

**MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC
RESEARCH
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FACULTY OF FOREIGN LANGUAGES
DEPARTMENT OF ENGLISH**

**“Illusions of Knowing”: Metacognitive Processes
and Achievement in Reading and Writing
Examination Tasks.
Case Study of First and Second Year Degree
Students in the Department of English at
University of Algiers 2**

Thesis Submitted to the Department of English in Partial Fulfilment of the
Requirements for the Degree of Doctorate in English Linguistics and Didactics

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DECLARATION

I hereby declare that this PhD thesis, entitled '**Illusions of Knowing: Metacognitive Processes and Achievement in Reading and Writing Examination Tasks (Case study of first and second year degree students in the department of English at University of Algiers-2)**', has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own and is under the supervision of Prof. Faiza Bensemmane.

Place: Algiers

Date: 27/05/2020

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DEDICATION

To my parents, Ammar and Nacera

To my husband, Khaled

To my daughters, Afnane and Nouha

To my sister, my brothers and their families

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All praise is to Allah the Almighty who granted me knowledge, health and a critical mind to conduct this humble research and who eased my way in the challenging journey of scientific inquiry.

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ABSTRACT

This study deals with the ‘illusions of knowing’ as a factor for determining achievement in English reading and writing examination tasks. There is a high demand for reading and writing skills at university, especially in examination situations wherein students need to continually use their metacognitive knowledge, but often experience weak monitoring and regulation strategies. This research was carried out to investigate the state of their metacognitive knowledge in an examination context. Drawing on a body of research and empirical data, the study examines the relationship between metacognition, year of study and level of achievement, and argues that high levels of metacognitive knowledge are needed to accurately monitor and regulate reading and writing weaknesses and achieve successfully. A Mixed Methods Explanatory Sequential Design was used to collect quantitative and qualitative data from eighty first and second year English degree students at the English department of the University of Algiers 2. The Metacognitive Awareness Inventory (MAI) was used to elicit students’ data on their metacognitive knowledge and the Taxonomy of Metacognitive Judgements (TMJ) was used for measuring the monitoring variable. A semi-structured interview was also employed to elicit qualitative data on students’ knowledge, monitoring and regulation. The findings reveal students’ low procedural knowledge, lack of task-specific strategies and lack of effective reading and writing strategies overall. Although the high achievers demonstrated increased levels of monitoring reading and writing tasks, and adequate use of task-specific strategies to regulate their errors, they tended to use more skimming, scanning and organizing strategies than predicting, inferring, using background and contextual knowledge and critical thinking. This study implicates that explicit instruction of metacognitive knowledge and self-regulation is therefore needed, as this is essential not only for regular class learning of language skills but also for dealing with examination tasks which are metacognitively quite demanding.

Key words: illusions of knowing; metacognition; regulation; examination situation; EFL reading and writing tasks; higher education.

TABLE OF CONTENTS

Declaration	i
Dedication.....	ii
Acknowledgements.....	iii
Abstract.....	iv
Table of contents.....	v
List of tables.....	xii
List of figures and diagrams.....	xv
List of graphs.....	xvi
List of abbreviations.....	xvii
INTRODUCTION.....	1
Rationale for the study and statement of the problem.....	3
Objectives of the study, research questions and hypotheses.....	7
Significance of the study.....	9
Operational definitions of metacognitive processes: knowledge, monitoring and regulation.....	10
Structure of the thesis.....	12

PART ONE: THEORETICAL CONSIDERATIONS

CHAPTER ONE: OVERVIEW OF RESEARCH ON METACOGNITION

Introduction	14
1.1 Origin of research on metacognition.....	15
1.2 Roots of metacognition.....	18
1.3 Definitions and components of metacognition	25

1.3.1 Definitions of metacognition	25
1.3.2 Components of metacognition	28
1.3.2.1 Flavell's framework (1979).....	29
1.3.2.1.1 Metacognitive knowledge or awareness.....	30
1.3.2.1.2 Metacognitive experience	32
1.3.2.2 Brown's framework (1987)	33
1.3.2.2.1 Knowledge of cognition	33
1.3.2.2.2 Regulation of cognition	36
1.4 Relationship between knowledge of cognition and regulation of cognition: the Vygotskian view.....	38
1.5 Issues in metacognition and self-regulated learning.....	40
1.5.1 Learners as poor judges of their knowledge.....	40
1.5.2 Learners' lack of effective study tactics.....	41
1.5.3 Learners' beliefs and self-regulated learning.....	41
1.6 Measuring metacognition in relation to academic achievement.....	43
1.7 Teaching with and for metacognition.....	46
1.7.1 metacognitive knowledge instruction model to improve reading and writing.....	50
Conclusion	53

CHAPTER TWO: READING AND METACOGNITION

Introduction.....	54
2.1 Reading: definition, processes and factors affecting reading in L1 and L2.....	55
2.2 Reading strategies and the strategic reader.....	63
2.2.1 Pre-reading strategies.....	65
2.2.2 While reading strategies.....	66
2.2.3 Post-reading strategies.....	67
2.3 Metacognitive reading: knowledge and regulation of cognition.....	68
2.3.1 Comprehension monitoring in L1 reading.....	70

2.3.2 Comprehension monitoring in L2 reading.....	76
2.4 Self-regulated comprehension of reading.....	78
2.5 Comprehension breakdowns: illusions of knowing.....	79
2.6 Calibration of comprehension: measuring metacognitive monitoring accuracy.....	82
2.7 Improving metacognitive illusions.....	85
2.8 Doing a reading task in an examination situation: metacognitive concerns.....	88
Conclusion	89

CHAPTER THREE: WRITING AND METACOGNITION

Introduction	90
3.1 Research development on writing	91
3.1.1 Text-based writing.....	91
3.1.2 Process-based writing.....	92
3.1.3 Context-based writing.....	93
3.2 Cognitive models of writing	94
3.2.1 Flower and Hayes' Model (1981).....	95
3.2.2 Bereiter and Scardamalia's model (1987).....	97
3.2.3 Skilled and unskilled writers.....	98
3.3 Metacognitive models of writing	101
3.3.1 Metacognitive awareness in writing.....	101
3.3.2 Metacognitive monitoring and regulation in writing.....	104
3.4 Reading and writing combined.....	107
3.4.1 Theories of reading-writing relations.....	108
3.4.1.1 Interdependence Hypothesis.....	110
3.4.1.2 Language Threshold Hypothesis.....	111
3.4.1.3 Extensive Reading Hypothesis.....	112
3.4.1.4 Unidirectional and Bidirectional Hypothesis between reading and writing.....	113
3.5 Reading-writing instruction in L2 context: issues of curriculum.....	114
3.6 Research studies on reading to write.....	115

3.7 Issues of reading to write in the foreign language classroom.....	118
3.7.1 Transition to advanced reading and writing.....	118
3.7.2 Teaching literature at an initial level of instruction	121
Conclusion	122

PART TWO: EMPIRICAL STUDY

CHAPTER FOUR: RESEARCH DESIGN AND PROCEDURE OF DATA COLLECTION AND ANALYSIS

Introduction	123
4. 1 Mixed Methods Approach: Explanatory Sequential Design.....	126
4.2 Data collection procedure.....	128
4.3 Sampling.....	133
4.4 Data collection tools.....	134
4.4.1 Metacognitive Awareness Inventory (MAI).....	134
4.4.2 Taxonomy of metacognitive judgments (TMJ).....	135
4.4.3 Reading /Writing tasks.....	140
4.4.4 Semi-structured interview.....	141
4.5 Methods of data analysis.....	144
Conclusion	146

CHAPTER FIVE: ANALYSIS AND PRESENTATION OF RESULTS

Introduction	147
5.1 Analysis and presentation of quantitative results	147
5.1 .1 Students' scores on the reading/writing task.....	148
5.1.2 Analysis of data from the Metacognitive Awareness Inventory (MAI)	150
5.1.2.1 Presentation of students' responses: declarative knowledge (DK).....	150
5.1.2.2 Presentation of students' responses: procedural knowledge (PK).....	152

5.1.2.3 Presentation of students' responses: conditional knowledge (CK).....	152
5.1.3 Presentation of the data from the Taxonomy of Metacognitive Judgments: (TMJ).....	154
5.1.3.1Monitoring before the R/W task (Question 1 of the TMJ).....	154
5.1.3.2Monitoring during the R/W task (Question 2 of the TMJ).....	156
5.1.3.3Monitoring after the R/W task (Question 3 of the TMJ).....	157
5.1.4 Comparing metacognitive processes and levels of achievement in R/W exam tasks.....	159
5.1.4.1Comparing metacognitive knowledge and levels of achievement in R/W exam tasks.....	163
5.1.4.2 Comparing metacognitive monitoring and levels of achievement in R/W exam tasks.....	165
5.1.5 Comparing 1 st and 2 nd year students' metacognitive processes and their achievement in R/W exam tasks.....	169
5.1.6 Relationship between metacognitive processes and levels of achievement in R/W exam tasks.....	170
5.1.6.1 Relationship between metacognitive knowledge and levels of achievement in R/W exam tasks	172
5.1.6.2 Relationship between metacognitive monitoring and levels of achievement in R/W exam tasks.....	174
5.2 Analysis and presentation of qualitative findings: Students' responses.....	175
5.2.1 Content Analysis of first and second year high achievers interview data.....	178
5.2.1.1 Knowledge of the self.....	178
5.2.1.2 Knowledge of task requirements.....	179
5.2.1.3 Knowledge of strategies.....	179
5.2.1.4 Knowledge of factors of achievement in reading/writing.....	180
5.2.1.5 Recognition of failure and monitoring/regulation.....	181
5.2.2 Content analysis of first and second year average achievers interview data.....	187
5.2.2.1 Knowledge of the self.....	187
5.2.2.2 Knowledge of task requirements.....	188
5.2.2.3 Knowledge of strategies.....	188

5.2.2.4 Knowledge of factors of achievement in reading/writing.....	189
5.2.2.5 Recognition of failure and monitoring/regulation.....	190
5.2.3 Content analysis of first and second year low achievers interview data.....	192
5.2.3.1 Knowledge of the self.....	192
5.2.3.2 Knowledge of task requirements.....	193
5.2.3.3 Knowledge of strategies.....	193
5.2.3.4 Knowledge of factors of achievement in reading/writing.....	194
5.2.3.5 Recognition of failure and monitoring/regulation.....	194
5.2.4 Content analysis of the R/W teachers' interview data.....	204
5.2.4.1 First year teacher responses on R/W task requirements and strategies	204
5.2.4.2 Second year teacher responses on R/W task requirements and strategies.....	207
Conclusion	212

CHAPTER SIX: DISCUSSION, INTERPRETATION OF THE FINDINGS AND IMPLICATIONS

Introduction	213
6.1 Metacognitive processes used by first and second year students for doing R/W examination tasks.....	215
6.1.1 Students' metacognitive knowledge about the R/W tasks.....	217
6.1.2 Students' metacognitive monitoring and regulation of R/W tasks.....	222
6.1.3 Teachers vs. students' views of metacognitive knowledge: knowledge of task requirements and knowledge of strategy	227
6.2 Metacognitive processes and achievement in R/W exam tasks: Comparing and discussing differences and relationships.....	234
6.3 Implications for language learning and teaching	236
6.3.1 Benefits of explicit instruction of metacognitive knowledge.....	237
6.3.2 Role of teacher education.....	238
6.3.3 Improving metacognitive knowledge, monitoring and regulation.....	240

6.3.3.1 Shraw (1998)'s Strategy Evaluation Matrix to promote metacognitive knowledge.....	243
6.3.3.2 Shraw (1998)'s Regulatory Checklist to improve self-regulation.....	244
6.3.3.3 Guidelines for metacognitive-based practices in reading and writing.....	246
Conclusion	249
 CONCLUSION	 251
REFERENCES	261
 APPENDICES	
Appendix A: Metacognitive Awareness Inventory (original).....	275
Appendix B: Metacognitive Awareness Inventory (adapted).....	275
Appendix C: Taxonomy of Metacognitive Judgments (TMJ).....	276
Appendix D: S1 Reading/Writing Exam.....	277
Appendix E: S3 Reading/Writing Exam.....	281
Appendix F: Semi-structured interview for students.....	284
Appendix G: Semi-structured interview for teachers.....	285
Appendix H: Students' interview transcripts.....	285
Appendix I: Teachers' interview transcript.....	304

LIST OF TABLES

Table 4.1: Taxonomy of Metacognitive Judgments (the original taxonomy by Schraw, 2009)	137
Table 5.1: Number and percentage of students in each level of achievement in R/W.....	149
Table 5.2: Students' declarative knowledge (DK).....	151
Table 5.3: Students' procedural knowledge (PK).....	152
Table 5.4: Students' conditional knowledge (CK).....	153
Table 5.5: Students' metacognitive judgments before the R/W exam (Q 1 of TMJ).....	155
Table 5.6: Students' metacognitive judgments during the R/W exam (Q 2 of TMJ).....	156
Table 5.7: Students' metacognitive judgments after the R/W exam (Q 3 of TMJ).....	158
Table 5.8: Comparison of students' monitoring levels in the three R/W phases	159
Table 5.9: Comparison between levels of achievement and metacognitive processes.....	160
Table 5.10: Analysis of variance of metacognitive processes among the three levels of achievement.....	161
Table 5.11: Comparison between levels of achievement and metacognitive processes using Sheffe Test.....	162
Table 5.12: Comparison between metacognitive knowledge and levels of achievement in R/W exam tasks.....	163
Table 5.13: Analysis of variance (ANOVA) with respect to the three types of metacognitive knowledge	164

Table 5.14: Complex mean comparison of metacognitive knowledge.....	164
Table 5.15: Comparison between metacognitive monitoring and levels of achievement.....	166
Table 5.16: Analysis of variance with respect to metacognitive monitoring before, while and after R/W tasks.....	166
Table 5.17: Complex mean comparison with respect to before, while and after metacognitive monitoring.....	167
Table 5.18: Comparison between 1 st and 2 nd year students' metacognitive processes and their R/W achievement	169
Table 5.19: Variance among the two degree levels of instruction in metacognitive processes	170
Table 5.20: Correlation between metacognitive processes and levels of achievement in R/W tasks	172
Table 5.21: Correlation between metacognitive knowledge and levels of achievement in R/W tasks	173
Table 5.22: Correlation between metacognitive monitoring and levels of achievement in R/W tasks.....	174
Table 5.23: Content analysis of first year high achiever (FYH) interview data.....	185
Table 5.24: Content analysis of second year high achiever (SYH) interview data.....	187
Table 5.25: Content analysis of first year average achiever (FYA) interview data.....	191
Table 5.26: Content analysis of second year average achiever (SYA) interview data.....	192
Table 5.27: Content analysis of first year low achiever (FYL) interview data.....	196
Table 5.28: Content analysis of second year low achiever (FYL) interview data.....	197

Table 5.29: Comparison between students' task knowledge and levels of achievement.....	198
Table 5.30: Comparison between students' strategy knowledge and levels of achievement.....	200
Table 5.31: Comparison between knowledge of factors of achievement and levels of achievement	201
Table 5.32: Comparison of regulation and levels of achievement	203
Table 5.33: Content analysis of R/W first year teacher interview data.....	206
Table 5.34: Content analysis of R/W second year teacher interview data.....	211

LIST OF FIGURES AND DIAGRAMS

Figure 1.1: Social Cognitive Model of Self-regulated Learning.....	24
Figure 1.2: A Model for Metacognitive Knowledge Instruction (Paris et al. 1991).....	50
Figure 3.1: Hayes and Flower model of the writing process (1980).....	97
Diagram 4.1: Data collection tools in quantitative and qualitative phases	144
Figure 6.1: Strategy Evaluation Matrix (Schraw, 1998).....	244

LIST OF GRAPHS

Graph 5.1: Number and percentage of each level of achievement in R/W....	149
Graph 5.2: Students' metacognitive judgments before the R/W exam (Q1 of TMJ).....	155
Graph 5.3: Students' metacognitive judgments during the R/W exam (Q2 of TMJ).....	157
Graph 5.4: Students' metacognitive judgments after the R/W exam (Q3 of TMJ).....	158
Graph 5.5: Graphic comparison of the students' monitoring levels in the three R/W phases.....	159
Graph 5.6: Mean differences in metacognitive monitoring.....	168

LIST OF ABBREVIATIONS

ANOVA Analysis of Variance

CK Conditional Knowledge

DK Declarative Knowledge

EFL English as a Foreign Language

ESL English as a Second Language

FYH First Year High Achiever

FYA First Year Average Achiever

FYL First Year Low Achiever

L1 First language

L2 Second language

M Mean

MAI Metacognitive Awareness Inventory

PK Procedural Knowledge

RQ Research Question

R/W Reading and Writing

SD Standard Deviation

SRL Self-Regulated Learning

SPSS Statistical Package of the Social Sciences

SYH Second Year High Achiever

SYA Second Year Average Achiever

SYL Second Year Low Achiever

TMJ Taxonomy of Metacognitive Judgments

INTRODUCTION

INTRODUCTION

The present study investigates the metacognitive state of Algerian first and second year undergraduate students of EFL in relation to their levels of achievement when doing reading and writing tasks in examination situations. More specifically, it explores students' 'illusions of knowing' in the two skills. The research is an endeavor to explore the role of metacognitive knowledge, monitoring and regulation in promoting academic achievement in the two highly demanding academic tasks at university i.e., reading and writing. The study aims to draw attention to a crucial mental capacity that all students possess and that needs to be fully exploited and employed to enhance higher order thinking skills that are of paramount importance at undergraduate level, especially in examination situations when students need to monitor and control their mistakes. This mental potential is called metacognition.

Researchers remarked that 'quite accomplished learners-university undergraduates-engage study tactics that deviate significantly from what research indicates to be effective approaches to learning' (Winne & Jamieson-Noel, cited in Hacker et al., 2009, p. 259). Even sophisticated or high level students appear quite unaware about how they study (Jamieson-Noel & Winne; Winne & Jamieson-Noel, cited in Hacker et al., 2009). Other researchers pointed to the factors that may limit the accuracy of judgments of text comprehension as regards reading. For instance, Hacker, Dunlosky, & Graesser (2009, pp. 2-3) argued that: 'Students often inaccurately monitor, they are unduly influenced by fallible heuristics, and they may not seek help in a useful way'. Thus, students tend to deal with academic tasks in a general or superficial way. This appears clearly when the task demands do not match the efforts made by the students

or when they may be using ineffective strategies that they mistakenly believe to be efficient. In this case, students may not be making sufficient efforts to regulate failures when dealing with the task. In this respect, accurate metacognitive monitoring seems critical to effective regulation of study (Thiede et al., cited in Hacker et al., 2009). When students cannot make the difference between well-learned material from less-learned material, they could waste time studying material that is already well learned or fail to re-study material that has not yet been adequately learned (Thiede et al., cited in Hacker et al., 2009).

The ground for developing interest in metacognition has proved particularly useful, especially in view of a constantly changing technological world when not only it is impossible for individuals to acquire all existing knowledge, but it is also difficult to conceive what knowledge will be essential for the future. The subsequent calling for inclusion of metacognition in the development of curricula, therefore, seems fully justified. For instance, Flavell (in Noushad, 2008) proposed that schools should be ‘hotbeds of metacognitive development’ because of the opportunities they offer for self conscious learning. Similarly, Paris & Winograd (in Noushad, 2008) argued that students’ learning can be enhanced by becoming aware of their own thinking as they read, write, and solve problems in school, and that teachers should promote this awareness directly by informing their students about effective problem-solving strategies and discussing cognitive and motivational characteristics of thinking.

Also sharing this view, Gunstone & Northfield (in Noushad, 2008) took a step further and granted metacognition a central position in instruction within teacher education. Borkowski & Muthukrishna (in Noushad, 2008) similarly declared that

metacognitive theory has considerable potential for aiding teachers in their efforts to construct classroom environments that focus on flexible and strategic learning.

Rationale for the study and statement of the problem

Voices advocating the importance of metacognitive activity within educational contexts have resulted in placing metacognition high on educational research agendas. At university, students are expected to make extensive use of metacognition and critical thinking that are essential to cope with the challenging demands of the tasks at this higher level of education. This requires more than employing learning strategies in a random way or dealing with tasks at a superficial level. The students are required to move on from surface structure levels of understanding to comprehension beyond the surface especially when dealing with demanding academic subjects.

In the English department of the Faculty of Foreign Languages at the University of Algiers 2 where the current study is conducted, undergraduate students of English are confronted with high academic demands, particularly in year 1 and 2 of the course. In addition to the language skills and language components that they are exposed to in the first year, and that they must master by the end of this foundation year, they also study content subjects such as linguistics, literature and civilization which all require rich background knowledge and effective study habits. This implies involvement in extensive reading and writing, and research on the topics studied. As far as assessment procedures are concerned, the three years of the English degree course are based essentially on regular written term tests and examinations in which students must demonstrate the extent of their knowledge retention and how far they can critically

analyze the information acquired through reading and writing. This is why this study focuses on the two important academic skills students are continually using at university, reading and writing.

As a teacher researcher, I have always been concerned with students' thought processes with the view to understanding why students succeed or fail, and to changing my teaching practices accordingly. As Hale put it, 'the more we understand the thought processes in our students the better we as teachers can instruct our lessons' (Hale, in Israel, Block, Bauserman, & Kinnucan-Welsch, 2005, p. 3)

My interest in metacognition has stemmed from the need to explore not only what students do to cope with the cognitive demands of academic tasks, but also what they are thinking about while doing them, what they know about themselves as learners, about the task itself, what efforts they make to complete the tasks, if task completion is easy or difficult for high, average or low achievers, and what they do when they are confronted with difficulties and worry about making mistakes in an examination situation. My concern is therefore for the students 'metacognitive processes', which includes their metacognitive strategies when dealing with academic tasks.

The present study is based on the assumption that students have little knowledge about their weaknesses in reading and writing and for many of them, their performance is average to low as attested by the scores they obtain in the reading and writing tests and examinations. In addition, they seem to lack regulating mechanisms necessary to adjust their cognitive processes, develop adequate study skills and achieve successful results. Students' inability to self-regulate their reading and writing processes seems to

be due to their lack of knowledge control since the knowledge of what the task is, what the task demands are and how to deal with them is often limited or absent. If students are not aware of where the problem lies, they cannot solve it. This directly reflects ‘underdeveloped’ reading and writing abilities that cannot meet the task requirements and the high level of proficiency demanded at university. Therefore, it was thought timely to focus in the present study on reading and writing tasks that are often perceived as considerably difficult in order to probe metacognitive thinking in these students. The assumed knowledge deficits described above pertain to what is referred to in the literature as ‘metacognitive illusions’ or the illusions of knowing. A number of studies on metacognition have reported instances of ‘illusions of knowing’ relevant to this study and that are dealt with in the coming chapters.

Therefore, the core issue of the present study revolves around the faulty judgments students make about their learning which are also called ‘metacognitive inaccuracies or biases’ in the literature. Researchers (Serra & Metcalfe, cited in Hacker et al., 2009) argued for a more effective implementation of metacognition and warned against these inaccuracies or biases more particularly in metacognitive monitoring. They also focused on the negative effects that poor monitoring accuracy can have on control processes. These negative effects would also point to the interrelationship between the three components of metacognition: knowledge, monitoring and regulation that exert a substantial influence on one another. This idea is supported by the view that metacognitive knowledge informs monitoring and regulation, and the accuracy and efficacy of these latter increase as metacognitive knowledge increases (Winn &

Hadwin, Wilson & Brekke, in Hacker et al., 1998). As Tobias and Everson (2009, p. 108) rightly noted:

If students fail to differentiate what they know or have learned previously from what they do not know or need to learn (or relearn), they are not expected to engage in more advanced metacognitive strategies, such as evaluating their learning in an instructional setting, or employing more efficient learning and studying strategies.

In the context of the English degree studies being investigated in this research, students do not seem to have developed the metacognitive and critical skills that allow them to cope with the reading or writing tasks essential in the first and second years of their university course. Mc Daniel (2004, in Israel et al., 2005, p. 11) termed these skills “critical literacy”. Critical literacy refers to the high demands that the reading and writing tasks dictate on students and specifically critical thinking. He remarked: ‘Critical literacy transcends conventional notions of reading and writing to incorporate critical thinking, questioning, and transformation of self or one’s world’. It is generally agreed that metacognition and critical literacy are closely related; thus, readers with critical literacy knowledge and skills are most likely to employ metacognitive strategies for text understanding and critiquing (Griffth & Ruan, 2005, in Israel et al., 2005).

In addition, and from teachers’ perspective, given the fact that metacognitive knowledge comprises task knowledge and task requirements, many teachers may fail

to identify the “ underdeveloped” thinking abilities of their students, or may know little about them, as described by Dunlosky, Hacker and Graesser (2009, p. 3):

‘Although computer-based tutors and other computer technologies are being used to promote effective metacognition and student learning, what is striking is how little is known about the metacognitive abilities of others who have driven education practices for centuries: teachers and tutors themselves’.

Therefore, it seems that not only students but also teachers may hold metacognitive illusions that can undermine their teaching effectiveness. However, the present research investigates the illusions of knowing from students’ perspectives only even though the study also attempts to understand the role of teachers in these learning contexts.

Objectives of the study, research questions and hypotheses

Metacognition is a key variable in learning. It has become critical for educators to explore their students’ metacognitive level so as to understand how they process knowledge and how they succeed or fail in their studies. The aim of this research is twofold: firstly, to investigate the state of the metacognitive knowledge of high, average and low achieving first and second year undergraduate students while doing reading and writing examination tasks. Secondly, to understand their failures to cope with these highly demanding academic tasks and identify a possible relationship between the students’ metacognitive processes, their level of achievement and their year of study. The study will therefore examine the extent to which these

undergraduate students can monitor their reading and writing tasks in an examination situation using their metacognitive knowledge, monitoring and regulation to achieve successfully in these skills. These two research objectives are specified by the research questions and hypotheses stated below:

Research questions

RQ1: What are the metacognitive processes used by first and second year degree students in reading and writing examination tasks?

- (a) What metacognitive knowledge do they have about these tasks?
- (b) How do they monitor and regulate these tasks?

RQ2: Is there a difference between the metacognitive processes of high, average and low achievers across the two years of study in reading and writing examination tasks?

RQ3: Is there a relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks?

Research hypotheses

Since this research aims to measure differences and relationships in the first quantitative phase, the statistical tests should rest on strong evidence for these differences and relationships. Therefore, levels of significance are set based on statistical scores that are presented to confirm or reject the following null hypotheses:

Null hypothesis 1 (H₀ 1): ‘There is no difference between high, average and low achievers’ metacognitive processes across the two years of study in reading and writing examination tasks’

H₀1 (a): ‘There is no difference between high, average and low achievers’ metacognitive knowledge across the two years of study in reading and writing examination tasks’

H₀1 (b): ‘There no difference between high, average and low achievers’ metacognitive monitoring across the two years of study in reading and writing examination tasks’

Null hypothesis 2 (H₀2): ‘There is no relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks’

H₀2 (a): ‘There is no relationship between students’ **metacognitive knowledge** and their achievement in reading and writing examination tasks’

H₀2 (b): ‘There is no relationship between students’ **metacognitive monitoring** and their achievement in reading and writing examination tasks’

Significance of the study

Relating metacognition to developing one’s self-knowledge and ability to learn how to learn in all disciplines and at all levels of education has resulted in “knowing about knowing” being awarded prominence as a feature of learning. Therefore, it is both interesting and useful to study metacognition.

With respect to studying a foreign language at university, being aware of the process of learning (or not learning) is a critical ingredient for both learning and teaching EFL literacy skills, that is, reading and writing. It is a key variable that differentiates effective thinkers/readers/writers from less effective thinkers/readers/writers and self monitoring has proved to be an efficient way to approach a learning task. This aspect of the learning process is worth exploring in this study as it enables students to know when and why to use different strategies to study or to solve problems. Students with effective metacognitive strategies are able to set goals, organize their activities, select among various approaches to learning, and change strategies when needed. But those students with less effective metacognitive strategies may be less able to succeed in their studies and more likely to build illusions of knowing. Therefore, it seems worthwhile embarking on a study on EFL students' active strategic processing in learning as this may reveal a great deal of their learning successes and failures in reading and writing at an academic level.

The following section provides brief definitions of the concepts which have been operationalized for the present investigation: metacognitive processes, metacognitive knowledge, regulation and achievement. A more detailed analysis of these concepts will be provided in the literature review chapters (Part one of the thesis).

Operational definitions: metacognitive processes (metacognition, metacognitive knowledge and regulation), achievement

Any concept used for a research study must be defined, explained and operationalized within a specific context so that it becomes relevant to that specific study. This

research work focuses on the metacognitive illusions of undergraduate students of English. It lays emphasis on their **metacognitive processes** or metacognitive strategies and highlights the role of metacognition, or metacognitive knowledge, monitoring and regulation in relation to the **achievement** of high, average and low achieving students when doing reading and writing examination tasks at **first and second year** levels of English degree study.

- **Metacognitive processes and strategies:** in the literature, “processes” is used as a generic term to include “strategies”; “metacognitive processes” refers to the act of planning, monitoring and assessing one’s understanding and performance; it also refers to being able to identify one’s learning styles and needs, collecting materials and organizing them, monitoring one’s mistakes; finally, being critically aware of one’s thinking and learning. Processes and strategies will be used synonymously in this study.
- **Metacognition:** refers to metacognitive knowledge and regulation
- **Metacognitive knowledge:** refers to knowledge of the learning task, how to process information, of strategies (both cognitive and metacognitive), in addition to knowledge about when and where it is appropriate to use such strategies; metacognitive knowledge includes declarative knowledge of what strategies to use, procedural knowledge of how to use these strategies, and conditional knowledge of when and why to use them.
- **Metacognitive monitoring (or judgements):** refers to judging or assessing the difficulty or ease of a learning task; being aware of knowing something, but

being unable to recall it completely; feeling confident about the judgement of the correctness or appropriateness of the response .

- **Regulation (or control):** refers to the processes used to control cognitive activities and to ensure that a cognitive goal has been met. These processes include planning activities, selecting them, allocating resources (time, effort, etc) monitoring and checking the outcomes of these activities.
- **Achievement :** students' ability to use and master information that has been acquired through a taught curriculum; Students' level of achievement" refers to their performance as high, average or low achievers
- **Year of study:** refers to first or second year levels of the English undergraduate degree course taught in the English department at the University of Algiers 2.

This research study is a Mixed-Method Research with an Explanatory Correlational Design (See chapter 4 for a full description); it examines the relationship between two variables: "level of achievement" and "year of study" in the examination of the phenomenon of "illusions of knowing" that should be demonstrated through the students' "metacognitive processes".

The last section of this introduction lays out the structure of this research work and describes briefly the contents of each chapter.

Structure of the thesis

The present study includes two parts and six chapters. The first part deals with the theoretical underpinnings of metacognition, reading and writing and the second part is

about the empirical study. The first three chapters are devoted to the theoretical and conceptual framework of the research. Chapter One provides an overview of research on metacognition and analyses the two theoretical frameworks of metacognition underpinning this study, Flavell's (1979) and Brown's (1987); it also discusses Vygotsky's (1978) socio-cultural view of learning in relation to knowledge and regulation of cognition. Chapter Two deals with metacognition, reading strategies and the strategic reader in L1 and L2, with special focus on comprehension breakdowns and "illusions of knowing". Chapter Three is devoted to writing and metacognition and deals with approaches to L1 and L2 writing, (text-based, process-based, context-based) as well as cognitive and metacognitive models of writing; it also deals with metacognitive strategies of writing, and theories of reading -writing relations. Two chapters are devoted to these two skills because they are both integrated, taught and assessed in the EFL undergraduate degree course under study.

The second part of this research, which is empirical, is divided into three chapters as well. Chapter Four entitled Research Design and Procedure describes the research design, the nature of the research, the participants of the study and the procedures of data collection and data analysis. The research framework adopted is the Mixed-Method Explanatory Sequential Design whereby the quantitative phase precedes the qualitative one. Chapter Five deals with the presentation and analysis of quantitative and qualitative data and Chapter Six discusses the findings of this research. This last chapter also makes a number of suggestions for the implementation of metacognition in the foreign language classroom and points to the limitations of the present investigation.

CHAPTER ONE

**OVERVIEW OF RESEARCH ON
METACOGNITION**

CHAPTER ONE

OVERVIEW OF RESEARCH ON METACOGNITION

‘... accurately assessing one’s own degree of learning is not something that comes naturally to our species, and fostering this ability is a useful, albeit neglected, component of education...people at all grade levels... experience failures of metacognition and illusions of knowing in which they think they know something but do not’.

(Pashler et al., in Hacker et al., 2009, p.259)

Introduction

The above quotation seems to us quite appropriate to introduce this chapter because it summarises somehow the present research concern, the "illusions of knowing". As a matter-of-fact, this phrase coined by Pashler et al. (2009) describes quite well the difficulties one has to assess one’s own degree of learning. This is even more crucial when it comes to assessment tasks, as will be developed throughout this study. The present chapter is an overview of research on metacognition. It contains seven sections. The first three sections trace the origins and roots of metacognition and define its constituents within two frameworks (Flavell’s and Brown’s). Section four draws on the relationship between knowledge of cognition and regulation of cognition from a Vygotskian point of view and section five reviews the challenges of metacognition and self-regulated learning. Section six is concerned with the issue of measurement of metcognition in relation to academic achievement and finally section seven is devoted to teaching with and for metacognition. The following section deals with the origins of research on metacognition.

1.1 Origin of research on metacognition

In 1991, Brown et al., (cited in Braten, 1991) described a major shift in emphasis taking place in the study of learning throughout the 1970s. According to these authors, this shift was from a passive organism responding to environmental influences, inspired by traditional American learning theory, toward the learner's side of the learner- environment equation, under the influence of European and Soviet genetic traditions and the landmark work by Bruner and Flavell. As a result, a heavy concentration on the person's activities and strategies for learning characterized the decade (Brown et al., in Braten, 1991.). Since the goal of traditional learning psychology was to find general laws of learning, applicable to all humans if not all higher organisms, the liberation from some basic tenets of behaviourism also meant that individual differences assumed a new role in research on learning and problem-solving.

As the movement toward a cognitive theory of learning emerged, through the intense study of the acquisition and use of learning strategies, it gradually became clear that this line of inquiry gave way to an entirely new set of research questions of great theoretical and practical significance. By the mid 1970s, it was demonstrated that younger and/or poorer learners seldom produced the deliberate, planful techniques necessary for efficient performance on a variety of learning tasks. However, it turned out possible to teach them to produce such strategies, frequently resulting in surprisingly large improvements in performance. To a certain extent, these instructional efforts might well be considered inefficient with immature learners, as they often abandoned the strategies with the removal of prompts. Finally, it was

demonstrated that immature learners frequently failed to transfer the instructed strategies to new problems where they would be highly appropriate (Campione, in Braten, 1991). It was this failure to achieve ‘the intelligent use of strategies’ (Brown et al., in Braten, 1991), by means of strategy training that, in part, triggered the questions giving birth to metacognitive research.

Originally, Flavell’s work (in Braten, 1991) aimed to explore the nature of production deficiency, that is, why ‘children who know perfectly well how to use a strategy or have the relevant prior knowledge, often fail to access it on appropriate occasions’ (Brown, in Braten, 1991, p.182). It was in this context that Flavell, Friedrichs and Hoyt (Cited in Braten, 1996) investigated the development of preschool through fourth grade (9-10 years old) children’s ability to predict their own immediate memory span and to monitor the current state of their learning during an ongoing study session. The data from this initial study indicated that with development, children come to know more about their memory system and show an increasing tendency to oversee their cognitive activities. Flavell named this competence ‘metamemory’. Soon, these findings were replicated with groups of normal and problem learners (Campione, 1987, in Braten, 1991); the ‘meta’ flood was on its way to the fields of psychology.

This move towards building the concept of metacognition has made it clear that from the very beginning it was supposed to refer to two separate forms of competence: declarative knowledge about the cognitive system and its contents, and the effective regulation and control of that system. This knowledge/control distinction has essentially been retained in subsequent attempts to define metacognition. For example, in Flavell’s (1976, in Braten, 1994, p. 182) words: ‘Metacognition refers to one’s

knowledge concerning one's own cognitive processes and products or anything related to them, e.g., the learning relevant properties of information and data' and 'metacognition refers among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective'

Thus, a number of writers have proposed awareness (knowledge) and control of specific cognitive resources as criteria for the understanding of metacognition. More specifically, knowledge about cognition has been considered stateable, 'in that one can reflect on the cognitive processes involved and discuss them with others' (Brown et al, in Braten, 1996), whereas the metacognitive activities used to oversee learning and problem-solving have been interpreted as less conscious, rarely stateable, processes. Quoting Brown (in Braten, 1991, p.183), 'knowing how to do something does not necessarily mean that the activities can be brought to the level of conscious awareness and reported on to others'. In addition to the statability criterion, knowledge about cognition has been characterized by its relative stability, its late development, and its fallibility (Flavell & Wellman, cited in Braten, 1991). Knowledge about cognition is assumed to be fallible in the sense that a person may believe himself/herself to know some cognitive facts, for example about his/her own memory that turn out to be untrue. This latter characteristic i.e. fallibility or 'illusion of knowing' is the major concern of the present research study. Yet, before providing a detailed description of the key components of metacognition, the next section traces the roots of metacognition.

1.2 Roots of metacognition

Metacognition has developed from four major roots as reported by Brown (in Braten, 1991). These roots have provided better understanding of the concept of metacognition and raised a number of questions in the same time. These include: consciousness of cognition, control, self-regulation.

The first root described in the literature is ‘verbal reports as data’. Philosophers such as Plato and Aristotle and psychologists have put forward a number of questions like: Are people conscious about their cognition? Can people verbalize their cognitive processes? How do reporting impact on these processes? The common feature of these questions seems to be the question of reflective access. ‘Reflective access has been used to denote the extension of an individual’s cognition into consciousness, and hence the realm of verbal statements’ as argued by Braten (1991, p. 186). This means that an individual is able to think, know, or cognize, and also report thoughts about thoughts, knowledge about knowledge, or cognizing about cognition to others as well. These two aspects of metacognition delineated earlier are referred to as metacognitive knowledge in Braten (1991).

The second root of metacognition is the notion of ‘executive mechanisms’ within information-processing models of human intelligence in (Braten, 1991). This idea resulted from research in Artificial Intelligence, and ‘attributes powerful second-order operations to a central processor or executive system, capable of efficiently planning, monitoring, and evaluating its own problem-solving strategies’ (Braten, 1991, p. 187). Thus, the executive component of information-processing systems draws on knowledge of the system as a whole, its strategies, and the characteristics of different

tasks. This is mainly related to the procedural aspect of metacognition, that is, metacognitive control or regulation. Within information-processing models, the executive system is especially needed to give explanations to the efficient organization and execution of effortful cognitive processes. This follows from the fact that such processes, unlike automated processes, may vary in the efficiency of their organization and execution (Kluwe, in Braten, 1991)

The third root of metacognition concerns Piaget's self-regulation which is closely related to executive control (Braten, 1991). It has gained a prominent position in several theories of learning and problem-solving (Zimmerman & Schunk, in Braten, 1991). In her search for the roots of metacognition, Brown (in Braten, 1991) has, however, chosen to deal with the concept of self-regulation as it has been featured in Swiss developmental psychology as put forward by Piaget (1976).

Brown (in Braten, 1991) described Piaget's three primary types of self regulation as corresponding to stages of developmental progression. At the same time, these types of self-regulation correspond to different levels of consciousness, implying that self-regulation is not necessarily a conscious experience, but may occur in the plane of action as well. This was described as follows:

During the initial stage of 'autonomous regulation', the learner is conceived of as unconsciously adjusting and fine-tuning his own motor actions. Nor in the next stage of self-regulation, termed 'active regulation', is the individual consciously directing his own learning or problem solving. He is now capable, however, of constructing and testing out 'theories-in-action' via

concrete trial-and-error. Even though the individual is not aware of the measures taken, this active regulation can still lead to successful performance. Finally, at the most mature level, the individual becomes capable of elaborating operations on operations, thereby establishing a control center for his own learning and problem-solving on the mental plane of functioning'. (In Braten, 1991, p. 188)

This implies that the individual's learning and problem-solving may be regulated by conscious processes, involving theory building, thought experiments, and theory revisions, taking place exclusively at the mental level. According to Piaget (in Braten, 1991), the fact that an individual can plan, examine, and revise his problem-solving thoughtfully before it is put into action, signals that he has reached the stage of formal operations.

The fourth root of metacognition relates to Vygotsky's 'other-regulation'. As opposed to Dewey who stressed individual construction of knowledge, Vygotsky focused on the social construction of that knowledge. Dewey represented reflection as a form of problem solving, whereas Vygotsky discussed verbalization as a supportive element of learning (Tarricone, 2011). Moreover, Vygotsky's 'conceptions of the zone of proximal development and internal verbalization are imbued in problem solving and are integral aspects of metacognition' (Bruner, in Tarricone, 2011, p.23). He emphasized the role of support or scaffolding as crucial to facilitate the movement through the zone of proximal development to the potential level of development. Thus, this move is reflected in the learning process by the transition from a social cognitive process to a metacognitive process.

Brown (in Braten, 1991) highlighted the issue of transference from other-regulation to self-regulation, as it belongs to metacognitive inquiry. She referred this line of research to Vygotsky's (1978) developmental theory, particularly to his notion of internalization, captured in the following principles: (1) An operation that initially represents an external activity is reconstructed and begins to occur internally; (2) an interpersonal process is transformed into an intrapersonal one; (3) the transformation of an interpersonal process into an intrapersonal one is the result of a long series of developmental events. This implies that the initial form of activity, defining the social situation of human development, is a collective accomplishment of that activity.

First, an individual is part of a group activity distributed among members and that has an extensive external expression. Then, the individual begins to perform the activity on his own on the basis of the mental functions he developed as he was participating in joint activity (Davydov & Zinchenko, in Braten, 1991). Vygotsky (in Braten, 1991, p. 189) wrote: 'every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside the child (intrapsychological)'.

