence. This was demonstrated experimentally by Sokolowski-Tinten et al. [1], who found that the transformation of GaAs into its liquid state occurs within several tens of picoseconds at fluences close to the melt threshold due to thermal melting under highly superheated conditions [1] or within several hundred femtoseconds via carrier excitation [2] for very high fluences. The processes occurring under high energetic fs pulse irradiation could be described more precisely with the help of the theoretical work of Stampfli and Bernemann [3]. The joining of very small metallic workpieces (10- 200 nm) causes problems that often cannot be solved by conventional methods. In this case, soft soldering by means of laser radiation is sufficient. During soldering, laser light is used to melt an additional material with a considerably lower melting temperature than that of the material of the component to be joined. In order to understand this phenomenon, metallic alloys (Al, Cu, Zn, ...) are irradiated by a Nd:Yag pulsed laser. The chemical distribution of elements can be influenced, in particular the oxygen [4] as well as the microhardness [5]. The irradiated area is studied by the profilometer instrument in order to measure the ablation depth.

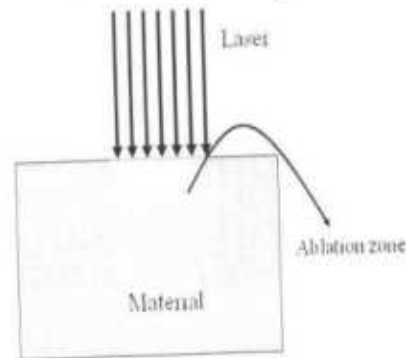


Fig.1. Schematic representation of ablation procedure

Experimental

The samples studied are two materials, industrial and recuperated aluminum alloys. They were polished mechanically and cleaned. The chemical composition of each type is obtained by X-ray analysis[1]. The chemical composition of recycled aluminum alloy is Al(72.02 wt %), Si(13.05 wt %), Zn(6.34 wt %), O(4.28 wt %), Mg(2.08 wt %), Cu(1.75 wt %), and Ni(0.48 wt %). The chemical composition of industrial aluminum alloy is Al(63.10 wt %), Cu(5.47 wt %), Fe(4.12 wt %), O(2.71 wt %), Mn(1.74 wt %), Si(1.66 wt %), and Mg(1.20 wt %). A

Numerical simulation of the pressuremeter test

¹Laboratory FIMAS, technology department, faculty of sciences and technology, Bechar university

²Laboratory of Semiconductor Devices Physics, sciences department, faculty of science and technology, Bechar university

Abstract – The pressuremeter is an in-situ test, based on the application of static loading by introducing a cylindrical probe into a borehole, this test having essential objective to determine the relation-ship between the pressure applied to the ground and the displacement of the borehole wall. In our study, we present a literature search on this test and the essential detail of the theoretical and analytical study of the expansion of a cylindrical cavity. A numerical modeling of the pressuremeter test is possible and can procure the information sought.

Keywords: pressuremeter test, finite element, cylindrical cavity, displacement, deformation.

I. Introduction

In most of the problems encountered by geotechnical engineers the precise evaluation of parameters of soil behavior is required for analysis of deformation and strength of these soils and induced shifts in the structures, many methods to estimate the properties of soils are currently used in situ or in the laboratory.

Pressuremeter, invented by Louis Menard (1955 and 1959), which falls into the category of tests in - situ became a fixture massively used today in foundation projects [2], [3]. The construction and operation of the test are coded by a standard specific to each country that provides the state of the practice. Due to its simplicity of execution and speed of measures, the pressuremeter test has several advantages that are extremely interesting to determine such parameters that are used to the foundation design and calculation of settlements. In many situations, it happens that the test is not practicable because of the terrain characteristics. Modeling digital test is possible and can provide the information sought [1]. Our study concerns the finite element modeling of the pressuremeter test. It presents a numerical simulation results using the code Plaxis in 2D and local computation (Symef) in 1D.

II. The pressuremeter test

II.1. Pressuremeter theory

The in situ tests include, among others, penetration tests, shearing, expansion and seismic testing [4], [5], expansion and seismic testing [4], [5]. Their use is almost systematically for any work major in civil engineering. But their speed advantage adds the variable

quality of these tests with the analysis mainly based on empirical considerations lacking theoretical foundations [4] - [6].

Due to its simplicity and speed enforcement measures pressuremeter test has several advantages that do extremely interesting to determine and deduct some soil parameters [5], [7], [8].

The standard pairs of pressuremeter test consists of three components, Tri-cellular probe, the pressure controller - volume (CPV) and tubes connection. (Figure 1)



Figure 1. Pressuremeter test devices

The pressuremeter test is to achieve horizontal expansion of a cylindrical probe in a borehole at a given depth until the rupture test uses the mechanisms of resistance of the soil presence of horizontal stress resulting. Usually the application of a load vertical [5], [7].

II.2. Theoretical study of the expansion of a cavity

The deformation of a ground under the expansion of membrane is represented as a pressuremeter expanding a cylindrical cavity [1], [5], [8] - [10].

Numerical Simulation of the Flows around two Cylinders of Different Diameters

¹ Département des sciences de la matière, Faculté des sciences, Université 20 Aout 1955 - Skikda, Route El-Hadadek, B.P. 26, Skikda, 21000, Algérie. (Corresponding E-mail: maïma2003@yahoo.fr, foudmaia@hotmail.com).

² Faculté de technologie, Université 20 Aout 1955 - Skikda, Route El-Hadadek, BP 26, Skikda, 21000, Algérie

Résumé – Le présent travail consiste à étudier numériquement le phénomène de l'écoulement d'un fluide incompressible bidimensionnel en régime laminaire autour de deux cylindres circulaires de différents diamètres en tandem. Cinq cas d'écoulement selon différents diamètres hydrauliques ont été simulés. Le diamètre D du premier cylindre est fixe, alors que le diamètre du deuxième cylindre changera entre $D/4$ et $4D$, la distance entre les deux cylindres est fixée à $L=4D$. À partir de cette simulation, les résultats démontrent clairement l'influence du diamètre sur la structure de l'écoulement, notamment dans la zone d'interférence et la zone du sillage en aval du cylindre. Nous avons visualisé le phénomène de Von-Karman, le comportement des particules fluides est caractérisé par une destruction brusque des tourbillons en aval du sillage. Pour fournir une meilleure compréhension de la dynamique des vortex, la distribution de la pression et de la vitesse en fonction du nombre de Reynolds, Re sont présentées et discutées.

Mots clés : Cylindres, Sillage, Vortex de Von-Karman, CFD.

Abstract – This work consists to study numerically the phenomena of two-dimensional incompressible laminar flows around two tandem circular cylinders of various diameters. Five cases of flow with various hydraulic diameters are simulated. The first cylinder has a fixed diameter D , while the diameter of the second will change between $D/4$ and $4D$, the distance between cylinders is fixed at $L=4D$. From these simulations, particularly in the area of interference and downstream wake area of the cylinder, the results demonstrate clearly the influence of the diameter on the flow structure. We visualized the phenomenon of Von Karman, the behavior of fluid particles is characterized by sudden destruction of the vortices downstream of the wake. To provide a better understanding of the dynamics of vortex, the pressure distribution contours, velocities depending on the diameter and the Reynolds number, Re are presented and discussed.

Keywords: Cylinders, Wake, Von-Karman Vortex, CFD.