This idea has been reflected in the concept that Vygotsky (1978) termed 'the zone of proximal development'. The general sense of this 'zone' is that at a certain stage in his development, a child can solve a certain range of problems only when he is interacting with people in his environment and in cooperation with his peers. Once the problem-solving activities have been internalized, however, the problems initially solved under guidance and in cooperation with others will be tackled completely independently. In addition, it was maintained by Vygotsky (1978) that instruction

should be oriented not so much toward the developmental stages already completed, that is, the existing characteristics of the child, as toward those processes or characteristics lying cognitively dormant in the zone of proximal development. In relation to Vygotsky's (in Braten, 1991) ideas, Brown (in Braten, 1991) noted that social settings, where the child interacts with more competent others in a problem solving domain, may be the real hotbeds of learning. Moreover, she pointed out that a great deal of this learning probably involves the transfer of executive control from the expert to the child adding that:

‘Children first experience active problem solving activities in the presence of others, then gradually come to perform these functions for themselves. This process of ‘internalization’ is gradual: First the adult (parent, teacher, etc.) controls and guides the child’s activity; gradually the adult and the child come to share the problem solving functions, with the child taking initiative and the adult correcting and guiding when the child falters; finally, the adult cedes control to the child and functions primarily as a supportive and sympathetic audience. (Brown, in Braten, 1991, p. 190)

Therefore, teachers, parents, and more capable peers initially supply the planning, monitoring, overseeing, and evaluation necessary for adequate performance, gradually transferring the skills of effective self-regulation (a key component of metacognition) to the novice, thus enabling him to learn independently (in Braten, 1991). It is noteworthy that these processes relate to child learning whereby thought processes are initiated and developed. Later in this review, these processes are described in adults’ foreign language learning.

The fifth root to be considered for understanding metacognition is Bandura's self-regulated learning as stated in his Social Cognitive Theory. For social-cognitive theorists, self-regulation is composed of three sub-processes: self-observation, self-judgment, and self-reaction (Bandura, Kanfer & Gaelick, Karoly, in Zimmerman & Schunk, 1989). These sub-processes interact with one another. While observing aspects of one's own behavior, one may judge them against standards and react positively or negatively. One's evaluations and reactions then set the stage for additional observations, either of the same behavioral aspects or others. These sub-processes do not operate independently of the learning environment; environmental influences can assist the development of self-regulation. This point is important, because 'educators are increasingly advocating that students be trained to self-regulate their academic performances' (Paris et al., Zimmerman, in Zimmerman & Schunk, 1989, p. 88), as will be discussed later.

A social cognitive model of self-regulated learning is depicted in Figure 1. It is assumed that students perform learning activities with such goals as acquiring knowledge, learning how to solve problems, finishing assignments, and completing science experiments. Students will differ in how efficacious they feel about being able to attain those goals (Schunk, in Zimmerman & Schunk, 1989). This sense of self-efficacy for learning can be influenced by such factors as students' abilities, prior experiences, and attitudes toward learning, as well as by instructional and social factors (e.g., teacher's presentation of material, classroom reward structure). Efficacy is further influenced by the self-regulation process; students who evaluate their

progress toward learning goals as satisfactory are apt to feel confident about continuing to improve their skills (Schunk, in Zimmerman and Schunk, 1989).



Figure1.1: Social Cognitive Model of Self-regulated Learning

The three theoretical underpinnings of self-regulation (a component of metacognition), i.e., Piaget's self-regulation, Vygotsky's other regulation and Bandura's self-regulated learning were summarized above to understand high processes of cognitive development. For Piaget, taking action to solve problems and build theories represents the advanced stage of formal operations. This developed stage of thinking and executive control in children is transferred from the knowledgeable other to the individual for Vygotsky. In addition, the environment and continuous observations of self efficacious behaviour, according to Bandura, are responsible for generating self-regulative reactions in learners. These constitute background on early thought about how regulation of study turned to be a conscious process. The following section deals with definitions necessary to clarify the concept of metacognition.

1.3 Definitions and components of metacognition

In this part of the review, key definitions of the notion of metacognition are provided and explained. Since metacognition is characterized as a fuzzy, complex concept, it is worth considering the key figures who contributed to its understanding. Besides, metacognition is further explained in relation to its components.

1.3.1 Definitions of metacognition

Metacognition has been defined as thinking about thinking, cognition of cognition, or using Flavell's words 'knowledge and cognition about cognitive phenomena' (in Hacker et al., 1998, p.3). In this definition 'Metamemory involves intelligent structuring and storage, intelligent search and retrieval, and intelligent monitoring suggests that metacognitive thoughts are deliberate, planful, intentional, goal-directed, and future-oriented mental behaviors that can be used to accomplish cognitive tasks' (Flavell, in Hacker et al., 1998, p. 3).

The idea of deliberate, planful, and goal-directed thinking applied to one's thoughts to accomplish cognitive tasks is deeply embedded in Piaget's conceptualization of formal operations in which higher order levels of thought operate on lower ordered levels. During this stage of cognitive development, the abilities of the adolescent begin to differentiate from those of a child. Flavell (in Hacker et al., 1998, p.3) wrote:

‘What is really achieved in the 7-11 year period is the organized cognition of concrete objects and events per se (i.e., putting them into classes, serializing them, setting them into correspondence, etc.) The adolescent performs these

first-order operations, too, but he does something else besides, a necessary something which is precisely what renders his thought formal rather than concrete. He takes the results of these concrete operations, casts them in the form of propositions, and then proceeds to operate further upon them, i.e., make various kinds of logical connections between them (implications, conjunction, identity, disjunction, etc.). Formal operations, then, are really operations performed upon the results of prior (concrete) operations. Piaget has this propositions-about-propositions attribute in mind when he refers to formal operations as second-degree operations or operations to the second power’.

Inhelder and Piaget (in Hacker et al., 1998) clarified further second-degree operations contending that they express the general characteristics of formal thought. Thus, first-degree operations, which are thoughts about an external empirical reality, can become the object of higher order thoughts in an attempt to discover not necessarily what is real but what is possible. ‘Formal thinking is both thinking about thought ...and a reversal of relations between what is real and what is possible’ (in Hacker et al., 1998, p. 4).

Referring to Inhelder and Piaget’s work, Flavell (in Hacker et al., 1998, p. 4) wrote: ‘Another way to conceptualize it is to say that formal operations constitute a kind of ‘metathinking’, i.e., thinking itself rather than about objects of thinking. Children certainly are not wholly incapable of this and other forms of ‘metacognition’. Kluwe (in Hacker et al., 1998) explained the concept of metacognition by identifying two general attributes common to activities referred to as ‘metacognitive’: (a) the

thinking subject has some knowledge about his own thinking and that of the other persons; (b) the thinking subject may monitor and regulate the course of his own thinking’.

Kluwe (in Hacker et al., 1998) also made a finer distinction between what is and is not metacognitive. Stored data in long-term memory and stored processes of a system can be found at both metacognitive and cognitive levels. According to Kluwe, at cognitive levels, stored data represent domain knowledge, which refers to what a person knows about ‘domains of reality’ (e.g. knowledge about mathematics, social interactions, personal history), and stored processes may consist simply of solution processes (i.e. processes directed to the solution of a specific problem).

By contrast, processes that ‘monitor the selection and application as well as the effects of solution processes and regulate the stream of solution activity’ represent, according to Kluwe metacognitive procedural knowledge. Kluwe uses the term ‘executive processes’ to refer to this kind of procedural knowledge. Executive processes involve both monitoring and regulating other thought processes, and therefore correspond with Flavell’s metacognitive strategies and Brown’s metacognitive skills. Executive monitoring processes are those that are directed at the acquisition of information about the person’s thinking processes. More details on Flavell’s and Brown’s conceptualization of metacognition are provided in the next section.

1.3.2 Components of metacognition

Two major frameworks represent the main constituent parts of metacognition in the literature. The first one initiated by Flavell (1979) and includes metacognitive knowledge and metacognitive experiences. The second was framed by Brown (1978) and suggests two components: knowledge of cognition and regulation of cognition. However, before presenting the two frameworks, it is worth considering Flavell's contribution in the study of metacognition as he was the first to start research activity in metacognition and was considered 'the father of the field' (Papaleontiou-Louca, 2003, p.9)

The study of metacognition was introduced by Flavell (1976), who focused on the development of children's memory. Flavell investigated the course of acquisition of the ability to reflect on and control one's own memory processes. As they grow up, children develop the ability to use strategies such as active rehearsal, organization into categories, and, later, elaboration (Kreutzer, Leonard, & Flavell, in Hacker, 2009). These are described further by Williams and Atkins (Cited in Hacker et al., 2009, p. 27) as follows:

‘At a certain point, children become aware of their own memory processes and can begin to control them, by deliberately rehearsing the information they wish to remember or by organizing the information into categories. Some of this cognitive activity is done at an automatic level, as when a child, asked to remember a word list, recites the words in categories without any intention or realization of doing so. But when a memory task is more difficult, a child may

apply a strategy with effort. At this point, he becomes conscious of what he is doing, and he is using a metacognitive strategy’.

Flavell’s work inspired two areas of research: Theory of Mind research and Metacognitive Theory. The former deals with very young children, toddlers and pre-schoolers and the latter is centered on applications of the theory to instructional issues for adult learners (Williams & Atkins, in Hacker et al. 2009).

The development of the Theory of Mind foreruns the development of and the knowledge component of metacognition which is knowledge of cognitive processes. To have a theory of mind means to be aware of one’s knowledge and beliefs that are shaped by experiences and that other people’s experiences shape their knowledge and beliefs. This awareness of cognition, and the separation of cognition from perception, starts at the age of 3 (Kuhn, 2000, in Hacker et al., 2009)

The developmental progression of metacognition goes from awareness to regulation of cognitive processes as it is impossible to regulate something unless one first possesses it. However, it is less clear how these properties develop; that is, what are the prerequisites for the knowledge and regulation of cognition and what environments and instruction can assist them (Williams & Atkins, 2009, in Hacker et al., 2009). Yet, before addressing the issue of how to assist these two concepts, it is important to define them thoroughly from Flavell’s perspective.

1.3.2.1 Flavell’s framework (1979)

According to this model, metacognition refers to awareness and regulation of one’s own cognitive states and processes (Flavell, 1979, in Corkill, 1996). It consists of two

broad components: (1) knowledge of cognitive states and processes and (2) the ability to control or modify these states (Brown, 1987; Flavell, 1985; Gavelek & Raphael, 1985, in Corkill, 1996). The former is called metacognitive knowledge or awareness, the latter metacognitive experience.

1.3.2.1.1 Metacognitive knowledge or awareness

It is defined as ‘what individuals know about themselves and others as cognitive processors’ (Corkill, 1996, p. 275). Metacognitive awareness is further subdivided into what one knows about differences between people, tasks, and strategies. The person category of metacognitive awareness includes everything one knows about the mental states and processes of one’s self and others.

The task category is composed of two subcategories. The first focuses on what information is available during cognition (e.g., how much, how it is organized, how it is presented) and understanding what the variations in this information imply. For example, knowing that what you are shown in a movie preview does not accurately portray the entire film. The second subcategory considers the demands or goals of the task. That is, understanding that some cognitive endeavors require more focused attention or are more difficult. For example, solving a mathematics problem may be more difficult than simplifying an equation.

The strategy variable involves knowledge of cognitive approaches or procedures that are more likely to be effective in achieving specific goals. A cognitive strategy differs from a metacognitive strategy in that a cognitive strategy is a procedure used to achieve a particular task, in Flavell’s words, ‘to make cognitive progress’ (In Corkill, 1996, p. 276). A metacognitive strategy is used because the individual has reason to

believe, perhaps based on evidence from previous experience that a particular strategy is more likely to result in success than another. For example, a piano student may use the cognitive strategy of repeatedly playing a particular piece in order to achieve a certain level of proficiency. Even though this student has difficulty with one section, repeatedly rehearsing the whole piece from start to finish might be the selected strategy. A metacognitive strategy might also include repeated rehearsal of the piece in question, but this student may understand that repeatedly playing a difficult measure or two only will likely result in greater progress than will repeatedly playing the entire piece. That is, the student does not repeatedly rehearse the parts that have been mastered; instead attention is focused on the troublesome sections.

Metacognitive awareness supposedly influences how one engages in a cognitive task. In addition, person, task, and strategy variables may interact in terms of how one proceeds in achieving a particular task. To illustrate this point, Corkill (1996, p. 276) added the following example:

‘I may use flash cards when learning physics equations because I know that spaced practice will assist with recall, but I may use an imagery strategy (along with repetition) when learning my German vocabulary because the information lends itself to that approach. My brother, on the other hand, may select to work on multiple physics problems to learn the equations and a repetition (flash card) strategy for his medical vocabulary. That is, different strategies may be selected by different people for the same task; a similar strategy may be selected for different tasks; and, at the same time, the same strategy will not be considered appropriate for all tasks’.

Consequently, variation in strategy use and knowledge of when to use effective procedures is what characterizes metacognitive activities and experiences.

1.3.2.1.2 Metacognitive experience

It is also termed ‘metacognitive control’ and ‘self-regulating strategies’ and denotes cognitive and affective experiences that relate to some ongoing cognitive endeavor (Flavell, 1985, in Corkill, 1996). These experiences may include, but are not restricted to, a number of mental activities used to regulate learning including planning activities, monitoring during learning, and evaluating outcomes (Brown, 1987, in Corkill, 1996). Ease of learning judgments, feelings of knowing, and confidence judgments are also considered to be components of metacognitive experience (Pintrich, Wolters, & Baxter in press, in Corkill, 1996).

Planning activities can help in activating prior knowledge and organizing and comprehending learning material. For instance, setting goals, skimming a text, or generating questions before reading are examples of planning activities (Garcia & Pintrich, 1994, in Corkill, 1996). Monitoring during learning refers to tracking one’s cognitive state and examining one’s proficiency while engaged in a learning task. Directing and focusing attention, involving in self-testing, and using test-taking strategies are examples of monitoring (Garcia & Pintrich, 1994, in Corkill, 1996). Evaluating outcomes includes checking that the strategies used are efficient and effective (Brown, 1987).

What is worth noting is that these metacognitive experiences ‘may affect metacognitive awareness by addition, revision, or subtraction’ (Flavell, 1979, in

Corkill, 1996, p. 277). That is, what one learns during regulation of learning may add to, revise, or result in deletions from one's metacognitive awareness repertoire. For example, if I engage in self-testing before an exam and discover that I don't understand a segment of the material, I might also realize that the strategy I was using for learning that material was ineffective and revise both my studying techniques and what I know about my own cognitive processes (Corkill, 1996).

Just as the above section described the components of metacognition according to Flavell's conceptualization of the term as a pioneer of the field, the next section reviews the categorization of metacognition as offered by Brown (1987).

1.3.2.2 Brown's framework (1987)

In this second model, Brown (1987) distinguishes knowledge of cognition from regulation of cognition.

1.3.2.2.1 Knowledge of cognition

It is knowledge that individuals have about their own cognition or about cognition in general (Schraw & Moshman, 1995). It usually includes three different kinds of metacognitive awareness: declarative, procedural, and conditional knowledge (Brown, 1987, Jacobs and Paris, 1987, in Schraw & Moshman, 1995). Declarative knowledge refers to knowing 'about' things. Procedural knowledge refers to knowing 'how' to do things. Conditional knowledge refers to knowing the 'why' and 'when' aspects of cognition.

Declarative knowledge includes knowledge about oneself as a learner and about factors influencing one's performance. For example, research investigating metamemory (i.e., knowledge about memory processes) indicates that adults have

more knowledge than children about the cognitive processes associated with memory (Baker, 1989, in Schraw & Moshman, 1995). Similarly, good learners appear to have more knowledge about their own memory and are more likely than poor learners to use what they know (Garner, 1987, Schneider & Pressley, 1989, in Schraw & Moshman, 1995). In one illustrative study, Leal (1987, in Schraw & Moshman, 1995) found that several subcomponents on a Metamemory Questionnaire were significantly related to course performance among college students, including estimated remembrance.

Procedural knowledge refers to knowledge about the execution of procedural skills. Individuals with developed procedural knowledge use skills more automatically (Stanovich, 1990, in Schraw & Moshman, 1995), are more likely to sequence strategies effectively (Pressley, Borkowski, & Schneider, 1987, in Schraw & Moshman, 1995), and use qualitatively different strategies to solve problems (Glaser & Chi, 1988, in Schraw & Moshman, 1995). As an example from an instructional standpoint, a number of studies report that helping younger learners increase their procedural knowledge improves their on-line problem solving performance. King (1991, in Schraw & Moshman, 1995), for example, compared groups of fifth-grade learners in which individuals solved problems using a problem-solving prompt card or solved problems without it. Those who received explicit procedural training in how to use the prompt card solved more problems on a paper-and-pencil test than the control group.

Conditional knowledge is knowing when and why to apply various cognitive actions (Garner, 1990, Lorch, Lorch & Klusewitz, 1993, in Schraw & Moshman, 1995). Recent studies suggest that conditional knowledge continues developing at least

through middle childhood. For instance, Miller (1985, in Schraw & Moshman, 1995) found that although kindergarten children showed conditional knowledge about their own learning, they showed less knowledge than older children. Similarly, older children and adults appear better able than younger learners to selectively allocate their attention based on conditional task demands (Reynolds, 1992, in Schraw & Moshman, 1995). Comparing adults, Justice and Weaver-McDougall (1989, in Schraw & Moshman, 1995) found a positive relationship between knowledge about the relative effectiveness of strategies (i.e., conditional knowledge) and strategy use (i.e., regulation of cognition).

Based on these findings, researchers have argued that ‘high achieving learners possess declarative, procedural and conditional knowledge about cognition’ and that this knowledge ‘usually improves performance’ (Schraw & Moshman, 1995, p. 354). Many theorists believe that metacognitive knowledge appears early and continues to develop at least throughout adolescence (Brown, 1987; Garner & Alexander, 1989; Flavell, 1987, in Schraw & Moshman, 1995). Adults tend to have more knowledge about their own cognition than do young children and are better able to describe that knowledge (Baker, 1989, in Schraw & Moshman, 1995). However, a number of studies reveal that children as young as six can reflect with accuracy on their own cognition, especially when asked to do so in a familiar domain (Flavell, 1992, in Schraw & Moshman, 1995). Yet, generally, children are not able to express their metacognitive knowledge and adults find it difficult to describe it as well. Although metacognitive knowledge need not be statable to be useful, conscious access to such information may facilitate thinking and self-regulation (Schraw & Moshman, 1995).

This section described the first component of metacognition; knowledge of cognition. The next section is concerned with regulation of cognition as suggested by Brown.

1.3.2.2.2 Regulation of Cognition

Regulation of cognition describes the metacognitive activities that help control one's thinking or learning. 'Although a number of regulatory skills have been described in the literature, three essential skills are included in all accounts: planning, monitoring, and evaluation' (Jacobs & Paris, 1987; Kluwe, 1987, in Schraw & Moshman, 1995, p. 354).

Planning involves the selection of appropriate strategies and the allocation of resources that affect performance. Examples include making predictions before reading, strategy sequencing, and allocating time or attention selectively before beginning a task (Miller, 1985, in Schraw & Moshman, 1995). An in-depth analysis of how good and poor writers plan their writing was conducted by Bereiter and Scardamalia (1987, in Schraw & Moshman, 1995). One finding relates to the ability to plan and knowledge about this process to develop throughout childhood and adolescence, improving dramatically between the ages of 10 and 14. Older, more experienced writers engage in more global planning than local planning. In addition, more experienced writers are better able to plan effectively regardless of text 'content', whereas poor writers are unable to do so.

Monitoring refers to learners' ongoing awareness of comprehension and task performance. The ability to engage in periodic self-testing while learning is an appropriate example. Research indicates that monitoring ability develops slowly and is

quite poor in children and even adults (Glenberg, Sanocki, Epstein, & Morris, 1987; Pressley & Ghatala, 1990, in Schraw & Moshman, 1995). However, several studies found a link between metacognitive knowledge and monitoring accuracy. For example, Schraw (1994, in Schraw & Moshman, 1995, p. 355) found that ‘adults’ ability to estimate how well they would understand a passage prior to reading was related to monitoring accuracy on a post-reading comprehension test’. Slife & Weaver (1992, in Schraw & Moshman, 1995) made similar observations. Studies also suggest that monitoring ability improves with training and practice.

Evaluation refers to appraising the outcomes and regulatory processes of learning. Typical examples include re-evaluating one’s goals and conclusions. A number of studies indicate that metacognitive knowledge and regulatory skills such as planning are related to evaluation (Baker, 1989, in Schraw & Moshman, 1995). For example, with respect to text revisions, Bereiter and Scardamalia (1987, in Schraw & Moshman, 1995) found that poor writers were less able than good writers to adopt the reader’s perspective and had more difficulty detecting text problems and correcting them. These differences were attributed to the use of different mental models of writing. Good writers used what Bereiter and Scardamalia (1987) referred to as the ‘knowledge transforming’ model. In contrast, poor writers used a ‘knowledge-telling’ model.

Researchers agree that regulation improves performance in a number of ways, including better use of cognitive resources such as attention, more effective use of strategies, and a greater awareness of comprehension breakdowns (Schraw & Moshman, 1995). A number of studies report significant improvement in learning when regulatory skills and an understanding of how to use these skills are included as

part of classroom instruction (Cross & Paris, 1988; Brown & Palincsar, 1989, in Schraw & Moshman, 1995). Research also indicates that knowledge of cognition and regulation of cognition are not independent of one another. For example, Schraw (1994, in Schraw & Moshman, 1995, p. 356) found that ‘college students’ judgments of their ability to monitor their reading comprehension were significantly related to their observed monitoring accuracy’.

Thus, there exists a close relationship between the key constructs of metacognition i.e., knowledge (or awareness in Flavell’s terms) and regulation (or experience according to Flavell) as proclaimed by research. Papaleontiou-Louca (2003, p. 16) make a similar statement: ‘It seems likely that metacognitive knowledge, metacognitive experience, and metacognitive skills are constantly informing and eliciting one another during the course of a cognitive task’. In the same vein, she argued that these components complement each other. Metacognitive knowledge is needed to act upon metacognitive experience and metacognitive experience informs knowledge. The next section is equally concerned with the relationship between knowledge and regulation from a Vygotskian perspective.

1.4. Relationship between knowledge of cognition and regulation of cognition: the Vygotskian view

Vygotsky’s theory advocates to a large extent the mastery and control of one’s own cognitive processes (Braten, 1991). Rohrkemper (in Braten, 1991) remarked that he was inspired by the idea from Marxist thinking which emphasizes that the ability to plan and direct one’s activity is peculiar to humans. Vygotsky tried to define this principle in his analysis of developmental change. He showed that at each stage of

development, children acquire the means by which they can competently affect themselves. As John-Steiner and Soubberman (in Braten, 1991, p. 306) put it: 'For Vygotsky, one of the essential aspects of development is the increasing ability of children to control and direct their own behavior, a mastery made possible by the development of new psychological forms and functions and by the use of signs and tools in this process'.

Vygotsky (in Braten, 1991) focused on language which he viewed as the instrument of individual thought that is of a semiotic nature. Thus, it is mainly through the mediation by human language, with the various ways it is used and the various types of speech, that the higher psychological processes are formed and maintained. Accordingly, it is through this exceptional, most important form of sign-using activity that individuals come to control and direct their own cognition and, in turn, overt behaviour. Vygotsky claimed that, with the help of speech, individuals 'acquire the capacity to be both the subjects and objects of their own behavior' (In Braten, 1991, p.307)

Vygotsky's work focused on how children progressively gain active control over initially passive cognitive processes through human speech. Most notably, he discussed how speech becomes a pervasive and profound part of perception, attention, and memory, converting the non-mediated, basic forms of these processes into speech-mediated, higher forms. Thus, Vygotsky considered the sign-using activity of human speech to be the key mechanism whereby individuals achieve deliberate or voluntary control of their own cognition. Moreover, from his perspective, the stage of effective

self-regulation is not reached until the individual is able to control his own cognition with the help of ‘inner speech’ (Zimmerman, 1989, in Braten, 1991).

It is clear that studies on metacognition lend themselves to other important aspects such as language. Besides, other variables combine to provide a comprehensive view on metacognitive thinking like critical thinking, motivation, self-efficacy and affective states in general. These are mentioned here to point out their importance in the study of metacognition.

1.5 Issues in metacognition and self-regulated learning

Being human, learners demonstrate a multiplicity of imperfect characteristics that impede their learning. These pose obstacles to effective metacognitive monitoring and metacognitive control and they raise substantial barriers to learners’ quests to self-regulate learning productively. The following section discusses such debated issues on metacognition.

1.5.1 Learners as poor judges of their knowledge

A large number of researchers have investigated whether learners can accurately judge what they know or their metacomprehension, and factors that affect Judgments of Learning (JOL) (for example, Dunlosky & Lipko, in Hacker et al., 2009). A distinction can be made regarding whether learners judge their comprehension by considering learning objective by learning objective, (termed resolution), or overall learning objectives (termed calibration). While findings vary somewhat depending on type of material (e.g., word lists, paragraphs), it is commonly agreed that ‘learners’ metacomprehension is often quite poor’ (Winne & Nesbit, 2009, in Hacker et al., 2009, p. 262). When metacomprehension is measured using correlational statistics,

ranges of near zero to +0.50 are common. Very often, learners' calibration is moderately to substantially optimistic; they judge they know material that they do not.

When learners fail to recognize occasions where metacognitive control is necessary, they suffer a production deficiency and thus fail to pass the first gate necessary to realize productive Self Regulated Learning (SRL) (Winne & Nesbit, 2009, in Hacker et al., 2009).

1.5.2 Learners' lack of effective study tactics

Findings of studies conducted with language learners demonstrate moderate to substantial gains in achievement when learners are taught to use study tactics such as generating summaries of texts, questioning, using diagrams, re-reading and providing opinion on content (Winne & Nesbit, 2009, in Hacker et al., 2009). The literature on teaching reading comprehension strategies reports that learners fail to pass the first four gateways to productive metacognition (Garner & Alexander, 1989; Paris, Wasik, & Turner, 1991, in Hacker et al., 2009) because 'they miss cues for tactics, misinterpret cues, lack skills for studying, or are not motivated to pursue plausible and effective study tactics' (Winne & Nesbit, 2009, in Hacker., 2009, p. 263). Those intervention studies show that learners in control and comparison groups are not skilled enough about tools for studying effectively. Moreover, even when learners acknowledge that simple tools are effective, they may abandon those tools on the basis of beliefs. These are addressed in the next section.

1.5.3 Learners' beliefs and self-regulated learning

Learners' belief systems affect self-regulated learning. For example, learners possess epistemological beliefs about what knowledge is and how knowledge can be

manipulated. 'Learners with 'sophisticated' epistemological beliefs view knowledge as elastic and uncertain. They expect learning to require effort, realize errors are opportunities to generate knowledge and seek explanations rather than just focus on facts' (Winne & Nesbit, 2009, p. 263). Learners with less sophisticated beliefs hold opposing views.

Research findings (Winne & Nesbit, 2009) demonstrate that learners with more sophisticated beliefs monitored better task complexity; they set goals and developed plans for studying that matched the tasks. Those with less sophisticated epistemological beliefs proceeded less well. Schommer, Crouse and Rhodes (1992, in Hacker et al., 2009) showed that undergraduates with less sophisticated epistemological beliefs reported they would use study tactics that process information in a superficial way. They achieved less than students with more sophisticated epistemological beliefs.

Beliefs extend to views about how well study tactics work and how much effort they take to use, the cost and benefit or utility of tactics. Even when undergraduates perceive a tactic is effective, they may reject it if immediate past experience generates perceptions that it is too effortful (Rabinowitz, Freeman, & Cohen, 1993, in Hacker et al., 2009).

The issues reviewed so far point to some inaccuracies that can be demonstrated through learners' performance. For the purpose of the present study, measurement of metacognition is needed in order to assess students' academic achievement.

1.6 Measuring metacognition in relation to academic achievement

Developing self-regulated learners is a major aim of education. Both practitioners and researchers seek to promote self-regulatory abilities, such as metacognitive knowledge and regulation of schooled learners. Therefore, there is a clear need for measures of metacognition as well as measures of other self-regulatory constructs such as self monitoring and self evaluation (Winne & Perry, 2000, in Sperling, Howard, Miller & Murphy, 2002). Two main reasons justify this need:

First, teachers, administrators, and researchers are interested in facilitating self-regulated learning and therefore need to assess the effects of learning strategy interventions on learners' metacognitive processing and strategy use. For example, investigation of the status of metacognitive skills or knowledge in students could facilitate effective targeting of metacognitive and other self-regulatory weaknesses. If such weaknesses were related to reading comprehension, for instance, instruction could be focused to develop more effective planning and monitoring skills (Cross & Paris, 1988; Manning, Glasner, & Smith, 1996; Paris, Cross, & Lipson, 1984; Schraw & Dennison, 1994, in Sperling et al., 2002). Second, there is a need to understand the components of self-regulated learning such as strategy use, metacognition, and motivation that can further lead to theory development and testing (Winne and Perry, 2000, in Sperling et al., 2002).

Measurement methods of metacognition and self-regulation have been implemented both for research and practice (Sperling et al., 2002). Measures that directly assess metacognition and broader self-regulatory constructs have also been used. Swanson (1990, in Sperling et al., 2002), for example, used an interview

technique with learners in the intermediate grades to assess metacognition. Similarly, Zimmerman (1986, in Sperling et al., 2002) employed a structured interview technique to measure self-regulation. Others have employed monitoring checklists (e.g., Manning, 1996, in Sperling et al., 2002) to promote and measure metacognition. Newman (1984, in Sperling, 2002), Pressley and colleagues (Pressley & Ghatala, 1989; Pressley, Levin, Ghatala, & Amhad, 1987, in Sperling, 2002), and Tobias and colleagues (e.g., Tobias, Everson, and Laitusis, 1999, in Sperling et al., 2002) have used calibration techniques to assess learners' metacognitive regulation, as explained below.

Each method of measurement has advantages and disadvantages. The main disadvantage is that 'it is difficult to capture metacognitive processing via direct observation' (Sperling et al., 2002, pp. 53-54). Achievement scores are particularly limited as a measure because gains in content knowledge and abilities may or may not reflect changes in metacognition, strategic knowledge, or other regulatory constructs. Interviews and other rich data sources, such as journals and open-ended responses, are problematic because of the relatively lengthy time to administer and time-consuming process of data analysis. Sometimes these data are reduced to a relatively small numerical scale, which may decrease the benefits of such rich measures (e.g., Craig & Yore, 1995, in Sperling et al., 2002). Think-aloud protocols are similarly demanding in administration and scoring. Difficulties sometimes appear when learners' strategies and skills may prevent them from thinking aloud while engaging in learning and monitoring tasks (Cavanaugh & Perlmutter, 1982; Pressley & Afflerbach, 1995, in Sperling et al., 2002). Monitoring checklists, where learners mark target activities

during or after a learning task, provide a systematic means to assess both metacognitive classroom academic learning and self-regulation of behavior in interventions (Manning, 1991; Reid & Harris, 1993, in Sperling et al., 2002).

In the technique of measurement of metacognition called Calibration, learners' judgments of their learning or of their performance are compared to their actual performance. These have assessed the concept across age and ability levels (Pressley & Ghatala, 1989; Pressley, Levin, Ghatala, & Amhad, 1987; Schraw & Roedel, 1994, in Sperling, 2002). In calibration measures, the difference between the rating and actual performance is calculated as either a bias or accuracy measure. The magnitude of this difference is taken as a measure of a learner's ability to monitor and evaluate his/her learning. The benefits of the calibration technique are that calibrations may be less subjective and also easily administered and scored. Although often used, one concern with calibration techniques is their close similarity to self-efficacy ratings (Sperling et al., 2002).

Self-report inventories as measures of metacognitive processing are perhaps, in some ways, the least problematic technique. In terms of their benefits, these inventories are easily administered and scored, which makes them useful large-scale assessment tools for determining which learners may need interventions in metacognition, strategy use, or self-regulation. Self-report inventories may also be helpful for use in theoretical research. For instance, research has demonstrated that both the knowledge and regulation components of metacognition can be measured via self-report inventories (Pereira-Laird & Deane, 1997; Schraw & Dennison, 1994, in Sperling, 2002). As self regulatory constructs are further delineated, researchers will

need measures of metacognitive processes to facilitate theoretical and predictive models of self-regulation. Unlike inventories used with older learners, such as the Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994, in Sperling et al., 2002) or the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, and McKeachie, 1991, in Sperling et al., 2002), and the Learning and Study Strategies Inventory (LASSI) (Weinstein, Schulte, and Palmer, 1987, in Sperling et al., 2002) that have undergone assessment for psychometric properties, less is known regarding self-report inventories of metacognition for use with young learners. In the present study, score measures have been used for reading and writing achievement, but for metacognition, the Metacognitive Awareness Inventory (MAI) as a measurement tool for metacognitive knowledge and the Taxonomy of Metacognitive Judgments (TMJ) as a technique employed for addressing the metacognitive monitoring of participants have been used. These tools seemed quite adequate for this study, and are described fully in Chapter Four. In addition, and to back up and compare the quantitative data obtained from these measuring instruments, a semi-structured interview as a qualitative tool has been used to confirm the findings and add depth and breadth to the results of the present research work. The next section addresses the issue of teaching with and for metacognition.

1.7 Teaching with and for metacognition

This section refers to the Vygotskian perspective that holds that ‘education and upbringing are means of organizing the process of man’s assimilation of socio-historically developed capacities, which are reproduced by the individual in the course of his mental development’ (Davydov & Zinchenko, 1989, in Braten, 1991, p. 313).

Educational influence, then, is regarded as a necessary and universal aspect of individual development.

Given the great importance attached to social-linguistic interaction within Developmental Theory, Vygotsky emphasized the dialogical character of effective instruction which is also reflected in the notion of 'Zone of Proximal Development'. Initially, the learner may need assistance from his dialogue with the teacher to solve certain problems. This, in turn, will probably enable him to regulate this kind of problem-solving on his own, without a need for any dialogical 'scaffolding'. He wrote: 'What is in the zone of proximal development today will be the actual developmental level tomorrow, that is, what a child can do with assistance today she will be able to do by herself tomorrow'(in Braten, 1991, p. 313) . Thus, this stresses the importance of the instructor's metacognition in relation to that of learners and leads towards the discussion of the instructional perspective in the study of metacognition.

Teaching metacognitively means teaching with and for metacognition. Teaching with metacognition refers to teachers thinking about their own thinking when teaching. It includes reflecting on: instructional goals, students' characteristics and needs, content level and sequence, teaching strategies, materials, and other issues related to curriculum, instruction and assessment. Such thinking occurs before, during and after lessons in order to maximize instructional effectiveness. Teaching for metacognition aims to develop students' metacognition (Hartman, 2001)

Metacognition in teaching includes knowing what instructional strategies are in the teacher's repertoire, what they entail, when and why to use them, and how to apply

them. This type of metacognition is needed for effective planning of a lesson or for changing a teaching approach when it is not effective (Hartman, 2001).

While teachers, like students, need to monitor and regulate their cognitive activity and must be strategic when they attempt to solve a problem, teachers have the additional tasks of promoting content learning, identifying appropriate strategies, making moment-to-moment decisions to ensure students' learning, adjusting for individual differences, and much more (Duffy et al, 1987, in Hacker et al., 2009)

The issue surrounding teachers' metacognition is, for instance, 'the fact that many teachers conduct lessons without adequate advance planning and without adequately checking to see how a lesson is going while it is underway' (Hartman, 2001, p. 151). Teachers often teach the way they were taught rather than consider the advantages and disadvantages of alternative approaches and how to use them most effectively. When observing classroom teachers, Brophy (in Hartman, 2001) found that many were so eager to begin a lesson that they skipped over communicating the lesson's objectives. Only five percent explicitly described the purpose of the assignments given to students and only fifteen percent mentioned the explicit cognitive strategies students needed to use when doing the assignment, thereby impeding students' mastery of those strategies.

While research shows that low-achieving students need explicit information on how to perform academic tasks (Doyle, 1983, in Hartman, 2001), research by Winne and Marx (1982, in Hartman, 2001) suggests that most teachers are least successful in providing that guidance and structure for students. They interviewed teachers and students to study their views of thinking processes for classroom learning and to

examine the degree of consistency between teachers' goals for students' thinking processes and the extent to which they are elicited successfully. The results indicated that there were serious problems in classroom communication. Teachers were relatively unsuccessful in setting objectives, defining tasks, and engaging students. Consequently, many teachers need to think more carefully about what they present during a lesson and how they provide students with important information.

Teaching for metacognition, on the other hand, can improve classroom communication and facilitate effective academic performance. For example, research on expert versus novice teachers shows that experts, or more experienced teachers, are better able to monitor, interpret and evaluate what occurs in a classroom during instruction than novices, or inexperienced teachers. Whereas novices were only able to describe classroom behavior, experts were able to explain it (Sabers, Cushing & Berliner, 1991, in Hartman, 2001).

According to Barko and Livingston (1989, in Hartman, 2001), expert teachers characteristically spend much more time in long-range planning than novices, can monitor the effectiveness of a lesson in progress, and change approaches as needed and are generally comparable to experts in other areas in their superior metacognitive skills. Their research indicated that expert teachers were also more effective than novices in managing students' questions, comprehension problems, and wrong answers.

Paris et al., (1991) suggested a model of metacognitive knowledge instruction for reading and writing to implement teaching for metacognition in the classroom.

1.7.1 Metacognitive Knowledge Instruction Model to improve reading and writing

The Metacognitive Knowledge Instruction Model represented in Figure 1.1 below was suggested by Paris et al., (1991). It is based on the assumption that reading and writing are interactive processes linked to one another. Reading lends itself to writing and writing lends itself to reading. It also implies that both reading and writing are processes which involve three recursive phases: a planning phase (before reading or writing), a drafting phase (during reading or writing), and a responding phase (after reading and writing).

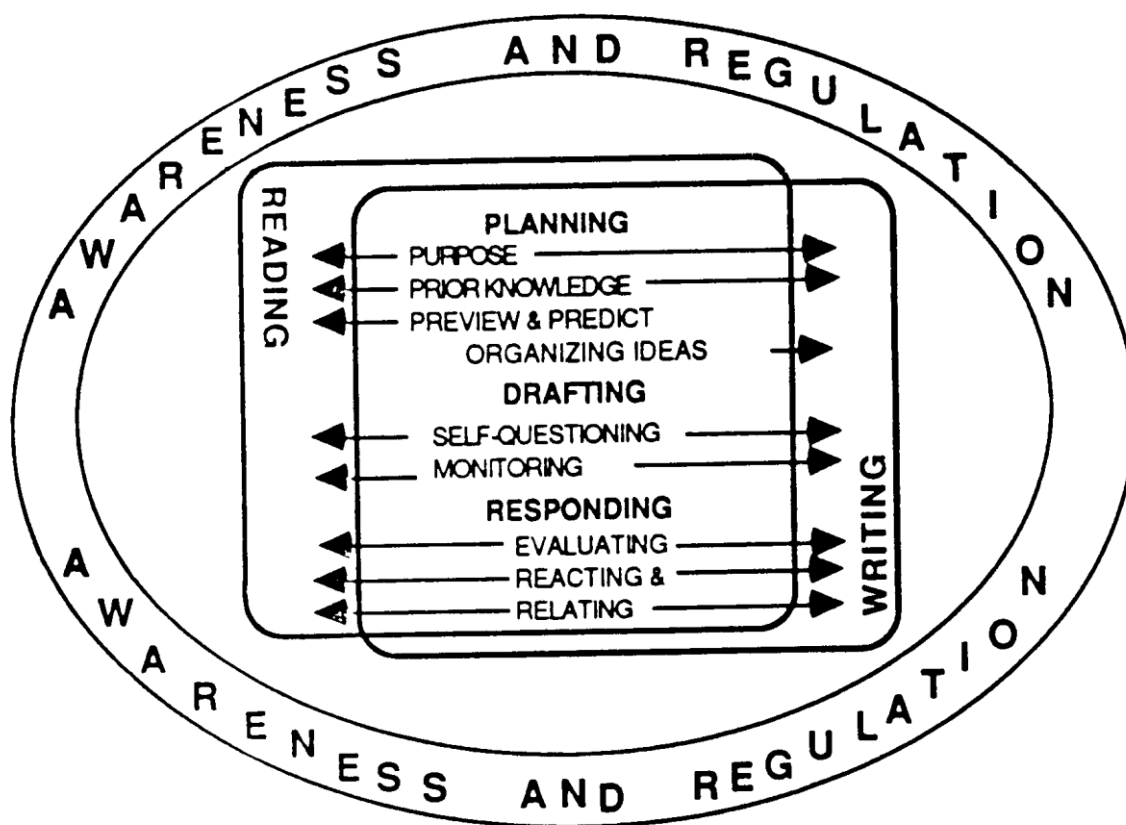


Figure 1.2: A Model for Metacognitive Knowledge Instruction (Paris et al. 1991. In El Hindi, 1996)

By using this model, students are taught specific metacognitive strategies that correspond to each of the phases of reading and writing. As Figure 1.1 illustrates, the metacognitive strategies associated with each of the three phases for reading and writing (planning, drafting and responding) work in parallel. Students are taught that planning for reading involves identifying a purpose, activating prior knowledge, previewing text, and making predictions about the text.

According to Baker and Brown (1984) effective readers engage in self-questioning and comprehension monitoring to keep track of their success in understanding the text. The students are instructed on self-questioning and comprehension monitoring as metacognitive strategies needed for the drafting phase of reading. For the third phase of Paris et al., (1991) model which is responding, the students are taught to evaluate their understanding of the text, to react to the text, and to relate the text to prior experience.

Paris et al., (1991) metacognitive strategies for writing are similar to the metacognitive strategies for reading. Planning for writing involves the metacognitive strategies of identifying a purpose for writing, activating prior knowledge, and organizing ideas. Writing is clearly ‘goal directed’ and needs background knowledge (Hayes & Flower, 1987). Setting a purpose is a fundamental metacognitive activity associated with writing (Raphael et al., 1989, in El Hindi, 1996).

In the drafting phase of writing, learners engage in self-questioning of their own texts and monitor their success at completing the writing task. Englert et al. (1988) suggested that self-regulating and monitoring a paper’s completion during writing is as important as the monitoring process associated with reading comprehension. Self-

questioning assists the monitoring process of writing. Hayes and Flower (1987) identified monitoring and directing one's own writing process as part of the problem solving necessary for effective writing (El Hindi, 1996).

During the responding phase of writing, 'learners evaluate their success at the writing task, react to their texts as readers, and examine their texts holistically in order to see connections among different parts of their text' (El Hindi, 1996, p.220). Englert et al. (1988) identified self-evaluation of a paper's completeness as an important metacognitive activity for writing. By reacting to their own texts as readers, they are better able to evaluate their texts for completeness. Examination and awareness of text structure or relations among segments of a text is also important for success in writing (Englert et al., 1988; Raphael et al., 1989, in El Hindi, 1996)

In addition to these specific strategies, two other essential components are the awareness and regulation of strategy use. Within the model described above, awareness and regulation are represented as thought processes which are used in conjunction with any and all strategies presented. For example, while students are taught how to identify a purpose for reading, they are also taught that they need to be aware of activating this strategy and to regulate its use (e.g., decide when and why this strategy is appropriate). Similarly, students are taught not only how to mark text which supports the monitoring strategy, but 'to identify when marking text is appropriate and to regulate their use of the strategy according to the reading situation' (El Hindi, 1996, p.220)

Thus, the model calls for a more integrative approach to literacy instruction which stresses metacognitive awareness that may benefit university students aiming to

improve their reading and writing skills. This approach, which promotes active processing of text seems to fit the heavy demands placed on university degree students. Instructional programs targeted toward assisting them with reading and writing proficiency would be improved by ‘attending to metacognitive skill development for these learners’ (El Hindi, 1996, p. 228). The role metacognition plays in enhancing learning and teaching has been clearly stressed by researchers who have suggested models for its implementation

Conclusion

This chapter has traced the origin and roots of metacognition and defined its constituents i.e., knowledge and regulation. It has pointed out to two frameworks to describe two metacognitive components i.e., knowledge and regulation; those by Flavell (1979) and Brown (1987). Besides, this chapter has referred to some variables that link to metacognition and contribute to its understanding, like motivation and self-efficacy, but which will not be accounted for in the present study. Measurement issues and instructional considerations in the study of metacognition have also been tackled in this first chapter that provided an overview of research on metacognition.

In the following chapters, reading and writing as processes in relation to metacognition will be discussed. As this study is concerned with the ‘illusions of knowing’ in reading and writing, attention is directed to metacognition and reading in Chapter Two and to metacognition and writing in Chapter Three.

CHAPTER TWO

READING AND METACOGNITION

CHAPTER TWO

READING AND METACOGNITION

Introduction

This second chapter delineates the relationship existing between metacognition and the reading skill in terms of awareness, monitoring and regulation. Reading in an academic context and at the undergraduate level, as is the case of the present study, requires not only understanding single words and decoding but also taking charge of what one is reading and assessing comprehension. This is why this chapter is concerned with monitoring comprehension in reading and the active involvement of the reader with the text. These are the key characteristics of metacognitive monitoring found in strategic readers. This chapter discusses this issue within eight sections. Section one is devoted to definition, processes and factors affecting reading. Section two deals with reading strategies and the strategic reader and section three reviews metacognitive reading. Section four describes self-regulated comprehension of reading and section five examines comprehension breakdowns and illusions of knowing. Section six addresses calibration of comprehension in reading and section seven suggests ways to improve metacognitive illusions. Finally, section eight presents a reading task in an L2 examination situation from a metacognitive standpoint. The first section defines the reading process and the factors affecting it.

2.1 Definition, processes, and factors affecting reading in L2

Reading can be defined as ‘the ability to derive understanding from written text’ (Grabe, 2010, p. 90). Reading in a second or foreign language can be considered a blend of skills and abilities that readers demonstrate when they start reading. The main characteristics used to describe reading as a process are: ‘rapid and automatic, interactive, flexible and strategic, purposeful and linguistic’ (Grabe, 2010)

Fluent reading is rapid by definition. A number of words have to be activated at the same time to achieve understanding. Reading slowly makes text comprehension inefficient. The ability to recognize words automatically renders the process of reading more rapid and efficient.

Moreover, the reading process is interactive. On the one hand, various skills like decoding, inferring, etc are simultaneously needed to achieve comprehension in reading; these can be either automatic or attentional. On the other hand, interaction occurs between textual information and reader’s background knowledge when reading for high level comprehension as it is the case in the present study i.e. reading metacognitively.

The definition that relates directly to the study at hand is the one that considers reading as strategic and flexible. Strategic readers assess their text processing and on the basis of that, they adapt their monitoring practices. This ability to adapt strategically is a feature of a good reader (Hudson, 2007; Koda, 2005, in Kaplan, 2010)

Besides, reading is purposeful and depends largely on learners' interest and motivation. It can be reading for pleasure whereby the reader can change the text and monitor interest. Or, it can be a class assignment where students must process a text and produce a response to it.

Finally, reading is a linguistic process in which meaning is derived by means of linguistic processing. As opposed to reading as a reasoning process for fluent readers, L2 reading is demanding for beginning readers who often struggle with the foreign language.

In terms of the processes involved in reading, two main types of processing are required: lower level processing and higher level processing (Grabe, 2010). For low level processing, readers must be rapid and automatic word recognizers; they must be able to use basic structural information; and begin to assemble clause-level meaning units (Perfetti, Landi, & Oakhill, 2005, in Grabe, 2010). Within higher level processing, readers must be able to assemble clause-level information into a text model of their understanding, strengthening repeated and pertinent ideas and removing irrelevant ones. Readers also need to build an interpretation of the text that conforms to their goals, attitudes, and background knowledge. They also have to make appropriate inferences and determine whether they are staying on task and achieving their reading purpose (Grabe, 2009; & Kintsch, 1998, in Kaplan, 2010)

The present study focuses on high level processing of reading which refers, according to Grabe (2010), to the text model of reading. This text model represents:

...‘the basic summary of the text, as the reader understands it to be intended by the author. At the same time, a more elaborate copy is created that combines the text model with stronger reader views about the purpose of the author in writing the text, the attitude of the reader to the material in the text, past experiences with reading similar text, reader motivations for reading, and reader evaluation of the text itself such as interests and opinions’. (Grabe, in Kaplan, 2010, p. 92)

Thus, a good reader creates two levels of comprehension for a text. Both levels of text understanding require interactions with reader knowledge and extensive inferencing and reasoning about the text. Finally, a fluent reader is able to monitor his or her reading (an executive control process) to decide if it is achieving the intended purpose, and if needed, to take some actions to make adjustments for better understanding demonstrating, therefore, an active processing of text.

A number of factors are said to confront readers when reading in a foreign language. Among the most common of these are: limited knowledge of L2, transfer of skills, strategy used uniquely by L2 readers (e.g., bilingual dictionaries), and the limited exposure of learners to L2 and L2 reading experiences (Grabe, 2010).

Compared to L1 readers, L2 readers start reading without the language base that is present in L1 reading. L1 readers begin their formal reading instruction with knowledge of vocabulary and structure of the language. The L2 reader, in contrast, may have relatively little L2 spoken language knowledge at the time reading instruction begins.

The Language Threshold Hypothesis has evidenced that ‘L2 language knowledge plays a great role until some general threshold of language knowledge is passed’ (Grabe, in Kaplan, 2010, p.94). L2 students have to recognize the vocabulary of the language, take command of language structure and discourse markers, and manage L2 reading tasks. When some words are recognized rapidly and structures are parsed automatically, the L2 student can be successful in using a range of reading skills and strategies that have supported L1 reading. In other words, the student is now able to read ‘with greater metalinguistic awareness, monitoring comprehension efficiently, engaging in a range of reading strategies with more difficult texts, and using background knowledge to support appropriate inferences’ (Grabe, in Kaplan, 2010, p. 94).

As concerns the issue of L1 transfer, L2 readers ‘almost certainly transfer underlying cognitive reading skills such as working memory processing, phonological processing, and orthographic processing for word recognition’ (Genesee et al., 2006, in Kaplan, 2010, p. 94). L2 readers do transfer L1 syntactic knowledge to their L2 reading, sometimes even at advanced stages. The transferred knowledge is said to be supportive in some cases, and may cause interference in others (Koda, 2005, in Kaplan, 2010).

Another issue that L2 readers face involves using certain reading strategies and the role of bilingual resources for reading such as bilingual dictionaries. The use of mental translation as an L2 strategy is not considered ineffective by strategy research. It can be helpful when the text is challenging. The use of bilingual dictionaries can be

equally useful and it may support L2 reading. Yet, students need to be trained to use this material effectively (Grabe, in Kaplan, 2010)

In addition to strategy use, L2 readers have limited exposure to L2 compared to L1 readers. Given that reading efficiently depends on rapid and automatic word recognition, extensive exposure to L2 texts through reading is the only learning possibility for L2 students seeking to develop advanced L2 reading abilities. Yet many L2 students do not receive adequate exposure to L2 texts necessary for the development of fluent L2 reading skills. The reason is, according to Grabe (2010, in Kaplan, 2010, p.95, 96) ‘that most teachers, curricula, and instructional materials do not recognize the severely limiting impact of relatively small amounts of exposure to L2 reading texts’. The solution, which is reading extensively outside the classroom, is, in theory, obvious and simple, but in practice, not easy to implement because students often lack autonomy and do little or no independent study.

Among the factors that might influence L2 reading is the social aspect that is highlighted in this study. Reading is primarily a cognitive activity, yet social influences on reading development cannot be ignored. The home is the first influential factor besides school, peers and teachers. For instance, ‘research has shown that home factors in early reading development have a significant and lasting impact, though they do so in many complex ways, depending on the settings and interactants’ (Snow et al., 2007, in Kaplan, 2010, p. 93). The role of peers, teachers and institutions is substantial in developing interest, motivation, reading proficiency and resources. Thus, these social factors can play a major role in the development of students’ reading ability.

After defining reading and discussing some issues and factors affecting it, it is important to consider reading comprehension strategies, both cognitive and metacognitive, and their role in the reading process.

Due to its complex nature, effective reading comprehension is difficult to define. For more than two decades, ‘researchers have attempted to identify the processes effective readers use. The goal is that teachers articulate those strategies to novice readers’ (Randi, Grigorenko, and Stenberg, 2005, p. 21). For example, early research described a set of comprehension-monitoring strategies students could practice through the reciprocal teaching method (Palincsar & Brown, 1984, in Israel et al., 2005). They found that readers who used these cognitive strategies intentionally, like summarizing, generating questions, clarifying unfamiliar vocabulary, and making and revising predictions, improved their reading comprehension (Rosenshine & Meister, 1994, in Israel et al., 2005).

On the debate of what readers comprehend out of a text after using cognitive strategies such as summarization, Winograd and Johnston (1987, in Israel et al., 2005) called attention to the distinction between ‘personally constructed and socially constructed meaning’. They argued that ‘research has tended to view reading comprehension as an end convergent on a single meaning perhaps best achieved through the use of strategies. They called for an expanded definition of reading comprehension that recognizes both the personal and social construction of meaning’ (in Israel et al., p.21). Personally constructed meaning is driven from the interaction between reader and text and reading is a generative activity that results in personal interpretations of the same text by different readers (Rosenblatt, 1978, in Israel et al.,

2005). For this reason, readers' prior knowledge and experiences serve more central roles and readers' interpretations are likely to be different than convergent on one meaning. Reading comprehension presumably occurs when readers bring to bear their prior knowledge and experiences to make sense of text, 'often rendering the author's ideas, the reader's' (Pearson & Fielding, 1991, in Israel et al., 2005, p. 21).

The role of the reader as a dynamic meaning maker represents the transactional view of reading comprehension (Rosenblatt, 1978, in Israel et al., 2005). In terms of strategy instruction, the aim is to involve students as active processors, make them predict events in stories, associate their readings to background knowledge and build mental images. It has also proven to be effective in improving reading achievement (Pressley & El-Dinary, 1997, in Israel et al., 2005)

As for the reading comprehension processes that a successful or a poor reader uses, some researchers have focused on identifying skills that characterize poor readers and their deficits in reading. Cain, Oakhill, and Bryant (2003, in Israel et al, 2005, p. 22) characterized poor comprehenders as:

‘...a heterogeneous group whose difficulties are likely to derive from a variety of cognitive deficits, including weakness in understanding vocabulary and syntax. They summarized the reading comprehension deficits of poor comprehenders at the discourse level: difficulty making inferences, regardless of prior knowledge; lack of ability in identifying referent pronouns; lack of skill in using context clues, especially when abstract thinking is involved; weak comprehension monitoring skills and lack of

ability to repair comprehension or vary strategy to purpose; and incomplete understanding of text structure’.

Kintsch (1988, in Israel et al., 2005) highlighted the processes used by good readers for text comprehension. At the sentence level, readers decode words and use knowledge of syntax to extract the meaning of sentences. At a more advanced stage, relational processes are relied on to make connections across sentences or paragraphs. Other comprehension skills include making inferences and interpreting the author’s words and phrases that have been omitted.

Winograd and Johnston (1987, in Israel et al., 2005) argued for the need of conditional knowledge in reading comprehension since understanding the conditions under which particular strategies are appropriate is necessary for advanced teaching of reading comprehension. Some reading comprehension programs have focused on helping students understand when to use particular strategies.

For example, process-based comprehension instruction ‘models strategies during the reading process at times when particular processes are called for’ (Collins Block, Schaller, Joy, & Gaine, 2002, in Israel et al., 2005, p. 23). In this model, students are encouraged to think about the purpose of the writer and to describe their own comprehension processes as they are used at particular times, rather than memorizing separate strategies to be applied universally.

Knowledge of when to use different comprehension strategies may help poor readers in answering comprehension questions on reading achievement tests. One study analyzed reading comprehension errors made by 10 sixth-grade L1 students on

the Qualitative Reading Inventory (Dewitz & Dewitz, 2003, in Israel et al., 2005). Related to Kintsch's comprehension processes and Cain et al.'s research on poor comprehenders, this study found that students' errors could be attributed to 'failure to make relational inferences, linking ideas across passages, failure to make causal inferences, failure to parse syntax correctly, inappropriate use of prior knowledge, or failure to know a key vocabulary word' (in Israel et al., 2005, p. 23).

The researchers questioned strategy instruction because it may not offer solutions to the reading comprehension problems described in their study. For example, some strategies may conflict with other strategies, such as drawing on prior knowledge to make a prediction and looking for connections across sentences and paragraphs to make causal inferences. The researchers also pointed out that strategies typically selected in strategy instruction programs, such as reciprocal teaching, do not match students' specific comprehension problems and students would benefit from learning when and which strategies to use, depending on the text and the purposes of reading (in Israel et al., 2005).

Therefore, these studies seem to agree that it is more beneficial to engage the reader in the process of comprehension by actively and strategically selecting the appropriate and effective strategies in reading.

2.2 Reading strategies and the strategic reader

Strategic readers are said to be expert readers. They most often resort to rapid decoding, large vocabularies, phonemic awareness, knowledge about text features, and a variety of strategies to aid comprehension and memory (Baker & Brown, 1984, in

Paris, Wasik & Turner, 1991). Novice readers, in contrast, rely on decoding single words, often fail to adjust their reading for different texts or purposes, and seldom look ahead or back in text to monitor and improve comprehension. Such cognitive limitations are characteristic of young novices as well as older, unskilled readers. In addition, older yet poor readers may have motivational handicaps such as low expectations for success, anxiety about their reading, and unwillingness to persevere in the face of difficulty.

Strategic reading depends on the range of the most effective strategies used by ‘good’ readers. In order to understand the notion of strategic reading, it is necessary first to define what strategies are. Strategies are actions selected deliberately to achieve particular goals. An emerging skill can become a strategy when it is used intentionally. On the opposite, a strategy can ‘go underground’ (Vygotsky, 1978, in Paris et al., 1991) and become a skill. However, strategies are more efficient and developmentally advanced when they become generated and applied automatically as skills. Because they are conscious and deliberate, strategies are open to inspection; they can be evaluated for their utility, effort and appropriateness.

The next section reviews Paris et al (1991)’s Taxonomy of Reading Strategies. This provides a framework that describes a variety of cognitive strategies to aid comprehension and to point at the choices that readers make as they engage with text. It is worth noting that strategic readers are not characterized by the number of tactics they use (quantity) but rather by the selection of appropriate strategies that fit the particular text, purpose and occasion (quality). This Taxonomy classifies the strategies

as pre-, while and post- reading strategies, i.e. according to whether they are used before, while and after reading.

2.2.1 Pre-reading strategies

At the onset of reading, a number of strategies can be used. Students may preview the text by skimming, looking at pictures or examining the title and subheadings. These can help initial comprehension and motivate the reader to read on. Previewing involves the activation of background knowledge through the use of a ‘K-W-L’ (know, want to know, learned) approach to reading, as suggested by Ogle (in Paris et al., 1991). In this approach students ask ‘What do I know? What do I want to learn? and, What did I learn?’ This line of self-questioning helps students to think about relevant background information and to make predictions about text. Preparing to read also involves setting a purpose which is an important step towards directed, critical, flexible, and strategic reading. Students need to form hypotheses and generate questions about the text when preparing to read (Paris et al., 1991). The role of schemata provided by prior knowledge is to guide readers to make inferences and elaborations while reading. Activating prior knowledge can be stimulated by many instructional procedures, such as a group discussion of the key concepts in the text (Langer, 1991, in Paris et al., 1991).

2.2.2 While-reading strategies

The main tactics to be used by readers when processing information from text are: identifying main ideas, making inferences, and looking forward and backward in the text to mention few of these while reading strategies (Paris et al., 1991).

Identifying main ideas has been referred to as the 'essence of reading comprehension' (Johnston & Afflerbach, 1985; Pearson & Johnston, 1978, in Paris et al., 1991, p. 612). Finding the main idea requires readers to (1) understand what has been read, (2) judge the importance of the information and (3) consolidate information succinctly. Yet, young readers have more difficulty recognizing, recalling, or constructing the gist, central theme, or main idea from prose passages (Baumann, 1981, 1982; Johnston & Afflerbach, 1985; Smiley & Brown, 1979; Taylor & Williams, 1983; Winograd & Bridge, 1986, in Paris et al., 1991). Instructional studies have demonstrated that students can be taught to improve main idea comprehension through direct explanation of the steps to construct main ideas for instance (Baumann, 1984, in Paris et al., 1991)

The second strategy of the while reading phase is making inferences. Inferential comprehension is frequently automatic. Young and beginning readers need training on strategies that promote inferences since research has shown that they have difficulty answering inferential than literal comprehension questions (Hansen & Pearson, 1983; Raphael & Pearson, 1985, in Paris et al., 1991).

The third strategy employed while reading is when readers encounter new words and ideas in text. It consists of backtracking used by skilled readers to confirm or try to understand a difficult word. However, less-skilled readers read the text only once in a linear way believing that it is unnecessary to reread parts of the text for better comprehension (Paris et al., 1991).

2.2.3 Post-reading strategies

Strategic readers revise their understanding repeatedly through checking plans, monitoring meaning, making inferences and by regularly reviewing text and comprehension. However, some evaluation strategies are particularly applied after reading such as summarizing (Paris et al., 1991).

Although using reading strategies has proven to be effective for comprehension and that several case studies have found relationships between various reading strategies and successful or unsuccessful second language reading (Devine, 1984; Hauptman, 1979; Knight, Padron & Waxman, 1985; Sarig, 1987, in Hartman, 2001), positive correlations have not been always drawn between the two. What matters more is the readers' awareness about what, how and when to use a given strategy as Anderson (1991, p. 19) states:

‘Successful second language reading comprehension is not simply a matter of knowing what strategy to use, but the reader must also know how to use it successfully and orchestrate its use with other strategies. It is not sufficient to know about strategies, but a reader must also be able to apply them strategically’

Knowing what strategies to use in reading, how and when, relates to the notion of metacognition and metacognitive reading. This is addressed in the following section.

2.3 Metacognitive reading: knowledge and regulation of cognition

In this section, reading is linked to the notion of metacognition in order to address one of the concerns of the present investigation: the relationship between metacognitive knowledge, monitoring and regulation in relation to a reading task.

The assumption held about the significant role of metacognition in reading is that if learners do not know when comprehension breaks down and what to do about it, the reading strategies taught by the teacher will be useless (Carrell, Gajdusek, & Wise, 2001). As O'Malley et al. (1985, in Carrell et al., 2001, p. 232) explained: 'Students without metacognitive approaches are essentially learners without direction or opportunity to review their progress, accomplishments, and future directions'.

Flavell (1978, in Carrell et al., 2001, p. 232) defined metacognition as 'knowledge that takes as its object or regulates any aspect of any cognitive behavior'. He identified two aspects of metacognitive ability: (1) knowledge of cognition, and (2) regulation of cognition. The first one, knowledge of cognition, includes the reader's knowledge of cognitive resources and the compatibility between the reader and the reading situation. If a reader is aware of what is needed to perform efficiently, then it is possible to take steps to meet the demands of a reading situation more effectively. If, however, the reader is not aware of the limitations and the complexity of the task at hand, then s/he can hardly be expected to take corrective actions to fix the problems.

The first aspect of metacognition, 'knowledge of cognition' includes three components: declarative, procedural, and conditional knowledge (Paris et al., 1991, in Carrell et al., 2001) as was discussed in the previous chapter. Declarative knowledge is

propositional knowledge, referring to ‘knowing what’. A learner may know what a given reading strategy is, for example, s/he may know what the process of summarization is and what summaries are. Procedural knowledge is ‘knowing how’ to perform various actions, for example, ‘how to study, how to deal with analogies, or how to write summaries’ (Winograd & Hare, 1988, in Carrell et al., 2001, pp.232-233). Conditional knowledge refers to ‘knowing why’, and includes the learner’s understanding, the value or rationale for acquiring and using a strategy, and when to use it appropriately and effectively.

The second aspect of metacognition, ‘regulation of cognition’, refers to when a ‘higher order process orchestrates and directs other cognitive skills’ (Paris, Cross & Lipson, 1984, in Carrell et al., 2001, p. 233). This notion of regulatory or executive skill is based on an information-processing model of human cognition (Brown, Bransford, Ferrara & Campione, 1982, in Carrell et al., 2001). In reading, these skills relate to planning, monitoring, testing, revising, and evaluating the strategies employed during reading (Baker & Brown, 1984, in Carrell et al., 2001). Self-regulatory metacognitive skills are used in reading for the following purposes: clarifying the purposes of reading; clarifying explicit and implicit task demands, identifying the important aspects of a message, focusing attention on the major content, monitoring ongoing activities, self-questioning to determine whether goals are being achieved, and taking corrective action when failures in comprehension are detected (Carrell, 1992, in Carrell et al., 2001). All these purposes relate to metacognitive reading. The next section deals with the monitoring of comprehension which is an important aspect of metacognitive reading.

2.3.1 Comprehension monitoring in L1 reading

Comprehension monitoring applies mainly to the comprehension of connected discourse, which may involve either reading or listening (Baker & Brown, 1984, in Wray, 1994, p. 107). A number of questions can be raised in relation to this issue:

- What do readers know about their own comprehension, that is, what do they comprehend and how do they comprehend?
- Are they aware of when they comprehend adequately and when they do not?
- How do readers decide when their comprehension is adequate?
- What kinds of strategies do readers use when they realize they are not comprehending what they read in order to compensate for this?

Some answers to these questions have emerged from research. They have important implications for teachers of reading (Wray, 1994, p. 107) as discussed below.

The reading process involves the operation of comprehension monitoring. ‘Good’ reading has been described by Whimbley (1994) as follows:

‘A good reader proceeds smoothly and quickly as long as his understanding of the material is complete. But as soon as he senses that he has missed an idea, that the track has been lost, he brings smooth progress to a blinding halt. Advancing more slowly, he seeks clarification in the subsequent material, examining it for the light it can throw on the earlier trouble spot. If still dissatisfied with his grasp, he returns to the point where the difficulty began and rereads the section more carefully. He probes and analyses phrases and sentences for their exact meaning; he tries to visualise abstruse descriptions;

and through a series of approximations, deductions, and corrections he translates scientific and technical terms into concrete examples'.
(In Wray, 1994, p. 108)

Although it is obvious that not all readers follow precisely this sequence of actions, most theories of reading have suggested similarly strategic models for the comprehension process.

Reading for meaning therefore involves the metacognitive process of comprehension monitoring, which implies keeping track of the success with which one's comprehension is proceeding, ensuring that the process continues smoothly and taking preventive action if necessary. This process has also been referred to as 'debugging' skills (Brown, 1979, in Wray, 1994).

Mature readers typically engage in comprehension monitoring as they read for meaning, yet it is usually not a conscious experience. Brown (1979, in Wray, 1994) distinguishes between an 'automatic' state and a 'debugging' state. Skilled readers tend to proceed on automatic pilot until a 'triggering event' signals a failure or problem in their comprehension. When alerted in this way they must slow down and devote extra effort in mental processing to the area which is causing the problem. They employ debugging devices and strategies which demand extra time and mental effort.

A common triggering event to comprehension is the realization that an assumption held about a text has not been confirmed by the actual text. For example, in reading a sentence such as 'The old man **the boats**', the fourth and fifth words will probably cause a revision of the reader's sense of understanding and therefore take longer to

process because of the missing verb. Another triggering event is reading unfamiliar ideas too frequently for the reader to maintain tolerance for the subsequent lack of understanding. The usual reader reaction to this is to slow down the rate of processing, devoting time and effort to the task of sorting out the failure in comprehension. In this case, the reader enters 'a deliberate, aware state quite distinct from the automatic pilot state, and the smooth flow of reading abruptly changes' (Baker & Brown, 1984, in Wray, 1994, p.108).

Realizing one's failure to understand is only part of comprehension monitoring; one must also know what to do when these failures occur. This involves making strategic decisions such as whether or not remedial action is required. This depends upon the reader's purposes for reading (Alessi, Anderson & Goetz, 1979, in Wray, 1994). For example, if a reader's purpose is to locate a specific piece of information, lack of understanding of the surrounding text will not require remedial action. On the other hand, if the purpose is to understand a detailed argument, then corrective action is necessary.

A number of options are available in the course of decision to take action. The reader may simply store the confusion in memory as an unanswered question (Anderson, 1980, in Wray, 1994) in the hope that the author will subsequently provide sufficient clarification to enable its resolution. The reader may otherwise decide to take action immediately, like rereading, jumping ahead in the text, consulting a dictionary or knowledgeable person, or a number of other strategies (Baker & Brown, 1984, in Wray, 1994).

Winser (1988, in Wray, 1994) asked readers of various ages to think aloud as they tried to understand difficult texts. The strategies they used when they encountered comprehension difficulties included the following:

- Reading on: reading more of the text to see if more information could be gained;
- Sounding out: examining letters and sounds carefully (this strategy was used most often by younger readers);
- Making an inference: guessing a meaning on the basis of textual clues and previous knowledge;
- Rereading: reading the difficult section again;
- Suspending judgment: waiting to see if the text provided more clues (Wray, 1994, pp. 108-109)

Further research studies on these decisions and strategies related to comprehension monitoring are presented in the section below.

Two examples of studies on comprehension monitoring of L1 undergraduate students have given research insights into how this operates in skilful readers. Baker (1979) conducted a study on fourteen University of Illinois undergraduates enrolled in an educational psychology course. She gave them passages to read where the middle paragraph had deliberately confusing features such as inconsistent information, an unclear reference or an inappropriate connecting word. A large proportion of these confusions (62 %) were not detected by the students. However, asking them afterwards

about what they had been thinking while reading suggested that many of them seemed to consider the problem unimportant and then ignored it.

Baker and Anderson (1982, in Wray, 1994) similarly working with ninety L1 undergraduate students at the University of Illinois, used a computer terminal to present texts for evaluation. Passages containing inconsistencies were presented one sentence at a time on a computer, under the reader's control. The readers spent more time reading inconsistent paragraphs than consistent paragraphs and they also looked back at previous information more frequently when inconsistencies were present. A full third of the inconsistencies, however, seemed to go undetected and there are several possible explanations for this. They may really have been undetected; they may have been detected and 'fixed'; or they may have been detected and ignored. However, it does seem that, in general, mature readers evaluate their own understanding during the actual process of reading. If they encounter confusion they give extra time to studying it and they reread previous sentences in an effort to clarify their understanding.

Research studies have also examined L1 children's and poor readers' monitoring of their comprehension and there has been a remarkable consistency in the findings of these studies. The two most replicated results were that:

- 'Younger and poorer readers have little awareness that they must attempt to make sense of text; they focus on reading as a decoding process, rather than as a meaning-getting process' (Baker & Brown, 1984, in Wray, 1994, p. 109);

- ‘Younger children and poorer readers are unlikely to demonstrate that they notice major blocks to text understanding. They seem not to realize when they do not understand’ (Garner & Reis, 1981, in Wray, 1994, p. 109).

However, these findings have emerged from studies using a range of methodological approaches which can be problematic. It is not easy to discover what is going on in the minds of even highly articulate adults, let alone those of young children, children with reading problems or poor readers. Studies have focused on interviewing, measuring the eye movements of young readers for signs of their responses to lack of comprehension, asking readers to make a judgment about how certain they are that they understand a text and then to compare their judgments with their actual comprehension as measured by a test, examining children’s self-corrections as they read, and the use of distorted texts. While there are problems with each of these research approaches and there remain several unanswered questions about comprehension monitoring in reading, it is possible to draw some conclusions from the extensive research in this area. Garner (1987, in Wray, 1994) sums them up as follows:

‘The convergent findings from recent research can be summarized: Young children and poor readers are not nearly as adept as older children/adults and good readers, respectively, in engaging in planful activities either to make cognitive progress or to monitor it. Younger, less proficient learners are not nearly as ‘resourceful’ in completing a variety of reading and studying tasks important in academic settings’ (p. 109).

Planful, strategic reading necessary for academic tasks develops late in children and particularly for children who find reading difficult. Yet, awareness of shortcomings when trying to comprehend plays an important part in effective fluent reading and, in turn, can automatically lead to regulation of the process.

2.3.2 Comprehension monitoring in L2 reading

Although most research involving comprehension monitoring has been conducted with native speakers of English (L1 subjects), one can argue that comprehension monitoring is of particular importance for L2 readers. Indeed, Casanave (1992, in Block, 1992) has called comprehension monitoring ‘a neglected essential’ in L2 reading research. L2 readers may encounter more unfamiliar language and cultural issues while reading authentic or unadapted texts than L1 readers. Therefore, they may have to ‘repair’ more gaps in their understanding than L1 readers.

It is generally accepted that L1 reading ability transfers to L2 reading, but there is considerable debate about how and when it does so. Some researchers suggest that reading ability and strategy use is dependent on language proficiency. The findings of Clarke (1979, 1980), Cummins (1980), Cziko (1980), and Yorio (1971) are examples of those researchers who suggest that ‘reading ability is heavily dependent on L2 language proficiency’ (in Block, 1992, p. 321).

Few studies inquiring into L2 metacognitive monitoring in reading are reported. Block (1992, p. 322), in this line of thought, stated that:

‘We know little about the processes that L2 readers use to monitor or evaluate their comprehension and to repair gaps in comprehension, or about

the cues to which they attend in this evaluation and regulation process. We do not know whether the monitoring process follows the same steps in L1 and L2 readers or whether different types of triggering events produce different versions of the process in either L1 or L2 readers’

Two studies of L2 readers’ monitoring are described in this section. Devine (1988, in Block, 1992) investigated two readers with different models of the reading process. She remarked that meaning-oriented readers can overcome the effects of limited language proficiency more than readers who focus on form. Carrell (1989, in Block, 1992), in her study of metacognitive resources, suggested that L2 readers with greater L2 proficiency (readers she defines as ESL) favoured a global process, whereas those with less L2 familiarity (readers she defined as foreign language readers) used a more localized process. For all readers, reading locally in their first language was ‘negatively correlated with reading performance’ (p. 322). Both studies concluded that L2 comprehenders favor a top-down, meaning-based approach, in the same way as more proficient L1 readers.

The two preceding sections described the monitoring process of L1 and L2 readers. Findings revealed that more proficient readers recognize failures to understand more rapidly than less proficient readers in both L1 and L2 reading. When readers effectively detect gaps in comprehension they will be able to regulate the process for better reading. The next section deals with self-regulation in comprehension of reading.

2.4 Self-regulated comprehension of reading

Calibration of comprehension is a term related to prediction of whether text has been or will be understood (e.g., Glenberg & Epstein, 1985; Glenberg, Wilkinson, & Epstein, 1982; Maki & Serra, 1992; Weaver, 1990, in Hacker, 1998). The concept underlying the term has been operationalized by relating readers' predictions of comprehension with their actual performance on comprehension-type questions. Readers whose predictions and performance are highly correlated are judged to have good calibration of comprehension, whereas readers whose predictions and performance are minimally correlated are judged to have poor metacomprehension.

Regulation involves control of one's reading to resolve problems and increase comprehension. The purpose of normal reading is to construct meaningful interpretations from text that is assumed to be consistent, coherent, and written in relevance to the reader's abilities and knowledge. As long as readers are able to construct meaning that is compatible with developing interpretations, reading is likely to proceed uninterrupted. In this case, ongoing evaluation of comprehension provides information to the reader that understanding is occurring and reading can proceed. In this case, regulatory processes are not required.

In contrast, when readers fail to establish consistency or coherence during normal reading, ongoing evaluation alerts readers to comprehension failures. Because of the assumption of text relevance held by most readers during normal reading, readers are likely to look first to themselves as the source of comprehension failure. Do they lack linguistic or topic knowledge? Is the failure due to lack of perceived coherence, or to

an inability to generate an interpretation of the text that is compatible with their own expectations for the text or with their understanding of the author's intended meaning? Then, readers may get a sense that the failure might be due to textual inadequacies (Hacker, 1998).

Once failure is identified, readers must resolve it, and further, as reading continues, they must periodically reevaluate whether their resolution continues to establish consistency, coherence, and compatibility with the ongoing interpretation of the text. Thus, when comprehension failures are monitored during normal reading, comprehension monitoring is more than a metacognitive judgment that a failure has occurred. Comprehension monitoring becomes 'a goal-directed metacognitive process through which the processes of evaluation and regulation interplay for the purposes of reestablishing the construction of a text's meaning and developing its interpretation' (Hacker, 1998, p. 125).

2.5 Comprehension breakdowns: Illusions of knowing

Broken comprehension can occur during normal reading in multiple ways. Normal comprehension problems include failing to amend current understanding of a text in light of newly encountered information, glossing over unfamiliar words, drawing incorrect inferences, failing to compare information with prior knowledge, failing to encode key information, forgetting key information, failing to identify main propositions, failing to understand information but continuing to read with the expectation that sooner or later understanding will be achieved. Some or all of these failures may occur, and yet readers can come away from reading believing they have

comprehended the text; that is, readers have ‘illusions of knowing’ (Glenberg, Wilkinson, & Epstein, 1982, in Hacker, 1998).

Illusions of knowing can take one of these two forms. First, readers may fail to monitor or control comprehension. In this case, triggering events alerting readers to comprehension failures never occur, and readers believe they have comprehended even though one or more comprehension failures may have occurred.

Alternatively, illusions of knowing can occur even when readers monitor and control comprehension. Self-regulated comprehension involves monitoring similarities and differences between the cognitive representation of a text and the reader’s metacognitive models, which consist of readers’ understanding of their prior knowledge, text propositions, goals for reading, and author’s intent. When similarities are monitored between what is represented in the text and what is represented in their metacognitive models, readers will believe that comprehension has occurred; when differences are monitored and readers are able to control them in satisfactory ways, they again will believe that comprehension has been achieved. And yet, if the metacognitive models that readers relied on to monitor similarities and differences have no bases in the actual text, readers will have failed to comprehend. In other words, as readers conform or adapt their constructions of text to fit their metacognitive models, deviations between what readers believe to be in a text versus what is actually in the text can and often do occur (Bransford & Franks, 1971; Paris, 1975; Paris & Lindhauer, 1976; Paris & Mahoney, 1974, in Hacker, 1998).

Otero (1998, in Hacker, 1998, p. 134) argues that ‘deviations between a reader’s understanding of text and the actual text can occur when excessive activation of certain propositions leads to the suppression of other propositions’. Excessive activation can occur due to the reader’s emphasis of specific connections between text information and knowledge recently learned. Moreover, Mannes and Kintsch (1987, in Hacker, 1998) have shown that readers’ memory for text is often more reflective of what readers know about the topic than what is in the text itself.

Thus, in either of these two cases, an illusion of knowing can occur, but the reasons for each differ. In the first case, the illusion of knowing is due to absence of self-regulated comprehension. In the second case, the illusion of knowing occurs because readers construct a text that conforms to their metacognitive models of the text (i.e., their understanding of what is believed to be in the text) rather than the actual text.

Another reason which can explain the illusions of knowing is the role that self-regulated comprehension plays when comprehension has not failed and yet differences in meaning- making keep readers apart in their interpretations. In the course of normal reading, a reader can activate relevant knowledge, understand all words and concepts, appropriately, represent all text propositions in memory, and make relevant comparisons of related textual information. In other words, the reader comprehends the text, and yet still encounters a comprehension problem if his or her interpretation of the text differs from the author’s intentions or from other readers’ constructions (Beal, 1990, in Hacker, 1998). Awareness of the range of possible interpretations a text may have can bring readers together in what a text ‘says’. Therefore,

‘understanding the role that self-regulated comprehension can play in facilitating that awareness is essential to knowing how meaning- making can be shared during normal reading’ (Hacker, 1998, p. 133, 134).

2.6 Calibration of comprehension: measuring metacognitive monitoring accuracy

The calibration paradigm has been used to measure students’ ability to evaluate their level of text understanding (Lin & Zabrucky, 1998, in Stolp & Zabrucky, 2009). Calibration of comprehension is a measure of the relationship between students’ perceived competence and their actual performance. Traditionally, calibration skills have been assessed in a controlled environment in which L1 students are asked to read a series of texts and then predict how well they expect to perform on a comprehension test to follow (Glenberg & Epstein, 1985; Glenberg, Sanocki, Epstein & Morris, 1987; Glenberg, Wilkinson, & Epstein, 1982; Lin, Zabrucky, & Moore, 2002; Maki & Berry, 1984; Maki & Serra, 1992; Weaver, 1990, in Stolp & Zabrucky, 2009). Students’ calibration accuracy is then determined by comparing their predicted performance to their actual performance. The phrase ‘calibration of comprehension’ was first coined by Glenberg and Epstein (1985) who found that L1 students’ predictions were generally unrelated to their performance.

Students’ post-hoc predictions of confidence have been termed ‘calibration performance’ or ‘post- diction’ (Glenberg et al., 1982, in Stolp & Zabrucky, 2009). These confidence judgments differ from calibration of comprehension judgments in that they are assessed after students have read a text and completed a comprehension

test. Research suggests that students are generally more accurate at post-dictions than predictions, presumably because the additional feedback obtained from taking a test is useful in later assessments (Glenberg et al., 1982, in Stolp & Zabucky, 2009).

The calibration model has been traditionally used to measure students' metacognitive skills for comprehension. Research evidence shows that high achieving students, who are generally aware of what they do and do not know, can calibrate comprehension more accurately than their lower achieving peers (Stolp & Zabucky, 2009).

However, research suggests that poor calibrators either lack knowledge about cognition, or ability to regulate cognition, or both (Schraw & Graham, 1997, in Stolp & Zabucky, 2009). Other study findings with L1 subjects (Kruger & Dunning, 1999, in Stolp & Zabucky, 2009) demonstrate that students with low knowledge of cognition not only lack the necessary skills to calibrate successfully but also lack the ability to recognize that their performance is poor. It is also possible that poor calibrators possess the necessary metacognitive knowledge or skills, but lack the motivation to consistently or effectively use them (Borkowski & Cavanaugh, 1979, in Stolp & Zabucky, 2009).

To sum up, studies conducted on monitoring accuracy of L1 readers contend that they are not able to judge their comprehension levels accurately. Glenberg and colleagues (1987, in Sarac & Tarhan, 2009, p.169) reported that 'their readers' comprehension monitoring judgements are far from being accurate'. Gamma correlations between confidence judgements and performance scores were never

higher than .20 and only differed from zero by chance. Readers seem to overestimate their comprehension.

In L2 reading, however, comprehension monitoring has been neglected because most L2 reading studies are schema theory-driven (Sarac & Tarhan, 2009). According to this theory, readers adjust their memories of a culturally unfamiliar story to fit a 'schema' that is more consistent with their own culturally familiar knowledge of the typical content and structure of stories. Thus, L2 reading researchers have focused more on the effects of content and structure of texts on reading comprehension of L2 readers and neglected what the readers do while trying to comprehend the text in L2. Yet, Block (1992, in Sarac & Tarhan, 2009) emphasised the importance of researching L2 readers comprehension monitoring accuracy and claimed that 'reading in L2 is more difficult than reading in L1 as L2 readers encounter more unfamiliar language and need more awareness of the reading processes in order to use appropriate fix-up strategies when they experience comprehension failure' (p. 170). However, a few studies were reported on the metacognitive monitoring processes of readers while reading texts in L2. It can also be noted that only a few studies were conducted on the comprehension monitoring ability of L2 readers. For example, the most commonly cited work is that of Block (1992) who conducted a study about the comprehension monitoring of L1 and L2 readers. He investigated L1 and L2 proficient and less proficient readers monitoring of referent and vocabulary problems. Two main findings were reported: the first one described L1 and L2 proficient readers' monitoring of a referent problem as completely the same ; also, both L1 and L2 less proficient readers failed to recognize the problem, and solve it. The second finding showed that the

process of monitoring the vocabulary problem was carried out by L1 and L2 proficient readers in the same way as in monitoring the referent problem. The less proficient L1 and L2 readers were not able to solve the identified problem. Block (1992, in Yang, 2002, p. 22) concluded that: ‘Differences in the effectiveness of comprehension monitoring between the four groups lay in their reading proficiency, rather than their language background’ and added that: ‘For years, many researchers have well investigated proficient and less-proficient readers’ different performances in comprehension monitoring [...] how comprehension monitoring functions throughout the whole on-going thinking process in a reader’s mind remains unexamined’.

The conclusions drawn from these research findings call for the need to do further research on metacognitive knowledge and regulation in reading in L2 contexts, which is the case of the present investigation. The next section describes ways to improve metacognitive illusions, as suggested by the studies reported by Hacker et al., (2009).