1. Introduction

Les écoulements du fluide autour des obstacles cylindriques ont trouvé une large application dans divers domaines de l'ingénierie par exemple :

- Les piliers des ponts ;
- Les structures des plates - formes pétrolières soumises aux effets du courant de la rivière ou de la mer ;
- Les types de refroidissement dans les échangeurs et les radiateurs ;
- Les structures physiques soumises à l'action du vent, tels que les bâtiments et les câbles de soutien (subvention) ;
- Les aubes d'une turbine industrielle qui entraînent les bateaux et les obstacles cylindriques et carrés ;
- Les pipelines ;
- Les structures maritimes...etc.

Le choix de l'étude des obstacles cylindriques résulte de leurs simplicités géométriques permettant d'avoir des facilités expérimentales et numériques. Avec le développement technologique actuel, le domaine des écoulements autour des obstacles a connu un renouvellement important. Plusieurs travaux de recherche ont été réalisés pour modéliser ces écoulements. Les travaux précédents, concernant l'écoulement autour de deux cylindres circulaires, identifient les différents régimes d'interférences et sont basés principalement sur une visualisation expérimentale de l'écoulement. Les investigations numériques telles que celles d'Igarashi (1981), Zdravkovich (1987) et Sumner et al. (2000) ont proposé des classifications de ces régimes. La classification d'Igarashi (1981) est fondée sur des arrangements tandems, similaires à ce cas d'étude. Selon cette classification, six différents régimes d'interférence peuvent être identifiés : (a) les couches de cisaillement

qui proviennent de la séparation sur la surface du cylindre ascendant n'est pas rattaché à la surface du cylindre descendant ; (b) les couches de cisaillement qui venaient du cylindre ascendant sont capturées par le descendant, mais il n'y a aucune formation de vortex dans l'espace entre corps ; (c) des vortex symétriques sont formés entre les cylindres ; (d) les vortex symétriques deviennent instables et commencent à se développer dans la proximité du cylindre descendant ; (e) le cisaillement provenant du cylindre ascendant s'enroule très près du cylindre descendant ; et (f) les extrémités proches de la région de sillage (région de formation) devant le corps descendant et des vortex sont lâchées dans la région d'espace d'une manière régulière.

Les résultats expérimentaux ont motivé un certain nombre d'études numériques en vue de la reproduction des régimes d'interférence et la réalisation d'un meilleur arrangement de l'interférence d'écoulement. Par exemple, Slaouti et Stansby (1992) ont utilisé une méthode discrète de vortex pour effectuer des simulations bidimensionnelles, alors que Moneghini et al. (2001) ont suivi une investigation bidimensionnelle en éléments finis. Les deux études montrent un bon accord avec les données expérimentales, dans le sens où les régimes d'interférence sont identifiés.

S. Bruno et al. (2010) ont effectué des simulations numériques des états possibles dans les écoulements autour de deux cylindres circulaires en tandem. La relation de l'instabilité secondaire (tri-dimensionnelle) a été étudiée lors de la transition entre les deux régimes. Un très bon accord est prouvé entre la pratique et les résultats proposés dans la littérature.

M. Mahbub Alam et J.P. Meyer (2011) se sont intéressés à l'effet du nombre de Reynolds sur les forces induites par l'écoulement autour de deux cylindres en tandem. L'effet du nombre de Reynolds, Re sur la fluctuante portance, la force de traînée et les nombres de Strouhal, St du cylindre aval et des deux cylindres en tandem sont étudiés expérimentalement.

R.d. Rajaona et al (2011) ont présenté une étude expérimentale de l'écoulement autour de deux cylindres en tandem. Suivant un mouvement uniformément accéléré et décéléré dans une cuve de visualisation, les lignes de la vague présente une zone de turbulence qui s'effondre un peu avant la phase de décélération.

K. Fallah et al. (2011) ont fait une simulation numérique de l'écoulement autour de deux cylindres circulaires rotatifs en arrangement décalés, basée sur la méthode Lattice Boltzmann par approche-temps de relaxation multiple pour faible nombre de Reynolds, Re . Les résultats obtenus montrent que le coefficient de traînée du cylindre principal a une faible tendance par rapport à l'angle d'incidence et au-delà de certaines augmentations d'angle progressivement.

L'étude de l'écoulement autour de deux cylindres peut alors donner des indications sur une meilleure conception de la dynamique des tourbillons et les forces appliquées sur un ensemble plus complexe.

Le présent travail a pour objectif d'avoir une compréhension de la dynamique du champ d'écoulement et de sa structure laminaire autour de deux cylindres, à partir d'une simulation numérique bidimensionnelle instationnaire. Des tourbillons connus sous le nom vortex de Von Karman se transforment entre et autour des deux cylindres.

II. Géométrie & Modèle Mathématique

Les deux cylindres de différents diamètres sont modélisés en 2-D par un cercle de rayon $R=0.05$ m, situé dans le domaine représenté par un rectangle avec une entrée et une sortie où l'axe de rotation des cylindres est perpendiculaire au sens de l'écoulement. (Cf. la figure 1). Pendant la résolution du problème, on suppose que les cylindres soient en arrangements tandems avec un diamètre fixe du premier cylindre, D et le diamètre du deuxième cylindre prendra les valeurs suivantes $D/4$, $D/2$, D , $2D$, $4D$. La distance, L entre les centres des deux cylindres est constante $L=4D$.

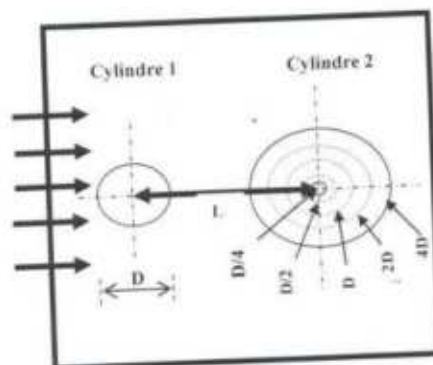


Figure 1. Représentation schématique du problème étudié

Le mouvement des fluides est gouverné par les équations de la conservation de masse et de la quantité de mouvement. L'équation de continuité d'un écoulement incompressible est donnée par :

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = 0 \quad (1)$$

Les équations de Navier-Stokes bidimensionnelles d'un écoulement transitoire, laminaire et incompressible sous forme adimensionnelle sont :

$$\frac{\partial u_i}{\partial t} + \frac{\partial (u_i u_j)}{\partial x_j} = -\frac{\partial p}{\partial x_i} + \frac{1}{Re} \frac{\partial^2 u_i}{\partial x_j \partial x_j} \quad (2)$$

où u_i est la composante de vitesse le long de x_i coordonnées de direction et Re est le nombre Reynolds. Pour un système bidimensionnel, l'équation (2) représente les composantes suivant x et y des équations

Dynamics contact between two Deformable Elastic Bodies

Laboratory FIMAS University of Bechar

Abstract – The flexibility method has been applied successfully to the contact problems modeling with friction between two deformable elastic bodies for the static cases. This article presents the extension of this method to dynamic problems. The main objective of the suggested work is to develop an algorithm based on the non-smooth contact dynamic method to study the phenomenon and dynamic friction contact between two deformable elastic bodies and the use of the flexibility method. For friction, Coulomb's law is considered. The results obtained are encouraging and will undoubtedly pave the way for other aspects and areas of research in this area.

Keywords: Contact, friction, deformable bodies, finite element method, flexibility method, NSCD method

1. Introduction

The problems of contact and friction present several inherent difficulties in their non-linear, irregular and multi-scale, making their analytical solution often impossible.

The impossibility to calculate analytically solutions to problems of contact, on the one hand, and development of methods and computational tools, on the other hand, have led to the approximate resolution of these problems. An abundant literature has been devoted to the numerical formulations, analyses, approximations and resolutions of the contact problems, since the beginning of the Seventies [1][2][3][4][5][6].