2.7 Improving metacognitive illusions

To improve students’ metacognition, teachers can help students in raising their awareness of the metacognitive illusions (for e.g. errors in metacognitive monitoring) they might have when studying specific materials or making specific types of judgments. It is argued that ‘...although students can learn to overcome metacognitive illusions through experience with the illusion-causing materials, only explicit, theory-based training for such illusions transfers to new instances of such materials’ (Koriat & Bjork, 2006, in Hacker et al., 2009, p. 279).

This is why students have to be explicitly trained to avoid specific illusions rather than waiting for them to learn from their mistakes. More empirical research is needed as merely teaching or warning students about metacognitive illusions is not sufficient to ensure that they will not occur. Wilson and Brekke (1994, in Hacker, 2009) named it ‘mental contamination’ and it can be difficult to avoid if one does not feel that it is in fact occurring. Students have to acknowledge that they may face learning biases in general and, therefore, they have to be prepared to monitor their judgments appropriately to prevent themselves from these biases.

Because accurate monitoring is essential in controlling study, research in the past decade has focused on ways to improve the accuracy of metacognitive judgments. In reading for instance, one way to do so is by asking learners to summarize what they have read before judging how well they understand. It is one way to improve the accuracy of metacomprehension judgments (Thiede & Anderson, 2003, in Hacker et al., 2009). Summarization (through reading and writing) seems to improve the metacomprehension accuracy of all readers, including high-ability readers (Griffin, Wiley, & Thiede, 2008, in Hacker et al., 2009). This improvement, however, is only found when the writing of the summaries and making of the judgments occur at a short delay from the reading of the texts (Thiede & Anderson, 2003, in Hacker et al., 2009).

Although summarization helps students make more accurate metacomprehension judgments, it can also be time-consuming. For this reason, researchers have sought out more time-efficient methods to improve the accuracy of these judgments. One such alternative is delayed-keyword generation. Students are supposed to generate keywords or important points from the text a short time after reading a text but before

making a metacomprehension judgment, for it makes the judgments more accurate but requires less time than would be required to write a full summary (Thiede et al., 2005, in Hacker et al., 2009).

According to Thiede et al. (2005, in Hacker et al., 2009), delayed-keyword generation improves the accuracy of judgments as it provides the learner with cues to diagnose their understanding of the text. Like summarization, keyword generation may improve the accuracy of meta-comprehension judgments if employed at a short delay from the reading of the texts.

Another important way through which metacognitive monitoring accuracy can be fostered is to inform students on how information will be tested. Thus, students will judge their understanding more accurately. Research findings (Thomas & McDaniel, 2007, in Hacker et al., 2009, p. 289) suggest that ‘if students can be trained to study in a way that is conducive to the type of test they expect, they can improve the accuracy of their metacomprehension judgments while studying’.

Other effective methods can be used by teachers to train their students on efficient monitoring of text comprehension. Similarly, students can foster comprehension monitoring by avoiding biased judgments through balancing their accurate judgments and actual performance (Hacker et al., 2009)

After considering ways to foster metacognition, it is important to review the different researches conducted on students’ metacognitive processes as demonstrated in reading exam settings.

2.8 Doing a reading task in an L2 examination situation: Metacognitive concerns

This section describes two studies whereby students' metacognitive processes are demonstrated while taking a reading test. In the first L2 context, Kraayenoord and Schneider (1999) examined the reading achievement and metacognitive knowledge as related to reading and memory, reading self-concept and interest of 140 German students of English. The results showed significant correlations between the metacognitive variable, motivational variable and reading achievement. The examination of good and poor readers showed significant differences in metacognitive knowledge of reading and memory, reading self-concept, interest in reading, and in teacher judgements of reading achievement between the groups. Therefore, this study underscores a strong relationship between metacognition and reading achievement as the findings demonstrate.

Another study conducted in China with L2 students of English investigated the metacognitive strategies of English major students in academic reading (Zhang & Seepho, 2013). Data collection tools comprised a Metacognitive Strategy Questionnaire (MSQ), a semi-structured interview and a reading comprehension test. The results demonstrated an overall use of metacognitive strategies by these Chinese EFL high and low proficient students. The results concluded to a significant positive correlation between metacognitive strategy use and English reading achievement. In this respect, Zhang and Seepho (2013, p. 63) affirmed that:

‘The more the students used metacognitive strategies, the more likely they were to obtain higher scores on the reading comprehension test. Readers with metacognitive strategies have definite reading goals and know how to accomplish them. They can insist on implementing their plans for reading activities and make appropriate adjustments when necessary, get timely feedback on their reading performance through self assessment on their own initiative, and take remedial actions accordingly. Therefore, readers with metacognitive strategies are able to read effectively and metacognitive strategies constitute an important factor of reading efficiency’.

As this study demonstrates, metacognitive reading can be considered as a good predictor of achievement in reading.

Conclusion

This chapter has reviewed studies on the reading process, reading comprehension along with metacognitive reading. Comprehension monitoring and illusions of knowing in reading comprehension are key elements of the chapter as they directly relate to the research problem of the current study. This study also investigates the writing skill which is taught together with reading. These two EFL skills are regarded as integrated skills in the present study. Thus, the next chapter is devoted to the writing skill with a focus on metacognition and to the reading- writing connections.

CHAPTER THREE

WRITING AND METACOGNITION

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Introduction

Writing in a first language is said to be a difficult task that requires background knowledge and cognitive abilities. Writing in a second or foreign language is even more complicated for non-native students. In addition to the knowledge and strategies required for composing, they need to possess both linguistic knowledge and knowledge about the rhetorical conventions of the target language. Being restricted sometimes by their limited linguistic competence, EFL writers may be often frustrated and overwhelmed by some writing issues such as lacking appropriate English lexical expressions and struggling with mechanics, punctuation, grammar, sentence structure, paragraph coherence, rhetorical patterns, revision, and English writing conventions generally.

However, research concerns have shifted attention from errors student writers make in their L2 compositions in relation to form to the mental processes involved in writing in a FL. For this reason, in this chapter, the writing process and issues surrounding it are highlighted along with metacognitive writing. Yet, writing is not surveyed as a separate skill; it is linked to reading to serve the purpose of the present study that investigates metacognition in the context of an integrated reading-writing course. The focus on process writing is thus purposeful since it is researched in connection to metacognitive awareness that represents the higher- order mental abilities of the learner. This chapter discusses these issues in seven sections as follows: The first section reviews research development on writing and the second one

describes the cognitive models of writing. The third section deals with metacognitive writing while the fourth examines theories of reading and writing combined. Section five addresses reading-writing instruction in L2 context and section six reports studies on reading to write. The last section is about issues of reading to write in the foreign language classroom. The next section of this chapter is devoted to research development on writing.

3.1 Research development on writing

Writing research has witnessed phases of development justified by varying concerns of what to focus on in writing. Text concerns emerged first by the study of form, structures and errors. Then, studies shifted attention to the processes involved in writing and the writer's cognition when composing. Later, decontextualized practices of writing were considered problematic and therefore context in writing became a major concern in composition research. In the next section, the first approach, text-based writing is delineated.

3.1.1 Text-based writing

In this approach, learning to write in a second or foreign language is considered as an exercise of habit -formation. The aim is the production of accurate linguistic forms rather than the quality of ideas. Error correction is the main focus of teaching L2 writing as for example in the Audio Lingual Method. Although more recent views on writing have reduced the importance of error correction, attention to detect and correct them has continued (Ferris, 1999; Guénette, 2007; Truscott, 1996, in Leki, 2010).

Another aspect that triggered research interest in writing within a text-based approach is Contrastive Rhetoric. It refers to the idea that 'different cultures produce

culturally influenced and rhetorically distinguishable types of text' (Kaplan, 1966, in Leki, 2010, p. 103). Since the common practice of teaching writing in the 1960's and 1970's was to provide students with model texts to imitate, it was easy to integrate contrastive rhetoric's organizational pattern into L2 writing classrooms. However, similar to the Audio Lingual Method and error correction, arguments started to question the validity of contrastive rhetoric research. Then in the 1980's, interest shifted to the process approach described in the following section.

3.1.2 Process-based writing

The coming of the process approach to writing in the mid 1980's witnessed emphasis on multiple drafting as imitating model texts and detecting errors proved to be ineffective. Thus, researchers and teachers' attention was directed towards teacher and peer responses to L2 students' writings (Conrad & Goldstein, 1999; Nelson & Carson, 1998, in Leki, 2010). In this approach, researchers explored individual writers' compositions, investigating their cognitive processes while composing, and diachronically tracing their development as writers in academic and professional disciplines.

Major research topics generally dealt with writing processes of proficient L2 writers, processes of less proficient L2 writers, use of L1 in L2 writing and threshold levels of L2 proficiency (Krapels, 1990, Zamel, 1983; Raimes, 1985; Roca de Larios, Murphy, Manchón, 1999; & Cumming, 1989, in Leki, 2010). The most significant results of these studies include the following (Leki, 2010, p. 106):

- Proficient L2 writers focus on content, not only on form, as they write.

- L2 writers may need to reach a threshold level of proficiency in L2 before they can use the efficient writing processes they already use in L1.
- Writing processes vary fairly widely across individuals, though they may remain more or less consistent from L1 to L2.
- Shifting to L1 can be a very useful strategy for generating ideas and stimulating more complex thinking in L2.

Time allocated to different tasks while writing like planning and editing was the main focus of studies; also focus on the mental processes of L2 writers characterized the process approach. Other aspects like attention during writing and task type as well as instruction were also investigated (Leki, 2010).

In summary, process-based writing emphasizes the recursive nature of writing by encouraging prewriting activities to generate ideas for writing, attention to audience and purpose for writing, peer reviewing and other potential responders on drafts of texts, and reduced focus on sentence-level correctness, among other features. Process approaches are often contrasted with previous ‘product’ approaches that tended to feature single-draft, error-free texts that were read only by instructors with a view to evaluation, not reviewing (Leki, 2010). After text and process, more recent approaches to writing instruction and research broadened their perspective to shifting the focus to context and to disciplinary and sociopolitical contexts.

3.1.3 Context-based writing

Moving further from considerations of decontextualized compositions of the writing processes, L2 writers’ development also revealed the importance of how personal, social, cultural, linguistic, institutional, educational, and political contexts are

necessarily accounted for in writing. Context was then linked to the writing task, the reading associated with writing, and teacher's and writer's goals (Cumming, 1989, in Leki, 2010).

Important theoretical influences in these studies have been Activity Theory (Engestrom, 1987, in Leki, 2010), Socio-Cultural Theories of language learning (Lantolf, 2000, in Leki, 2010), and Theories of Situated Learning (Lave & Wenger, 1991, in Leki, 2010), 'each of which places the individual within a network of other individuals, tasks, tools, goals, and settings in an effort to explain both experiences and progress, or lack of it' (in Leki, 2010, p. 108). Thus, the development of L2 writing has moved from narrow focuses and tight control over L2 writing toward a growing interest in the context in which that writing takes place.

The next section relates to process-based writing and describes three cognitive models of writing reported in the literature which emphasize the thinking processes involved in writing. Besides, in this section, a distinction is made between the cognition of skilled and unskilled writers.

3.2 Cognitive models of writing

Writing researchers have investigated the processes students undertake when they write. They have proposed models for L1 writing such as Flower and Hayes' Cognitive Process Theory of Writing (in Xiao, 2002) and Bereiter and Scardamalia's (1987) Knowledge Telling and Knowledge Transforming models (in Xiao, 2002). In addition, they have discussed the differences between mature and immature writers, and claimed that L2 writing is not different from L1 writing and that there exist differences between skilled and unskilled writers (Leki, 1992; Raimes, 1985,

Scardamalia & Bereiter, 1987; Zamel, 1983, in Xiao, 2002). The first model of Flower and Hayes (1981)'s cognitive process of writing is reviewed in the following section.

3.2.1 Flower and Hayes' Model (1981)

Flower and Hayes's model (1981) describes the act of composing as 'a conscious, intellectual effort by which writers determine what they want to accomplish and how they want to accomplish it' (Brand, 1989, in Moran & Soiferma, 2010, p. 10). Flower and Hayes merged thinking and writing in one process by showing how experienced writers produce text. This model opposed previous linear models that followed a step-by-step process of prewriting, writing, and rewriting or drafting, revising, and editing (Murray, 1978, in Moran & Soiferman, 2010). While linear models focused on the product, Flower and Hayes (1981) encouraged process writing. They claimed that experienced writers monitor their texts regularly, and return to previous stages in order to adjust the various elements of the text. Brand (in Moran & Soiferman, 2010, p. 10), in her description of the cognitive process model of writing, argued that 'the cognitive process model attempts to show how writers bring complex and recursive mental acts to bear on the general stages of composing'

By using think-aloud protocols, Hayes and Flower (1980, in Hacker et al., 1998) distinguished three major processes of writing: planning, translating, and reviewing (see Figure 3.1 below). This empirical representation is similar to earlier theoretical work into the stages of writing classified as prewriting, writing, and rewriting (Rohman, 1965, in Hacker et al.; 1998), yet Hayes and Flower's model altered and highlighted the processes in two important ways:

First, **interactivity** is emphasized. It shows that writing is a recursive rather than a linear process. Second, Hayes and Flower (1980)'s model specifies the writing process in terms of **explicit identification of sub processes**. The planning process includes goal setting, generating, and organizing. These sub processes are highly interactive and may come into play at any time during composing: goal setting includes both establishing a purpose and short-term goals, such as providing an example, and generating ideas and content, whereas organizing refers to how writers arrange their content into a coherent structure.

Translating, which is the second process in the model, refers to the transformation of ideas into written text. Working memory is consumed by this process, but with practice, translating can become automatic. Reviewing is the process in which writers reexamine what has been written and compare it to their internal representation of intended text. Finally, the identification of a monitor to manage these processes is linked to metacognition, because the monitor is the conscious control and regulation of processes carried out by the writer. Because processes are recursive, planning may be invoked during editing, or reviewing may serve to help organization. The monitor according to Sitko (1998, p. 75, 76) 'represents metacognitive awareness of how and when to invoke strategies appropriately'. These processes are described in Figure 3.1 below:

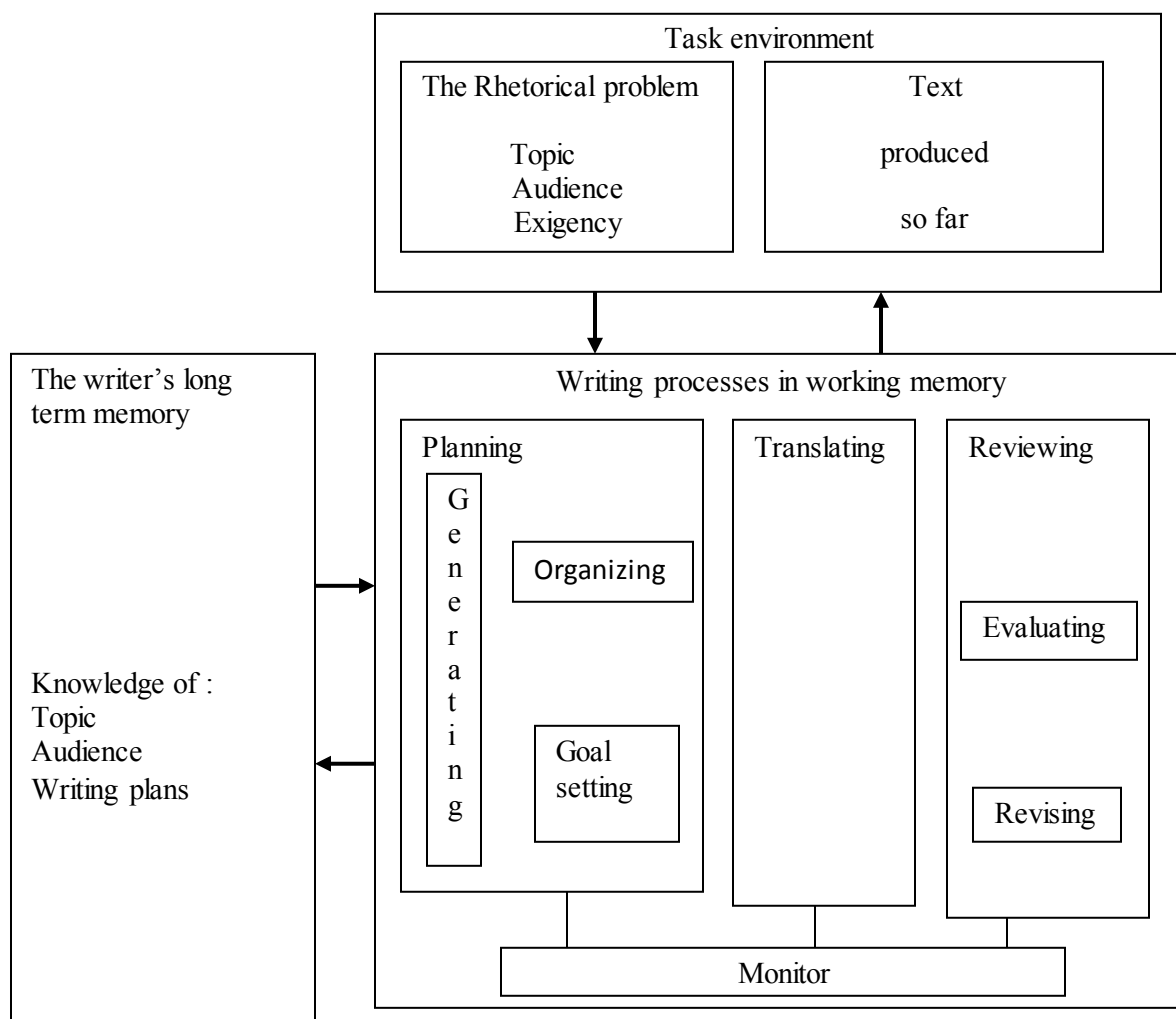


Figure 3.1 Hayes and Flower's model of the writing process (1980. In Hacker et al., 1998)

In the next section the second model of writing as a process is described.

3.2.2 Bereiter and Scardamalia's model (1987)

Bereiter and Scardamalia (1987) distinguished two writing modes that discriminate experts from novices: Knowledge-Telling and Knowledge-Transforming. These two modes attempt to describe texts usually produced by younger and older children. Knowledge-telling results in a plan or a text in the form of a list. Calling on linguistic resources derived from the ordinary social experience of conversation, 'knowledge-

telling is an easily acquired writing strategy used by novice writers who simply recite what they know about a topic in a relatively free associationist manner' (Sitko, 1998, p. 76). The model can be used to describe developmental changes, with 10-year-old children consistently conforming to the knowledge-telling model and 12-year-old children beginning to show signs of conceptual planning.

Knowledge-transforming, on the contrary, enables the writer to 'accomplish alone what is normally accomplished only through social interaction—namely the reprocessing of knowledge' (Bereiter & Scardamalia, 1987, in Hacker et al., 1998, p. 76). Knowledge-transforming is a strategy demanding mental effort, engaging the writer in metacognitively guided planning, audience considerations, problem solving, and diagnosing. What distinguishes these more mature patterns is that they involve conscious control over parts of the process that are ignored by less mature writers. This distinction provides an important principle for analyzing patterns of development and in designing instruction. Therefore, there is a need to understand the processes skilled and less skilled writers are involved in, as is explained in the following section.

3.2.3 Skilled and unskilled writers

Skilled and unskilled writers differ in terms of the amount of writing they usually produce as well as in the processes they go through. While planning, for example, experienced writers appear to be able to translate high-level goals into sub-goals and to handle the overload on working memory by embedding solutions through using strategies (B. Hayes- Roth & F. Hayes-Roth, 1979, in Hacker et al., 1998). The generation of sub-goals appears to be dynamic rather than pre-established (Matsushashi & Gordon, 1985, in Hacker et al., 1998). The planning episodes of more experienced

writers consider larger rhetorical elements such as overarching purpose, audience needs, and genre conventions (Bereiter & Scardamalia, 1987 and Flower & Hayes, 1981, in Hacker et al., 1998) than less experienced ones.

Revising is also different among skilled or experienced and unskilled or inexperienced writers. Experienced writers are better at both detecting and diagnosing problems in texts written by others (Flower et al., in Hacket et al., 1998) and in texts of their own making (Sitko, 1998). Less experienced writers consider revision only if word and sentence-level change (Matsushashi & Gordon et al., 1985, in Hacker et al., 1998), and even if they are taught to look for text difficulties, less experienced writers often decide to leave potential problems in their texts (Fitzgerald & Markham, 1987; Sitko, 1992, in Hacker et al., 1998).

As for editing, it used to appear solely in the form of sentence correction exercises. Young writers very often seek adult help while editing from older family members or friends (Raphael, Englser, & Kirschner, 1989, in Hacker et al., 1998) rather than from instructors. They are attentive at this stage due to school instruction that highlights the importance of editing especially in assessment (Applebee, 1984, in Hacker et al., 1998). Older writers, in comparison, establish different purposes for writing, take into account different readers' needs and take advantage of conventions of the genre they have selected.

Flower and Hayes (1981, in Moran & Soiferman, 2010) reported novice writers' over reliance on the surface structure of their texts which makes them unwilling to make more general decisions on what to write (Kozma, 1991, in Moran & Soiferman, 2010). Gourgey (1998, in Moran & Soiferman, 2010, p. 14) claims that 'the distraction

caused by the over-emphasis on surface details leads to a breakdown in cognitive and metacognitive functions which compromises the novice writers' ability to understand what needs to be done and why'. However, experienced writers make sentence-and-theme-level changes based on the mismatch between their text and their intentions, and their revisions are more likely to change the meaning of their composition (Kozma, 1991, in Moran & Soiferman, 2010).

It is noteworthy that besides the cognitive processes involved in writing that these models describe, they also imply the higher operations that writers are involved in especially when considering the demanding task of EFL composition. For instance, writing in Hayes and Flower (1980)'s model is viewed as a problem solving act, where writers 'need to keep simultaneously in focus their communicative goals, their writing plans, the nature of the targeted audience, and the conventions of writing' (Wong, 1991, in Maftoon, Birjandi & Farahian, 2014, p. 2). This draws attention to the importance of higher order processing, most notably problem -solving that is a key element in metacognition (Hawkins, 2007, in Maftoon et al., 2014). Furthermore, in their model, Flower and Hayes (1981) give prominence, though implicitly, to the control level of cognitive processing. Monitoring in this model coordinates writing activities since it urges the writers to set goals, and regulate their progress toward the goals. Emphasis on the critical role of metacognition in cognitive models of writing has been quite significant. Thus, Hacker, Keener, and Kircher (2009, in Maftoon et al., 2014) have recently defined writing as 'applied metacognition'.

3.3 Metacognitive Models of writing

Hacker, Keener, and Kircher (2009, p. 154) defined writing as ‘the production of thought for oneself or others under the direction of one’s goal-directed metacognitive monitoring and control, and the translation of that thought into an external symbolic representation’. Reference to writing as a thinking process thus requires the consideration of metacognition from both knowledge and regulation perspectives. It is a highly demanding academic task for students that involve them fully and critically when composing extended pieces of writing in particular. This section on metacognitive writing discusses issues of monitoring and control in writing in addition to metacognitive strategies of skilled and unskilled writers when production problems occur.

Definitions of metacognition suggested by Flavell and Wellman (1977, in Hacker et al., 1998) and elaborated by Brown (1987, in Hacker et al., 1998) are commonly used by writing researchers. These definitions include ‘knowledge of the task and one’s own cognitive resources, and monitoring, or the ability to control and regulate one’s own thinking’. (Sitko,1998, p.75). These two aspects of awareness and monitoring or control will be discussed in the next sections.

3.3.1 Metacognitive awareness in writing

Progressive Education under the influence of cognitivism emphasized experiential learning and problem- solving (Gold et al., 2012; & Mohanty, 2007, in Farahian, 2015). The process-oriented paradigm to writing views it as the act of meaning - creation whereby the writer is involved in the recursive process of preparing the draft, revising and checking.

In the early 1980's, the writer's mental processes gained prominent importance (Johns, 1990, in Farahian, 2015) and this produced process-based models of writing. Among these models, the most notable ones were developed by Hayes and Flower (1980) and Bereiter and Scardamalia (1987), that were described earlier in section 3.2.1 and 3.2.2 of this chapter. Both models consider writing as problem -solving and a higher- order mechanism, as was discussed earlier.

In Hayes and Flower's (1980) model, writing is assumed to be a problem-solving activity. In this problem- solving model, the monitor has the implicit role of metacognitive awareness. On this point, Farahian (2015, p. 40) writes:

‘The writer has to tackle the ongoing problem of formulating, organizing, and producing text. To put it simply, the problem for a writer is the act of producing the text for which he has to set goals and find a solution (...) In Hayes and Flower's (1980) model, the monitor assumes such a responsibility and checks the progress of planning, translating and reviewing. Therefore, although not explicitly stated in the model, the monitor plays the role of metacognitive awareness’

Based on Hayes and Flower's model, writers have to constantly make decisions regarding their cognitive resources (Wong, 1991). This necessitates the use of a higher -order process which seems to control cognitive processing.

Klein (2004, in Farahian, 2015, p. 40) also views Bereiter and Scardamalia's (1987) model of knowledge-telling and knowledge- transforming, ‘as the most developed metacognitive model of writing’ which revolves , similarly, around the problem- solving idea and provides further evidence for the use of metacognitive

processes in writing. Bereiter and Scardamalia (1987) suggest that knowledge-tellers use their long- term memory in all processes of writing and make the least use of planning, revising, and monitoring. Yet, knowledge-transformers who are more mature writers, as Sitko (1998, in Farahian, 2015, p. 40) notes, engage in ‘metacognitively guided planning, audience considerations, problem- solving and diagnosing’. These metacognitive activities are absent in knowledge- telling (Zalewski, 2010, in Farahian, 2015). This monitoring over the thinking process distinguishes skilled from unskilled writers.

Besides, these models make reference to self-regulatory and decision- making processes which improve writing performance. In Flower and Hayes’ model (1981), these are termed ‘executive control mechanisms’, and in Bereiter and Scardamalia’s (1987), they are referred to as ‘strategic control guide’ and ‘control cognitive processes’ in writing. In the present study, these are referred to as ‘regulation processes’.

Metacognitive knowledge plays an important part in most cognitive activities responsible for second language learning (Flavell, 1987, in Farahian, 2015). For this reason, Wenden (1999, in Farahian, 2015) claimed that metacognitive knowledge should be granted more credit in language learning. This awareness contributes to learners’ progress in different language skills, specially writing, and has been recognized as a key attribute affecting the process and the product in SL writing (Wang et. al., 2009; Zimmerman & Bandura, 1994, in Farahian, 2015). In addition, findings provided evidence that metacognitive awareness can distinguish skilled from unskilled writers (Victori, 1999, in Farahian, 2015) and that apart from SL learners’

ethnic, cultural and linguistic background, metacognitive development correlates positively with their writing performance (Kasper, 1997, in Frahian, 2015). The next section deals with two important aspects of metacognitive writing which are: monitoring and regulation.

3.3.2 Metacognitive monitoring and regulation in writing

Metacognitive monitoring is described as ‘an awareness of one’s current thoughts or behavior’, and metacognitive regulation is described as ‘the modification of one’s current thoughts or behavior’ (Hacker, Keener & Kirsher, 2009, p.157). The importance of these two components of metacognition has been underscored in the area of writing for at least thirty years (Hacker et al, 2009).

In the original model suggested by Hayes and Flower (1980) and as described earlier in this chapter (Section 3.2.1), the actions of three working memory processes, planning, translating, and reviewing, are controlled and coordinated by a monitor. On this point, Bruer (1993, in Hacker et al., 2009, p. 157) wrote that: ‘A well-developed monitor is necessary to keep the complex, recursive processes of writing manageable’. Kellogg (1994, in Hacker et al., 2009, p. 157) also stated that ‘a writer must monitor and evaluate the progress of his or her thinking and writing using metacognition’. Deliberate control of writing sub-skills was declared by Bracewell (1983, in Hacker et al., 2009) as important for the acquisition of new language sub-skills that are unique to writing and for solving problems that occur during writing.

When writers produce texts, they are obviously producing meaning. They are also using monitoring strategies like reading, re-reading, reflecting and reviewing to confirm that meaning production is congruent with the author’s goals for writing. If

the author's monitoring is accurate, this congruence will continue to occur. Editing, drafting, idea generation, word production, translation (i.e. transforming ideas into written text), and revision similarly account for regulation strategies that are responsible for the actual production of meaning. Generally, by the time the first words have been produced, the author has already monitored and regulated the production of numerous ideas that are potentially appropriate to his or her goals for writing. Of these numerous ideas, only a few have probably been translated into written text, although this varies with writing experience, with less experienced authors translating more of the ideas produced, and more experienced writers translating less. As mentioned earlier, Bereiter and Scardamalia (1987) refer to the former as knowledge-telling writers and the latter as knowledge-transforming writers.

Alternatively, monitoring and regulation of writing continues until the author experiences a breakdown in meaning, which indicates that something in the text is no longer in accordance with his or her goals for writing, or additional meaning is simply not available. To re-initiate meaning production, Hacker et al., (2009, p. 158) note the following:

‘The author must exert control/regulation to ensure that any inappropriate mapping is remediated and further production continues. At a minimum this requires an orchestration of monitoring and regulation, involving a variety of strategies, such as accurately diagnosing the breakdown in meaning, reviewing what has been written, generating new ideas, and rewriting to produce new text that is in better conformance with the writer's purposes. Once the breakdown is resolved, the author again continues with writing

until another breakdown in the production of meaning occurs. As larger units of text are completed, each larger unit can be monitored through a review process for meaning at a macro-level, and if the review indicates non-conformance to the author's goals, further control must be exerted. If the review indicates conformance to one's goals, meaning production continues until the author decides to stop'.

Some portion of the monitoring and regulation of writing is known to be implicit (Flower, 1994; Newell & Simon, 1973; Reder & Schunn, 1996, in Hacker et al., 2009). However, it is important to remember that although automatic processing can be a valuable asset to effective writing, explicit monitoring and regulation are essential components in the production of meaningful text. Only through explicit reading and re-reading, reviewing, revising, editing, and deliberate production and reproduction of text can the writer gain confidence that the written text is a good representation of his or her thoughts.

It has to be noted, however, that foreign language writing research studies that investigate the three components of metacognition i.e., knowledge, monitoring and regulation in an exam situation are rather scarce. This claim is supported by some FL researchers like Wang and Han (2017) who reported only two studies that explore metacognitive components in EFL writing. In their study, Wang and Han examined metacognitive knowledge and control/regulation of EFL writing of high and low performing writers. They used two writing tasks and two questionnaires to collect data from 65 Chinese university students. The results revealed that the high and low performing EFL writers did not differ from each other in terms of metacognitive

knowledge; they differed in terms of actual use of writing strategies depending on the writing task. The researchers reported that:

‘When the participants were undertaking a writing topic which was more familiar and easier for them, the two groups of writers only differed in using cognitive writing strategies, whereas when the writing task appeared to be more challenging and difficult, in addition to using more cognitive strategies, the good readers might have used more metacognitive strategies to help them coordinate cognitive processes in terms of planning and evaluating for their writing’. (Wang & Han, 2017, p. 529)

Therefore, the current study undertaken with Algerian undergraduates of EFL may reveal students’ metacognitive processes when performing challenging tasks within the context under study.

It is worth recalling that the present research investigates the role of EFL undergraduate students’ metacognitive knowledge, monitoring and regulation in relation to their achievement at both receptive and productive levels, focusing on the integrated course of reading and writing at first and second year degree levels. Since one of the objectives of this course is to emphasize the connection between these two academic skills, there is a need to review major research perspectives on reading-writing connections. The aim is to reflect on the possibility of producing a model of metacognitive processes involved in both reading and writing when combined.

3.4 Reading and Writing Combined

Reading and writing are intertwined processes since research in writing instruction corresponds largely with work on reading and metacognition. The two tasks of reading

and writing inform each other: writers read their texts and often construct texts from sources that they have read. While reading their own texts during composing, writers exhibit the same moves as when reading the texts of others, such as backtracking to aid comprehension and building a representation in memory. However, writing research interest has been on the production of texts rather than on their comprehension. One area where the two activities clearly meet is in revision like peer- reviewing or editing (Hacker et al., 2009). Reading and writing are closely related in research and instructional design. This can be seen in some school and university curricula whereby the two skills are taught as one subject which is the case of this research work. The section that follows draws on theories that explain the connections between the two skills.

3.4.1 Theories of Reading-Writing Relations

The relation between reading and writing has long been characterized by a complex set of approaches and conceptualizations. In more traditional approaches, reading and writing were defined as individual skills that could be analyzed and taught as a range of independent skills and strategies. At present, however, reading and writing are generally described as ‘parallel processes’ or ‘natural partners’ (Trosky & Wood, 1982; Tierny & Pearson, 1983; Sarasota, 2002; Tsai, 2008, in Farahzad & Emam, 2010, p. 597) in which the activities of readers match the activities of writers (Smith, 1983, in Farahzad & Emam, 2010).

Reading and writing are described as ‘parallel processes’ because there is a link between what readers do and what writers do as they prepare to read or write; that is, as they create meaning through text (in writing), and as they reflect on the text (in

reading). However, the exact nature of these relations has not been properly determined. Researchers from a variety of fields (e.g. education, composition, reading, learning psychology, applied linguistics) have become interested in the ways that reading and writing might reinforce or accelerate the learning of content, the development of literacy skills, and the acquisition of language abilities (Grabe, 2003, in Farahzad & Emam, 2010).

The interaction between reading and writing is an area of concern in the academic context as it relates to students studying both in their first language (L1) and in a second or foreign language (L2). The study of reading-writing relations, according to theoreticians (e.g. Grabe & Kaplan, 1997; Urquhart & Weir, 1998; Grabe, 2003, in Farahzad & Emam, 2010) must be grounded in the theories of reading and writing that can stand independently. Reading- writing relations should then build on these theories and offer a framework that explains the ways in which reading and writing together enhance language, literacy, and content learning. Such a framework can offer teachers a richer understanding of how to assemble a course designed to promote literacy and language skills needed for successful performance in academic English contexts.

On the one hand, when reading-writing relations are dealt with in terms of similarities and/or differences between L1 and L2, it is a matter of interlingual aspects. Thus, researchers contend that some familiarity with L1 findings can help L2 teachers develop greater awareness of the challenges that all learners face in accomplishing their reading and writing goals (Farahzad & Emam, 2010). On the other hand, researchers who address reading-writing relations focusing mainly on what processes

and/or products are followed in L2 in particular are rather highlighting the intralingual aspects of this issue.

Second language research on reading-writing connections can be traced back to the 1980's. Two early topics of research involved the Interdependence Hypothesis and the Language Threshold Hypothesis (Cummins, 1981; Durgunoglu & Verhoeven, 1998; Connor, 1996; Johns & Mayes, 1990; Sasaki & Hirose, 1996, in Farahzad & Emam, 2010). The Interdependence Hypothesis 'suggests that literacy transfers from the L1 to the L2', while the Language Threshold Hypothesis argues against 'supportive transfer until a certain variable level of L2 proficiency is attained' (p. 598). Two further issues have also been identified; the first is the Extensive Reading Hypothesis supporting the argument that extensive reading directly improves writing abilities (Krashen, 1984, 1993, in Farahzad & Emam, 2010). The second issue is the Directionality of the Connectedness Hypothesis emphasizing the role of directionality between reading and writing. Then, the question that teachers may ask is: is it better to go from reading to writing or from writing to reading for more effective teaching? These four hypotheses have dominated discussions of L2 reading-writing relations in the 1980s and 1990s (Wallace, 2001, Grabe, 2003, in Farahzad & Emam, 2010) and are described in the next section.

3.4.1. 1 Interdependence Hypothesis

The Interdependence Hypothesis relates to the two literacy skills, reading and writing, in L1 and L2 learning research. The rationale underlying this approach is that cognitive knowledge is shared by domains of reading and writing (Fitzgerald & Shanahan, 2000, in Fukuda, 2011). The 'shared cognitive domains' were also

hypothesized to function as a basic competence from which literacy skills in distinct languages stem according to the Interdependence Hypothesis advocated by Cummins (1994). He stressed that ‘there is an underlying common proficiency across languages’ (in Grabe, 2003, p. 247). Cummins argued further for a reasonable L2 proficiency to allow transfer of common literacy abilities. Generally, there seems to be considerable evidence that certain types of literacy skills transfer reinforce L2 literacy development (Grabe, 2003). Yet, opposing views to the Interdependence Hypothesis emerged and limited its claims giving way to some peculiarities of L2 writing. For example, both Silva (1992) and Raimes (1985) proclaimed that L1 writing abilities are not wholly responsible for certain aspects of L2 writing (in Grabe, 2003). Although transfer is an important aspect of L2 literacy development, it is not always clear which aspect of literacy abilities transfer more readily. In any case, the aspect of transfer will not be addressed in this study.

3.4.1.2 Language Threshold Hypothesis

According to the Language Threshold Hypothesis, transfer is not the only major influence on L2 literacy development. The assumption is that readers or writers will need to develop a certain level of language proficiency in the target language before they can transfer L1 reading/writing skills or strategies to improve L2 reading comprehension. Before this threshold level of language proficiency or linguistic ceiling is reached, whether or not students read/write well in their L1 does not make much difference in their L2 reading/writing performance (Lee & Schallert, 1997, in Jiang, 2011)

For instance, studies across different student populations, tasks, texts, and general proficiency levels show that L2 proficiency is a powerful predictor of student reading performance up to a level of reasonable L2 proficiency (Bernhardt & Kamil, 1995; Bossers, 1992; Lee & Schallert, 1997, in Grabe, 2003). In writing, there is less evidence of an L2 language threshold, though two studies provide persuasive arguments supporting reading research. In one study, Johns and Mayes (1990, in Grabe, 2003) demonstrated that students with better L2 language proficiency wrote better summaries. In another, Sasaki and Hirose (1996, in Grabe, 2003) found that L2 language proficiency accounted for 52% of the variance with an L2 writing task, while L1 writing abilities accounted for 18% only of the shared variance. Overall, it is reasonable to argue that L2 language proficiency is a crucial element of L2 literacy abilities. One may therefore conclude that ‘this language proficiency factor is central to L2 reading-writing relations’ (Grabe, 2003, p. 248).

3.4.1.3 Extensive Reading Hypothesis

Extensive reading leads to better writing performance as indicated by research findings (Grabe, 2003). It was Krashen who suggested the idea in the 1980’s and was further supported by other studies (Elley, 1996; Flahive & Bailey, 1993, in Grabe, 2003). Not only L2 but also L1 studies suggested that extensive exposure to texts through reading paves the way to language knowledge that supports better writing abilities. For example, research has shown that ‘extensive reading leads to better vocabulary knowledge, better verbal fluency, better syntactic knowledge, better semantic memory, better metalinguistic awareness, and broader knowledge of the world’ (Stanovich et al., 1996, in Grabe, 2003, p. 249).

Empirical work conducted by Stanovich and his colleagues (1996, Grabe, 2003) indicated that students can develop a substantial amount of literacy- related skills and abilities from long periods of exposure to print. One of the implications drawn from these findings, and particularly for reading and writing relations is the idea that ‘connections between reading and writing may be variable, but they can be interconnected more efficiently through extensive reading in combination with consistent writing practice’ (p. 249).

3.4.1.4 Unidirectional and Bidirectional Hypothesis between reading and writing

Research suggests that reading and writing are related (Eisterhold, 1991). These relations have been explored through different models. These models have examined directionality of connectedness between reading and writing claiming that: (1) reading improves writing, or (2) writing improves reading, or (3) reading and writing improve each other (bidirectionality).

Each of these directions accentuates the reading-writing relationship and each one offers the teacher of L2 writing a valuable perspective on reading-writing interactions in the writing classroom. The unidirectional model focuses on input –reading to writing or writing to reading- in the development of reading and writing skills. On the one hand, this model suggests the important role that reading must play as information source in the writing class. On the other hand, the bidirectional model stresses the multiple relations and interrelated process that seem to build the reading-writing relationship. This model points to the fact that the reading -writing relationship can vary qualitatively at different stages of development.

As a result of these directions ‘the existence of multiple relations and interrelated processes gives the writing teacher real confidence in an eclectic approach that includes a variety of activities designed to take advantage of structural and cognitive similarities in reading and writing’ (Eisterhold, 1990, p .93). Most notably, current research seems to have reached a consensus on the issue of directionality by considering reading- writing relations as mutually supportive for literacy development and content learning (Carson, 2001; Ferris & Hedgcock, 1998, in Grabe, 2003). Some instructional practices are illustrated in the following section to showcase the mutual connectedness of reading-writing in L2 teaching contexts and the role of the curriculum.

3.5 Reading-writing instruction in L2 contexts: Role of Curriculum

Students in many academic contexts are asked to combine reading and writing activities as in the present research context. These activities represent a major component of academic English curricula. Thus, besides the importance of literacy development through reading and writing, there is a crucial need to teach specific instructional genres required in a variety of academic settings such as summarizing, writing a response to reading and reviewing (Grabe, 2003).

Research suggests two frameworks that offer the best opportunities to incorporate reading and writing within realistic academic demands in academic English curricula; these are Content-Based Instruction and Task-Based Instruction. Adopting these two instructional practices ‘can build the foundational skills of reading and writing and also develop literacy abilities to advanced levels in a coherent curriculum, reflecting realistic academic expectations’ (Grabe, 2003, p. 254).

Content-Based Instruction can be an effective way to generate a coherent set of reading and writing experiences, and it can yield practice in the specific literacy tasks expected in advanced academic settings. Content based instruction presented thematically ‘builds student motivation, offers a degree of student autonomy, allows for group planning and project work, and provides opportunities for many realistic reading-writing tasks’ (Grabe, 2003, p. 254).

As for Task Based Instruction, it targets lower levels of language learning and do not propose intensive reading- writing interactions for advanced academic cases (Skehan, 1996, in Grabe, 2003). Yet, Carson (1993, in Yoshimura, 2009) proposed an approach that strongly highlights reading-writing tasks developed for students in transition to academic work in university settings.

In what follows there is an attempt to examine previous research findings on the issue of reading- to- write in ESL/EFL contexts.

3.6 Research studies on reading to write

Reading- to- write is the most common task students are involved in when they are at university. It is the case of the present investigation whereby undergraduate students in the first and second years read texts for the purpose of composing their own texts later (for e.g., writing essays for exams or project writing).

A large number of studies on reading to write in an L2 have been conducted in the context of English as a Second Language but very few in EFL settings; for example, a doctoral study was conducted on the effect of extensive reading on the writing performance of first year Algerian university students of English (Ouafi, 2019). The

results revealed that the extensive reading programme developed their writing performance, but also improved their grammar.

In L2 contexts, Campbell (1987, in Ruiz-Funes, 1999) explored the process of writing from sources used by native and nonnative speakers of English at the undergraduate level. Analysis of the data was based primarily on Kirby and Kantor's concept of 'authority' (1983, in Ruiz-Funes, 1999). Campbell proposes that effective readers and writers have 'authority' to produce better quality academic papers. On the opposite, poor readers and writers lack authority and, consequently, try to simplify the task as much as possible 'by avoiding the text, copying the text, or simplifying the structure of the merging text to accommodate repetitious patterns of use of the background text' (in Ruiz-Funes, 1999, p. 520). As a result, the texts produced are of low quality by academic standards. These findings were considered preliminary since the researcher noted the need for more research on aspects involved in the writing process from source texts, accounting for language proficiency, cultural differences, and reading-writing interaction. There is a positive relationship between comprehension of the background text and overall writing quality of the student paper: as comprehension of the background text increases, so does overall writing quality.

Carson and Leki (1993, in Ruiz-Funes, 1999) report a number of studies on reading and writing in ESL. Their works address issues that range from the importance of developing critical literacy in ESL classes (Gajdusek & Van Dommelen, 1993, in Ruiz-Funes, 1999) to the need for ESL students to develop metacognitive knowledge of the processes involved in reading and writing (Devine, 1993, in Ruiz-Funes, 1999), the relationship between reading skills and writing skills (Flahive & Bailey, 1993, in

Ruiz-Funes, 1999), and task representation (Connor & Carrell, 1993, in Ruiz-Funes, 1999). In addition, pedagogical implications discuss the use of a sequential recursive syllabus using reading and writing (Spack, 1993, in Ruiz-Funes, 1999).

As for EFL contexts, Ruiz-Funes (1999) explored the process of reading to write used by skilled learners of Spanish in an upper level Spanish composition course. The analysis was based on Stein's (1990, in Ruiz-Funes, 1999) model of the cognition of reading to write. The major processes identified in addition to planning, writing, revising and editing are: synthesizing, monitoring, structuring and elaborating. These processes served specific functions in the performance of the reading to write task. In those tasks students were asked to read articles or literary selections and to react and respond to them in an insightful and critical manner. The objective of each process is described below:

- a. The process of synthesizing serves to compile information from the source text and form the reaction around which the students develop their essays;
- b. The process of monitoring serves to check for accuracy of information and to collect relevant information from a play;
- c. The process of structuring serves the function of selecting relevant information and restructuring it according to the intended purpose of the writer; and
- d. The process of elaborating seems to be the most important one and serves the functions of generating new ideas, evaluating and judging. It is the most challenging part where the students produce their texts showing critical thinking.

The findings of Ruiz-Funes (1999)'s study indicate that the subjects had a high level of awareness and regulation of the processes they used. In particular, they were aware of the process of elaboration and of the important role it played in integrating information from the play with their own ideas. This underscores the role of metacognitive monitoring in these processes.

The next section discusses students' levels of instruction in relation to EFL reading to write at university.

3.7 Issues of reading-to-write in the foreign language classroom

Two major issues of relevance to the study at hand are discussed in this section in relation to reading to write in the EFL classroom. The first issue concerns the gap that exists between the different levels of EFL instruction at university, i.e. students move from one level to another with a wide gap of demands and tasks. The second issue relates to the teaching of literature which may help students develop critical thinking skills. In the context of the current study, literature is a common subject at the undergraduate level, and at the postgraduate level for those who specialize in literary studies. The literature course is often regarded as a subject matter more likely to produce metacognitive students than other courses, as is discussed below.

3.7.1 Transition to advanced reading and writing

It is generally noticed that the transition that students make from intermediate to advanced FL classes is not easy. Preparation for heavy task demands is often lacking, particularly in reading and writing and strategy use. This was evidenced by Schultz (1991, in Ruiz-Funes, 1999, p. 521) who argued that 'students who apparently do well in language classes often seem to be at a loss when faced with the demands of upper

division courses'. The author pointed to the lack of appropriate composition skill preparation at the intermediate level, as can be seen in many of today's major institutions, in terms of upper level demands. In the present investigation, it is a reality that students join EFL classes to study English at university with inadequate proficiency in English. They typically come from high school (secondary education) where English is a school language subject only and not a content subject. But at university, all language and content subjects are taught in English, except for very few courses which are taught in Arabic or French.

Another gap exists even at university level when students move from one degree year to another. For example, intermediate-level students (first year) are generally taught to write in the simplest modes of writing such as description and narration, and sometimes exposition. Expectations of more advanced writing courses, like argumentative writing, are rarely dealt with.

In upper-level courses (second and third years), students are asked to write in more complex modes such as argumentation. The argumentative essay involves cognitive processes that are more complex than those involved in producing a narrative or a descriptive essay as 'the argumentative essay depends on higher-level cognitive skills that can be conceived of as a multidimensional network of conceptual constructs' (Schulz, 1991, in Ruiz-Funes, 1999, p.521). When writing an argumentative essay, writers engage in a complex process that includes exploration of a problem, evaluation of facts and evidence, generation and testing of hypotheses, and redefinition of such hypotheses in relation to new ideas and evidence. Whereas when writing a descriptive or a narrative essay, writers engage in more simple, linear cognitive processes that

‘can be called upon fairly automatically for writing purposes’ (Schultz, 1991, in Ruiz-Funes, 1999, p. 521). The transitional gap that exists between the intellectual demands of the two modes of writing causes writing difficulties for a large number of students.

Foreign language experts propose a comprehensive program as a solution to this transition problem. Schultz (in Ruiz-Funes, 1999) suggests writing tasks based on reading literary texts. The writing program is based on the following principles

1. It deals with the type of essay students will be expected to write at the next level of study;
2. It creates grading criteria not only for grammar but also for other aspects;
3. A variety of response mechanisms are taken into account, from teacher to students and group work answers; and
4. It is process-based.

The second issue as stated earlier is that of teaching literature to enhance critical thinking that falls under the umbrella term ‘metacognition’. Halpern’s (1998, in Magno, 2010, p.138) model posits that metacognition and critical thinking should be introduced together. She explained that:

‘Metacognition is the ability to use knowledge to direct and improve thinking skills. When engaging in critical thinking, students need to undergo specific metacognitive skills like monitoring their thinking process, checking whether progress is being made toward an appropriate goal, ensuring accuracy, and making decisions about the use of time and mental effort. This implies evidently that critical thinking is a product of metacognition’

The next section is devoted to the teaching of literature as a means to develop high-order thinking skills at university.

3.7.2 Teaching literature at an initial level of instruction

Lack of adequate preparation to process literary texts in the target language by FL students has been highlighted by language and literature experts. This is because literature plays a minor role in lower level foreign language classes (Schofer, in Ruiz-Funes, 1999).

Foreign language researchers (Schofer, 1990, and Barnett, 1991, in Ruiz-Funes, 1999) recommend the integration of literature in the core of language teaching early in language studies so that ‘students have a better preparation in reading and writing as they go from language to literature courses’ (Schofer, 1990, in Ruiz-Funes, 1999). Lack of students’ adequate preparation results not only from the secondary position literature generally has in lower degree courses but also from the lack of adequate methodology used to teach literature.

Students in early exposure to literary selections feel unable to respond critically to these texts. Bretz (1990, in Ruiz-Funes, 1999, p. 522) comments: ‘Students are easily convinced that there is only one correct ‘reading’ and that they do not have the tools nor the ability to find it without the aid of an instructor’. Consequently, they find themselves completely ‘disempowered’ and often stop trying to read. This problem occurs mainly because in many institutions, literature is still approached from a traditional view of ‘new criticism textual reading’, very popular in the 1970’s, which claims that there is only one correct reading of a given text, that of the instructor. This

belief in the existence of 'one reading' of text may generate in students 'illusions of knowing' and decrease their capacity to develop metacognitive higher-order skills and critical thinking necessary for reading and writing at academic levels.

Conclusion

This chapter has reviewed research in writing first, and then reading and writing combined since the teaching context of the study integrates reading with writing as one subject at the undergraduate level. Writing is considered as a skill that requires mental processing and high order thinking. Connected to reading, writing becomes more demanding and calls for more control and monitoring of the cognitive operations necessary to produce accurate academic texts. It is clear that metacognitive processes are involved at all levels of comprehension and production.

The second part of this thesis is devoted to the empirical study. It includes three chapters: Chapter four deals with the description of the research design and procedure. Chapter five reports the results of the study in relation to the 'illusions of knowing' in first and second year students and their achievement in reading and writing tasks. Chapter six deals with the discussion, interpretation of the findings, the implications and limitations of the study.

CHAPTER FOUR
RESEARCH DESIGN AND
PROCEDURE OF DATA
COLLECTION AND ANALYSIS

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RESEARCH DESIGN AND PROCEDURE OF DATA COLLECTION AND ANALYSIS

Introduction

This chapter is devoted to the description of the methodology adopted in this study. It first justifies the selection of the design and procedure to collect and analyze the data needed for the present investigation. Then it describes the participants of the study and the instruments of data gathering and methods of analysis. A Mixed-Methods Approach involving quantitative and qualitative methods will be used to collect and analyze the data, to answer the research questions and confirm or infirm the hypotheses restated below. From the point of view of epistemology, the study seeks to investigate students' metacognitive processes when involved in reading and writing examination tasks. That is, it attempts to reach knowledge of their metacognitive knowledge, monitoring and regulation. This study is conducted at the University of Algiers-2 and thus the reality is depicted from a sample of 80 Algerian first and second year students and two reading and writing teachers' standpoint (ontology). As regards the research paradigm adopted in the present study, it is the pragmatic paradigm whereby the research approaches (i.e. quantitative and qualitative) mix along with the data collection instruments to serve the purpose of this research and that is to provide depth and breadth to the issue of metacognitive processes in a reading and writing examination setting in the Algerian EFL context. According to Creswell (2014), the

pragmatists believe in the philosophy that researchers need to rely on the procedure that ‘works’ for a given research issue.

Although researchers acknowledge the fact that metacognition and strategy use in reading and writing are essential for deep and long lasting comprehension and learning, to measure them is said to be challenging. One main reason is that students tend to judge their learning abilities incongruently with their performance. Studies demonstrate that there is a mismatch between their achievement and what they believe they know and they can do. Besides, variation in learning styles and individual differences plays a major part in measuring metacognition consistently. For instance, some students are able to use higher order thinking skills in one task, but fail to do so in another. Thus, the main concern of the present study is to investigate the illusions of knowing of first and second year students when doing reading and writing tasks in an exam situation. Three main research questions have been asked regarding this concern:

Research questions

RQ1: What are the metacognitive processes used by first and second year degree students in reading and writing examination tasks?

(a) What metacognitive knowledge do they have about these tasks?

(b) How do they monitor and regulate these tasks?

RQ2: Is there a difference between the metacognitive processes of high, average and low achievers across the two years of study in reading and writing examination tasks?

RQ3: Is there a relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks?

These research questions lead us to formulate the upcoming null hypotheses that need confirmation or rejection.

Null hypothesis 1 (H₀₁): **‘There is no difference between high, average and low achievers’ metacognitive processes across the two years of study in reading and writing examination tasks’**

H₀₁ (a): ‘There is no difference between high, average and low achievers’ metacognitive knowledge across the two years of study in reading and writing examination tasks’

H₀₁ (b): ‘There no difference between high, average and low achievers’ metacognitive monitoring across the two years of study in reading and writing examination tasks’

Null hypothesis 2 (H₀₂): **‘There is no relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks?’**

H₀₂ (a): ‘There is no relationship between students’ **metacognitive knowledge** and their achievement in reading and writing examination tasks’

H₀₂ (b): ‘There is no relationship between students’ **metacognitive monitoring** and their achievement in reading and writing examination tasks’

These hypotheses are to be confirmed or rejected on the basis of the results obtained from the statistical measures that will be described in a subsequent section of this chapter, i.e. methods of data analysis.

4.1 Mixed Methods Approach: Explanatory Sequential Design

For the current study, the Mixed Methods Approach was used for data gathering and analysis. This approach was used because both quantitative and qualitative data are needed to be collected to provide a better understanding of the research problem than either type by itself (Creswell, 2014). Miles & Huberman (1994, in Creswell, 2014, p. 565) note that: ‘Mixed methods research is a good design to use if you seek to build on the strengths of both quantitative and qualitative data...When one combines quantitative and qualitative data, ‘we have a very powerful mix’.

We believe that pragmatic approach, based on both quantitative and qualitative designs, will help us to gain deeper understanding of the issue of the illusions of knowing. The design consists of two phases. The first phase is quantitative and falls under descriptive correlational design whereby the study attempts to answer research question (1) on the metacognitive processes of 1st and 2nd year undergraduate LMD students when reading and writing examination tasks. The knowledge component is measured in terms of three sub-constituents as defined earlier in the introduction to this thesis. These constituents are: Declarative knowledge (DK), Procedural knowledge (PK) and Conditional knowledge (CK). Research question (2) compares between levels of achievement and metacognitive processes in reading and writing

examination tasks. Question (3) seeks to establish the relationship between levels of achievement and metacognitive processes in reading and writing.

As a follow up to the quantitative design, and in order to draw a full picture of the problem being investigated, a qualitative tool is used in this research. A semi-structured interview is conducted with a sample of six students, three from each year (first and second year) and of different achievement levels in reading and writing (high, average and low achievers) to answer research question one. Therefore, the study lends itself to what is called in the research methodology literature the Explanatory Sequential Design, in which quantitative and qualitative data are collected sequentially in two phases, with one form of data collection following and informing the other (Creswell, 2014).

The decision to conduct a Mixed Methods Design is dictated by a number of reasons. These vary from the need to achieve triangulation to the desire to expand the breadth of the inquiry following the pragmatic paradigm. This approach is also undertaken for complementarity, development and initiation (Ary, Jacobs, Sorensen & Rasavieh, 2010). As concerns triangulation, it 'seeks to examine the convergence of evidence from different methods that study the same phenomenon or to corroborate findings from one method by examining the findings using a different method' (Ary et al., 2010, p. 561). It looks for consistency or otherwise contradiction in findings elicited from multiple tools of data collection. For complementarity, this design elaborates and clarifies findings from one method by using results of another

instrument. The variety of tools aims to measure different facets of the same phenomenon.

Regarding the study at hand on the illusions of knowing, the aim when adopting the Mixed Methods Design is both to corroborate the findings (i.e. triangulation) and to complement the study. In the first phase, that is quantitative, two inventories are used to gather data about the constructs of metacognitive knowledge and metacognitive monitoring. Metacognitive regulation is investigated in the qualitative phase.

For the variable of knowledge, the three categories: declarative, procedural and conditional are measured using the Metacognitive Awareness Inventory (Dennison & Schraw, 1994). As for knowledge of self, knowledge of task and knowledge of strategies, they are elicited from the participants of the study using the follow up interview in the qualitative phase.

Besides knowledge, data are also gathered for the metacognitive monitoring variable using the Taxonomy of Metacognitive Judgments (adopted from Schraw, 2009) which serves the quantitative data collection phase. These inventories and the semi-structured interview are fully described in the following sections. In what follows is the data collection procedure.

4.2 Data collection procedure

An explanatory sequential mixed methods design (also called a two-phase model; Creswell & Plano Clark, 2006, in Creswell, 2014) starts with collecting quantitative data and then collecting qualitative data to help explain or elaborate on the quantitative

results. The rationale for this approach is that the quantitative data and results provide a general overview of the research problem. However, more analysis, through qualitative data collection can help ‘to refine, extend, or explain the general picture’ (Creswell, 2014, p. 572). To summarize:

- The mixed methods design gives priority to quantitative data (QUAN) collection and analysis. This is introduced first in the study and represents a major aspect of data collection. A small qualitative (QUAL) component typically follows in the second phase of the study.
- The mixed methods design uses the qualitative data to refine and expand on the results from the quantitative data.

This design has enabled us to organize quantitative and qualitative parts, an advantage for readers as well as for researchers. Creswell (2014, p. 573) contends that: ‘This design also captures the best of both quantitative and qualitative data- to obtain quantitative results from a population in the first place, and then refine or elaborate these findings through an in-depth qualitative exploration in the second phase’. What is challenging in using this design, however, is that the researcher needs to determine what facet (s) of the quantitative results to follow up on. This follow-up consists of deciding on what participants to sample in the second qualitative phase as well as the questions to ask in this follow-up phase that builds upon the initial quantitative phase. Also, this design is said to be difficult because it requires both expertise and time to collect both numerical and textual data (Creswell, 2014).

Therefore, the first phase is quantitative through the depiction of the metacognitive knowledge, monitoring and regulation state of the participants and aims to answer research question one. Then, it compares between high, average and low achievers in these metacognitive processes and answers research question two. Following is the correlation to be drawn between the reading/writing achievement variable and metacognitive processes to answer research question three. For this part of the study, i.e. the first quantitative sequence, the metacognitive processes are described and the relationship between the variables is drawn, as indicated by Creswell (2014, p. 364): ‘you use this design when you seek to relate two or more variables to see if they influence each other’.

In correlational research designs, investigators use the correlation statistical test to describe and measure the degree of association (or relationship) between two or more variables or sets of scores. In this design, there is no attempt to control or manipulate the variables as in an experiment; instead, there is use of a correlation which is a statistical test to determine the tendency or pattern of two (or more) variables or two sets of data to vary consistently. In the present study, two scores are compared, a student metacognitive knowledge measure and a student reading/writing achievement score.

As far as phase one of the present study is concerned, the design is explanatory correlational because the main objective is to explain the association between metcognitive processes (knowledge, monitoring and regulation) and achievement in reading and writing an examination task. Furthermore, in using correlational design, my aim is to see the extent to which two variables (or more) co-vary, that is, where

changes in one variable are reflected in changes in the other. According to Creswell (2014, p.366), the current study showcases the key features of an explanatory correlational study for the quantitative phase (phase 1):

- Two or more variables are related.
- Data are collected at one point in time.
- All participants are analyzed as a single group (80 students).
- At least two scores for each individual in the group-one for each variable are obtained.
- The use of the correlation statistical test is reported.
- Interpretations or conclusions are made from the statistical test results.

As for phase two of the study, qualitative data were gathered through the use of a semi structured interview. Three participants from each undergraduate level i.e. first year and second year were interviewed. High, average and low achievers were selected according to the scores they obtained in their reading/writing exam. Further details of the interview are described in the tools of data collection section below. As mentioned above, the interview aims both at triangulation and completeness advocated by a mixed methods approach.

For the quantitative part of the study, data were collected in the context of a reading/writing examination in which the students were expected to demonstrate their efforts to cope with the demands of the task. The students and teacher were first asked for permission to administer the Taxonomy of Metacognitive Judgments (See

Appendix C) to their students taking the reading/writing exam, and they agreed to use the Taxonomy.

Before the exam, students were requested to make prospective metacognitive judgments about the task i.e. before they read/write, by filling in the Taxonomy. The latter were filled in and handed out to the researcher. Then, the students started answering the exam questions and while they were reading and writing, they made the concurrent judgments on the Taxonomy. Finally, when they completed the exam, the students were requested to make retrospective judgments about the reading/writing task. These judgments were made by assigning a percentage from 0 to 100 for each of the eight statements in each stage (See Appendix C).

As for the Metacognitive Awareness Inventory (MAI) (See Appendix B), students selected the items that reflected their metacognitive knowledge in a different reading/writing session. The aim was to assess their declarative, procedural and conditional knowledge in reading/writing tasks. The MAI contains seventeen statements and is an adapted version of Schraw and Dennison's (1994) Inventory of Metacognitive Awareness (See Appendix B).

For the qualitative part of the study, and to follow up on quantitative data, three (03) students from each undergraduate level (year 1 and year 2) were interviewed. The total number of participants in this phase is six students. The interview was conducted by the researcher in a different reading/writing class. The participants in the semi-structured interview were selected on the basis of their achievement in the reading/writing exam. There were three students: high, average and low achiever from

each year (first and second year). They were interviewed individually and the interviews were recorded and transcribed for coding and analysis.

The two lecturers teaching reading and writing to first and second year students were also interviewed. The aim was to compare their responses to the students' responses and increase the validity of this study.

Before providing a detailed description of the tools employed in the study, sampling is presented first.

4.3 Sampling

The sample of the study consisted of eighty (80) participants from year 1 and year 2. There were 50 first year and 30 second year undergraduates. The 50 students were non-randomly selected from a population of 1000 first year students and 800 second year undergraduates respectively. The sample consisted of students who both filled in and returned the MAI and filled in the 'before', 'while' and 'after' reading/writing exam judgments (TMJ). It is important to mention that the sample was larger at the beginning of the study; it comprised 140 participants. Yet, many students either did not return the Metacognitive Awareness Inventory (MAI) or did not fill in the Taxonomy of Metacognitive Judgments due to the stressful exam atmosphere. Besides, the selection of the participants was done non-randomly. Only teachers and students who accepted to provide data during a reading and writing exam participated in this study. The age of the students ranges from 18 to 22 years.

Moreover, from each year group of participants, a sub sample of three students was selected to conduct the follow up interview and thus collect qualitative data. The three

students had distinctive achievement levels in reading and writing as attested by the official records. They were interviewed for the purpose of elaborating on their responses to the metacognitive knowledge, monitoring and regulation questionnaire. In other words, they were asked to reveal their knowledge of the self, the task and the strategies they used in reading and writing and whether they monitored their breakdowns in these two tasks and how.

In addition to the sample of eighty students, the two reading/writing teachers of the same groups participated in the study since they provided the scores of the reading/writing exam. The achievement variable was measured by the scores the students obtained in the exam assessed by the two teacher participants. On the other hand, the two teachers were interviewed on two main components of metacognitive knowledge: knowledge of task requirement and knowledge of strategies. Only two questions were addressed to them in order to compare their views to those of their students in the analysis of qualitative data (See Appendix G)

4.4 Data collection tools

As explained earlier, the present study seeks to identify students' metacognitive processes in reading and writing exam tasks. This was carried using four tools:

1. The Metacognitive Awareness Inventory (MAI)
2. The Taxonomy of Metacognitive Judgments (TMJ)
3. The reading/writing task
4. The semi-structured interview

The next section describes each tool in detail and the first is the Metacognitive Awareness Inventory.

4.4.1 Metacognitive Awareness Inventory (MAI)

The first research tool used for data collection is the MAI. It was designed and used by Schraw and Dennison in 1994 and seems quite appropriate for the current study to measure metacognitive awareness (Schraw & Dennison, 1994). The MAI is composed of 52 statements representing two component categories of metacognition: knowledge of metacognition and regulation of metacognition. Knowledge of metacognition is divided into three areas: declarative knowledge (knowledge about self and strategies), procedural knowledge (knowledge about how to use strategies) and conditional knowledge (knowledge about when and why to use strategies).

Regulation of metacognition on the other hand covers five areas: planning (or goal setting), information management (or organizing), monitoring (or assessment of one's learning and strategy), debugging (or strategies used to correct errors) and evaluation (or analysis of performance and strategy effectiveness after a learning episode). The 52 statements are mixed and not divided into these different areas in order to avoid predictability.

As regards the validity and reliability of this instrument, Schraw and Dennison (1994) who used the MAI for their experiments argued that: 'both experiments supported the two-component model of metacognition' i.e. knowledge and regulation (Brown, Flavell, Jacobs & Paris, 1987, in Schraw & Dennison, 1994). Schraw and Dennison also found that 'the internal consistency of these scales was excellent,

ranging from .93 to .88'. Thus, from the results of their experiments, the researchers concluded that: 'The MAI provides valuable predictive information about subsequent performance' and that '...the MAI provides a reliable initial test of metacognitive awareness among adult students' (Schraw & Dennison, 1994, p. 471).

The MAI was adapted for the purpose of this study. Not all items of the MAI were used but only 17 items which tapped into students' metacognitive knowledge. That is, statements that concern declarative, procedural and conditional knowledge were addressed (See Appendix A for the original MAI and Appendix B: 17 for the adequate tool). The reason for using only 17 items out of 52 is because these items target the knowledge component of metacognition to identify students' 'illusions of knowing' which is the focus of the present study.

Therefore, the MAI statements addressed the participants' metacognitive knowledge only, not regulation. However, the qualitative phase of the study addresses some regulatory actions when failure to read and write occurs. It is worth mentioning that the Metacognitive Awareness Inventory was administered to the participants in a regular reading and writing class unlike the Taxonomy of Metacognitive Judgments (TMJ) which necessitated an exam setting. The latter is described in detail in the next section.

4.4.2 Taxonomy of Metacognitive Judgments (TMJ)

The Taxonomy of Metacognitive Judgments (Schraw, 2009) is the second research instrument designed to collect data on metacognitive monitoring. Metacognitive judgments refer to one of three different types of judgments about one's learning and

performance that are summarized in Table 4.1 (See below). These judgments are categorized as prospective, concurrent, and retrospective judgments to indicate when the judgment is made with respect to the main performance task. Schraw (2009) describes them as follows:

Time of judgment	Type of judgment	Description
Prospective (judgments made prior to testing)	Judgments of Learning (JOL)	Judgments of subsequent recollection of recently studied information
	Ease of Learning Judgments (EOL)	Judgments prior to study about the relative ease of learning information
	Feeling of Knowing (FOK)	Judgments of subsequently recognizing information that could not be recalled
Concurrent (judgments made during testing)	Online (in operation) Confidence Judgments	Judgments of confidence in one's performance
	Ease of Solution Judgments	Judgments about the accuracy of performance
	Online Performance Accuracy Judgments (Calibration of performance)	
Retrospective (judgments made after testing)	Ease of Learning/Solution	Judgments after study or testing about the relative ease of learning information
	Retrospective Judgments of Performance Accuracy	Judgments of how well one performed after completing all items

Table 4.1 Taxonomy of Metacognitive Judgments (the original taxonomy by Schraw, 2009)

(a)Prospective judgments (i.e., predictions) require the examinee to make a judgment about learning or performance prior to performing the task. Three different types of **prospective judgments** are of interest to researchers. These are: Judgments Of Learning (JOL), Ease Of Learning (EOL) and Feeling Of Knowing (FOK). Judgments Of Learning have been researched extensively. The main format for assessing JOLs is for an examinee to study to-be-learned material such as a list of words, and then make predictions of subsequent recollection for each item. JOLs presumably address metacognitive judgments about one's ability to encode and retain information.

Ease of learning judgments are judgments about the amount of time or effort necessary to learn material in order to meet a subsequent recollection criterion. EOLs presumably assess one's ability to monitor the relative difficulty of comprehension processes.

Feeling Of Knowing judgments 'occur when an individual is asked to predict whether they will recognize information that could not be recalled from long-term memory or from a prior study episode' (Schraw, 2009, p. 416). FOK measures one's ability to monitor the contents of memory and one's readiness to search memory.

Concurrent judgments require the examinee to make confidence or performance judgments while performing the task. In a typical study, an individual may complete a 15-item test and make a confidence or performance accuracy judgment after each item. These judgments refer to ongoing assessments of learning or performance. They include confidence judgments (i.e., confidence about learning or performance), ease of solution, and performance accuracy judgments (i.e., calibration of performance) while performing the task. The typical format is similar for all three measures, in which an

individual answers a test item or performs a criterion task, and immediately makes a judgment regarding confidence, ease of solution judgments, or performance accuracy. Concurrent judgments are often made on an item-by-item basis rather than over a set of items as is characteristic of retrospective judgments. Concurrent Confidence Judgments assess the individual's ability to estimate their performance as it occurs. Ease of solution judgments reflect the ability to monitor task difficulty relative to available cognitive resources. Judgments about the accuracy of performance provide a measure of the ability to monitor performance on the criterion task.

Retrospective judgments (i.e., post-dictions) require the student to judge the ease of learning or performance after completing a study phase or test. Retrospective judgments often are holistic in nature in which an examinee evaluates performance on all test items rather than an item-by-item basis as in concurrent judgments. They refer to judgments of learning or performance made after task completion. These include item-by-item (i.e., local) as well as global judgments in which a single ease of learning or performance judgment is made for the entire criterion task. Retrospective ease of learning or ease of solution judgments are similar to those described above with the exception that they are made after all aspects of the criterion task have been completed. For example, after completion of a 40-item test, individuals may judge how well they have performed even if they have made item-by-item judgments previously. Retrospective Judgments of Performance Accuracy follow the same pattern.

For the present study's purpose, the TMJ was used in the form of a questionnaire administered to the participants in order to measure their knowledge monitoring of the

task of reading and writing (See Appendix C). The Taxonomy was adapted and included statements with percentages that students selected depending on the extent to which they could monitor their reading and writing exam by judging their performance before, while and after the task. The tasks were designed and corrected by the teachers of the reading/writing course. The purpose of the tests is to collect evidence about students' achievement in reading and writing tasks as a key variable in the study and to see how their achievement correlates with their metacognitive knowledge and monitoring (See Appendix D for S1 reading/writing exam and Appendix E for S3 reading/writing exam).

4.4.3 Reading/Writing Tasks

The first year (S1) reading and writing exam was designed by the teacher of the subject in the academic year 2015-2016. It consisted of a reading text about 'concussions among athletes' followed by two sections of activities, one for reading and one for writing. The first part contains four exercises devoted to reading. Exercise one requires from students to answer five questions; three comprehension questions and two vocabulary questions. The second seeks to elicit the general idea of the text; the third asks questions about the text (justification and explanation) whereas the last exercise involves the students in writing a summary of the text.

As for the second part, which is devoted to writing, it consists of three activities. One seeks for a topic sentence, concluding sentence and sentences that break unity in the paragraph. The second requires from students to determine the type of mistake and to correct it while the last activity is about writing a meaningful paragraph about one selected topic out of three topics suggested by the teacher (See Appendix D).

The second year (S3) reading and writing exam was also designed by the teacher of the module in the academic year 2015-2016. It includes two parts; one for reading and one for writing. Part one requires from the students to read an extract from the short story 'The Martyr' by Ngugi wa Thiong'o and answer two questions. Question one asks the students to provide the key idea of each of the four paragraphs and question two requires from them to explain the significance of paragraph four in relation to one of the characters of the short story. Part two, which is devoted to writing, involves the students in describing a luxurious restaurant they have been invited to in an essay of four paragraphs (See Appendix E).

After presenting the two reading and writing exams the semi-structured interview is described in the following section.

4.4.4 Semi-structured interview

The semi-structured interview is the fourth tool used to collect qualitative data for the current study. It follows up on the quantitative tools (MAI and TMJ) and it is meant to investigate the illusion of knowing from the students' perspectives. This tool will enable us to deepen understanding of the relationship, if any, between metacognitive processes and academic achievement in reading and writing.

The use of the interview in this research is justified by the need to understand what students think when doing a reading and writing task and thus tap directly into their metacognitive knowledge. The aim of this tool is not to target declarative, procedural and conditional, but to explore self knowledge, task knowledge and strategy knowledge which also belong to metacognitive knowledge. Therefore, the interview data will help to triangulate the quantitative results and will therefore

complement the quantitative data in order to provide explanations and cues about factors contributing to the illusion of knowing. The use of the semi-structured interview is believed to add depth and breadth to the findings of the study. Fixed questions have been employed with some key questions which required elaboration. That is why neither the structured nor the unstructured interview was used. The semi-structured interview was opted for as it combines standardized and open format questions.

The framing of questions has considered both prompts and probes (Morrison, in Cohen, Manion & Morrison, 2007). The prompts enable the interviewer to clarify topics or questions, while the probes enable the interviewer to ask respondents to extend, elaborate, add to, provide detail for, clarify or qualify their response, thereby addressing richness, depth of response, comprehensiveness and honesty that are some of the hallmarks of successful interviewing (Patton, 1990, in Cohen et al, 2007). A probe may be simply the follow-up ‘why’ question. It could comprise simply repeating the question, repeating the answer in a questioning tone, showing interest and understanding, asking for clarification or an example or further explication, or, indeed simply pausing.

The questions of the interview used in the study were addressed to a sample of six (06) students overall. A sample of three students was selected from the first year reading/writing class and three students from the second year reading/writing class. The selection was made on the basis of the students’ achievement in the reading/writing test: one high achiever, one average achiever and one low achiever. The two teachers of the course were consulted for this purposeful sampling as they

were the raters of the reading and writing exam and therefore they had assigned their students a score representing a specific achievement level.

In addition to the questions designed for the students, two interview questions were directed to the two teachers of reading and writing (See Appendix G). They were about task knowledge and strategy knowledge. The responses elicited from the two teachers were compared with those of the students to discover any convergence or divergence in metacognitive knowledge. If the students' and teachers' knowledge were similar, this would mean that there is absence of illusion. But, if their knowledge were incongruent, this would mean that there is a possible illusion in these two aspects of metacognitive knowledge. In other words, students would possibly demonstrate lack of task knowledge and the appropriate strategies to perform it.

The questions of the interview were designed by the researcher. They address metacognitive knowledge of the self, the task of reading and writing and the strategies used in these tasks. An additional question was used to elicit the students' knowledge of their factors of achievement and also ask them to describe any monitoring and regulation attempts they engaged in when failures occurred (See Appendix F)

The following diagram provides a visual representation of the data collection instruments at each phase within the Mixed Methods Design adopted in the present study.

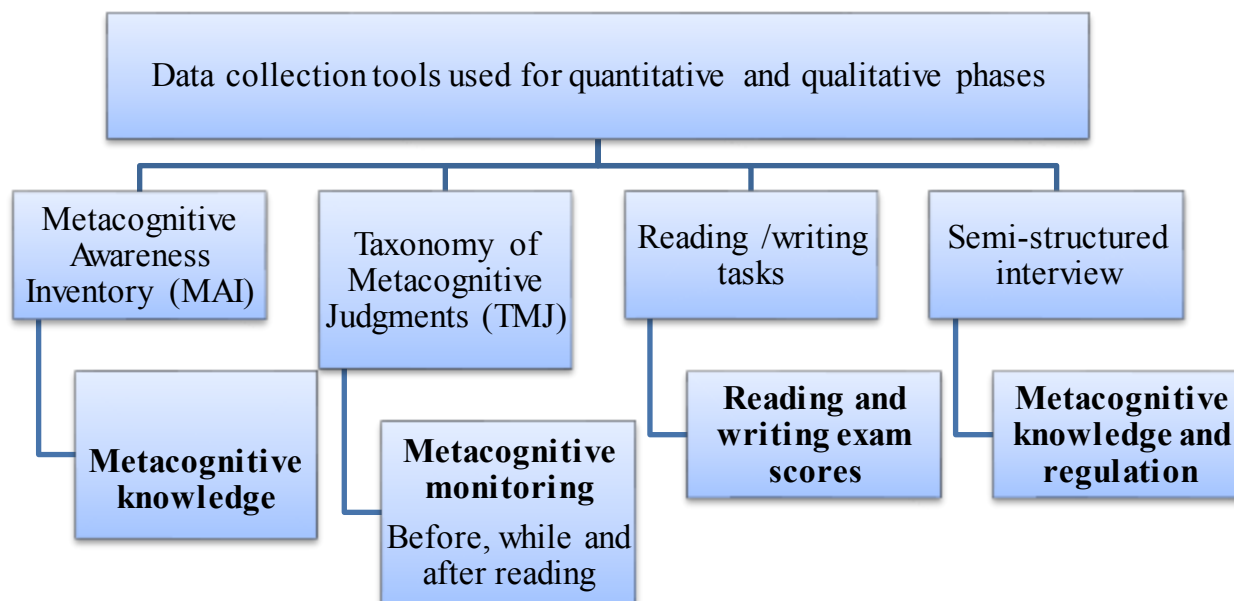


Diagram 4.1: Data collection tools in quantitative and qualitative phases

4.5 Methods of data analysis

After the collection of data from the four instruments: the reading writing test, the MAI, the Taxonomy of Metacognitive Judgments and the interview, the results were analysed quantitatively in the first part and qualitatively in the second according to the design adopted in the study i.e., the Mixed Methods Design.

For the quantitative analysis, students' scores in the previous reading/writing exams were presented. This allowed their classification into different achievement levels: high achieving students, average achieving students and low achieving students. The reading/writing scores represent measures of the achievement variable.

The second step in this quantitative data analysis is the numerical presentation of the metacognitive knowledge and monitoring variables. This was conducted through calculating percentages and frequencies of selection of three constituents of the

knowledge variable i.e., declarative knowledge (DK), procedural knowledge (PK) and conditional knowledge (CK).

In addition, the metacognitive judgments that reflected metacognitive monitoring were also measured in percentages and frequency and presented in tables. This analysis aimed to answer the first research question of the study that investigates the participants' metacognitive processes involved in reading and writing exam tasks.

Also, a comparison between the three levels of achievement in reading/writing (in terms of metacognitive knowledge and metacognitive monitoring), using descriptive statistics, was done. This analysis consisted of the calculation of the means (M), standard deviation (SD) and the analysis of variance (ANOVA). This provided an answer to the second research question that aimed to compare levels of achievement and metacognitive processes in reading and writing examination tasks.

In order to answer the third main research question which sought to find if any association exists between metacognitive processes and reading writing achievement in examination tasks, the correlation coefficient of these two variables was calculated using Pearson 'r' correlation coefficient. The program used for the calculation of the correlation coefficient is the Statistical Package of the Social Sciences (SPSS)

This section was devoted to the method of analysis of the quantitative data for both first year and second year students. The results were compared in terms of metacognitive knowledge and monitoring so as to provide an answer to the research questions of the study. Descriptive statistics were also used to provide evidence for variance among first and second year students.

As regards the qualitative data analysis method, the answers to the interview conducted with the sample of 6 students were content analyzed by coding the data first, categorizing these codes and clustering them in themes to provide answers to the research questions of the study. The analysis of the data, therefore, aimed to target students' metacognitive knowledge of the self, the task and strategies and to see to what extent these results relate to each student achievement in reading and writing exam tasks. It also aimed to find out what monitoring and regulatory strategies the participants resorted to in reading and writing. These data would thus help to draw a more complete picture of metacognitive processes from the participants' perspective and to better understand the illusion of knowing that was hypothesized.

Conclusion

This chapter outlined the methods of data collection and data analysis that were used for the Mixed Methods Explanatory Sequential Design. It described the sample of the study and data collection instruments which include: the Metacognitive Awareness Inventory, the Taxonomy of Metacognitive Judgments, the Reading/writing tasks and the Semi-structured interview. The data analysis procedures were also delineated in this chapter; descriptive and inferential statistics were used for the quantitative phase and content analysis for the qualitative phase. The next chapter reports the findings obtained from the different research tools used to collect both quantitative and qualitative data.

CHAPTER FIVE
ANALYSIS AND PRESENTATION
OF RESULTS

CHAPTER FIVE

ANALYSIS AND PRESENTATION OF RESULTS

Introduction

This chapter analyses and presents the quantitative and qualitative data obtained for the present study. It includes two sections. In Section 5.1, the quantitative data obtained from the three tools: the Metacognitive Awareness Inventory (MAI), the Taxonomy of Metacognitive Judgments and the reading/writing exam scores are analyzed and reported. In section 5.2, the qualitative data gathered from the semi structured interviews are analyzed and reported. The methods of data analysis used are: descriptive statistics which includes the use of frequency, percentage, mean, and standard deviation, and inferential statistics using ANOVA, correlation coefficient and t-test. The data are presented in tables and graphs. They are also compared across years (first and second year results) and across levels of achievement in reading and writing (high, average and low achievers' results).

5.1 Analysis and presentation of quantitative results

In this first stage of quantitative data analysis, numerical results are displayed through tables and graphs. The first sub-section is devoted to the students' scores in the reading and writing task. The second sub-section analyses and presents data from the Metacognitive Awareness Inventory. The third sub-section represents results from the Taxonomy of Metacognitive Judgments. The fourth and fifth sub-sections compare between metacognitive processes and levels of achievement across the two years in reading/writing exam tasks. The last sub-section compares the results between metacognitive processes and levels of achievement across the two years in

reading/writing exam tasks. Sub-section 5.1.1 displays data from the students' reading/writing exam task.

5.1.1 Students' scores on the reading/writing task

This sub-section presents the scores obtained by first year and second year students in the R/W exam (See Appendix C for first year reading/writing exam and Appendix D for second year reading/writing exam). The 80 participants were classified in different achievement levels according to their scores. The R/W exam was designed and corrected by the two teachers of the R/W course. The exam was scored out of 20 points. The teachers assigned the following scores to each achievement level:

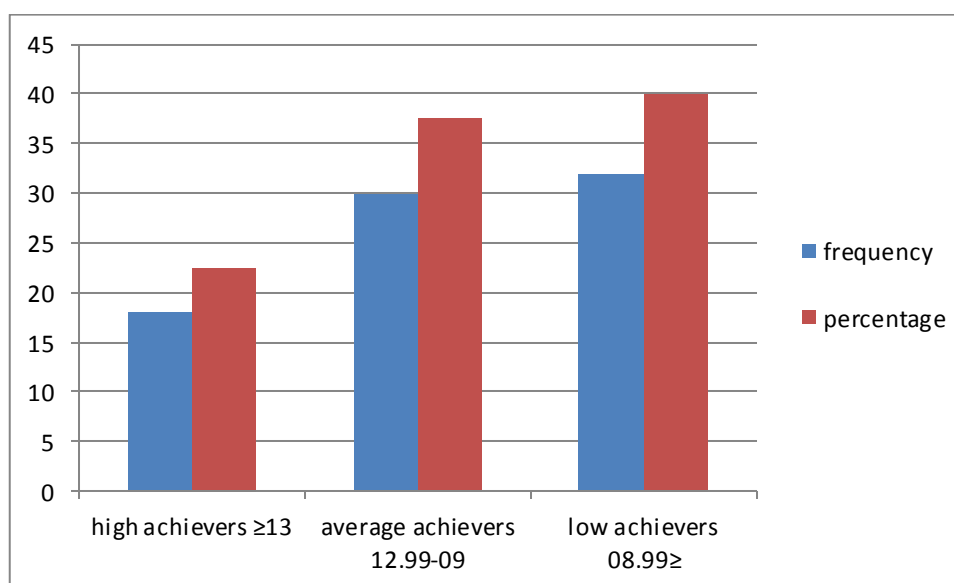
- A score of 13/20 and above was assigned to high achieving students in R/W task.
- A score ranging from 12.99/20 to 09/20 was assigned to average students in the R/W task.
- A score of 8.99/20 and below was assigned to low achieving students in the R/W task.