The main objective of our work is to develop an algorithm based on the non-smooth contact dynamics method to study the dynamics contact and friction phenomenon between two deformable bodies by using the flexibility method. For friction, Coulomb's law is considered. We limit the present study at the contact plane problems with friction generated by elastic strain.

2. Unilateral contact condition

Let us consider a contactor A of contour Γ_A which comes into contact with an obstacle B of contour Γ_B . To study the kinematics of the contact of A , we should only consider a point P on the contour Γ_A , at the vicinity of the obstacle B . The orthogonal projection of P on the surface Γ_B of the obstacle B defines a point P' , which will be the origin of the local frame related to the obstacle. The normal coordinate x_n of the point P in the

local frame is equal to $\overline{P'P}$. The unit vector $\{n\}$, oriented towards the outside of the obstacle, is normal to the surface at P' . The two unit vectors $\{t_1\}$ and $\{t_2\}$, orthogonal to $\{n\}$, define a plan tangent to the surface of the obstacle at the point P' (figure 1).

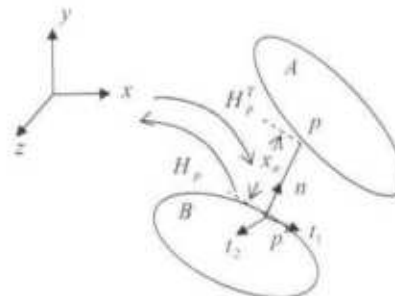


Figure 1: local contact frame

The unilateral contact conditions are expressed in the local frame as follows:

a) - *Impenetrability:*

$$x_n \geq 0 \quad (1)$$

When this condition is checked, we have two possible cases:

b) - *Static State of contact (non-adhesion):*

Synthesis and characterization of phosphors doped with various rare earths

Corresponding author: hcsaravadasubbaraj@gmail.com

Abstract – A blue emission powder phosphor, Sr_2CeO_4 , was prepared using solid-state reaction technique. The powder fired at $1100^\circ C$ for 3 hours gave good luminescence yield. The emission peak of this phosphor is at 470 nm. To use this phosphor in a tricolor lamp effectively, studies have been carried out to see the effect of rare earth dopants on the luminescence spectra of this phosphor. The effect of the dopants on phosphor efficiency has been evaluated and the effect of using these dopants and material characterization of these phosphors using optical and structural techniques are discussed in this paper.

Keywords: solid state reaction, emission

I. Introduction

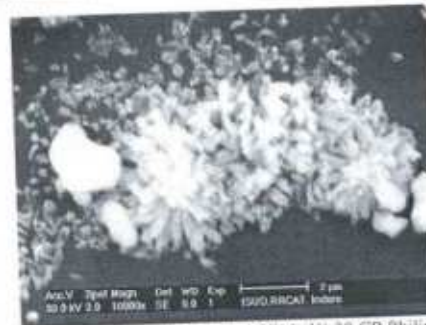
In recent years the Plasma Display Panels (PDP) are replacing the conventional color televisions. In phosphor area today top priority is to replace the high performance expensive rare earth activated phosphors with cheaper equivalent materials. This essentially means replacing the rare earth ions with transition metal ions or post transition ions[1]. The advances in the optical spectroscopy of solids, especially those of transition metal ions help to evolve research on phosphor and solid-state luminescence. In 1960s, efficient rare earth activated phosphors were developed for use in color televisions (Tb^{3+} -green, Eu^{3+} -red and Dy^{3+} -yellow) and in 1970 tricolor lamp was introduced. Blue emission from Eu^{2+} , red emission from Eu^{3+} and green emission from Ce^{3+} - Tb^{3+} pair was used in tricolor lamps. At present a combination of halo phosphate and tri-band phosphor blend is commonly used in many lamps as a compromise between performance, phosphor cost and the lamp making cost[2,3]. However to improve the performance of the already existing low cost phosphors require better materials. One such material being strontium cerate, phosphors based on this material were synthesized and characterized using photoluminescence, XRD and Scanning Electron Microscope(SEM) techniques.

II. EXPERIMENTAL

Pure rare earth doped Sr_2CeO_4 phosphor samples were prepared by the conventional solid state reaction method[4]. Strontium carbonate $SrCO_3$ and Cerium oxide CeO_2 (high purity chemicals) were used as starting materials for preparation of blue phosphor Sr_2CeO_4 and

added them as a stoichiometric proportions of Sr : Ce as 2:1.

compound obtained was grinded into a fine powder and fired at $1100^\circ C$ for 3 hours in a muffle furnace. The photoluminescence spectra were recorded at room temperature using Spectrofluorophotometer (SHIMADZU, RF-5301 PC). XRD (Rigaku-D)max 2500



make with Cu K α radiation) and SEM (XL30 CP Philips) [5] studies are done on the prepared samples for the microstructure evaluation.

Figure 1. SEM of pure Sr_2CeO_4 phosphor

III. Results and discussion

Tables Figure.1 shows the SEM micrograph of the pure phosphor. The microstructure appears to consist of ellipsoidal flakes type particulates having an average basal diameter of ~450 nm and a length of 1.4 μm . In order to determine the crystal structure, phase purity, chemical nature and homogeneity of the Sr_2CeO_4

Radiation Heat Transfer in ZrO₂-8% Y₂O₃ Electrolyte Of SOFC Fuel Cell

S. P. Zou

1 Laboratoire d'Etude des Systèmes Energétiques Industriels (LESEI) Universités de Batna, Algérie
2 Unité de Recherche Appliquée en Energies Renouvelables (URAER)

Centre de Développement des Energies Renouvelables (CDER), Ghardaia, Algérie
3CEMHTI UPR CNRS 3079, 1D avenue de la Recherche Scientifique, 45071, Orléans cedex 02, France
Corresponding author: abdesmad.sou@gmail.com

Abstract – SOFC operating temperature is relatively high. This last one is imposed by the electrolyte mode operating which becomes ionic conducting at these high temperatures (1000-1300K). The exact contribution of the thermal radiation to the total heat balance is not well known. The thermal radiation can play a very significant role in the thermal combination of transfer through the various SOFC structure layers. The thermal radiation utilizes another mechanism which is the electromagnetic radiation. In this case, atoms, molecules and free electrons of the SOFC components can lose a part of their kinetic energy by emission of an electromagnetic radiation received by the components. Electrolyte and electrodes are considered as semi-transparent medium. They can absorb, disperse and emit the thermal radiation. In this work, we study the temperature gradient following a conduction-radiation model in the SOFC electrolyte. The approximation of Schuster-Schwarzschild is used to evaluate the Radiatif heat flow through the electrolyte SOFCs. The results obtained by the finite volume method show the effect of spectral parameters and optical dimensions on the spatial distribution of temperature in SOFC electrolyte.

Keywords: Electrolyte SOFC, temperature, radiation, Optical dimensions.