The table below shows the number and percentage of students at each achievement level i.e., high, average and low, among the 80 student participants.

Level	Number	Percentage
High achievers $\geq 13/20$	18	22.5%
Average achievers 12.99/20-09/20	30	37.5%
Low achievers $\leq 08.99/20$	32	40%
Total	80	100%

Table 5.1: Number and percentage of students in each level of achievement in R/W

The graph below demonstrates further the numbers and percentages of the three different achievement levels of the students.



Graph 5.1: Number and percentage of each level of achievement in R/W

Both the table above and the graph show that the number of low and average students exceeds that of high achievers. High achievers represent 22.5% whereas average and low achievers are of 37.5% and 40% respectively.

5.1.2 Analysis of data from the Metacognitive Awareness Inventory (MAI)

The MAI, as discussed in the previous chapter, aimed to measure the students' metacognitive awareness in reading and writing. This construct, as defined in the literature, has three sub constituents: Declarative knowledge, Procedural knowledge and Conditional knowledge (Brown et al., 1987). These three types of knowledge are demonstrated quantitatively with the frequency and percentage assigned by the students at each level of achievement. The aim of using the MAI was to investigate what type of metacognitive knowledge the students possess in year 1 and year 2 of their English degree studies.

5.1.2.1 Presentation of students' responses: Declarative Knowledge (DK)

This section presents the frequency and percentage of student responses in relation to declarative knowledge. Eight statements (1, 2, 3, 4, 5, 6, 7, 8) of the MAI refer to declarative knowledge out of the overall 17 statements. In the table below, each statement is presented in terms of frequency of responses and percentage.

Number	Statement	Frequency		Percentage	
		Yes	No	Yes	No
1	I understand my intellectual strengths and weaknesses	71	09	88.8%	11.2
2	I know what kind of information is most important to learn	66	14	82.5%	17.5
3	I am good at organizing information	25	55	31.2%	68.8
4	I know what the teacher expects me to learn	25	55	31.2%	68.8
5	I am good at remembering information	31	49	39%	61
6	I have control over how well I read/write	28	52	35%	65
7	I am a good judge of how well I understand something	50	30	62.5%	37.5
8	I read/write more when I am interested in the topic	78	02	97.5%	2.5

Table 5.2: Students' declarative knowledge (DK)

The results obtained for declarative knowledge indicate that the highest responses are attributed to statements 8, 1 and 2 respectively showing percentages of 97.5 %, 88.8%, and 82.5% for each statement. Lowest responses are displayed in the table for statements 6, 3 and 4 with the percentages 35%, 31.2%, and 31.2% respectively.

The majority of students (97.5 %) say that 'they read/write more when they are interested in the topic', 88.8% of the students stated that 'they understand their intellectual strengths and weaknesses' whereas 82.5% reported that 'they know what kind of information is most important to learn'. However, one third 1/3 of students (35%) say that 'they have control over how well they read/write', 31.2% declared that 'they are good at organizing information' and 31.2% reported that 'they know what the teacher expects them to learn'.

5.1.2.2 Presentation of students' responses: Procedural Knowledge (PK)

This section presents the students' responses to the questions on procedural knowledge. In this sub-section, the four statements from the MAI are presented in Table 5.3 that shows the frequency of responses and percentages attributed to each statement by the students.

Number	Statement	Frequency		Percentage	
		Yes	No	Yes	No
9	I try to use strategies that have worked in the past	52	28	65%	35%
10	I have a specific purpose for each strategy I use	22	58	27.5%	72.5%
11	I am aware of what strategies I use when I read/write	33	47	41.2%	58.8%
12	I find myself using helpful learning strategies automatically	31	49	38.8%	61.2%

Table 5.3: Students' procedural knowledge (PK)

The data obtained for procedural knowledge demonstrate higher frequencies and percentages (65%) selected by students for item (09). These results reveal that more than half of the students of students (65%) 'Try to use reading/writing strategies that have worked in the past'. However, few students (27.5%) 'have a specific purpose for each reading/writing strategy they use', 38.8% 'find that they are using helpful reading/writing strategies automatically' and 41.2% 'are aware of what reading/writing strategies they use'.

5.1.2.3 Presentation of students' responses: Conditional Knowledge (CK)

This sub-section presents the students' responses on conditional knowledge. The presentation of the frequency of responses and percentages attributed by the

participants to the five remaining statements of the MAI (13, 14, 15, 16 and 17) is shown in table 5.4 below.

Number	Statement	Frequency		Percentage (%)	
		Yes	No	Yes	No
13	I read/write best when I know something about the topic	74	06	92.5%	07.5%
14	I use different learning strategies depending on the situation	35	45	43.8%	56.2%
15	I can motivate myself to read/write when I need to	61	19	76.2%	23.8%
16	I use my intellectual strengths to compensate for my weaknesses	53	27	66.2%	33.8%
17	I know when each strategy I use will be most effective	21	59	26.2%	73.8%

Table 5.4: Students' conditional knowledge (CK)

It is clear from the table above that the majority of students (92.5%) answered that they read and write best when they know something about the topic. A large number of the students (76.2 %) stated that 'they can motivate themselves to read/write when they need to' and over half of them (66.2%) said 'they use their intellectual strengths to compensate for their weaknesses in reading/writing'. Less than half of the students (43.8%) reported that they use different reading/writing strategies depending on the situation. However, very few (26.2%) said that they know when each reading/writing strategy they use will be most effective.

5.1.3 Analysis of the data from the Taxonomy of Metacognitive Judgments (TMJ)

The Taxonomy of Metacognitive Judgments is the second research tool used for this study to tap into students metacognitive monitoring (See Appendix C). The taxonomy was suggested by Schraw (2009) to measure task performance. In the context of this study, students made judgments at different levels of reading/writing exam task performance i.e., before taking the exam, while taking the exam and after taking the exam. The frequency and percentage of monitoring selected by the participants at each stage i.e. before, while and after is reported in the following sub-section.

5.1.3.1 Monitoring before the R/W task (Question 1 of TMJ)

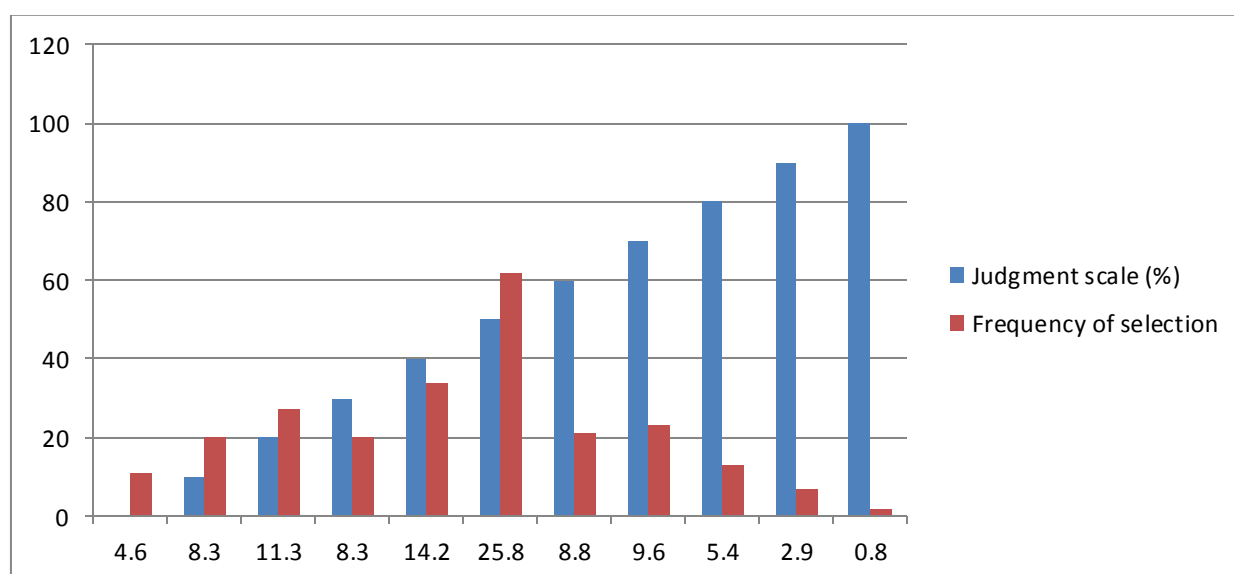
In this sub-section, the results are demonstrated quantitatively in Table 5.5. This shows the percentages of monitoring selected by the students prior to taking the R/W exam. The before R/W exam phase consists of circling the percentage corresponding to three judgments (See Appendix C)

- (a) I can recollect/remember what I learned in the course of reading/writing the day of the exam.
- (b) I think the reading writing exam is easy.
- (c) I feel I know what the content of the reading writing exam is.

Judgment scale (%)	Frequency of selection	Percentage of selection
00	11	4.6%
10	20	8.3%
20	27	11.3%
30	20	8.3%
40	34	14.2%
50	62	25.8%
60	21	8.8%
70	23	9.6%
80	13	5.4%
90	7	2.9%
100	2	0.8%

Table 5.5: Students' metacognitive judgments before the R/W exam (Q 1 of TMJ)

A graphic representation of the data obtained from the Taxonomy of Metacognitive Judgments is provided in Graph 5.2 below.



Graph 5.2: Students' metacognitive judgments before the R/W exam (Q1 of TMJ)

What can be noticed from the students' responses is that the percentages of monitoring range between 25.8% (highest) and 0.8% (lowest). It is clear from the table and graph that 25.8% of the participants have a monitoring level of 50% prior to the R/W exam. Many judgments are inferior to 50% though.

5.1.3.2 Monitoring during the R/W exam (Question 2 of TMJ)

The data gathered for the concurrent judgments made while doing the reading/writing task are reported in this sub-section. Student participants attributed a percentage to each of the three items below related to the while R/W exam performance. The statements refer to the extent to which students (See Appendix C):

(d) I feel confident in my reading writing exam.

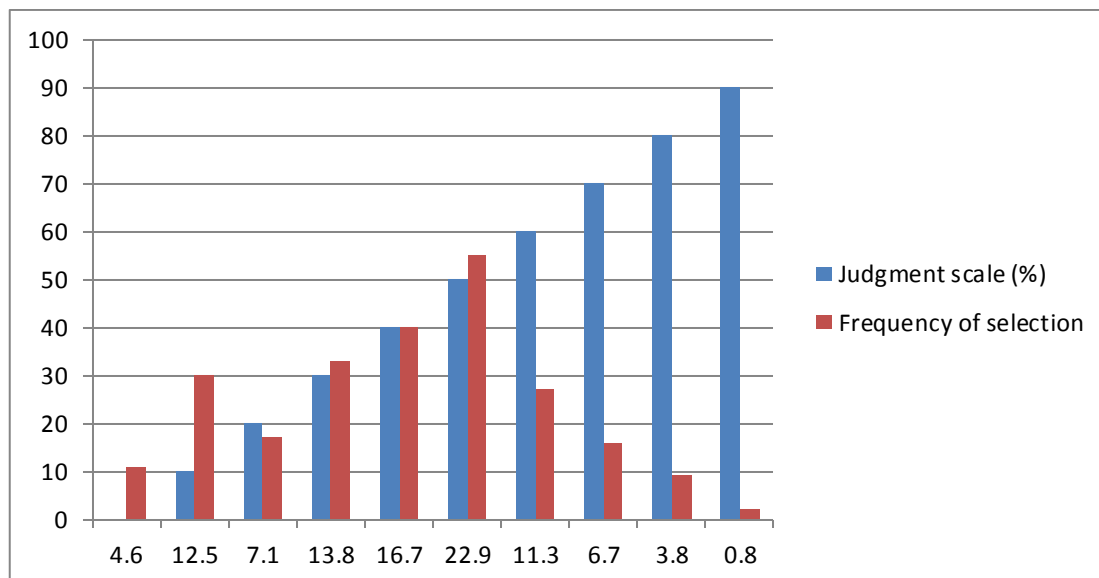
(e) I find it easy to answer the reading writing exam questions.

(f) I think I am answering the questions correctly.

Judgment scale (%)	Frequency of selection	Percentage of selection
00	11	4.6
10	30	12.5
20	17	7.1
30	33	13.8
40	40	16.7
50	55	22.9
60	27	11.3
70	16	6.7
80	9	3.8
90	2	0.8

Table 5.6: Students' metacognitive judgments during the R/W exam (Q2 of TMJ)

The data obtained for the while R/W task judgments are further illustrated in Graph 5.3 below.



Graph 5.3: Students' metacognitive judgments during the R/W exam (Q2 of TMJ)

Both the table and graph display differences in the extent of students' concurrent judgments. It can be noted that 22.9% of the participants stated they can monitor the exam at over 50%. But many can do it at less than 50% including very few participants (0.8%) who reported little or no monitoring during the exam.

5.1.3.3 Monitoring after the R/W task (Question 3 of TMJ)

As regards monitoring after the R/W exam task, the participants of the study gave the following responses to the retrospective judgments (See Appendix C):

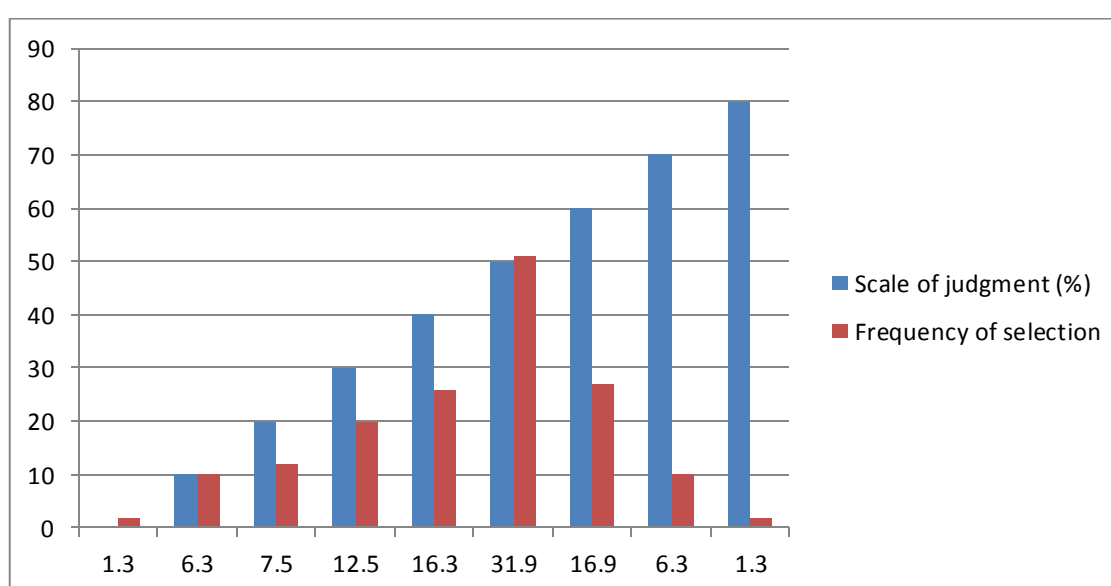
(g) I think the reading/writing exam was easy.

(h) I think I performed well in the reading/writing exam.

Table 5.7 and Graph 5.4 below present the data collected for the two retrospective judgments.

Scale of judgment (%)	Frequency of selection	Percentage of selection
00	2	1.3
10	10	6.3
20	12	7.5
30	20	12.5
40	26	16.3
50	51	31.9
60	27	16.9
70	10	6.3
80	2	1.3

Table 5.7: Students' metacognitive judgments after the R/W exam (Q3 of TMJ)



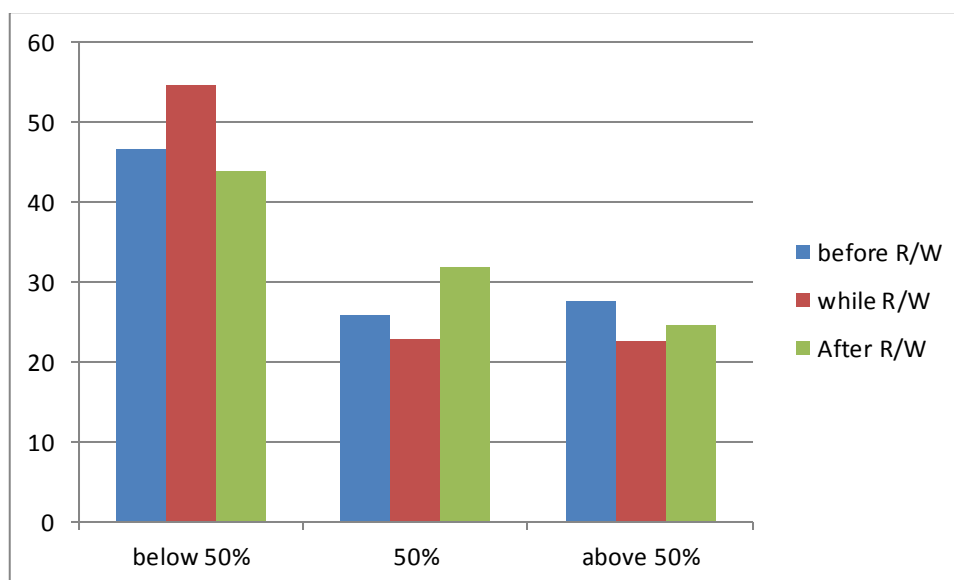
Graph 5.4: Students' metacognitive judgments after the R/W exam (Q3 of TMJ)

The table and graph above show that 31.9% of the students monitor their reading and writing after the exam at about 50%. Many students made after exam judgments below 50% according to the results obtained.

The judgment percentages in each R/W phase are summarized presented in the Table 5.8 and Graph 5.5 below.

Percentage	Before R/W	While R/W	After R/W
Above 50 %	27.5%	22.6%	24.5%
50%	25.8%	22.9%	31.9%
Below 50%	46.7%	54.7%	43.9%

Table 5.8: Comparison of students' monitoring levels in the three R/W phases



Graph 5.5: Graphic comparison of the students' monitoring levels in the three R/W phases

The table and graph above show that about 25% of the participants monitor their reading and writing at above 50% level before, during and after the R/W exam. Even lower levels of monitoring are shown above 50%. This is indeed a low figure which implies that about 75% of students cannot monitor their reading and writing at or beyond 50%.

5.1.4 Comparing metacognitive processes and levels of achievement in R/W exam tasks

After presenting the students' responses in relation to their metacognitive knowledge and their levels of monitoring before, during and after the R/W exam, this section

provides a comparison between high, average and low achievers regarding their metacognitive processes, i.e., knowledge and monitoring. The purpose here is to attempt to present data in order to answer research question (RQ2): **‘Is there a difference between the metacognitive processes of high, average and low achievers across the two years of study in reading and writing examination tasks?’** and confirm or infirm the first null hypothesis: **‘There is no difference between high, average and low achievers’ metacognitive processes across the two years of study in reading and writing examination tasks’**. The results will display the difference, if any, in terms of metacognitive knowledge and monitoring.

Table 5.9 shows the difference between high, average and low level students achievement in relation to their metacognitive knowledge and monitoring using descriptive statistics. More specifically, the mean (M) and the standard deviation (SD) are calculated to demonstrate the differences between the 80 participants levels of achievement on the R/W exam task and their metacognitive processes of knowledge and monitoring combined.

N= sample, M= mean, SD= standard deviation

	N	M	SD
High achievers	18	49,9444	10,43451
Average achievers	30	44,9667	11,56237
Low achievers	32	38,4063	13,80944
Total	80	43,4625	12,96631

Table 5.9: Comparison between levels of achievement and metacognitive processes

The table displays clear differences of mean between the three categories: High achievers demonstrate higher metacognitive knowledge and monitoring (M=49,94).

Average achievers (M= 44,96) and low achievers (M= 38.40) appear to have lower levels of knowledge and monitoring than their high achieving counterparts. Table 5.10 below provides further statistical evidence and significance of the variations of means among the three levels, using analysis of variance (ANOVA).

ANOVA

	Sum of squares	d.f.	Mean square	F	Sig.
Inter groups	1642,258	2	821,129	5,432	,006
Intra groups	11639,630	77	151,164		
Total	13281,888	79			

Table 5.10: Analysis of variance of metacognitive processes among the three levels of achievement

Fisher Test (F) in Table 5.10 above is a statistical significance test that calculates the deviation from the null hypothesis: **‘There is no difference between high, average and low achievers’ metacognitive processes in reading and writing examination tasks’**. Thus, this null hypothesis is rejected since the test of significance shows a p-value of 0.006 that is below 0.05 ($p\text{-value} \geq 0.05$) which means that the variation among the three levels of achievement in terms of metacognitive knowledge and monitoring is statistically significant.

However, this comparison has been made more significant with a more detailed comparison table (Table 5.11) using Sheffe Test. This is to show where the difference

is more important and among which levels. The following quantitative display of results shows the level of significance of the variation between the three levels of achievement and how each group varies.

Level_	Level_	Mean difference	Sig.
High	Average	4,97778	,402
	Low	11,53819*	,009
Average	High	-4,97778	,402
	Low	6,56042	,117
Low	High	-11,53819*	,009
	Average	-6,56042	,117

*. The mean difference is significant at 0.05.

Table 5.11: Comparison between levels of achievement and metacognitive processes using Sheffe Test

This more complex comparison of means is conducted using Sheffe test that is a post-hoc test used in Analysis of Variance. It is calculated after running ANOVA and obtaining (f) that rejects the null hypothesis as described above. The Sheffe Test aims to find which pairs of means are significant as displayed in Table 5.11 above. The latter reports levels of significance among high and low levels (p-value=0.009) which means that the difference between these two levels is high ($p \geq 0.05$). However, this complex comparison does not show a large variation among high and average and also between average and low achievement levels.

According to the aforementioned results, the alternative hypothesis stating that ‘There is a difference between high, average and low achievers’ metacognitive

processes in reading and writing examination tasks' is confirmed instead of the rejected null hypothesis (H_0 1).

5.1.4.1 Comparison metacognitive knowledge and levels of achievement in R/W exam tasks

In order to provide a more detailed understanding of the results, data are displayed in relation to each metacognitive process separately. Thus, this section compares metacognitive knowledge (declarative knowledge, procedural knowledge and conditional knowledge) with the three different achievement levels elicited from students through the use of the MAI whereas in the previous section, the results showed the variations in all three levels of metacognitive processes. The results of the descriptive statistics are presented below.

Knowledge	Achievement	N	Mean	Standard deviation
Declarative knowledge	High	18	4,8889	1,81137
	average	30	4,5333	1,30604
	Low	32	4,8125	1,59510
	Total	80	4,7250	1,53421
Procedural knowledge	High	18	1,9444	1,34917
	average	30	1,7000	1,08755
	Low	32	1,6250	1,03954
	Total	80	1,7250	1,12481
Conditional knowledge	High	18	3,0556	,72536
	average	30	3,1000	,71197
	Low	32	3,0000	,80322
	Total	80	3,0500	,74460

Table 5.12: Comparison between metacognitive knowledge and levels of achievement in R/W exam tasks

		Sum of squares	df	Mean squares (MS)	F	Sig.
Declarative knowledge	Inter groups	1,831	2	,915	,383	,683
	Intra groups	184,119	77	2,391		
	Total	185,950	79			
Procedural knowledge	Inter groups	1,206	2	,603	,470	,627
	Intra groups	98,744	77	1,282		
	Total	99,950	79			
Conditional knowledge	Inter groups	,156	2	,078	,137	,872
	Intra groups	43,644	77	,567		
	Total	43,800	79			

Table 5.13: Analysis of variance (ANOVA) with respect to the three types of metacognitive knowledge

Scheffe Test

	level_	level_	Mean difference	Sig.
Declarative knowledge	High	Average	,35556	,744
		Low	,07639	,986
	average	High	-,35556	,744
		Low	-,27917	,778
	Low	High	-,07639	,986
		Average	,27917	,778
Procedural knowledge	High	Average	,24444	,770
		Low	,31944	,634
	average	High	-,24444	,770
		Low	,07500	,967
	Low	High	-,31944	,634
		Average	-,07500	,967
Conditional knowledge	High	Average	-,04444	,981
		Low	,05556	,969
	average	High	,04444	,981
		Low	,10000	,873
	Low	High	-,05556	,969
		Average	-,10000	,873

*. The mean difference is significant at 0.05.

Table 5.14: Complex mean comparison of metacognitive knowledge

The three tables above (Tables 5.12, 5.13 and 5.14) refer to means differences, variations and significance levels among the three achievement levels regarding metacognitive knowledge. What is clear from these three tables is that the means for declarative, procedural and conditional knowledge are not importantly different. It appears that participants (high, average and low achievers) demonstrated approximately similar levels of metacognitive knowledge. This difference is further displayed in ANOVA scores that do not show significant variations. Besides, the Sheffe Test provided more evidence of the low level of significance of variation among the obtained scores ($p \geq 0.05$) and thus led to maintaining the subsidiary null hypothesis: ‘There is no significant difference between high, average and low achievers’ metacognitive knowledge in reading and writing examination tasks’

5.1.4.2 Comparing metacognitive monitoring and levels of achievement in R/W exam tasks

As for the second component of metacognition i.e. metacognitive monitoring, data obtained from student participants through the Taxonomy of Metacognitive Judgments are presented in Tables 5.15 and 5.16 below. Following the procedure adopted above, these tables display the means, analysis of variance and significance. The three phases of monitoring (before, while and after exam tasks) are displayed in relation to each achievement level. Descriptive statistics reveal the following results.

		N	Mean	Standard deviation
Before	High	18	15,5000	4,74342
	average	30	14,5333	4,56926
	Low	32	10,5938	4,73736
	Total	80	13,1750	5,09349
While	High	18	14,7222	4,30875
	average	30	11,9333	6,30234
	Low	32	10,5938	5,92893
	Total	80	12,0250	5,90425
After	High	18	9,8333	2,09341
	average	30	9,1667	3,17407
	Low	32	7,7813	3,30917
	Total	80	8,7625	3,10673

Table 5.15: Comparison between metacognitive monitoring and levels of achievement

ANOVA

		Sum of squares	df	Mean squares	F	Sig.
Before	Inter groups	365,865	2	182,932	8,366	,001
	Intra groups	1683,685	77	21,866		
	Total	2049,550	79			
While	Inter groups	196,753	2	98,377	2,962	,058
	Intra groups	2557,197	77	33,210		
	Total	2753,950	79			
After	Inter groups	56,352	2	28,176	3,072	,052
	Intra groups	706,135	77	9,171		
	Total	762,488	79			

Table 5.16: Analysis of variance with respect to metacognitive monitoring before, while and after R/W tasks

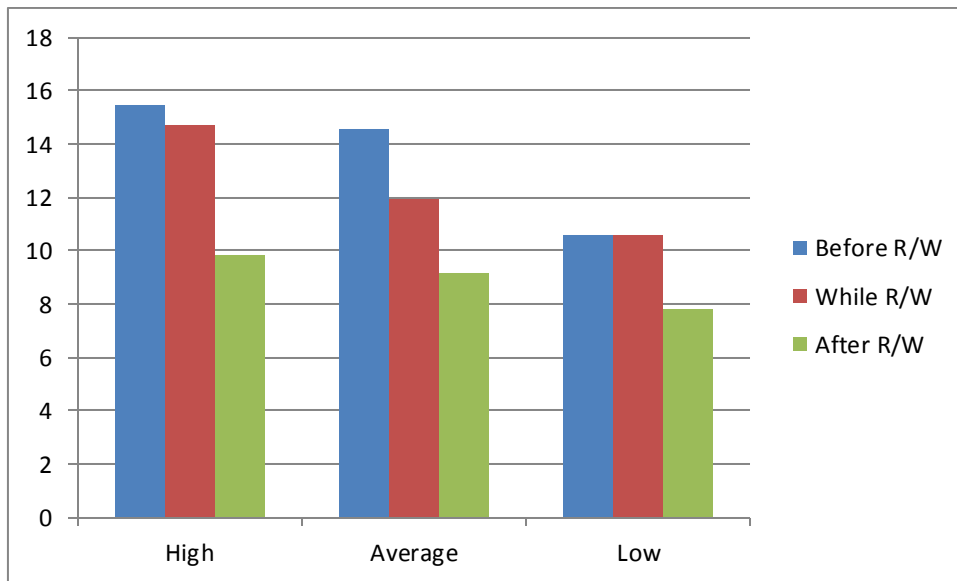
Scheffe Test

	level	level	Mean difference	Sig.
Before	High	Average	,96667	,787
		Low	4,90625*	,003
	average	High	-,96667	,787
		Low	3,93958*	,006
	Low	High	-4,90625*	,003
		Average	-3,93958*	,006
While	High	Average	2,78889	,274
		Low	4,12847	,058
	average	High	-2,78889	,274
		Low	1,33958	,660
	Low	High	-4,12847	,058
		Average	-1,33958	,660
After	High	Average	,66667	,762
		Low	2,05208	,077
	average	High	-,66667	,762
		Low	1,38542	,204
	Low	High	-2,05208	,077
		Average	-1,38542	,204

*.The mean difference is significant at 0.05.

Table 5.17: Complex mean comparison with respect to before, while and after metacognitive monitoring

From the data displayed in the three tables above, there are different means among the three achievement levels. The means related to metacognitive monitoring in the before and while stages are importantly different across the three achievement levels. Yet they are not considerably distinct among high and average achievers in the after R/W stage but again noticeable compared to those of low achievers. The graph below shows the difference among the achievement levels in metacognitive monitoring.



Graph 5.6: Mean differences in metacognitive monitoring

According to the means displayed, high achievers seem to monitor more than average and low achievers in the before and while R/W phases. They also monitor more than low achievers in the after R/W phase but monitor at approximately the same level with average achievers in the after R/W stage. Moreover and from the Analysis of Variance (ANOVA) scores, the variations are significant in the three phases for the three achievement levels since $p \leq 0.05$ as shown in the ANOVA (Table 5.16) above. For more detailed results, the Sheffe Test has determined the alpha level at ≤ 0.05 between high and low achievers in the before and while phases which means that the difference between them is important, yet it is not significant between high and average achievers in the same phases. It is also not significant among the three groups in the after R/W stage as it is ≥ 0.05 . Thus, the null hypothesis stating that ‘There no difference between high, average and low achievers’ metacognitive monitoring across the two years of study in reading and writing examination tasks’ is rejected due to the obtained level of significance across the three groups i.e. $p\text{-value} \leq 0.05$. The alternative hypothesis: ‘There is a difference between high, average and low achievers’ metacognitive

monitoring across the two years of study in reading and writing examination tasks' is therefore accepted.

5.1.5 Comparing 1st and 2nd year students' metacognitive processes and their achievement in R/W exam tasks

After displaying the results of the total sample of 80 participants that include first and second year undergraduates in the Department of English, it is important to compare the participants' metacognitive knowledge and monitoring in relation to their degree year of English. These results are displayed in Table 5.21 below.

	Degree Level	N	Mean	Standard deviation
Metacognitive processes	1st year	50	40,5000	12,44129
	2nd year	30	48,4000	12,49441

Table 5.18: Comparison between 1st and 2nd year students' metacognitive processes and their R/W achievement

For a deeper understanding of the difference between the two years of English degree instruction, Levene Test along with the T-test were conducted to calculate the significance of variance between the two degree levels. This is presented in Table 5.22 below.

		Levene test for equality of variance		t-Test for equality of means		
		F	Sig.	t	df	Sig. (bilateral)
Metacognitive processes	Hypothesis for inequality of variance	,013	,908	-2,745	78	,008
				-2,742	60,993	,008

Table 5.19: Variance among the two degree levels of instruction in metacognitive processes

Tables 5.21 and 5.22 reveal that the two levels of instruction, i.e. first and second year, are distinct in terms of metacognitive processes. The mean is higher for second year undergraduates (M=48.4) compared to first years (M=40.5) in Table 5.21. As for variance, it is clear from the scores obtained out of Levene and T-tests that the difference is significant at $p \leq 0.05$ ($\alpha = 0.008$). Therefore, the null hypothesis that states that ‘there is no difference in metacognitive processes across the years in reading and writing examination tasks’ is rejected.

5.1.6 Relationship between metacognitive processes and levels of achievement in R/W exam tasks

As for research question (3) and hypothesis (2) of this present investigation, they seek to find if any relationship exists, statistically, between the two main variables of

metacognition addressed in this research, i.e., ‘metacognitive knowledge’ and ‘metacognitive monitoring’. The third variable that is also measured in this research is ‘levels of achievement in reading and writing’. Ultimately, the purpose of this section is to calculate the correlation of these variables i.e. metacognitive knowledge and achievement on the one hand and metacognitive monitoring and achievement on the other.

In order to reach this objective, the correlation coefficient is calculated for the overall concept of metacognitive processes and R/W achievement and between each component individually i.e. knowledge and R/W achievement first, then monitoring and R/W achievement in a subsequent section. The correlation statistical test is used to measure the degree and direction of the association between the aforementioned variables. The test ‘determines the tendency or pattern for two variables or two sets of data to vary consistently’ to seek for the conclusion that ‘two variables share common variance, or they co-vary together’ (Creswell, 2014, p. 366).

In addition, the research design adopted in the investigation at hand is the Explanatory Correlation Design whose objective is ‘to explain the association between or among variables’ and ‘where changes in one variable are reflected in changes in the other’ (Creswell, 2012, p. 366). Thus, the study uses the product-moment correlation test to measure and explain the degree of association of the variables of this research. This measure also ‘expresses a correlation statistic as a linear relationship (...) it is called the bivariate correlation (...) or simply r , and it is indicated by an ‘ r ’ for its notation’ (Creswell, 2012, p. 366).

The presentation of the results obtained for the correlation between the overall concept of metacognitive processes and levels of achievement in reading/writing is demonstrated in Table 5.20 below.

Correlation		
	results	metacognition
Pearson correlation	1	,392**
Sig. (bilateral)		,000
N	80	80
Pearson correlation	,392**	1
Sig. (bilateral)	,000	
N	80	80

**. The correlation is significant at 0.01 (bilateral).

Table 5.20: Correlation between metacognitive processes and levels of achievement in R/W tasks

One can notice a positive correlation between the variables in Table 5.20 above as Pearson ' r '=.4. This correlation is also significant by reference to the alpha level ($p \leq 0.05$) as shown in the table. The relationship is said to be bilateral since the association is between the two variables which co-vary in two directions. This result, thus, allows the rejection of null hypothesis two (H_02) and confirms that 'There is a relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks'.

5.1.6.1 Relationship between metacognitive knowledge and levels of achievement in R/W exam tasks

As mentioned in the previous section, a more precise explanation is provided by the demonstration of the statistical results obtained from each variable of the overall construct of metacognitive processes, i.e. knowledge and monitoring. This refers to the

calculation of the correlation coefficient between each constituent and R/W achievement. Thus, in this section, the relationship is shown in relation to metacognitive knowledge and achievement first. Table 5.21 below provides the statistical results of the coefficient measured for the two variables.

Correlation		Results	metacognitive_knowledge
Results	Pearson correlation	1	,140
	Sig. (bilateral)		,216
	N	80	80
Metacognitive Knowledge and levels of achievement	Pearson correlation	,140	1
	Sig. (bilateral)	,216	
	N	80	80

**. The correlation is significant at 0.01 (bilateral).

Table 5.21: Correlation between metacognitive knowledge and levels of achievement in R/W tasks

The table clearly indicates through the results obtained that the correlation is at $r=.14$ which means that the relationship exists but it is not significant since $p\text{-value} \geq 0.01$. Thus, it can be said that there is a relationship between metacognitive knowledge and levels of achievement in reading/writing, but it is not important since the correlation coefficient is low. As a result, the subsidiary null hypothesis H_{02} (a) stating that ‘There is no significant relationship between students’ metacognitive knowledge and their levels of achievement in reading and writing examination tasks’ is accepted.

5.1.6.2 Relationship between metacognitive monitoring and levels of achievement in R/W exam tasks

As for the second main variable that needs to be measured, ‘metacognitive monitoring’ is presented in this section in relation to levels of reading/writing achievement so as to identify any relationship between them. In Table 5.22 below, the correlation coefficient along with its significance are displayed.

Correlation		Results	Metacognitive_monitoring
Results	Pearson correlation	1	,395**
	Sig. (bilateral)		,000
	N	80	80
Metacognitive monitoring and levels of achievement	Pearson correlation	,395**	1
	Sig. (bilateral)	,000	
	N	80	80

**. The correlation is significant at 0.01 (bilateral).

Table 5.22: Correlation between metacognitive monitoring and levels of achievement in R/W tasks

The results show a correlation coefficient of $r=.4$. This refers to a positive significant relationship given that the significance level is that of ($p \leq 0.01$). Therefore, it can be concluded that there is a positive significant relationship between metacognitive monitoring and reading/writing achievement. These results allow the rejection of the second subsidiary hypothesis of H_02 (b) and accept the alternative one ‘There is a significant relationship between students’ metacognitive monitoring and their achievement in reading and writing examination tasks’

To sum up, this first section of this chapter (5.1) was devoted to the analysis and presentation of the quantitative data gathered from the two quantitative tools employed in this phase, i.e. the Metacognitive Awareness Inventory and the Taxonomy of Metacognitive Judgments. The next section of this chapter (5.2) is devoted to the analysis and presentation of qualitative findings to complement this research work with data obtained from the participants' responses to the interview.

5.2 Analysis and presentation of qualitative findings: Students' responses

This second section of chapter five reports the findings gathered from the semi-structured interview used as a follow-up tool of investigation. As discussed in the previous chapter (i.e. chapter 4), this research is based on a sequential explanatory mixed design using a qualitative tool to corroborate and complement the results of the study. The different facets of the issue of illusions of knowing are investigated from the students' perspective.

The semi-structured interview was used for its flexibility and openness to elaboration on the research questions. In this context, researchers argue that 'they [semi-structured interviews] are well suited for the exploration of the perceptions and opinions of respondents regarding complex and sometimes sensitive issues and enable probing for more information and clarification of answers' (Barriball & While, 1994, p. 330).

From the data gathered through the quantitative tools (MAI, TMJ and R/W task) and as the results regarding students' metacognitive knowledge seemed inconclusive with reference to procedural knowledge, it was felt necessary to complement the study

by exploring further the state of their knowledge. Thus, this qualitative phase seeks to find out what particular knowledge might be related to achievement in reading and writing from the students' perspective. Responses were analyzed using Flavell's framework that defines it in terms of self knowledge, task knowledge and strategy knowledge (as described in Chapter one, section 1.3.2.1). Flavell (1979) refers to metacognitive knowledge as 'knowledge or beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises. There are three major categories of these factors or variables- person, task and strategy' (p. 907). These categories are addressed through the first three questions of the interview. Question one asks: How do you qualify as a reader/writer? Justify; question two asks: What techniques do you usually use in reading/writing? And question three says: What are the requirements/demands of the reading/writing task? Question four, however, is related to students' knowledge of other factors such as motivation, environment or affect that might be related to achievement; it asks: 'What is/are the factors that you think are necessary for high achievement in reading/writing? These were referred to earlier in the introduction in relation to volitional control (See introduction: operational definition, Table 1). Thus, three questions of the interview out of six address the issue of metacognitive knowledge and the fourth one targets knowledge of factors of achievement (See Appendix F: Q1, Q2, Q3, Q4).

Therefore, qualitative data analysis addresses metacognitive knowledge, monitoring and regulation. The purpose is to complement the study with students' own perspectives on their metacognitive processes. Two questions of the interview target the issue of monitoring, question five asks: Do you think about how well you are doing

while reading and writing? And question six asks: What do you do when you recognize that you are not doing well in reading/writing? (See Appendix F: Q5 and Q6). For the purpose of triangulating the findings from students' responses, teachers were also interviewed on task knowledge and strategy knowledge to compare their views on this issue. Two interview questions were addressed to two teachers of reading and writing to serve that purpose. Question one asks: What are the requirements of the reading/writing task? what does the reading/writing task require from the students to do? And question two asks: What techniques should students use for effective reading/writing? (See Appendix G: Q1 and Q2).

Six students selected purposefully from the first and second years of degree instruction were interviewed. The three first year participants vary in terms of their reading/writing achievement. Each one belongs to an achievement level: high, average and low and so do the three second year students. We will refer to these students as follows: first year high achiever (FYH), first year average achiever (FYA), first year low achiever (FYL), second year high achiever (SYH), second year average achiever (SYA) and second year low achiever (SYL).

Students' responses to the interview questions are presented dealing with high achievers, average achievers and low achievers in turn. Then, these responses are compared to their levels of achievement. They are also compared to the teachers' answers. The method used for analysis is 'Content Analysis' that proceeds by identifying codes, categories and the general themes that emerge from the data gathered. Hsieh and Shannon (2005) refer to content analysis as 'a research method for the subjective interpretation of the content of text data through the systematic

classification process of coding and identifying themes or patterns' (Cited in Hashemneezad, 2015, p. 59). The content analysis of the interview data from the six students is presented in the next section. The following section is devoted to the analysis of the high achievers' responses using Flavell's framework (1979) which describes metacognitive knowledge in terms of (1) knowledge of the self, (2) knowledge of task requirements, (3) knowledge of strategies, (4) knowledge of factors of achievement in reading/writing, and (5) recognition of failure and monitoring. Sections 5.2.1, 5.2.2 and 5.2.3 give the details of content analysis of the interview data produced by first and second year high, average and low achievers respectively using these themes/categories.

5.2.1 Content analysis of first and second year high achievers interview data

5.2.1.1 Knowledge of the self

The two first and second year students identified as high achievers by their teachers (by reference to their previous R/W exam scores) also reported that they achieved high in the present reading/writing exam task. The first year student (FYH) stated '*I may go with advanced*' while the second year student (SYH) claimed: '*I can say high*'. This is attributed to 'knowledge of the self' variable that belongs to the constituent of metacognitive knowledge. The two students explained their high achievement by referring to some of their personal 'stories' that have contributed to their good level in reading and writing. The first year student (FYH) stated '*I am more of a reader (...), I loves reading*', also that she uses her critical thinking which '*is a must in reading*'. Whereas the second year high achiever (SYH) argued that the reason which may

expalin her high achievement was *'self confidence'* stating that *'I quite feel confident about myself in both reading and writing and I see myself improving'*.