I. Introduction

The fuel cell SOFC is a technology solutions the most effective to control pollution resulting from the modern world's dependence on fossil fuels. The SOFC is a cell operating at high temperature. Electrolytes for fuel cells SOFCs are usually zirconia doped with yttrium, it was used with a thickness of 100 to 200µm, if the maximum conductivity is achieved with a 8%percentage of yttrium. Materials are cheap and very stable although it is an ionic conductors of oxygen ions O²⁻ to high operating temperatures. Therefore the heating system has ensured the end of ionic conductivity is the approach of the cell. SOFC systems couple to different modes of heat transfer. Operating at a temperature of 600-1000 ° C, the thermal radiation is involved in the combination of heat transfer through the electrolyte of SOFC fuel cell. [1], [8] and [9]

II. Modeling of Radiatif Transfer in SOFC

II.1. Modeled from the equation of Radiatif Heat Transfer

For a semi transparent, gray, absorbing, and disseminating emissivity and local thermodynamic equilibrium. Radiatif transfer is described in each area of the SOFC by equation "Eq. 1" [6] and [7]

$$\frac{dI_{\lambda}}{d\tau_{\lambda}} = -I_{\lambda} + (1-\omega_{\lambda})I_{\lambda} + \frac{\omega_{\lambda}}{4\pi} \int_{\Omega} I(S, \lambda) \Phi(S, \lambda) d\Omega \quad (1)$$

The radiative boundary condition of a gray area in transmission and diffuse reflection as is expressed by "Eq.2"

$$I_{\lambda}(\hat{i}) = \frac{\epsilon_{\lambda} \sigma T_{\lambda}^4}{\pi} + \frac{1-\epsilon_{\lambda}}{\pi} \int_{\Omega} I_{\lambda}(\hat{i}) |\hat{i} \cdot \hat{n}| d\Omega \quad (2)$$

The heat transfer by radiation is modeled using the radiative transfer equation RTE for determining the radiant flux by integrating the field luminance in all directions and all wavelengths. The ETR, taken in its complex form has no analytical solution. It appears necessary to use a numerical method to solve the equation. In practical terms, one of the main difficulties in the numerical solution of the ETR lies in the calculation of a function of seven variables three position coordinates, two angular coordinates, variable temporal and spectral parameters. Moreover, the RSD being type integro-differential, the other major problem to solve comes from the integral term and the no homogeneous term which takes the temperature and generally requires coupling of the ETR to the conservation equation energy.

PHASE STRUCTURE, MICROSTRUCTURE AND DIELECTRICS PROPERTIES OF NEW CERAMIC MATERIAL NEAR THE MORPHOTROPIC PHASE BOUNDARY

125

¹University of BISKRA (0700), ALGERIA, ²University of QUARGULA, ALGERIA

ABSTRACT

This article investigates the sintering temperature effect on microstructure and dielectric properties of a new ceramic material: $\text{Pb}_{0.96}\text{Sm}_{0.02}\text{Nd}_{0.02}(\text{Zr}_{0.55}\text{Ti}_{0.45})_{1-2x}\text{x}(\text{Y}_{2/3}\text{Mn}_{1/3})_x(\text{Y}_{2/3}\text{Ni}_{1/3})_x\text{O}_3$ of perovskite structure, such that $x = [0.01, 0.03, 0.05, 0.07, 0.1]$. In order to study well this system and delimiting the composition close to the morphotropic phase boundary (FMB) in which the tetragonal and rhombohedral phases coexist, we varied the dopants ratio for that various compositions were prepared by conventional solid state process. A thermal treatment was applied to these compositions at different temperatures (1100, 1150, 1180°C), in order to optimize the sintering temperature where the density of ceramics is maximum. We present the preparation and the different stages of the formation of the solid solution. Then we will detail the different techniques of analysis applied to this compound, we begin first by x-ray diffraction, in the following, analysis by scanning electron microscopy (SEM) and finally the study of physical properties (dielectrics). These studies help us to accumulate as much information on these materials.

KEYWORDS: Ceramic; Microstructure; dielectrics.

1 INTRODUCTION

The lead zirconate titanate materials $\text{Pb}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3$ (PZT) of a perovskite-type represented by the formula ABO_3 , have been extensively used for the piezoelectric applications such as capacitors, sensors, actuators and other high piezoelectric devices. In the PZT materials, the dielectric, the ferroelectric, and the electromechanical characteristics have been modified when several substitutions were being done on the A- or/and B-sites, and also by varying the ratio of Zr/Ti [1-2]. Since the discovery of the behavior of the relaxor in $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ [3], $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ [4], and $\text{Pb}(\text{Ni}_{1/3}\text{Nb}_{2/3})\text{O}_3$ [5], the studies of the ferroelectrics of the relaxor with $\text{Pb}(\text{B}^{1/3}\text{B}^{2/3})\text{O}_3$ -type perovskites have attracted much attention because of their excellent dielectric and electromechanical properties.

In a conventionally prepared PZT ceramics with compositions near the morphotropic phase boundary (MPB), the tetragonal, and the rhombohedral phases always coexist [5]. The width and the properties of the Coexistence region are associated with the occurrence of the compositional fluctuation of Ti^{4+} and Zr^{4+} ions in the PZT materials [6]. The compositional fluctuation, which is due to a non uniform distribution of Titanium and Zirconium ions, leads to a broad variation in the dielectric constant accompanied with a Zirconium concentration in the MPB region [7]. The width of this coexistence region and the

structure of the PZT ceramics were greatly affected by the firing time and temperature [8]. The selection of dopants or substitutions to tailor some physical properties of PZT was based on many factors which are the following: 1) charge neutrality, 2) tolerance factors, 3) ionic radius, and 4) solubility/miscibility. The substitution of lanthanides and the different doped material at Pb-sites and Zirconium at the Ti-sites with a different ratio of Zr/Ti have produced many solid solutions with interesting properties for wide industrial applications. The dopant can improve the sintering process, produce ceramics with high specific mass, reduce the lead oxide evaporation, and prevent the formation of second phases [9].

Besides, dopants also engender the substitution of A or B cations of ABO_3 perovskite structure. Ions of higher valence, such as Nb^{5+} , cause vacancies in the A cation called lead vacancies; and the lower valence ions, as Fe^{3+} , result in vacancies [10]. The additives that increase the amount of oxygen vacancies cause a small reduction of the unit cell dimensions, increase the internal stress; and, consequently, increase the coercitive field.

Therefore, the additives that accept electrons are called hardener additives. The material doped with iron presents lower dielectric constant, and loses constant when the mechanic quality factor is increase [11]. Therefore, according to [12] the vacancies of oxygen generated by the addition of iron are suppressed when there are niobium and

iron equimolar compositions. In a polycrystalline system, dielectric and piezoelectric properties are dependent on both intrinsic and extrinsic mechanisms [13,14]. Intrinsic contributions are from the relative ion or cation shift that protects the ferroelectric crystal structure.

In this study, $\text{Pb}_{0.96}\text{Sm}_{0.02}\text{Nd}_{0.02}[(\text{Zr}_{0.55}\text{Ti}_{0.45})_{1-2x}(\text{Y}_2/3\text{Mo}_{1/3})_x(\text{Y}_2/3\text{Ni}_{1/3})_x]\text{O}_3$ piezoelectric ceramics were investigated near the MPB by varying the ratio of dopant. The purpose of this work was to study the phase structure, the dielectric properties of these ceramics near the MPB in detail.

2 EXPERIMENTAL PROCEDURE

The polycrystalline samples with a general compositional formula $\text{Pb}_{0.96}\text{Sm}_{0.02}\text{Nd}_{0.02}[(\text{Zr}_{0.55}\text{Ti}_{0.45})_{1-2x}(\text{Y}_2/3\text{Mo}_{1/3})_x(\text{Y}_2/3\text{Ni}_{1/3})_x]\text{O}_3$, such that $x = \{0.01, 0.03, 0.05, 0.07, 0.1\}$ were being prepared by a conventional dry ceramic method to form the solid solution. The reagent grade oxide of Pb_3O_4 , ZrO_2 , TiO_2 , NiO , Y_2O_3 , Sm_2O_3 , MoO_3 and Nd_2O_3 were used as starting materials in a stoichiometric ratio.