5.2.1.2 Knowledge of task requirements

Both year 1 and year 2 high achieving students answered the question on whether they have knowledge of task requirement when doing a R/W task. Their answers are presented in this section. The first year high achieving student (FYH) mentioned in what follows what can account for knowledge of task requirement: *'open your mind, like use it, literally use your brain', 'like any background or information you have, you know if it's a topic that we are familiar with', 'if it's a new subject, you have never heard that word try to understand the word from context instead of I don't know, I'm not gonna do anything about it', 'don't rush to the questions and answer them without really understanding the text', and 'use draft papers'*

Whereas the second year high achieving student stated the following demands: *'I am supposed of course to read, to read it carefully many times', 'Try to understand the hard words of the text through the context', 'Then in writing I try to follow the instructions that the teacher taught us on class, for example the steps of a descriptive essay or a narrative essay'*

5.2.1.3 Knowledge of strategies

First and second year high achievers also responded to the set of questions related to their knowledge of strategies. Starting by the first year student (FYH), she describes the process of reading/writing along with the techniques she usually uses, she reports: *'I read the text from the first beginning to the end once and then I check the questions*

and then I reread again', 'I know which part I have to base on more', 'For writing I use a lot of brainstorming like the spider map so I don't miss any details later', 'Rereading, using drafts and correcting again', 'If I can I could just check the vocabulary from the dictionary if I can, if it is not a test of course'.

The second year student (SYH), on the other hand, stated that she does not use a specific range of techniques in reading/writing: *'I don't have that like an academic or specific technique to follow, I just go for it'*. Yet, with a probing question (given that it is a semi-structured interview) the student answered that she employs the following strategies: *'if I could understand from the context so it's good, if I can't I have to look in the dictionary', 'in writing I, I brainstorm my ideas and then I try to organize them and then I try to connect those ideas and then I try to put them in a good way to make the style of writing interesting'*

5.2.1.4 Knowledge of factors of achievement in reading/writing

In order to probe further responses on metacognitive knowledge, from the two high achieving students, the interviewer asked for other possible factors responsible for their high achievement in reading/writing. These factors relate personally to the two students or to other high achievers in their classes. These are investigated in reference to the classification suggested by Pintrich, Wolters and Baxter (2000, p. 47) whereby metacognitive knowledge includes 'Knowledge of self- comparative knowledge of intra-individual and inter individual strengths and weakness as a learner or thinker'.

To my question on the factors of achievement in reading and writing, the first year student (FYH) stated that these are manifested as follows: *'don't stop at just reading,*

like if you read something and you learn from it try to practice it', she provided an example of how to practice reading arguing that 'I learn new vocabulary I better use it' in writing. She added: 'it's a completion, one completes the other while you learn writing [...] like while you start reading an article for example you know if it is an argumentative essay or if it is an opinion one', 'if there is an information or a new style that I have noticed I try to practice that style while writing so kind of one thing helps the other one'

On the other hand, the second year student (SYH) referred to the factors by saying: *'reading helped me a lot because when I read a novel for example, I pay attention to some expressions and then I put them down on a notebook' and 'I use [expressions] for further use and also I learned some new terms, I see the style of the writer, I'd like to imitate him'*

5.2.1.5 Recognition of failure and monitoring/regulation

The last two questions of the interview to the two student participants elicited data on their metacognitive process of monitoring or regulation in reading and writing, including recognition of comprehension breakdowns and any possible actions to regulate the reading/writing task, as described in the review of literature where illusions of knowing were addressed (See chapter two, section 2.8)

Both students declared that they think about how well their reading/writing proceeds. They also recognize their reading/writing failures. The first year student (FYH) stated: *'I think how well I can go like I try my best [...] I try to make the best of*

it even when sometimes it really gets complicated'. Likewise, the second year student (SYH) commented: *'yea, sometimes I do, I feel that my answer is not sufficient'*.

As regards students' reactions to failure and monitoring/regulation processes, the students reported some fix up techniques they use to adjust their reading and writing. The first year student responded: *'when I am not doing well, since I know there is something wrong somewhere so I just try to think errrr again about the question, I forget my first opinion or the first thought, either I think it's wrong and try to ask myself like why do I think it's wrong? What's wrong in that idea or the thing I am writing, I try to fix it', 'generally I may go back to the text, read it again, if the problem is with the answer for the question like the comprehension questions, I just go to the text, like reflect like or you know what I do, what else I do is stop the question I stop it [...] yea, put a pause on that, go to do another activity, like a different one and then I go back because otherwise I'll be just complicating things and that wouldn't make it any better so, I go, do another activity or finish a paragraph or synonyms, antonyms etc, and I go back to that question so and then I have a clearer mind and clearer set of mind then I be able to answer correctly', 'I'll check because... it happens that I always forget something, a little detail...so now what I try to do is whenever I finish I feel like finishing, it is over, I reread again all the answers and then I check like if there in one in that question one there is an a,b,c I check if I have like all the answers a,b,c or written again and then I reread my paragraph or of course before writing them again all on the exam paper, I have them like, I already use the draft so I'll check again the grammar, any punctuation mistakes, any questions that I may have missed answering, that's it'*.

Concerning the regulatory actions of the second year student (SYH), she mentioned: *‘I let it for aside and I go to answer the easy ones and then I come back to it’* and that she *‘read it more and more and several times’*, she also stated: *‘try to confirm that it is relevant to the question’*, she added: *‘I don’t rush just because I’m happy I found the right answer I confirm more so I don’t make a mistake’*

Table 5.23 and Table 5.24 below present the content analysis of the interview data as provided by the first year high achiever (FYH) and the second year high achiever (SYH) respectively.

Interview transcript (FYH)	Codes	Categories/themes
<i>‘I am more of a reader but they say every reader can be a writer’, ‘I am a frequent reader’</i>	Frequent reader	Self knowledge
<i>‘I may go with advanced’</i>	Reading/writing achievement	Self knowledge
<i>‘I love reading’</i>	Preference	Self knowledge
<i>‘Because while reading I am not only reading the words but also I can also use my critical thinking which is a must in reading’</i>	Use of critical thinking	Task requirement/ task knowledge
<i>‘it goes beyond words and you have to read between the lines too’</i>	Deep reading	Task requirement/ task knowledge
<i>‘for example in reading I take the text ...I read it like from the first beginning to the end once’</i>	Skimming	Strategy knowledge

<i>'I check the questions'</i>	Reading instructions	Strategy knowledge
<i>'I reread again so I know which part I have to base on more'</i>	Rereading and scanning	Strategy knowledge
<i>'For writing, I use a lot of brainstorming'</i>	Brainstorming	Strategy knowledge
<i>'You know like the spider map so I don't miss any details'</i>	Mind mapping	Strategy knowledge
<i>Rereading, using drafts and correcting again'</i>	Revising	Strategy knowledge
<i>'If I can I could just check the vocabulary like from the dictionary if I can'</i>	Using dictionary	Strategy knowledge
<i>'don't stop at just reading, if you read something and you learn from it try to practice it...like if I learn new vocabulary I better use it in my writing'... 'if there is an information or a new style I have noticed I try to practice that style while writing so kind of one thing helps the other one'</i>	Practice reading and writing Integrating reading and writing practice	Strategy knowledge
<i>'Yes I think how well how far I can go'... 'yes like I try to make the best of it'... 'yes I make the difference' (between when I am doing well and when I am not)</i>	Recognition of failure	Monitoring
<i>'Since I know there is something wrong somewhere so I just try to think again about the question'</i>	Self-reflection on one's decision	Monitoring and regulation
<i>'I forget my first opinion or the first thought, either I</i>	Questioning one's decision	Regulation

<i>think it's wrong and try to ask myself like why do I think it's wrong? What's wrong in that idea or the thing I am writing...I try to fix it'</i>	Fixing-up	Regulation
<i>'I may go back to the text, read it again'</i>	Rereading	Regulation
<i>'What else I do is stop the question I stop it, put a pause on that go to do another activity'</i>	Skipping questions/doing different activity	Regulation
<i>'It happens that I always forget something...so ...whenever I feel like finishing I reread again all the answers and then I check'</i>	Revising / editing	Regulation
<i>'You have to really open your mind, like use it...like any background or information you have'</i>	Thinking and using background knowledge	Strategy knowledge
<i>'If it's new or different just take time don't panic ...try to understand the word from context'</i>	Using context	Strategy knowledge
<i>'Take your time to read clearly, don't rush to the questions'</i>	Reading carefully and slowly	Regulation

Table 5.23: Content analysis of first year high achiever (FYH) interview data

Interview transcript (SYH)	Codes	Categories/themes
<i>'I quite feel confident about myself in both reading and writing'</i>	Self-confidence	Self-knowledge

<i>'I can say high'</i>	Reading/writing high level of achievement	Self-knowledge
<i>'to read, to read it carefully many times'</i>	Rereading	Task requirement/ task knowledge
<i>'try to understand the hard terms words of the text through the context'</i>	Using context	Task requirement/task knowledge
<i>'try to follow the instructions that the teacher taught us'</i>	Follow teacher instructions	Task requirement/task knowledge
<i>'if I could understand from the context so it's good, if I can't I have to look in the dictionary'</i>	Using dictionary/using context	Strategy knowledge
<i>'I brainstorm my ideas'</i>	Brainstorming	Strategy knowledge
<i>'then I try to organize them, then I try to connect those ideas and then I try to put them in a good way'</i>	Organizing, connecting ideas	Strategy knowledge
<i>'reading help me a lot because when I read a novel for example, I pay attention to some expressions and then I, I put them down on a notebook'</i>	Reading extra material	Knowledge of factors of achievement
<i>'I see the style of the writer, I'd like to like to imitate him'</i>	Using a writing model/ Style imitation	Knowledge of factors of achievement
<i>'yea sometimes I do I feel that my answer is not that sufficient for the question'</i>	Recognition of failure	Monitoring

<i>'I let it for aside and I go to answer the easy ones and then I come back to it read it more and more and several times to try to go straightforward to the right answer'</i>	Skiping difficult questions Rereading	Strategy knowledge/ Regulation
<i>'I just try to confirm that the it is relevant to the question'</i>	Revising	Regulation

Table 5.24: Content analysis of second year high achiever (SYH) interview data

This section was devoted to the analysis and presentation of the interview data obtained from the two high achieving readers/writers belonging to two different levels of degree instruction i.e. first and second year. The participants' responses have been content analyzed using Flavell's (1979) framework which describes metacognitive knowledge in terms of (1) knowledge of the self, (2) knowledge of task requirements, (3) knowledge of strategies, (4) knowledge of factors of achievement in reading/writing, and (5) recognition of failure and monitoring. The next section deals with the analysis and presentation of interview data from the two average achievers from year 1 and year2.

5.2.2 Content analysis of first and second year average achievers interview data

5.2.2.1 Knowledge of the self

Similar to the two subjects who were identified by their teachers as high achievers (through the scores they obtained in R/W exam), two more subjects were reported by

their teachers and by themselves as average students. The first year student (FYA) stated *'I don't read a lot, I read articles on the net'* and *'I think it's not enough'*. For the second year average (SYA) student, she stated that *'reading it is ok I have a good level, I understand quite good, but in writing perhaps I have to make more effort and because I don't write that much'*, she concluded *'I will say average'*.

5.2.2.2 Knowledge of task requirements

The two average participants (FYA and SYA) demonstrated their knowledge of the reading/writing task demands through their responses. Year one student mentioned these requirements: *'you have to read a lot to...to better yourself in reading and writing'*, *'you have to practice essays'* and, *'to concentrate'*

As for year two student, she described her knowledge of task requirements as follows: *'we have the text and we have a question to, questions to answer'*, *'we have words to explain especially in the context'*, *'we have a task to do and we are guided ...the teacher give us something to write about and we have to follow, we have to have an outline'*, *'we have to have a specific organization'*, *'title, she give us... title'*, *'and perhaps the meaning of some sentences like I said before read between lines and to perhaps some hidden meanings'*.

5.2.2.3 Knowledge of strategies

Regarding average students strategic knowledge, some reading/writing techniques have been highlighted by the participants. The first year student (FYA) stated: *'I use key words in the test...I use key words to more...to understand'*, *'brainstorm technique...I learn it from study skills'*, *'I highlight the headline'*

As for the second year student (SYA), she declared: *‘we have to read to have a general view; I read a general view to have a general view about the topic’, ‘and then I start to understand more deeply and read between lines and what we have behind this text and the purpose of it’, ‘Using creativity in free writing for writing it depends of the topic if we have a task like if the teacher demands us to write about something, we are guided so we have to write about something about that topic and if it is free writing about what I want to write that’s another thing perhaps I don’t know to be creative’.*

5.2.2.4 Knowledge of factors of achievement in reading/writing

In addition to their knowledge of the self, task and strategies, the average participants answered the question on the factor (s) that may possibly lead to high achievement in reading/writing.

Year one student (FYA) reported that high achievers: *‘read books’, ‘practice’, ‘do their homework’* and that they *‘are clever in class, they understand rapidly’* and this according to him *‘...helps a lot’*

Year two student (SYA), on her part, provided the following factors: *‘I think they read a lot perhaps and they write a lot’, ‘I think that when you have something to, when you want to master something, you have to train because training is the key if you want to be good at something you have to train and you can do, you can reach that level’*

5.2.2.5 Recognition of failure and monitoring/regulation

The two average interviewees (FYA and SYA) reported that they recognize when they are not doing well in reading/writing as a sign of monitoring. The first year student simply answered ‘yes’ whereas the second year student elaborated by saying ‘*generally yes because I know if I remember something just it pops I know the answer*’.

As for regulating failure, the two students provided some details. The first year student (FYA) reported: ‘*I try to correct ...faults, answers*’, ‘*I read the text more and more*’ and ‘*I try to focus on the text*’. This student also expressed his uncertainty when correcting wrong answers stating that ‘*I’m not sure about...I’m correcting well*’

The second year student (SYA) described her regulation of failure as follows: ‘*I redo for example for writing, I don’t like what I write sometimes I put aside all what I wrote and I start over when I have time*’, ‘*I select critical thinking, we have to choose what is good and what is bad and to select*’, ‘*I try to remember...perhaps I saw the word*’, ‘*when I don’t know the word I start to, if it is a hard word like a composed word I start to separate the word I try to understand if I can pick up one or I will understand the composed word*’, ‘*and also sometimes it helps me because it is Latin so sometimes the word in French it is the same in English and it helps me a lot*’, ‘*I review all my paper...I try to make it better why not if I had time and I liked what I did and it gives confidence*’

Table 5.25 and Table 5.26 below present the content analysis of the interview data as provided by the first year average achiever (FYH) and the second year average (SYA) achiever respectively.

Interview transcript (FYA)	Codes	Categories/themes
<i>'average'</i>	Reading/writing level of achievement	Self-knowledge
<i>'I use key words in the test'</i>	Using key words	Strategy knowledge
<i>'Brainstorm techniques yes... I learn it from study skills'</i>	Brainstorming	Strategy knowledge
<i>'I think you have to read a lot'</i>	Extensive reading	Task requirement/task knowledge
<i>'You have to practice essays'</i>	Practice writing	Task requirement/task knowledge
<i>'To concentrate'</i>	Focus on task	Task requirement/task knowledge
<i>'They are clever in class'</i>	Intelligence	Knowledge of factors of achievement
<i>'yes'</i>	Recognition of failure	Monitoring
<i>'I try to correct ...faults'</i>	Self-correction	Self regulation
<i>'I read the text more and more'</i>	Rereading	Strategy knowledge and regulation

Table 5.25: Content analysis of first year average achiever (FYA) interview data

Interview transcript (SYA)	Codes	Categories/themes
<i>'I have a good level, I understand quite good, but in writing perhaps I have to make more effort'</i> <i>'average, I will say average'</i>	Reading /writing level of Achievement	Self-knowledge
<i>'To read to have a general view'</i>	Skimming/gist reading	Task requirement/task knowledge
<i>'Then I start to understand more deeply'</i>	Scanning	Task requirement/task knowledge
<i>'And read between the lines'</i>	Critical reading	Task requirement/task knowledge

<i>'We have the text and we have a question to questions to answer and then perhaps we have words to explain especially in the context'</i>	Answering comprehension questions Explaining vocabulary	Task requirement/task knowledge
<i>'For writing, we have a task to do and we are guided...the teacher give us something to write about'</i>	Follow teacher's instruction	Task requirement/task knowledge
<i>'They read a lot and they write a lot'</i>	Extensive reading/writing	Knowledge of factors of achievement
<i>'I redo for example in writing'</i>	Rewriting	Regulation
<i>'For reading I start I try to remember ...perhaps I saw the word'</i>	Remembering	Regulation
<i>'If it is a hard word like a composed word I start to separate the word'</i>	Decoding /bottom-up reading	Regulation /strategy knowledge
<i>'I review all my paper'</i>	Revising	Regulation

Table 5.26: Content analysis of second year average achiever (SYA) interview data

The above findings pertained to the two average students who have been selected purposefully to answer the questions of the interview. The two last informants are the low achievers whose responses to the interview questions are presented in the following section.

5.2.3 Content analysis of first and second year low achievers interview data

5.2.3.1 Knowledge of the self

Just as high and average students did, low achieving informants also responded to the interview questions. The first year respondent (FYL) identified herself as 'below average' stating that *'I am near of the average but I need some, I don't know some hard work, some individual hard work'*. However, the second year student (SYL),

although identified by her teacher as low, claimed to be an average reader/writer reporting that *'I am medium, in between'*. The two students are low achievers as their scores indicate and as their teachers reported. These students justified their low level of proficiency by lack of reading. Year one student stated: *'because I don't read a lot before'*, but she said she is making progress. For year two student (SYL), she stated *'when I compare myself for last year and this year I remarked that I have progressed in my writing and also in my speaking or my reading'*

5.2.3.2 Knowledge of task requirements

The first year student (FYL) provided answers to the task requirements question. According to her: *'when we read too much I think that we get more experience in writing as style'*, *'we have to read, listen also'*, *'the teacher said that we have to practice too much (...) she always say that practicing helps us to develop our level'*, *'try to create or introduce something original'*

Regarding the second year students (SYL) views on task demands, she mentioned: *'of course it demands a lot of reading'*, *'and also a lot of practicing of writing, writing essays or writing any text, any brief paragraph in order to ameliorate and to...correct myself'*.

5.2.3.3 Knowledge of strategies

As concerns knowledge of strategies, the two participants listed a number of techniques they frequently use in reading/writing. Year one student (FYL) replied: *'I try to take the simple model sometimes, the model in which the teacher said for*

example in the topic sentence for example the teacher said that we have to learn it', 'I try to check something short and select, I select some, I try to select the main point'.

Whereas year two student (SYL) reported: *'my process for writing an essay first task is clustering and because I find this way make me limited and have my limit in writing', 'after this it's outlining of course about how I will manage these ideas and after this I make the outline', 'after I will write my essay so I need for my writing four drafts', 'for my reading which will get the last one I read the whole text', 'after this I read each paragraph individual and I try to have a main idea for each paragraph and then like this I will have my idea, the main idea of this text', 'sometimes I read the question of reading and I start reading the text in order to have what is my question about and to pick out the idea, the key word'.*

5.2.3.4 Knowledge of factors of achievement in reading/writing

According to the two low achievers in reading/writing, the factors that contribute to high achievement are listed below. For the first year student (FYL), good readers/writers: *'had many information, they had I don't know information about American life, British life', they 'read', 'can create when they had a lot of information, they can create they can have special style'*

As for the second year student (SYL), high achievers: *'read a lot, reading makes you develop your reading enriching your vocabulary and also progressing in writing'*

5.2.3.5 Recognition of failure and monitoring/regulation

For the last question of the interview, regarding students' failure and monitoring/regulation, year one student (FYL) declared '*I feel sometimes I didn't understand the topic*'. Yet, she did not provide clear regulatory actions, she repeated the following '*but I try to check may be I don't know I try to get some points may be sometimes of the form or the context. I try to check sometimes I know it before, I don't know, I try sometimes to write something not let it as it is*'. She also concluded that '*I think that sometimes I think I haven't control I can't I don't know, I try, I work, I listen to the teacher, I follow but it is still a percentage of hard work, of habit, by time may be if I read or I don't know or usually, I practice more or may be if I be ready may be I give more*'

Concerning year two student (SYL) response, she confirmed her monitoring of the reading/writing process saying that '*I know it, I know it*' for recognition of failure. She referred to the text type as a source of failure in her reading comprehension: '*it depend of the quality of the text about sometimes, there is some text who contains a lot of words that may be I have never heard or never saw in my studies*'. For regulating her breakdowns, she responded: '*when I feel that I am wrong I try to change it and to ameliorate and to correct*', '*I rewrite and reorganize my answering*', '*I try to verify like the grammar, the punctuation, the spelling mistakes and the usual mistake*'

Table 5.27 and Table 5.28 below present the content analysis of the interview data as provided by the first year low achiever (FYL) and the second year low achiever (SYL) respectively.

Interview transcript (FYL)	Codes	Categories /themes
<i>'I am near of the average'</i>	Reading/writing achievement	Self-knowledge
<i>'Because I don't read a lot before'</i>	Extensive reading	Self-knowledge
<i>'When we read so much I think that we get more experience in writing'</i>	Extensive reading	Task requirement/task knowledge
<i>'She said that we have to practice too much'</i>	Practice writing	Task requirement/task knowledge
<i>'I try to take the simple model sometimes'</i>	Following a writing model	Strategy knowledge
<i>'I try to take ...may be only the most important point'</i>	Selecting ideas	Strategy knowledge
<i>'They had many information, they read...they can create'</i>	Background knowledge, extensive reading, creative	Knowledge of factors of achievement
<i>'I feel sometimes I didn't understand the topic'</i> <i>'I think that sometimes I haven't control'</i>	Recognition of failure	Monitoring
<i>'I don't know, I try, I work, I listen to the teacher, I follow but it is still a percentage of hard work, of habit, by time may be if I read or I don't know ...I practice more or may be if I be ready may be I give more'</i>	Need for more reading and practice	Regulation

Table 5.27: Content analysis of first year low achiever (FYL) interview data

Interview transcript (5SYL)	Codes	Categories/themes
<i>'I am medium in between'</i>	Reading/ writing level of achievement	Self-knowledge
<i>'It demands a lot of reading and also a lot of practicing of writing'</i>	Extensive reading and writing	Task requirement/task knowledge
<i>'First task is clustering'</i>	Clustering	Strategy knowledge
<i>'After this it's outlining...about how I will manage these ideas'</i>	Outlining	Strategy knowledge
<i>'So I need for my writing four drafts'</i>	Drafting	Strategy knowledge
<i>'I read the whole text after'</i>	Skimming and scanning	Strategy knowledge

<i>this I read each paragraph individual and I try to have a main idea'</i>		
<i>'I read the question of reading ...to have what is my question about'</i>	Reading the questions	Strategy knowledge
<i>'Reading and read a lot'</i>	Extensive reading	Knowledge of factors of achievement
<i>'I know it I know it...when I feel that I am wrong'</i>	Recognition of failure	Monitoring
<i>'I try to change it and to ameliorate and to correct'</i>	Correcting	Regulation
<i>'So I rewrite and reorganize my answering'</i>	Rewriting and reorganizing	Regulation
<i>'I try to verify like the grammar, the punctuation, the spelling mistakes ...'</i>	Checking answers and reviewing	Regulation
<i>'I try to read it again'</i>	Rereading	Regulation

Table 5.28: Content analysis of second year low achiever (FYL) interview data

This section has content analyzed data retrieved from the semi structured interview used to elicit responses from the sample of six students from year 1 and year 2 of English study. The questions targeted their metacognitive knowledge that comprises knowledge of self, of task and of strategies. They were also asked about the factor (s) contributing to high achievement in the two academic literacy skills as part of metacognitive knowledge. Finally, the interview questions required from students to elaborate on their monitoring and regulation of the reading/writing tasks.

Given the fact that the interview represents a qualitative tool of data collection whereby the responses can probably be biased, the researcher considered the need to triangulate the findings by analyzing teachers' interview data. The two reading/writing teachers' participants were also interviewed to allow a comparison of the responses and thereby increase validity.

As for **task knowledge**, the study findings show varied responses among the six students. These are compared in Table 6.1 below:

Task knowledge	High achievers		Average achievers		Low achievers	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Using background knowledge	✓					
Using context	✓	✓				
Careful reading	✓	✓				
Drafting	✓					
Following teacher instruction		✓				
Doing extensive reading			✓		✓	✓
Practicing writing			✓		✓	✓
Concentrating on task			✓			
Answering comprehension questions				✓		
Outlining				✓		
Organizing				✓		
Providing a title				✓		
Reading between the lines				✓		
Creating new ideas					✓	

Table 5.29: Comparison between students' task knowledge and levels of achievement

Table 6.1 above compares between the six students task knowledge and their levels of achievement. It aims to see how high achievers perceive reading/writing task demands as opposed to average and low achievers. What is noticeable is that both first and second year high achieving readers/writers focus upon 'reading carefully' and 'using context' as task demands, yet year one student mentions 'using background knowledge' as a key requirement in reading and 'drafting' in writing while year two student refers to 'following teacher instruction' as a task demand also in writing.

As for average achievers, the two students perceive task requirements differently. While first year reader/writer states 'doing extensive reading, 'practicing writing' and

‘concentrating on the task’ as the key demands, the second year student lists ‘answering comprehension questions’, ‘outlining’, ‘organizing’, ‘providing a title’ and ‘reading between the lines’ as the main reading/writing demands.

Concerning low achieving readers/writers, they both agree on ‘extensive reading’ and ‘practicing’ as task demands, yet the first year student adds ‘creating new ideas’ as another requirement that she considers important.

What is remarkable in students’ responses is that high achievers focus on ‘top down’ and ‘bottom up’ reading such as ‘activating background knowledge’ and ‘using context’ while average and low achievers focus more on what they have identified as weaknesses in reading/writing. They explain their low level by lack of reading and practice in reading and writing. This is why they probably consider reading extensively and practicing as key requirements for doing reading/writing tasks successfully.

Regarding **strategy knowledge**, students reported some common reading/writing strategies. Yet, they also showed some variation in strategy use as demonstrated in Table 6.2 below.

Strategy knowledge	High achievers		Average achievers		Low achievers	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Skimming	✓			✓		✓
Scanning	✓			✓		✓
Brainstorming in writing	✓		✓			
Controlling stress	✓					
Drafting	✓					✓
Correcting	✓					✓
Checking vocabulary	✓					
Using context		✓				
Using dictionary		✓				
Organizing		✓				
Connecting ideas		✓				
Using key words			✓			
Highlighting headlines			✓			
Using creativity				✓		
Using a model					✓	
Selecting ideas					✓	
Clustering ideas						✓
Outlining						✓
Reading the questions						✓

Table 5.30: Comparison between students' strategy knowledge and levels of achievement

The table shows that 'skimming' and 'scanning' strategies are the most commonly used by the participants since three students from the three levels of achievement mentioned them. 'Checking vocabulary' and 'using key words' are also reported as strategies used in reading/writing by two students whereas the rest of the strategies

vary. What is remarkable is that the students appear to focus on the form of the text and use more ‘bottom up’ reading strategies such as ‘using key words’, ‘highlighting headlines’, ‘using sample writing models’, and ‘using the dictionary’. These strategies denote language related difficulties that may still prevent some students from reading and writing fluently.

Question four of the interview aimed to elicit responses on students’ general knowledge of the possible factors that contribute to their high achievement in reading/writing. The informants provided the following answers that are compared in Table below 6.3 below.

Knowledge of factors of achievement	High achievers		Average achievers		Low achievers	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Practice reading and writing	✓		✓	✓		
Integrating reading and writing	✓					
Using models in writing	✓	✓				
Extensive reading		✓	✓	✓	✓	✓
Doing homework			✓			
Being intelligent			✓			
Having extensive background knowledge					✓	
Creativity					✓	

Table 5.31: Comparison between knowledge of factors of achievement and levels of achievement

As the table reveals, most interviewees seem to agree on ‘doing extensive reading’ as a key factor of high achievement in reading/writing. Other factors of achievement are considerably varied.

Regarding the last two questions of the interview that tap into students’ **monitoring** and **regulation**, the participants responded to whether they recognize failure when they read and write and to how they regulate their failure. Concerning recognition of failure, five students out of six declared they know when they are doing well and when they are not. However, one first year low achiever was not sure and responded by ‘*I feel sometimes I didn’t understand the topic*’. Besides, she was unable to describe her regulation of failure. Another student, a first year average achiever, also stated that he is ‘*not sure to correct well*’. The other respondents reported the following regulatory actions compared in Table 6.4 below.

Regulation	High achievers		Average achievers		Low achievers	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Thinking again	✓				No regulation	
Self-questioning	✓					
Fixing the problem	✓					
Rereading	✓	✓	✓			✓
Pausing and reflecting	✓	✓				
Checking answers and reviewing	✓	✓		✓		✓
Skipping difficult questions		✓				
Reorganizing			✓			✓
Correcting			✓			✓
Focusing			✓			
Rewriting				✓		✓
Selecting and using critical thinking				✓		
Remembering vocabulary				✓		
Decoding difficult words				✓		
Using L2 (French)				✓		

Table 5.32: Comparison between regulation and levels of achievement

The table shows that the strategies employed by the students to regulate reading and writing differ. While high achievers rely commonly on ‘rereading’, ‘pausing and reflecting’ and ‘checking answers and reviewing’, average and low achievers resort to ‘checking answers and reviewing’, ‘correcting’ and ‘reorganizing’. What is worth noting is that high achievers also state that they regulate failure by ‘fixing the problem’, ‘self-questioning’, ‘skipping difficult questions’ and ‘thinking again’ that

are said to be ‘metacognitive’ strategies. They seem to use the strategies that fit the task demands most; they ‘adjust their reading strategies on the basis of the language of the text and their own perceived proficiency in that language’ (Carell, 1989, in Alsheikh, 2011, p. 152)

It is clear that these high achieving readers/writers make consistent attempts to monitor and fix up failure to read and write. According to Schmitt and Sha, (2009, cited in El Dawaideh & Al Saadi, 2013, p. 224) ‘effective readers must perform a number of tasks, most notably problem-solving tasks at the processing stage. They also self-monitor comprehension processes by identifying harmonious and disharmonious aspects among sources of information’. These students also use certain strategies that they believe are more effective to ‘repair comprehension failure, including reading slowly and carefully, controlling the reading rate, rereading, pausing to reflect on the reading, and reading text aloud’ (Onovughe & Hannah, 2011 in El Dawaideh & Al Saadi, 2013, p. 224)

5.2.4 Content analysis of the R/W teachers’ interview data

Two teachers teaching the reading/writing course were interviewed on the task requirements and the strategies used for reading and writing. The findings are presented below for each year of degree instruction.

5.2.4.1 First year teacher responses on R/W task requirements and strategies

First and concerning task requirements, the teacher of the module (Teacher 1) provided the following:

- Do extensive reading *'the first thing would be reading, extensive reading because the more they read the more they get background information about the topics or possible topics of writing, the more they get used to punctuation, capitalization, grammar and different writing styles, different registers'*
- Practice writing *'students need to practice writing, they can use models, models or sample paragraph, sample essays and then build on their own paragraphs and essays'*
- Understand/practice grammar *'if ever students have other difficulties weaknesses in grammar they need to work on these difficulties too so as to be equipped well equipped with any writing task or a reading task', she justified 'because if students do not understand grammar, they cannot understand reading passages, they may find some structures difficult...if the student has problems in punctuation, he or she cannot understand the text'*

These are the requirements stressed by the first year reading/writing teacher. She also answered the following question that inquires about the strategies that students should employ and develop when they read and write. According to her, these are:

- Skimming through the text for main idea (s) *'in reading I usually target of course the comprehension because it's reading comprehension whether the student understood what the text is about, the main ideas of the text, the organization of the text'*
- Predicting *'I also test their ability to predict what is to come in a text'*

- Activating and using background knowledge *‘...their ability to use background knowledge in order to understand reading passages I mean background information, all they know before the lecture ...whether they make good use of all the knowledge they received throughout their readings’*
- Inferring *‘I also test their ability to infer’*

So far in this content analysis are the strategies highlighted by the Teacher 1. For a clearer representation of the findings from year 1 reading/writing teacher, the content analysis procedure from coding to categorizing is displayed in Table 5.29 below.

Teacher 1 interview transcript	Codes	Categories/themes
<i>‘I think the first thing would be reading, extensive reading.....the second, students need to practice writing ...use models....if ever students have other weaknesses in grammar they need to work on these difficulties’</i>	Extensive reading Practice writing Practice grammar	Task requirements
<i>‘I usually target the comprehension ...whether the student understood...the main ideas of the text...the organization...the structure, ...I also test their ability to predict what is to come...their ability to use background knowledge , ...I also test their ability to infer’</i>	Skimming Predicting Use of background knowledge Making inferences	Strategies required for reading and writing

Table 5.33: Content analysis of R/W first year teacher interview data

In the next section, the answers of the second year teacher are analyzed

5.2.4.2 Second year teacher responses on R/W task requirements and strategies

The second participant is year two reading/writing teacher (Teacher 2) of the same sample investigated in this study. She also answered the two questions of the interview on the reading/writing task demands and strategies. The findings are presented below. According to her, the reading/writing task requirements are:

- Reading for a general meaning *‘in reading, they are required first to have a general meaning of the text’*
- Reading behind the lines *‘second to be able to read behind the lines means having the deep meaning of the text, grasping the deep meaning’*
- Reading critically *‘and third to be able to have critical mind about this text, to develop that critical spirit about the text, means to analyze certain aspects from the text’*

The teacher also provided an example of the process the students go through in reading. She explained *‘for example, in the first semester, we have the short story, the literary short story to deal with and so they were required to first give an overall idea about the story’*. She followed *‘then they read the story and then they were required to try to understand the message of the author’*. Finally *‘they had questions not only on comprehension, vocabulary but also question on responding to that story through the analysis for example of a passage...’*

For writing, the teacher highlighted the following requirements:

- Knowledge of text structure and organization *‘in academic writing they are required first to know how to structure their essay’*
- Knowledge of genres *‘second to be able to write certain genre, genre of essays, for example, descriptive essay, narrative essay...so to know what these texts involve’*
- Use of imagination in creative writing *‘in creative writing, they are just required to use their imagination’* she added *‘not to limit themselves to the linguistic constraints that are required in academic writing’*

The teacher also answered the second question of the interview on the strategies that students should make use of in reading/writing. She elaborated on the following strategies:

- Extensive reading *‘I always remind them that it is very important to read all kinds of texts, not to read only texts given to them at the university’*
- Use of context in reading literary text *‘if they come across a literary text for example I don’t advise them to take the dictionary right at the beginning so I just tend to tell them to trust themselves first to have their own idea about the text without going to the dictionary’*, she justified the utility of this technique by: *‘in order not to hinder the process of reading because some students complain and say when we read literary texts and go very often to the dictionary we lose that interest in that text’*

- Being autonomous *‘I encourage them to be autonomous when they read a text just read it trust your level at English and then when you finish reading the text you can go for further explanations about certain terms or about certain ideas’*
- Skimming for general understanding *‘I give them questions and they start to answer gradually it means a set of questions about for example comprehension and then some questions about vocabulary’*
- Scanning *‘then we have a close reading of the text together so we divide the text into parts then we read one part for example we explain it in detail so that the meaning is very clear’*
- Using critical thinking *‘once we do this close reading I give them other sets of questions which are more complex yes which are for example about finding symbols in the story, symbolism finding imagery, figures of speech explaining some sentences...I usually intend to teach them indirectly how to have a critical mind’*

The teacher of year two not only provided the techniques required for reading academic texts but also highlighted reading literary texts as necessary for undergraduates to develop critical thinking skills. She mentioned the use of short stories in her classes as a means to have ‘critical mind’ in reading and in responding to extracts through the analysis of certain literary devices in writing. The content analysis conducted for Teacher 2 interview data is displayed in Table 5.30 below.

Teacher 2 interview transcript	Codes	Categories/themes
<i>'In reading, they are required first to have a general meaning of the text and second to read behind the lines ...and third to be able to have critical mind about this text '</i> <i>'In writing, they are required first emm to know how to structure their essay'</i> <i>'and second to be able to write certain genre'</i> <i>'In creative writing, eh they are just required to use their imagination emm not to limit themselves to the linguistic constraints'</i>	Understanding gist Deep reading Critical reading Organizing Knowledge of genre Use of imagination	Task requirements
<i>'Techniques in reading, well I tell them first, I always remind them that it is very important to read all kinds of texts, not to read only texts given to them at the university'</i> <i>'if they come across a literary text for example I don't advise them to take the dictionary right at the beginning so I just tend to tell them to trust themselves first to have their own idea about the text without going to the dictionary'</i> <i>'Try to have your own idea of the text first...so I sometimes I just try to encourage them to be autonomous when they read a text'</i>	Practice reading/extensive reading Using context Self-reliance	Strategies required for reading and writing

<i>'I give them questions and they start to answer gradually it means a set of questions about for example comprehension and then some questions about vocabulary'... 'then we have a close reading of the text together so we divide the text into parts then we read one part for example we explain it in detail so that the meaning is very clear'</i> <i>'Once we do this close reading I give them other sets of questions which are more complex yes which are for example about finding symbols in the story, symbolism finding imagery, figures of speech explaining some sentences...I usually intend to teach them indirectly how to have a critical mind'</i>	Skimming Scanning Critical analysis	

Table 5.34: Content analysis of R/W second year teacher interview data

This section has presented the interview data from students and teachers. As far as students' responses to the questions on metacognitive processes are concerned, these were analyzed and presented separately i.e., high, average and low achievers metacognitive knowledge, monitoring and regulation as manifested in the R/W exam task. In addition, teachers' responses on metacongitive task requirements and strategies were analyzed and presented.

Conclusion

This chapter was devoted to the analysis and presentation of the results obtained from both quantitative and qualitative instruments that elicited data from students and teachers through the use of numerical, statistical and content analysis procedures. The next chapter deals with the discussion and interpretation of the findings. The quantitative data (from the MAI, TMJ and R/W tasks) and the qualitative data (from the students' and teachers' interview) are compared. These data will be used together with other results of the quantitative investigation to answer the research questions formulated in the introduction to this study.

CHAPTER SIX

**DISCUSSION, INTERPRETATION
OF THE FINDINGS AND
IMPLICATIONS**

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DISCUSSION, INTERPRETATION OF THE FINDINGS AND IMPLICATIONS

Introduction

This chapter aims to discuss and interpret the findings obtained from the quantitative and qualitative analyses described in the preceding chapter. It attempts to answer the following research questions and sub-questions related to students' metacognitive processes and illusions of knowing that is at the heart of this study:

RQ1: What are the metacognitive processes used by first and second year degree students in reading and writing examinations tasks?

(a): What metacognitive knowledge do they have about these tasks?

(b): How do they monitor and regulate these tasks?

RQ2: Is there a difference between the metacognitive processes of high, average and low achievers across the two years of study in reading and writing examination tasks?

RQ3: Is there a relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks?

The chapter draws the implications of the study and provides some recommendations to students and teachers resulting from these findings and supported by the literature. It also suggests ways to improve students' metacognitive knowledge, monitoring and regulation particularly when doing reading and writing tasks.

In this research work, the Mixed Methods Sequential Design was used for data collection and data analysis. The design is sequential as it first gathers quantitative data through three instruments: the Metacognitive Awareness Inventory (MAI), Taxonomy of Metacognitive Judgments (TMJ), and a reading/writing task. These are described below; this quantitative phase was followed by a phase of qualitative data collection using a semi-structured interview to complement the study and deepen understanding of the issue of metacognitive illusions. Thus, the variable of metacognitive knowledge was investigated through the use of the Metacognitive Awareness Inventory (MAI) to collect evidence on students' declarative, procedural and conditional knowledge (Brown, 1987). This variable was also targeted in the qualitative phase by conducting a semi-structured interview with students and teachers that addressed questions on students' knowledge of self, task and strategy (Flavell, 1979). The aim of using these tools was to triangulate the results and increase research validity.

Besides the variable of 'metacognitive knowledge', the variable of 'metacognitive monitoring' was also investigated by using the Taxonomy of Metacognitive Judgments (TMJ), a quantitative tool, and the interview, a qualitative tool. This allowed us to explore fully the issue of illusions of knowing. Finally, the variable of 'regulation' was also investigated and qualitative data were collected: students were interviewed on their recognition of failure in reading and writing tasks and how they reacted to it. Therefore, the Mixed Methods Design has helped to investigate the three essential components of metacognitive processes: knowledge, monitoring and regulation. The next sections are devoted to the discussion and interpretation of the findings. The

research questions and the hypotheses formulated in the introduction will be answered in different sections of this chapter.

In sum, the quantitative and qualitative data were elicited by using four instruments of data collection described in Chapter Four: the MAI, the TMJ, the R/W tasks and the semi-structured interview to students and teachers.

6.1 Metacognitive processes used by first and second year students for doing R/W examination tasks

This section attempts to answer RQ1, which includes two sub-questions (a) and (b), formulated as follows:

RQ1: What are the metacognitive processes used by first and second year degree students in reading and writing examination tasks?

(a) What metacognitive knowledge do they have about these tasks?

(b) How do they monitor and regulate these tasks?

It is worth recalling that the two skills being investigated in this study, reading and writing, are two demanding academic skills which both require complex mental efforts and a great deal of monitoring on the part of the students. At university, undergraduates are confronted to extensive practice of these two skills since all courses involve critical reading and composing. In addition, exam questions along with written assignments rely heavily on reading and writing. This is one of the reasons that motivated the investigation of these two skills.

When the students' levels of achievement were classified according to the scores obtained by the students in the reading/writing exams, it was quite noticeable that **most of them (77.5%) were either average achievers (37.5%) or low achievers (40%)**, whereas only 22.5% of them were high achievers. It was hypothesized that this was related to the nature of the skills themselves, or to the students' underuse or poor use of their metacognitive knowledge or monitoring skills while doing reading and writing tasks. As a matter-of-fact, the literature reports the difficulty students face when dealing with reading/writing tasks at the undergraduate level, due to their perceptions of learning in general. For instance, Cox (2009) argues that: '...first-year college students often perceive learning as something that occurs through memorizing and recycling information' (In Pacello, 2014, p. 123). This implies that students often do not consider learning, or studying at university, as a higher order thinking process and these perceptions can act as a barrier for their studies. The difficulty facing these undergraduate students when doing reading/writing tasks was probably due to their perceptions of the nature of these skills and tasks. Research suggests to describe 'explicit discussions of learning, reading and writing' as 'processes' so as 'to strategically navigate the reading and writing demands of college classrooms' (Pacello, 2014, pp. 123-124).