The powders were, first, ball milled for six hours; and then, calcined at 800°C for two hours at the following heating and cooling rates: $2^\circ\text{C}/\text{min}$. After calcination, the mixture was, first, ball milled for six hours; and then, after drying, the powders were pressed into discs of a diameter of thirteen millimeters and of a thickness of about one millimeter. The compacted discs were being sintered at a temperature ranging from 1100°C - 1180°C for two hours in air. To prevent PbO volatilization from the pellets, a PbO atmosphere was controlled with a bed of PbZrO_3 powder placed in the vicinity of the pellets.

The X-ray diffraction (XRD, Siemens D500) was used to determine the crystalline phases present in the powder. The compositions of PZT phases were identified by the analysis of the peaks $\{100\}_T$, $\{200\}_R$, $\{200\}_T$ in the twenty range 43° - 46° . The $\text{Cu K}\alpha$ radiation with a step of 0.01° was used. The bulk densities of the sintered ceramics were being measured by the Archimedes method. The micrographs of the fractured samples were taken on a JEOL scanning electron microscope. The average grain size of the samples was determined from the micrographs by the linear intercept technique. To investigate the electrical properties, the electrodes were made by applying a silver paste on the two major faces of the sintered disks followed by a heat treatment at 750°C for thirty minutes. The dielectric constant ϵ was calculated from the capacitance at a frequency of one kHz. It was measured at temperatures ranging from 25°C to 400°C with a heating rate of one $5^\circ\text{C}/\text{minute}$ by using an impedance analyzer (HP 4192A, Hewlett-Packard).

3 RESULTANTS AND DISCUSSIONS

Sintered powders were examined by X-ray diffractometry to ensure phase purity and to identify the phases and lattice constants of the materials. The co-existence of tetragonal

and rhombohedral phases near the morphotropic phase boundary implies the existence of compositional fluctuation. The compositional fluctuation can in principle be determined from the width of the X-ray diffraction peaks. A morphotropic phase boundary « co-existence region » was observed [shown by duplicated (200) peaks]. It has been reported in the literature [5,6] that the splitting of these reflections into triplets takes place in conventionally prepared ceramics due to compositional fluctuations leading to the co-existence of the tetragonal and rhombohedral phases (T+R). The X-ray diffraction patterns of $\text{Pb}_{0.96}\text{Sm}_{0.02}\text{Nd}_{0.02}[(\text{Zr}_{0.55}\text{Ti}_{0.45})_{1-2x}(\text{Y}_2/3\text{Mo}_{1/3})_x(\text{Y}_2/3\text{Ni}_{1/3})_x]\text{O}_3$ materials ($x = 0.01, 0.03, 0.05, 0.07$ and 0.1), represented by samples A1, A2, A3, A4 and A5 are given in figure 1.

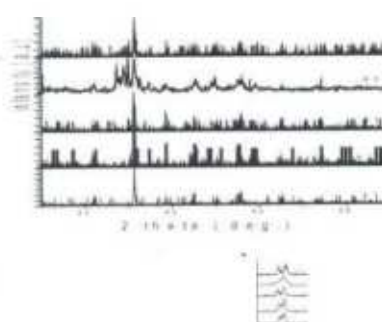


Figure 1: XRD patterns obtained by $\text{Pb}_{0.96}\text{Sm}_{0.02}\text{Nd}_{0.02}[(\text{Zr}_{0.55}\text{Ti}_{0.45})_{1-2x}(\text{Y}_2/3\text{Mo}_{1/3})_x(\text{Y}_2/3\text{Ni}_{1/3})_x]\text{O}_3$ after crushing the pellets at 1180°C for 2 h: (A1) $x=0.01$; (A2) $x=0.03$; (A3) $x=0.05$; (A4) $x=0.07$; (A5) $x=0.1$.

Triplet peaks around $2\theta = 45^\circ$ indicate that the specimen consists of a mixture of tetragonal and rhombohedral phases, so the morphotropic phase boundary (MPB) of solid solution is located at $x = x = 0.07$ (A4 sample) and at $x = 0.01$ (A1 sample).

It is shown that the tetragonal structure can be formed up to $x_T < 44$. While the rhombohedral structure becomes stabilized for $x_R > 45$, however, at $x = 44-45$ tetragonal and rhombohedral phases coexist. The width $\Delta x = x_T - x_R$ of the co-existence region from our work is close to that obtained by others [15, 16, 17].

The variation of the lattice parameters as a function of sintering temperature could be explained by the enhancement of cation diffusion, and consequently by the homogenization of the micro composition. The variation in the lattice parameters of the identified phase composition shows that the values of the c/a ratio have decreased.

Figure 2 shows the lattice parameters variations for the composition $\text{Pb}_{0.96}\text{Sm}_{0.02}\text{Nd}_{0.02}[(\text{Zr}_{0.55}\text{Ti}_{0.45})_{1-0.02,0.01}(\text{Y}_2/3\text{Mo}_{1/3})_{0.01}(\text{Y}_2/3\text{Ni}_{1/3})_x]\text{O}_3$ as a function

DISTRIBUTION OF THE RARE EARTH METALS CONCENTRATIONS IN THE SEDIMENTS OF ALGIERS BAY AND SURKOUF AREA

DISTRIBUTION OF THE RARE EARTH METALS CONCENTRATIONS IN THE SEDIMENTS OF ALGIERS BAY AND SURKOUF AREA

F. Kheltraoui¹ and M. E. A. Benamar^{2,3}

¹ Faculté des Sciences, Université Ziane Achour, B.P. 3117, Djelfa 17000, Algeria.

² Faculté des Mathématiques et des Sciences de la Matière, Université Kasdi Merbah Ouargla, Ouargla 30000, Algeria

³ Ecole Normale Supérieure, Bachir El Ibrahimy B.P. 92, Kouba - Alger 16050, Algeria.

⁴ Sous Direction de la Police Scientifique et Technique/DPJ/DGSN, Châteauneuf - Alger, Algeria.

⁵ Centre de Recherche Nucléaire de Draria, B.P. 43 Sebala - Draria - Alger, Algeria.

⁶ Laboratoire LRPPS, Faculté des Mathématiques et des Sciences de la Matière, Université Kasdi Merbah Ouargla, Ouargla 30000, Algeria

⁷ Laboratoire Physique Fondamentale et Appliquée, Université Saad Dahlab Blida, Blida 09000, Algeria.

Email : benamardz64dz@yahoo.fr

Abstract: Sediments were collected at 33 stations from Algiers Bay to determine potential sources of pollution. The analyses were made with Phillips X-ray fluorescence (XRF) equipment. The results give information about the level of concentrations for La, Ce, Er and Tb. Except for lanthanum and erbium which present a particular distribution (unrelated to the sedimentary facies), the distribution of the different rare earth metals is irregular and depends on the bay morphology. Terbium, erbium and cerium present high concentrations in the vases. The level of pollution by rare earth metals of the bottom sediments in Algiers Bay has been shown to be significant compared with that of Surkouf, considered to be a region with low anthropogenic activity.

Keywords: Sediments, rare earths, metals, XRF, Algiers Bay.

1. Introduction

The Algerian littoral, with its 1200 kilometers, is characterized by a great diversity of physical and natural environments, with large plains and littoral plates (Mitidja, hills of the Sahel...) and more or less high reliefs, giving rise to a multitude of bays. With these last, the main portuatives cities and sites of Algeria, are associated.

The zone of study (3°02' E-3°20' E and 36°40' N-36°50' N) belongs to the Algiers coast which extends on 80 kilometers length with a broad bay overhung by the town of Algiers. It leans in the South on the vast plain of Mitidja with a rather regular and not very significant planimetry and opening in North on the Mediterranean.

The area is made up in majority by quaternary alluvia, sands, sandstones and limestones of reef, pliocenes sandy clay and sandy limestones deposits, marls and conglomerates, and miocenes carbonated marls limestones, clays and sandstones. The limits of bay, coinciding with Cap Matifou in the East and the peak of El Kettani in the West, are formed by metamorphic rocks like phyllites, cristallophylien schist, mica schist and gneiss. The volcanic formations outcropping in the area of Surkouf are represented by basaltic lava, dolerites, diorites, gabbro-diorites and granites [1].

The hydrographic system consists of rivers with reduced flow of which most significant are Oued El Harrach, Oued El Hamiz and Oued Reghaïa in Surkouf area.

In addition to a population of more than two million inhabitants, the area is marked by a significant industrial activity in particular near Algiers harbour and industrial areas of Rouïba and Reghaïa. The population and public infrastructures (hospitals, schools...) are concentrated near the main localities of Algiers such as Algiers center, Bab El Oued, Hussein dey, Kouba, Fort de l'Eau and Aïn Taya.

Algiers bay and the littoral of Algiers in general are prone to many sources of pollution due to significant volume of domestic and industrial worn water rejected directly and without preliminary treatment in the sea, to the derivative of hydrocarbons related to the harbour activity and to the scrubbing residues of the old cement factories and careers.

The vulnerability of the Algiers coast is mainly due to the fact that the Mediterranean sea is almost closed with little exchange with the ocean, thus reducing the circulation and the renewal of its water.

It is known that sediments in Algiers Bay have a high capacity to concentrate and retain toxic trace elements, due mainly to the fine fractions ($< 40 \mu\text{m}$) present at more than 75% [2-3]. Heavy metals may be natural constituents of the sediments. They come from the rocks and soils via their geochemical mobility. They also can be anthropogenic sources; in which case they are incorporated into the sediments as artificial pollutants coming from industrial and urban releases and wastes.

In the environmental sciences, among the many multi-elemental analysis technique, ion beam analysis and X-ray fluorescence have been shown to be the two powerful tools for monitoring the elemental composition and trace element content of soils, sediments, water and air particulates [4-6].

In Algiers Bay, soil comes from the El-Harrach and El-Hamiz rivers. These cross similar rocks. In pelitic sediments found in the bay, clay represents 40 to 50% of deposits in association with kaolinite-illite where illite is predominant. This may represent 60% of the association [7]. However, chlorite may complete this association instead of kaolinite. The Surkouf reference radial is 10 km east of Cap Matifou (east of Algiers Bay). The Surkouf sector is characterized by significant local erosion.

2. Experimental

Samples of sediments were taken by using the oceanographical boat of the *Institute of Sciences of the Sea in Algiers (ISMAL, Institut des Sciences de la Mer d'ALGER)* on 33 stations in Algiers bay, including 5 samples in Surkouf area in order to determine potential sources of pollution by rare earths metals.

Sampling was carried out according to 7 profiles (A, B, C, D, E, F and G) from the shore towards the open sea. The profiles C, D and F were established in order to tally with the mouths of Oued El Harrach and Oued El Hamiz.

The sediments of the sea-bed were collected, the same day, using Van Veen Snapper according to isobathic profiles with sampling point every 20 meters (in-depth) including six (A, B, C, D, E, F) in Algiers bay and a profile (G) apart from bay in Surkouf area. The sediments were then lyophilised and homogenised in an agate mortar.

Measurements of Rare earth metals are carried out using XRF with a Gaseous Flux detector (TG) and X-Ray tube excitation (Siemens, 70-90 μA , 50-60 kV). The yields of the characteristic X-Ray peaks are measured after background fitting and subtraction.

The concentrations of the metals are determined by use of an external standards. The standards used are: SD-M-2 / TM and SL-3 supplied by IAEA (International Atomic Energy Agency). The attenuation of the emitted X-Rays in the sample matrix is taken into account by use of absorption coefficients [8].

The Algiers bay with a slight slope from the coast towards the open sea and a depth reaching the 100 m contains sediments made up of 40 to 50% of clays (kaolinite, illite and chlorite) with illite dominant up to 60% of association (7). The cartography of the percentage of the fine particle in the deposits of Algiers bay gives the nature and the mode of distribution of the various facies (Fig. 1). A prevalence of the fine particle ($> 95\%$) is observed in an increasing way, from the shore towards the center of Bay [2].

Half-metallic ferrimagnetism in the Mn_2CoAs Heusler compound

¹Department of Physics, Faculty of sciences, University of M'sila, Algeria.

²Department of Physics, Faculty of sciences, University of Setif, Algeria.

³Department of Physics, Faculty of sciences, University of Annaba, Algeria.

E-mail : ilhemiloud@yahoo.fr

ABSTRACT : First-principles calculations for the structural, electronic, and magnetic properties of Mn_2CoAs Heusler compound, have been performed for using full-potential linearized augmented plane wave (FP-LAPW) scheme within the (GGA-WC) and GGA+U. Features such as the lattice constant, bulk modulus, and its pressure derivative are reported, in addition to the results of the band structure and the density of states. The electronic structure in the ferrimagnetic configuration for Mn_2CoAs Heusler compound shows that the spin-up electrons are metallic, but the spin-down bands have a gap of 0.48 and 0.77 eV for GGA-WC and GGA+U, respectively. The Mn_2CoAs Heusler is ferrimagnetic and maintains the half-metallic character having 100 % polarization for lattice parameters in 5.5 and 5.82 Å.

KEYWORDS: Heusler compounds; FP-LAPW; DFT+U; Spintronics.

1. Introduction

Heusler compounds are ternary intermetallic compounds that have the general composition X_2YZ . In this class, X and Y represent d-electron transition metals, and Z denotes a sp-electron element [1]. In recent years, Heusler compounds have been extensively studied, and motivated by their gained importance due to advancements in spintronics [2–6]. In contrast to half-metallic ferromagnets (HMFs) [7], only a few Heusler compounds (all of them with a rare earth metal at the Y position) have been successfully implemented as superconductors [8]. Pd_2YSn is the Heusler compound with the highest critical temperature (4.9K) [9]. The coexistence of antiferromagnetism and superconductivity demonstrating the manifoldness of the Heusler family, was reported for Pd_2YbSn [10] and Pd_2IrSn [11]. Many of the Heusler compounds have been reported to be HMFs [12,13], and several Co_2 -based Heusler compounds have been used as electrodes in magnetic tunnel junctions [14,15]. The hexagonal compound Pd_2CeIn orders antiferromagnetically at 1.23 K [16]. D. B. de Mooij et al. [17] reported that Pt_2GdSn and Pt_2ErSn exhibit ferromagnetic ($T_c = 20$ K) and paramagnetic behavior, respectively. Generally, Heusler compounds (X_2YZ) crystallize in the cubic $L2_1$ structure (spacegroup $Fm\bar{3}m$), the X_2 atoms form a primitive cubic sublattice and adjacent cubes of this X_2 sublattice are filled by alternating Y or Z atoms. If the number of 3d electrons of Y atom is more than X atom, we can observe $CuHg_2Ti$ -type structure with the space group $F43m$. In this structure, X atoms occupy the nonequivalent $4a(0,0,0)$ and $4c(1/4,1/4,1/4)$ positions, while Y and Z atoms are located at $4b(1/2,1/2,1/2)$ and $4d(3/4,3/4,3/4)$ positions, respectively [18].

In the present paper, the structural, electronic and magnetic properties of Mn_2CoAs are reported. The aim of this work is to evaluate the validity of the predictions of half metallicity for Mn_2CoAs Heusler compound. The calculations are performed using ab-initio full-potential linearized augmented plane wave (FP-LAPW) within the density functional theory (DFT) with the generalized gradient approximation GGA-WC and GGA+U. In this paper, we organized the theoretical background as it's showed in Section 2. The results and discussions are mentioned in Section 3. The summary of our results is given in Section 4.

I. INTRODUCTION

Nowadays, nano-objects provide a promising research for the identification of new fundamental properties of the materials and their potential technological applications. Much effort is devoted to understand the physical and chemical properties of materials, which can serve as model catalyst systems. Consequently, fundamental studies have been carried out on a range of heterogeneous catalyst, for example, metal islands grown on thin films [1-4] or on single-crystals surfaces [5, 6]. Palladiums deposits on the MgO (100) surface have become one of the most widely used model systems, and have given rise to many detailed experimental studies [7-9]. Although the main microscopic steps governing nucleation and growth of the films are now understood, detailed characterization of these processes has proven difficult. Earlier, empirical and theoretical studies of Pd over single crystals MgO, investigated defect nucleation [10, 11] when nucleation centers occupy minority of sites. On the other hand, the results of nucleation kinetics over thin films governed by random nucleation [1, 12], each atomic site is potentially a nucleation centre. In this study, we build upon many experimental and theoretical studies [1, 13] have been carried out to understand these processes. The aim of this work is to investigate the microscopic mechanisms focusing on the nucleation, growth and coalescence of Pd / thin MgO (100) using Fortran software.

1. INTRODUCTION

Composite materials find more applications in the realization of structural parts of various dimensions in many industries such as aerospace, car manufacturing, nuclear, biomedical engineering. Due to their high specific properties, woven composites carbons (fiber/epoxy) are increasingly used in aerospace applications. These applications generally require the use of assemblies to load transfer between the laminates composite and other parts that are either metallic or composites. However, the design of assemblies remains a hard point for structural applications. Indeed, the use of bonded assemblies is often prohibited by industrial requirements of reproducibility and maintenance. Mechanically-fastened bolted-joints under tensile loads frequently are damaged in five common failure modes (Fig.1), namely cleavage, bearing, shear, tension, and pull-through. Cleavage failures are associated with both an inadequate end distance and too few transverse plies. Bearing failure occurs predominantly when the bolt diameter is a small fraction of the plate width, this mode of failure leads to an elongation of the hole. Shear-out failure can be regarded as a special case of bearing failure, this mode of failure can occur at very large end distances for highly orthotropic laminates. Net-tension failure occurs when the bolt diameter is a large fraction of the strip width; this fraction depends on the type of material and lay-up used... Pull-through failure occurs mainly with countersunk fasteners or when the thickness to diameter ratio is sufficiently high to precipitate failure [1-22]. Many studies have attempted to develop methods for understanding these mechanisms using digital image correlation and acoustic emission. The spatial resolution of the aforementioned procedures is relatively poor. Digital image correlation (DIC) has improved the spatial resolution of optical full-field strain measurements. Parsons et al. [7-9] obtained strain fields on two sides of rectangular tensile specimens with this technique using one camera and a right-angle prism. De Almeida et al. [9] recently used one camera and a mirror to measure strain fields on both the front and the lateral side of a specimen simultaneously. However, all the methods mentioned above are based on the assumption that the strains measured on the surface of the specimen are representative of the strains throughout the

thickness of the specimen, i.e. the reduction of width measured on the front surface is representative for the width reduction throughout the thickness [6]. The most significant parameter used in acoustic emission signals is the amplitude. The works of Chen Karandikar and al. [23], Kim and Lee [24], Kargers-Kocsis and al [25], Kotsikos and al.[26], Ceysson and al [27], Benzeggagh and al.[28], Mouhmid and al [29], on different families of composites and on the tensile stress, on bending static or on fatigue show the interest of using this acoustic parameter. However, it is clear that the absolute amplitude values of involved areas vary from one test and material type to another. Ueno *et al.* [30] studied the signals in functions of their amplitude and rise time, four zones were identified: matrix cracking, fiber-matrix debonding, delamination and finally fiber breakage. Another parameter was analyzed by Hill [31] on composite glass/epoxy and carbon epoxy; in fact it is a matter of the influence of the energy and amplitude signals in a purpose of predicting failure in composite materials. Huguet and Godin [32-33] have conducted a conventional parametric analysis such as the amplitude, rise time, duration and energy of acoustic emission signals during a monotonous tensile test on unidirectional composites at matrix reinforced by glass fibers. This work concerns the study of damage and rupture under monotonic loading in tensile test of a carbon fiber reinforced epoxy laminated composite bolted joints with clearance between bolt diameter and hole diameter. The influence of stacking sequences and various geometric parameters of laminates will be taken into account for the study of global mechanical behavior of assembly. For this propose three different stacking sequences and geometries were studied and correspond to specimen A, B and C. Two experimental techniques have been used such as acoustic emission (A.E) and digital image correlation (D.I.C). These two techniques are coupled with the evolution of the load applied with the displacement for improvement identification of different phases as well as the chronology of damage. Complementary microscopic observations (S.E.M) were carried out on post mortem of specimen C. This enables the confirmation of results obtained by two techniques mentioned earlier.

Appendix E

Researchers' Questionnaire

Miss. Wafa AGGOUNE
Faculty of Letters and Foreign Languages
Department of English
Batna 2 University
Email: Wafa.english@live.fr

Dear Researchers,

This questionnaire is addressed to Applied Linguistics and Physics' researchers at the departments of English and Physics in different Algerian Universities. The subject around which the present Doctoral dissertation revolves is a study of Genre Analysis of Research Articles (RAs) Introduction. This study aims to investigate Algerian researchers' awareness of the main rhetorical and linguistic features that characterize articles' introduction in the two fields. Your assistance in completing the questionnaire will be very much appreciated. The information you provide is solely for academic purpose.

Thank you for your corporation

University.....

Section One: General Information

1. Degree:

- Magister
- LMD Doctorate
- Doctorate Es-Sciences
- Others (Specify)

.....

2. Number of Published Articles:

3. Number of citations for your published article (s).....

(Citations=how many times your article (s) has (have) been cited by other articles.)

Section Two: Background to Research Articles (RAs) Introductory Section

4. Which section of the RA is implicated in the perceived increased difficulty in writing RAs?

- Abstract
- Introduction
- Method (s)
- Results
- Discussion
- Conclusion

Why?

.....

.....

.....

.....

5. According to you, what is the purpose of RAs introduction?

.....

.....

.....

6. Are there logical steps of writing RAs introduction?

Yes No

7. If yes, how many steps does RAs introduction consist?

- One
- Two
- Three
- More than Three

What are they?

.....

.....

.....

.....

.....

8. Which of the following step(s) is (are) *obligatory* in RAs introduction?

- Identifying the general framework of the topic by claiming the relevance of the field
- Testing new hypotheses and exploring new phenomena
- Outlining research purposes, findings and the structure of the article
- Others (Specify)

.....

.....

.....

9. What are the main characteristics of a RA introductory section in your field?

.....

.....

.....

.....

.....

.....

Section Three: Introduction Opening Statements

10. In RAs introduction, the opening sentences report that the topic is of a lively, *significant or well-established research area?*

Yes No

11. Do you use a *general statement* that emphasizes the frequency and complexity of your research?

Yes No

12. Do you think that synthesizing and reviewing previous work in a literature review is:

Obligatory

Optional

Why? Why not?

.....

.....

.....

13. To what extent do you agree or disagree with the following statements? Use the following scale: Agree (A), Undecided (U), Disagree (D)

N	Statements	A	U	D
1	The use of integral and non-integral citations is mandatory in RAs introduction.			
2	Lexical categories (like conjunctions, verbs, adjectives, nouns...) are key signals to distinguish between introduction's sections.			
3	Linguistic exponents (like contrastive statements, quantifiers, negatives...) are extremely important to strengthen the significance of the research.			

Section Four: Writing a Research Problem

14. Do you state your research problem in RAs introduction?

Yes

No

15. If yes, why should a research problem appear in the introduction?

.....

.....

.....

.....

.....

.....

16. Generally, how do you word the research problem?

- Stating shortcomings, or limitations of earlier work
- Referring to a research problem in the area of your study
- Asking questions
- Extending previous research

17. In your field, stating a research problem should be amenable to:

- Data based on incomplete evidence
- Empirical data
- Both

Section Five: Introduction Aims and Structure

18. According to you, which of the following step (s) should appear at the end of the introduction?

- Outlining research purposes
- Announcing research findings
- Indicating the structure of the article
- All of them

19. How would you typically evaluate a RA introduction that does not include this (these) step (s)?

.....

.....

.....

.....

20. In your field, is there allowable variation in where *research purposes* can occur in RAs introduction?

Yes

No

If yes, why?

.....

.....

.....

.....

.....

.....

Section Six: Researchers' Attitudes toward RAs Introductions

21. How would you rate your overall satisfaction with your RAs introduction?

- Very satisfied
- Somewhat satisfied
- Somewhat dissatisfied
- Very dissatisfied

22. To what extent do you agree that your research discipline impact the rhetorical and grammatical choices of your RAs introduction?

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Explain, How?

.....

.....

.....

.....

.....

23. What do you find most difficult about writing RAs introductions?

.....

.....

.....

Thank You!

Appendix F

Editors' Interview

Dear Editors,

We are conducting a research to better understand the structure of research articles' (RAs) introduction. Essentially, we want to know editors' perspectives on RAs introduction and main problems that Algerian researchers encounter in writing RAs introductions.

Questions

1. According to you, what are the main difficulties encountered researchers in writing scientific articles?
2. What are the most problematic sections of research articles?
3. What are the main language problems found in the articles?
4. What is (are) the objective (s) of a research article introduction?
5. Do all introductions reflect the content of the articles?
6. What are the most common reviewers' critical comments about research articles' introductions?
7. To what extent does the academic discipline impact researchers' choices of language? How?
8. What are your recommendations for researchers about writing research articles' Introductions?

Translation of Editors' Interview into French

Chers éditeurs,

Nous menons une recherche pour bien comprendre la structure des introductions des articles scientifiques. Fondamentalement, Nous voulons savoir les perspectives des éditeurs vis-à-vis les introductions des articles scientifiques ainsi que les problèmes majeurs que rencontrent les chercheurs algériens dans la rédaction des introductions des articles scientifiques.

1. Quelles sont les difficultés principales auxquelles les chercheurs sont confrontés dans la rédaction des articles ?
2. Quelles sont les parties les plus difficiles à rédiger dans l'article ?
3. Quel sont les problèmes de langue principaux que vous trouvez dans les articles ?
4. Quel(s) est (sont) l'(les) objectif (s) de l'introduction et son intérêt dans un article scientifique ?
5. Est-ce que toutes les introductions reflètent le contenu des articles ?
6. Quels sont les critiques les plus fréquents des correcteurs par rapport à l'introduction de l'article ?
7. Est-ce que le choix de la langue utilisée dépend de la discipline ? comment ?
8. Quelles sont les recommandations que vous pouvez donner aux chercheurs sur la rédaction de l'introduction d'un article scientifique ?

Translation of Editors' Interview into Arabic

1. بالنسبة لكم، ماهي أهم المشاكل التي يواجهها الباحثون لكتابة مقال علمي؟
2. ما هو الجزء الأكثر صعوبة في المقال العلمي؟
3. ماهي أهم صعوبات اللغة الموجدة في المقالات؟
4. ما هو هدف (أهداف) المقدمة في المقال العلمي؟
5. هل تعكس كل المقدمات مضمون المقالات؟
6. ماهي أهم الانتقادات التي يقدمها المدققون اللغويون بخصوص مقدمات المقالات العلمية؟
7. على أي مدى يؤثر المجال الأكاديمي على الخيارات اللغوية للباحثين؟ كيف ذلك؟
8. ماهي التوصيات التي تقدمونها للباحثين بخصوص كتابة مقدمات المقالات العلمية؟

Appendix G

Email of Editor of New Materials and Technology journal



Résumé

Les articles scientifiques fournissent un moyen utile pour les chercheurs afin d'affronter le développement explosif de la recherche scientifique dans les différents domaines. Ils ouvrent une brèche pour communiquer le contenu des recherches précédentes et traitent de nouveaux phénomènes. L'introduction joue un rôle primordial dans les articles scientifiques. Elle présente la section de l'article qui comprend une série d'étapes tout en fournissant une description détaillée de l'article entier. La présente recherche découle de débat entre les sciences humaines et sociales et les sciences exactes. C'est une étude d'analyse de genre comparative qui a pour objectif d'identifier la structure rhétorique et les aspects linguistiques de l'introduction des articles scientifiques notamment celles de la linguistique appliquée et de la physique publiés dans les revues scientifiques algériennes. La recherche s'appuie sur les méthodes de recherche quantitatives et qualitatives à travers une analyse de corpus des introductions, un questionnaire pour les chercheurs, et un interview avec les éditeurs. En general, les résultats relèvent l'existence des similitudes et des différences de la structure de l'introduction des articles de la linguistique appliquée et ceux de la physique. Ce qui implique que la rédaction des introductions est inévitablement intégrée dans les conventions disciplinaires. Les résultats de la recherche dévoilent des implications importantes pour l'usage des méthodes de l'analyse de genre dans l'enseignement de l'Anglais à des Fins Spécifiques.

Mots-clés: introduction des articles scientifiques, revues algériennes, aspects linguistiques, structure rhétorique, analyse de genre comparative, conventions disciplinaires.

ملخص

تعد المقالات العلمية وسيلة فعالة للباحثين لمجارة الانفجار المعرفي في شتى المجالات العلمية. كما أنها فضاء يسمح بنقل مضامين الدراسات السابقة والتعرض لظواهر جديدة. وتلعب المقدمة دورا جوهريا في المقالات العلمية حيث أنها تشكل جزءا لا يتجزأ من المقال والتي تشمل مجموعة من المراحل التي تعطي وصفا مفصلا لمجمله. وتبثق هذه الدراسة من صلب السجال الواقع بين العلوم الانسانية والاجتماعية والعلوم الدقيقة، إذ تمثل دراسة تحليل نوع مقارن من أجل تحديد البنية البلاغية والسماة اللسانية لمقدمة المقالات العلمية للسانيات التطبيقية والفيزياء المنشورة في المجالات العلمية الجزائرية. وتخضع هذه الدراسة للمناهج العلمية النوعية والكمية من خلال تحليل مدونة مقدمات واستبيان مقدم للباحثين ومقابلة مع رؤساء التحرير. وعموما، تكشف نتائج الدراسة عن وجود تماثلات وتباينات بين بنية مقدمة المقالات في اللسانيات التطبيقية والفيزياء، وهذا ما يدل على أن تحرير المقدمات يرتبط بالضرورة بلغة التخصص. وتكشف نتائج هذه الدراسة عن تداعيات هامة تخص استخدام مناهج تحليل النوع في تدريس الانجليزية لأهداف خاصة.

الكلمات المفتاحية: مقدمات المقالات العلمية، المجالات العلمية الجزائرية، تحليل نوع مقارن،

البنية البلاغية، السماة اللسانية، لغة التخصص.