Therefore, it is worth mentioning that students meet with a crucial challenge when moving from school to university, and dealing with this difficult transition, especially in terms of teaching and study methods. In the context of this research, the move is from attending general English classes in the middle and secondary school to attending specialized English classes with an important amount of content subjects at university,

such as critical reading, academic writing, literature, civilization, media studies and linguistics. All these courses, based essentially on lectures, rely heavily on solid reading comprehension and composition skills. This observation goes hand in hand with what researchers like Ruiz-Funes (1999, p. 521) referred to as ‘lack of appropriate composition skill preparation at the intermediate level’. She adds that ‘intermediate-level students are generally taught to write in the simplest modes of writing such as description and narration, and sometimes exposition’ with little ‘consideration (...) to the writing modes students are expected to produce in advanced courses’. This lack of skills preparation might explain the illusions of knowing that many students face when dealing with reading and writing tasks, namely in examination situations. These considerations were confirmed by the students’ and teachers’ views on this issue, as is discussed later in this study.

The next sections attempt to answer **RQ1 (a)** on the **type of metacognitive knowledge** students have about R/W tasks, and **RQ 1(b)** on the **monitoring and regulation** of R/W tasks.

6.1.1 Students’ metacognitive knowledge about the R/W tasks

RQ1 (a) asked: ‘**What metacognitive knowledge do they have about these tasks?**’.

This research question targeted students’ use of metacognitive knowledge for doing reading/writing tasks. The Metacognitive Awareness Inventory (MAI) was used to obtain information on students’ **declarative, procedural and conditional knowledge**, that is, on ‘what students know about themselves, strategies and conditions under which strategies are most useful’ (Shraw & Dennison, 1994, p. 466).

Other instruments employed for collecting quantitative and qualitative data are: the Taxonomy of Metacognitive Judgments (TMJ) and the semi-structured interview. The TMJ was used to collect quantitative data in the different phases of the reading/writing examination tasks. Students were asked to self- measure the rate of their performance in the exam by choosing the appropriate percentage before, while and after taking the exam.

As far as '**declarative knowledge**' is concerned, that is 'knowledge about oneself as a learner and about what factors influence one's performance' (Shraw, 1998, p. 114), students selected more frequently statements pertaining to declarative knowledge (statement 8, 1 and 2, see Appendix B) than others (e.g. statement 3, 4 and 6). For example, they declared that they read and write more when they are interested in the topic. They also said they understand their strengths and weaknesses in reading/writing and they are aware of information that is more important to learn in the two skills. Thus, **students seemed to express more knowledge of self as readers/writers** than of strategies since they selected more statements that referred to declarative knowledge.

Also, a number of themes emerged out of the participants' responses to the semi-structured interview which provided further insights on students' metacognitive knowledge. For self knowledge, the data showed that **the majority of students have accurate self-knowledge** since they ranked themselves at the same level of achievement as the level attributed to them by their teachers and which matched their scores , except for one low achiever (year 2 student). Thus accuracy of self knowledge corresponds to the students' level of achievement as evidenced by the results obtained

from the quantitative analysis, more particularly when students measured their own declarative knowledge. In the same vein, the qualitative data highlighted **the significance of declarative knowledge and its correlation to the students' level of achievement**. According to Pintrich (2002, p. 222): 'Although self-knowledge itself can be an important aspect of metacognitive knowledge, it is important to underscore the idea that accuracy of self-knowledge seems to be most crucial to learning'. This accuracy of knowledge was established on the basis of the analysis of the interview responses to the first question (See Appendix F)

Task and strategy knowledge, which are part of declarative knowledge, were also explored qualitatively; but the findings demonstrated variation in students' responses when compared to the teachers' responses (See section 6.1.3.below). Students seemed to **lack knowledge of task specific strategies**, which may be due to teachers' inexplicit instruction of task specific strategies. Also, students seemed to be **unsure about the appropriate use of strategies**, that is, when and how to employ reading and writing strategies. On this point, Pintrich (2002, p.221) remarks:

'As students develop their knowledge of different learning and thinking strategies and their use, this knowledge reflects the 'what' and 'how' of the different strategies. However, this knowledge may not be enough for expertise in learning. Students also must develop some knowledge about the 'when' and 'why' of using these strategies appropriately. Because not all strategies are appropriate for all situations, the learner must develop some knowledge of the different conditions and tasks where the different strategies are used most appropriately'

As far as ‘**procedural knowledge**’ is concerned, that is, knowledge about how to use strategies, the participants in the study selected one statement (statement 9) more frequently than the other three statements (10, 11 and 12), and that belongs to procedural knowledge. They stated that they tried to use reading/writing strategies that worked in the past. But they did not seem to have a specific purpose for each reading/writing strategy they use; they were not aware of what reading/writing strategies they used and did not find that they were using helpful reading/writing strategies automatically. Thus, it is clear from these responses that **students have a low degree of procedural knowledge** and in general, **lack knowledge about reading/writing strategies**. As Hofer et al. & Simpson et al. (in Boekaerts, Zeidner & Pintrich, 2000, p. 470) remarked, this gap in knowledge may be due to university study demands and entry requirements:

‘In college classrooms, entering freshmen often have difficulty in their first courses because they are not monitoring or adjusting their perceptions of the course requirements to the levels expected by the faculty. Many college learning strategy or study skills courses attempt to help students become aware of these differences and adjust their strategy use and behavior accordingly’

As concerns ‘**conditional knowledge**’, which refers to when and why to use strategies or ‘when and why to use declarative and procedural knowledge’ (Garner, 1990, in Ahmadi, Ghonsooly & Ghanizadeh, 2016, p. 121), students selected three statements (13, 15 and 16) more frequently than others (14 and 17). They declared that they learn best when they know something about the topic of reading/writing; that they

can motivate themselves to read/write when they need to and they use their intellectual strengths to compensate for their weaknesses in reading/writing. But they did not use the reading/writing strategies needed in a particular situation, and did not know when each reading/writing strategy they use will be most effective. Conditional knowledge 'enables students to adjust to the changing situational demands of each learning task' (Shraw, 1998, p.114). Thus, students seem to be lacking this knowledge and appeared to be unable to alter their performance and use the appropriate strategies to match the requirement of the reading/writing task. From these results, it can be concluded that **students generally demonstrate a low degree of conditional knowledge, and little awareness of when and why to use reading/writing strategies.**

In sum, the students' responses to this question on metacognitive knowledge, that includes declarative, procedural and conditional knowledge, indicate that **their weaknesses and difficulties when doing R/W tasks appear to relate more to their procedural and conditional knowledge than to their declarative knowledge.**

Researchers report that: 'Individuals with a high degree of procedural knowledge perform tasks more automatically, are more likely to possess a larger repertoire of strategies, to sequence strategies effectively' (Pressley, Borkowski & Schneider, 1987, in Hartman, 2001, p.4), and 'use qualitatively different strategies to solve problems' (Glaser & Chi, 1988, in Hartman, 2001, p.4). Typical examples include how to chunk and categorize new information. Consequently, automatic processing of reading/writing in an exam situation seems to be weak or absent in these first and second year students.

6.1.2 Students' metacognitive monitoring and regulation of R/W tasks

In order to answer **RQ 1 (b), 'How do they monitor and regulate these tasks?'**, data were elicited on metacognitive monitoring using the Taxonomy of Metacognitive Judgments (TMJ); the aim was to measure students' metacognitive monitoring before, while and after doing the reading/writing exam tasks. Qualitative data regarding monitoring and regulation were also collected through a semi-structured interview (See Appendix F).

Metacognitive monitoring refers to 'keeping track of the success with which one's comprehension is proceeding, ensuring that the process continues smoothly and taking remedial action if necessary. It thus involves the use of what was called 'debugging' skills' by Baker & Brown (in Pearson et al., 1984, p. 355)

In relation to metacognitive monitoring, the quantitative analysis showed **low levels of monitoring among the first and second year participants**. A large majority of students (75%) monitored at lower than 50% in the three stages of reading and writing, i.e. **before, while and after**. In the qualitative analysis, most students (5/6) declared in the interview that they did monitor the reading and writing tasks and tried to regulate their occurring failures or errors through the use of different strategies like 'rereading', 'correcting', 'rewriting', 'reviewing and checking'.

The results of the study also showed an important difference between the three levels of achievement in terms of metacognitive knowledge and monitoring. **High achievers in both degree years demonstrated a high level of metacognitive**

knowledge and monitoring as compared to average and low achievers. This conclusion was drawn from the results of the quantitative analysis.

In the qualitative analysis, that was exploratory in nature, students of different levels of achievement responded differently on task knowledge and strategy knowledge except for self knowledge. **The majority of interviewees (5/6) demonstrated accurate self knowledge, but had different detailed responses to task knowledge and strategy knowledge.** While high achievers mentioned ‘using background knowledge and using context’ as the main requirements of the task, average and low achievers stressed ‘reading extensively’ and ‘practicing writing’ as the main task demands. The same conclusion can be drawn regarding strategy knowledge whereby the participants’ responses differed considerably from one level of achievement to another (See Table 6.2 in this chapter).

The results obtained from the Taxonomy of Metacognitive Judgments reveal that high achievers monitor their knowledge more than average and low achievers in the pre and while-stages of reading and writing. They also monitor more than low achievers in the post-stage of reading and writing, but at approximately the same level with average achievers in this post-stage of R/W. What is important to mention is that **the difference between the three levels of achievement in terms of metacognitive monitoring is quite significant.** These findings are congruent with Garner (2005)’s study conducted with children and adult learners. He remarked that:

‘Young children and poor readers are not nearly as adept as older children/adults and good readers, respectively, in engaging in playful

activities either to make cognitive progress or to monitor it. Younger, less proficient learners are not nearly as ‘resourceful’ in completing a variety of reading and studying tasks important in academic settings. (in Lewis & Wray, 2005, p. 36).

These results confirm the relationship that exists between metacognitive monitoring and reading/writing achievement. It is also worth mentioning that most participants answered that **they can recognize their failure when doing the reading and writing exam task**. However, it is not sufficient to know that failure has occurred, it is also necessary to take action to fix any occurring breakdown in the process of reading and writing. This is termed ‘regulation’.

Regulation, which is another element of metacognition, was investigated together with monitoring in this study. The majority of the students (5/6) declared they recognise their failure to read and write, but they regulate their errors in different ways. One low achiever stated: *‘I feel the failure’* and another average achiever reported: *‘I am not sure that...I am correcting well’*. **The students used different strategies for regulation** such as rereading, checking answers and reviewing (See Table 6.4 above). This can result from the different levels of achievement they belong to and from the varying perceptions they hold about task demands.

Wray (1994), noted that:

‘Realizing that one has failed to understand is only part of comprehension monitoring; one must also know what to do when such failures occur. This

involves the making of a number of strategic decisions. The first of these is simply to decide whether or not remedial action is required' (p.108)

The literature on metacognition highlights the relationship existing between knowledge and regulation that cannot be ignored in the interpretation of these findings. Reference to the constituents of metacognitive knowledge is essential to understand the diverging regulatory strategies the students reported in this study. Jacobs and Paris (1987, cited in Vrugt & Oort, 2008, p. 126) argued that:

‘One key assumption of all theories of metacognition is that knowledge and regulation of cognition are mutually correlated. However, this positive relationship does not occur when metacognitive knowledge is incorrect, since incorrect metacognitive knowledge about their learning processes prevents students from amending this knowledge’

According to the results obtained from the quantitative tools, it can be stated that **lack of procedural knowledge is responsible for the students' inadequate regulation and ineffective use of reading/writing strategies**. The data demonstrated that the students relied on general reading/writing strategies like ‘skimming’, ‘scanning’ and ‘organising’ and neglected ‘task related strategies’ reported by their teachers like ‘predicting’, ‘inferring’, ‘using background and context’ and ‘use of critical thinking skills’. As Sperling et al. (2004) and Luwel et al. (2003) (as cited in Vrugt & Oort, 2008, p. 127) rightly noted: ‘Metacognitive knowledge and regulation influence decisions which strategy to use’. Therefore, it seems logical to relate the students’ ineffective use of reading and writing strategies when regulating their failure to **lack of**

procedural knowledge. This conclusion can provide a fair explanation of their illusions of knowing. Research conducted by Foerst, Klug, Jostl, Spiel and Schober (2017, p. 2) seems to support this conclusion:

‘Competencies in self-regulated learning go beyond strategy knowledge. They also embody the application of such strategies in a way that is fruitful for performance and fits the challenging situations that are relevant in a specific domain. The conceptualization of self-regulated learning as a competence underlines the importance of learning more about students’ knowledge as well as action with regard to self-regulated strategies’

The findings of the study seem to corroborate the claims that the elements of metacognition: knowledge, monitoring and regulation function together and can explain the illusions of knowing that these English degree students face in examination situations. These illusions of knowing seem to affect knowledge of self, task and strategies and the overall process of reading and writing. They seem to be responsible for the students’ inadequate regulation and thus to the low level of achievement of some students in the reading/writing exam tasks.

In addition to the responses obtained from the student participants about their knowledge, monitoring and regulation, it is worth recalling that the teachers of reading and writing’s views of task requirements and strategies have also been elicited to increase the validity and reliability of the findings and their interpretation. In the next section, teachers’ responses are being compared with the students’ responses. The hypothesis is that teachers are also held responsible for their students’ low degree of

metacognition insofar as they are expected to teach with and for metacognition (See Chapter one, section 1.7). This comparison is an attempt to understand teachers' views of metacognition and to reflect on possible solutions.

6.1.3 Teachers vs. students' views of metacognitive knowledge: knowledge of task requirements and knowledge of strategy

In order to answer RQ1 which asked, **'What are the metacognitive processes used by first and second year degree students in reading and writing examination tasks?'** a comparison between teachers' and students' responses to the questions on knowledge of task requirements and of strategy while doing reading/writing tasks was done. The rationale for this comparison was to find out whether teachers' and students' views of knowledge of task demands and knowledge of strategy converge or not. In case they do not converge, there is a need to consider teachers' approach to metacognition as an important recommendation for EFL teaching.

The first year reading/writing teacher mentioned three requirements/demands which she views as essential for her reading/writing course: 'extensive reading', 'practice writing' and 'understanding grammar'. However, high achievers responded that in reading/writing, they are required to 'use background knowledge', 'use context', 'read carefully', 'draft', and 'follow teacher's instruction'. Thus, it is clear that **the students' responses to task requirements/demands do not match the teachers'**. This may be attributed to the fact that high achievers are autonomous learners who can take charge of the task requirements according to their own needs and interests, and that 'extensive reading' and 'practice writing' are already common

practices for these high achievers; so they do not consider them as requirements. This might also explain their good reading and writing proficiency level as both high achievers declared: *'I love reading'*, *'I read a lot'* and *'I feel quite confident about myself in reading and writing'*.

For average and low achievers, however, they seemed to agree with their teacher's responses on the two task demands she highlighted, i.e. 'extensive reading' and 'practice writing'. This may reflect some lacunas and may indicate their strong desire to take these two reading and writing requirements seriously. They also demonstrated this need quite clearly when responding to the question on the factors related to high achievement in reading/writing. The first year average student argued that high achievers are good because *'they read books'*, *'do a lot of practice'*, *'do their homework'* and are *'intelligent'*. Likewise, the first year low achiever attributed the high performance in reading and writing of good students to background knowledge, extensive reading and to their ability to create new ideas when composing. Thus, they were implicitly referring to what they should do to improve these two skills according to their own needs.

What is also important to point out is that the first year teacher referred to **'grammatical competence'**. According to her, this is an important prerequisite for reading and writing. However, no student mentioned it in response to the task knowledge question of the interview. There is no doubt that the proficiency level of students is an important factor in their success in these two academic skills. On the issue of reading, Garner (1987, in El Dawaideh & Al Saadi, 2002, pp. 224-225) stated that 'students with inadequate vocabulary and decoding ability find reading

comprehension challenging, but this could be because of lack of strategic knowledge'. The present research results would support the conclusion that 'awareness and monitoring of a person's comprehension processes are critical aspects of skilled reading' (Mokhtari & Reichard, 2002, in El Dawaideh & Al Saadi, 2002, p.225). Therefore, the deficits noted in the study may lead students to illusions of knowing because **they seem to lack knowledge of their own needs; they also have language weaknesses and more importantly they do not exercise effective monitoring because they do not use efficient strategies in processing text or in composing text.** Cain, Oakhill, and Bryant (2003, in Israel et al, 2005) described in their study this category of students that they termed "poor comprehenders":

'...a heterogeneous group whose difficulties are likely to derive from a variety of cognitive deficits, including weakness in understanding vocabulary and syntax. They summarized the reading comprehension deficits of poor comprehenders at the discourse level: difficulty making inferences, regardless of prior knowledge; lack of ability in identifying referent pronouns; lack of skill in using context clues, especially when abstract thinking is involved; weak comprehension monitoring skills and lack of ability to repair comprehension or vary strategy to purpose; and incomplete understanding of text structure' (pp. 22-23)

It is noteworthy that 'understanding grammar', or having 'grammatical competence', as mentioned by the first year teacher, is a necessary prerequisite in reading/writing; in the absence of this linguistic competence, any attempt to monitor the process of

reading and writing may prove ineffective. Therefore, students' awareness of this essential requirement is of paramount importance.

Regarding **knowledge of strategy**, the first year teacher reported 'skimming', 'organizing' 'activating and using background knowledge', 'predicting' and 'inferring' as the strategies required for reading/writing tasks. Most students agreed on 'skimming', yet the other strategies differed considerably from those suggested by the teacher. Thus, **strategy requirement is perceived differently by teachers and students**. What should be pointed out, however, is that low achievers consider the requirements of 'extensive reading' and 'practice writing' as the main strategies needed for the task. This may be due to their lack of practice in these academic skills on the one hand, and to their inability to decide how best to approach the task of reading and writing on the other hand.

As regards the second year reading/writing teacher's responses, she explained that reading tasks first require students to read for general meaning, and then read between the lines and finally reading critically. This is what she involved her students in when asking them to read short stories. As for her students' responses, they mentioned some general task demands that did not directly reflect knowledge of the process they should be engaged in. For instance, the move from general reading to reading critically that the teacher seemed to adopt in her class was not explicitly stated in students' responses. A high achiever referred to 'following teacher's instruction' which might refer to proceeding from general to critical reading. An average achiever mentioned different task demands, and 'reading between the lines' was one of them. However, a

low achiever mentioned the need for ‘doing extensive reading’ and to ‘practice writing’.

As for **knowledge of strategy**, the second year teacher highlighted extensive reading, using context, skimming and scanning, being autonomous, and using critical thinking as key strategies used for reading and writing. Although some of these strategies were mentioned by second year students like ‘using critical thinking’, it cannot be concluded that both teacher and students perceive strategic knowledge in the same way. Their views of strategic knowledge are somehow divergent. The second year reading/writing teacher said **she targets critical thinking in her course, which seems more relevant to metacognition**. But she gave no detail on her approach. Kuhn (1999, p. 17) remarked that ‘the developing cognitive competencies I describe as most relevant to critical thinking, are metacognitive-rather than cognitive-competencies’.

One may conclude that **teachers’ and students’ knowledge of task and task demands are not in agreement**. This is due to either lack of explicitness of the teacher’s instructions at the onset of her course, or to the students’ basic linguistic needs that have not yet been fulfilled. For instance, students’ responses demonstrate that some of them are still struggling with the surface level of reading/processing the text and cannot move to a deeper level such as reading between or beyond the lines, interpreting or responding critically to a literary passage through writing.

What seems also important to consider in terms of strategy knowledge is **the quality of the strategies used rather than their quantity**. Procedural knowledge

consists of when and why to use a given set of strategies that will result in comprehension taking place. However, if inappropriate strategies are employed, breakdowns of comprehension will be frequent. As a matter of fact, findings of this study show that different task types compelled students to use a range of strategies depending on task requirements. These strategies would be obviously different, according to the skills targeted. On this point, Hamzaoui-Elachachi (2005, pp. 60-61) observed: 'In writing, they would use strategies like planning, self-monitoring, substitution and revision. Listening, on the contrary, demands strategies such as elaboration, inferencing, selective attention and self-monitoring'.

As concerns metacognitive knowledge identified through the quantitative analysis, it should be recalled that over half of the students (65%) demonstrated **a low degree of procedural knowledge, and students' inability to use appropriate and effective reading and writing strategies for R/W exam tasks.** However, the qualitative analysis revealed that the majority of students (5/6) had **accurate self knowledge. Their responses agreed with their teachers with respect to their level of achievement,** except for one low achiever who described herself as an average achiever, but was described as a low achiever by the teacher.

Strategic knowledge as pointed out by research studies on metacognition and self-regulated learning, '...stress the need for students to adapt their learning strategies to demands of a task in order to optimize their learning performances' (Boekaerts & Corno, 2005; Butler & Winne, 1995; Pintrich et al, 2000, in Schellings & Broekkamp, 2011, p. 65).

Therefore, these diverging perspectives reported by the students and the teachers seem to be due to students' lack of accurate and appropriate task and strategy knowledge as well as inappropriate or inexplicit instruction on task demands and strategic reading and writing. As Schellings and Broekkamp (2011, p. 81) rightly remarked:

‘Attuning to task demands requires in the first place that the student has a clear notion about what the task demands consist of. Students need to be instructed in their abilities to assess the task demands in their educational environment’.

To summarize, with respect to **knowledge of task/task demands**, the first year and second year reading and writing teachers seemed to have levelled their demands to match the predominantly low level of achievers who still rely heavily on bottom-up reading techniques. Consequently, it can be concluded that many students have not yet developed a clear idea of what the tasks of reading and writing require and tend to demonstrate **some deficits in metacognitive task knowledge**. As for **knowledge of strategy**, students' views and teachers' views seem to diverge, across the three levels of achievement and the two years of study. There appears to be no general agreement on the range of strategies to use in reading and writing. Therefore, it can be concluded that there are **some deficits in the students' repertoire of strategies and possibly a lack of teachers' explicit instruction on the range of strategies to use for doing reading and writing tasks**.

In the light of the findings discussed in this section related to the students' purported illusions of knowing, one may conclude to an interplay between their metacognitive knowledge, monitoring and regulation that the literature reports: 'Students self-regulate all further learning activities based on their interpretation of task demands' (Bulter & Cartier, 2004; Butler & Winne, 1995, in Schellings & Broekkamp, 2011, p. 67). This study therefore calls for a number of recommendations for teaching reading and writing focusing on metacognitive knowledge, monitoring and regulation that are presented later in this chapter.

6.2 Metacognitive processes and achievement in R/W exam tasks: Comparing and discussing differences and relationships

RQ2 asked: 'Is there a difference between the metacognitive processes of high, average and low achievers across the two years of study in reading and writing examination tasks? The aim was to compare the metacognitive processes of high, average and low achieving students across the two years of study in reading and writing examination tasks.

RQ3 was formulated as follows: 'Is there a relationship between the metacognitive processes of the first and second year degree students and their reading and writing achievement in examination tasks?'. The aim was to seek for a relationship between the students' metacognitive processes and their achievement in reading and writing examination tasks in the first and second year of the English degree course.

Both quantitative and qualitative findings are displayed and interpreted in what follows. The design adopted in the quantitative phase of the analysis is Correlational in

order to compare the students' levels of achievement and to measure the degree of association between the variables of interest. After conducting the statistical tests, the results revealed that:

- **There is a difference** between first and second year students: **Second year students have higher metacognitive knowledge and monitoring**, as compared to first year students, as expected.
- **There is a relationship** between metacognitive knowledge and academic achievement in reading and writing tasks, **but this relationship is non-significant**
- **There is a relationship** between metacognitive monitoring and academic achievement in reading and writing tasks. **This relationship is significant especially between high and low achievers.**

These findings demonstrate that metacognitive knowledge and monitoring (including regulation) as components of metacognition are key determiners of achievement in reading/writing and in academic achievement in general. This was highlighted by Tobias & Everson, (2009, p. 123) who concluded that: 'Accurate knowledge monitoring was related to achievement in different domains'. They 'demonstrated the importance of accurate knowledge monitoring in a variety of school settings'.

As for the qualitative findings, they revealed that metacognitive knowledge refers to knowledge of self, knowledge of task and of strategies for the three types of achievers: high, average and low. In addition, the students' responses matched the teachers' answers as concerns **self-knowledge**. High and average participants reported

accurately their levels in reading and writing and this was congruent with the level their teachers attributed them to. However, one second year low achiever identified herself as 'average' and thus demonstrated lack of knowledge of self since the teacher described her as 'below average' or 'low level' student. On this point, Pintrich's (2002, p.222) remarked: 'Although self-knowledge itself can be an important aspect of metacognitive knowledge, it is important to underscore the idea that accuracy of self-knowledge seems to be most crucial for learning'. Pintrich and Schunk (1996) earlier argued that 'It is much more important to have accurate perceptions and judgments of one's knowledge base and expertise than to have inflated and inaccurate self-knowledge' (in Pintrich, 2002, p.222). Thus, this second year student clearly demonstrated an inflated and inaccurate self-knowledge.

6.3 Implications for foreign language learning and teaching

Academic achievement at university is largely dependent on an advanced proficiency level of reading and writing because these skills are essential for most subjects. This study has revealed that a number of first and second year university students have some deficits in these academic skills, among them metacognitive monitoring and lack of procedural and conditional knowledge needed for strategic processing. Some researchers have considered the power of metacognitive skill instruction to compensate for these deficits. They have given evidence that instruction in metacognitive development can assist students with the reading and writing skills necessary for independent learning at university. As Simpson (1984) and Simpson and Nist (1990) stated, 'First-year college students have limited repertoires for interacting with text' and El Hindi (1996, p. 216) declared that 'instructional programs which

enhance metacognitive awareness could benefit this population’. The next section describes the benefits of explicit instruction in metacognitive knowledge.

6.3.1 Benefits of explicit instruction in metacognitive knowledge

The implications of this study on students’ metacognitive processes for teaching, learning, and assessing are important to consider. For instruction, it is essential to teach for metacognitive knowledge explicitly. It has been noted that, in their lessons, teachers tend to target metacognition in an implicit way because they assume that students will be able to acquire metacognitive knowledge on their own. In the studies conducted by Hofer, Yu, and Pintrich (1998) and Pintrich, Mc Keachie, and Lin (1987), findings show that ‘A large number of students who come to college have very little metacognitive knowledge, knowledge about different strategies, different cognitive tasks, and particularly, accurate knowledge about themselves’ (in Pintrich, 2002, p. 223).

In order to make instruction more explicit and productive, teachers are advised to embed metacognitive knowledge within the usual content-driven lessons in different subject areas (Hofer et al., 1998; Pintrich et al., 1994, in Pintrich, 2002), rather than teach for metacognitive knowledge in separate courses, although this can possibly be done.

Teaching for metacognition can be possible when teachers plan to include some goals for teaching metacognitive knowledge in their regular lesson planning, and eventually teach and assess for the use of this knowledge when teaching other content knowledge. Teaching for metacognitive knowledge explicitly implies labeling it for

students. For instance, the teacher can note occasions when metacognitive knowledge comes up in a lesson, such as in a reading group discussion of the different strategies students use to read a section of a story. This explicit labeling and discussion can help students connect the strategies, and their names/labels, to other knowledge they may already have about strategies and reading (Pintrich, 2002).

Ultimately, discussing metacognitive knowledge as part of the everyday discourse of the classroom can help foster a language for students to talk about their own cognition and learning. The shared language and discourse about cognition and learning among peers and between students and teachers can make students more aware of their own metacognitive knowledge as well as their own strategies for learning and thinking.

6.3.2 Role of teacher education

As has been mentioned earlier, teachers play an instrumental role in providing explicit metacognitive instruction to students (Baker, 2008; Kintsch & Kintsch, 2005; Pressley, 2002; RAND Report, 2002, in Curwen, Miller, White-Smith & Calfee, 2010). Indeed, developing students' metacognition requires teachers to be knowledgeable and trained about various comprehension strategies (in reading for example) and how to teach them explicitly. However, while teachers are aware of students' need for comprehension strategies, they often have not provided direct instruction in how to use them (Pressley, 2002, in Curwen et al, 2010). Therefore, there remains 'a need for research into professional development required to scaffold teachers in developing strategic readers (and writers) across the curriculum, providing supports for integrating

instruction' (Duke & Martin, 2008, in Curwen et al, 2010, p. 130), and 'cultivating students as professional thinkers'(Block & Duffy, 2008, in Curwen, 2010, p.130).

Language teachers and applied linguists have highlighted the need for well-prepared lesson plans that include introductions, detailed descriptions of content, teacher-directed questions, and independent practice as the latter are strongly associated with students' achievement. Teacher education must not only offer to trainee teachers a variety of classroom methods and techniques involving metacognitive thinking and activities, but also ensure that teachers understand when, why, and how to use them (Nahrkhalaji, 2014). As Duffy et al. (2009, in Nahrkhalaji, 2014, p. 1665) rightly emarked:

'Effective classroom teaching is not limited to procedural methods and techniques because real classrooms produce unpredictable situations requiring immediate decisions rather than established procedures. That is, the appropriate and professional application of procedures that work is one dimension of sophisticated teaching and their engagement in complex mental activity involving metacognitive thinking or innovation is another one'.

Hartman (2001) also commented that metacognition offers teachers the opportunity to be aware and control their teaching and self- regulate teaching activities with respect to students, goals and situations. It enables teachers not only to have a critical view about information they have, but also when, why and how to use them. Teachers are required to think metacognitively to effectively teach by using instructional techniques

strategically. This comment applies to the conclusions of the present study where it was found that teachers' and students' knowledge of task and strategy did not match. Because language lessons are dynamic in nature, to some extent unpredictable, and characterized by constant change, teachers therefore have to 'continuously make interactive decisions that are appropriate to the specific dynamics of the lesson they are teaching' (Richards & Lockharts, 2007, in Nahrkhalaji, 2014, p.1665), although some studies of effective teachers, and not only effective language teachers, suggest that teachers do engage in metacognitive actions, when they daily confront unanticipated situations requiring immediate decisions that need to be strategic and thus metacognitive in nature.

With reference to the present investigation, teachers' instructional practices of reading and writing are interesting to explore further. Teachers said they used different texts and topics when designing materials for their course and, in general, they were aware of the need to communicate clearly to their students the objectives, the procedures and the strategies used for their course. The deficits reported in this study relate to students' procedural knowledge, knowledge of task and knowledge of strategy, as well as monitoring and regulating their weaknesses. This requires improving some instructional practices, focusing on metacognitive knowledge, monitoring and regulation.

6.3.3 Improving metacognitive knowledge, monitoring and regulation

What emerged from the results revealed through the quantitative and qualitative analyses of the data is that students had difficulty monitoring and regulating their

knowledge. Procedural knowledge seemed to be lacking when doing reading and writing tasks. Thus, the role of the teacher can be viewed as a crucial factor in helping students to understand their metacognition and what lies behind their ‘illusions of knowing’, in order to improve their performance in reading and writing.

In order to promote metacognition, Schraw (1998) pointed out three essential factors: the teacher, other students and reflection. He suggested a teacher’s model which includes both cognitive and metacognitive skills for students. Butler & Winne (1995, in Schraw, 1998) pointed out that the more explicit the teacher’s model, the more likely it is that students will develop cognitive and metacognitive skills. But Schunk (1989, in Schraw, 1998) commented that other students can provide effective models as well, and in many situations, are better models than teachers. In some situations, students are better able to model cognitive and metacognitive skills, and can provide a powerful rationale for using these skills within a zone of proximal development, as compared to teachers. This is congruent with Vygotsky’s idea of transference from other-regulation to self-regulation. Brown (1987, in Papaleontiou-Louca, 2003) explained this phenomenon as follows:

‘Basic to Vygotsky’s approach is the assumption that social interaction plays a major role in the origin and development of higher mental (e.g. metacognitive) functions. These functions appear first on the interpsychological (i.e. social) plane and only later on the intrapsychological (i.e. individual) plane. This means that a great deal of learning occurs in the presence of, and is fostered by, the activity of others. So many cognitive acts are initially experienced in social settings, but in

time, the results of such experiences become internalised. Initially, supportive others, such as parents, teachers, peers and so on, act as interrogators'. (p.12)

Besides teachers and peers, extended practice and reflection can play a major part in the construction of metacognitive knowledge, monitoring and regulatory skills. This is especially the case when students exercise regular reflection on their own successes and failures (Kuhn, Schauble & Garcia-Mila, 1992; Siegler & Jenkins, 1989, in Schraw, 1998). Studies examining the construction of theories of mind also suggest that reflection; both as a solitary and as a group endeavour, contributes to the breadth and development of these theories (Astington & Montgomery, 1993, in Schraw, 1998).

Another way of promoting metacognitive processes is through the observation of skilled teachers who may be a good model for novice ones. First, teachers should take the necessary time to discuss the importance of metacognitive knowledge, monitoring and regulation, including self-regulated learning (Schon, 1987, in Schraw, 1998). Second, teachers should make a concerted effort to model their own metacognition for their students. Too often teachers discuss and model their cognition (i.e., how to perform a task) without modelling metacognition (i.e., how they think about and monitor their performance). Third, teachers should allot time for group discussion and reflection, despite the many pressures of time-consuming and demanding curricula (Rogoff, 1990, in Schraw, 1998).

In the case of the reading and writing course, teachers can provide explicit instruction of the most effective reading and writing strategies by modelling them to

their students. Alternatively, students can model these strategies for the whole class and at the end of the reading/writing session, they might be given time to reflect on the usefulness of the strategies for the accomplishment of the task, and why other unsuccessful strategies have not worked and must be discarded.

6.3.3.1 Schraw (1998)'s Strategy Evaluation Matrix to promote metacognitive knowledge

Schraw (1998) suggested an instructional aid to promote metacognitive knowledge, be it declarative, procedural or conditional. The Strategy Evaluation Matrix (SEM) is claimed to be an effective way to improve metacognitive knowledge and learning in a significant way (Jonassen, Beissner & Yacci, 1993, in Schraw, 1998).

Figure 6.1 below describes the Matrix to improve metacognitive knowledge and learning. This Matrix can be used when dealing with reading, and possibly, writing activities. The purpose of each strategy in the SEM is to promote explicit teaching of declarative (column 1), procedural (column 2), and conditional (column 3) knowledge about each strategy as explained by Schraw (1998).

Strategy	Declarative knowledge	Procedural knowledge	Conditional knowledge
Skim	Search for headings, highlighted words, previews, summaries	Prior to reading an extended text	Provides conceptual overview, helps to focus one's attention
Slow down	Stop, read, and think about information	When information seems especially important	Enhances focus of one's attention

Activate prior knowledge	Pause and think about what you already know. Ask what you don't know	Prior to reading or an unfamiliar task	Makes new information easier to learn and remember
Mental integration	Relate main ideas. Use these to construct a theme or conclusion	When learning complex information or a deeper understanding is needed	Reduces memory load. Promotes deeper level of understanding.
Diagrams	Identify main ideas, connect them, list supporting details under main ideas, connect supporting details.	When there is a lot of interrelated factual info.	Helps identify main ideas, organize them into categories. Reduces memory load.

Figure 6.1: Strategy Evaluation Matrix (Schraw, 1998)

In the study reported by Schraw (1998), teachers evaluated positively the effectiveness of the SEM for the following reasons: First, it promotes strategy use that, in turn, improves performance of the task. Second, it enhances general metacognitive awareness especially because it explicitly addresses the three sub- knowledge components, i.e. declarative, procedural and conditional. Finally, it actively engages students in constructing and self-evaluating knowledge of how, when and why to use a particular strategy that leads automatically to efficient regulation.

6.3.3.2 Schraw (1998)'s Regulatory Checklist to improve self-regulation

For the regulatory aspect of metacognition, Schraw (1998) put into practice a checklist for improving regulation. This approach can help students in exercising control over an academic task or a problem-solving activity. The Regulatory Checklist has three objectives: a) planning, b) monitoring and c) evaluating

- a. Planning: aims at preparing for the task, knowing its nature, goal, the strategies, time and resources needed to perform it.
- b. Monitoring : aims at taking control over task performance
- c. Evaluating : aims at assessing the quality of task performance

Schraw (1998)'s Regulatory Checklist is described below:

a) Planning: what is the task about

- 1. What is the nature of the task?
- 2. What is my goal?
- 3. What kind of information and strategies do I need?
- 4. How much time and resources will I need?

b) Monitoring: how to perform the task

- 1. Do I have a clear understanding of what I am doing?
- 2. Does the task make sense?
- 3. Am I reaching my goals?
- 4. Do I need to make changes?

c) Evaluating: how to assess task performance

- 1. Have I reached my goal?
- 2. What worked?

3. What didn't work?

4. Would I do things differently next time?

This checklist for self-regulation can be applied to the process of reading and writing in EFL instruction, whereby students are performing the task and involved in regulation simultaneously. King (1991, in Schraw, 1998) noted that explicit prompts in the form of checklists help students to be more strategic and systematic when solving problems.

In addition to the Matrix and the checklist, guidelines for metacognitive-based practices in reading and writing were cited in Grabe (2003), as follows.

6.2.3.3 Guidelines for metacognitive-based practices in reading and writing

The following ten guidelines for instruction on reading and writing constitute foundations that can promote EFL students' academic performance and literacy development. These are the outcomes of research findings (Grabe, 2003) that can be integrated into the current reading and writing course quite successfully. These guidelines have been adapted to target metacognitive tasks and meet the objectives of the present investigation.

1. In order to increase metacognitive task knowledge, task analysis should be the primary focus of reading and writing instruction. Teachers and students should collect tasks used in different university courses and contexts and then analyze task expectations, plans for completing the tasks and critical evaluations of what they would describe as an effective performance (and why).

2. In order to increase knowledge of task demands and procedural knowledge in metacognition, students are required to exercise through writing many types of relevant genres and tasks (e.g., summaries, essay-exam writing, literature reviews, and research reports). Instructional genres and realistic tasks need to be regularly practiced to increase students' complex problem solving routines.
3. In order to develop awareness of task representation in metacognition, students need to be aware of existing rhetorical stances of tasks and texts; for example, by recognizing how a writer is shaping the text through linguistic choices to establish a position.
4. Knowledge of text structure is another key requirement for students because knowledge of the organization of written discourse allows them to communicate specific genres. Class writing activities should increase students' awareness of text coherence, how to link ideas logically and the ways that texts open and end.
5. A functional efficient EAP (English for Academic Purposes) curriculum aims to develop strategic readers and writers. To achieve this objective, teachers should extend students' attention to strategic processing and their continual awareness of planning, monitoring, and repairing. Students' attention and awareness have to be built steadily and consistently by learning, modeling, and using many types of strategies: strategies for planning, for learning information, for monitoring comprehension and writing, for re-evaluating goals and plans, and for repairing and revising. All these metacognitive processes are essential for

learning and studying academic skills such as reading and writing. Therefore, the English degree curriculum currently taught in the English department should be reviewed to include more metacognitive and monitoring tasks.

6. Taking into serious consideration teachers' and peers' feedback is also an essential component of any curriculum focusing on reading and writing. Constructive feedback with peer reviewing and correction contribute considerably in improving reading and writing performance. Seeking help when necessary is also an effective strategy used for metacognitive monitoring and regulation
7. Teaching students to collect and interpret data on interesting issues. In a curriculum that gives priority to reading-writing connections and interactions, data collection and analysis can provide important practice for analyzing information, critiquing content and form of texts, and planning ways to present information and make persuasive arguments. Thus, adequate strategy use is advocated in these guidelines.
8. Knowledge of the conventions of writing can help to enhance task awareness and conditional knowledge. An efficient curriculum has to provide instruction on how to use textual resources in writing. For instance, skills are needed for determining the strength of arguments, inferring the author's position, incorporating strong examples and illustrations, making effective links between ideas across texts, and presenting critical comparisons of conflicting

information. The development of these abilities requires substantial practice and commitment to writing from texts.

9. Students are also expected to learn from texts by developing the ability to summarize main ideas and synthesize information from two or more references. These skills are essential aspects of large tasks requiring writing from text resources. Effective strategic processing is therefore required for advanced reading and writing, for example, when doing research.
10. Finally, any reading and writing curriculum should incorporate effective ongoing assessment practices which integrate both reading and writing, and task requirements should be clearly explained to students. Students need formal feedback mechanisms that will reflect the expectations of academic settings. These, in turn, will allow for more effective adjustments of students performance in reading and writing tasks.

Conclusion

This chapter attempted to discuss and interpret the research findings by answering the three research questions and sub-questions formulated at the start of this study. Also, a number of recommendations were suggested to teachers of EFL. What is worthy of consideration is the close relationship between the aspects of metacognition that contributed to the understanding of the issue of illusions of knowing such as the effect of knowledge of self, of task and of strategies on students' monitoring and regulation of their reading/writing tasks in an examination situation. The chapter also stressed the need to embark on research projects to investigate other equally crucial

factors that may throw more light on the illusions of knowing, such as teacher metacognition and instructional practices, including more emphasis on literature courses to develop students' higher-order skills and critical thinking. These are variables of great interest that should be addressed in a further research study.

CONCLUSION

CONCLUSION

The present investigation attempted to understand and find out about the observed 'illusions of knowing' that undergraduate students at the University of Algiers 2 experience in reading and writing academic texts in examination situations. These illusions of knowing seem to be metacognitive in nature since they relate to both awareness and monitoring of the process of reading and writing. Although it is unquestionable that these two skills are demanding in terms of the mental cognitive efforts required, the fact that they are integrated into the same course and used for all subjects at university does make them more challenging from a metacognitive viewpoint. Thus, students are expected not only to have background knowledge and skills to deal with these academic skills, but also to control and regulate any failures that might hinder their processing or composing of written texts, more specifically in examination situations.

The main issue that this study has addressed is the metacognitive illusions that students face when, in an examination situation, the reading and writing tasks become more complex and require a higher level of thinking. The study has revealed a number of difficulties in relation to students' metacognitive knowledge that includes declarative, procedural and conditional knowledge, and their performance in the reading/writing exam tasks. It has also pointed to a number of monitoring inaccuracies that are the outcome of their knowledge deficit or their poor monitoring strategies.

This study was based on the notion of metacognition and its constituent components as described by Flavell (1979) and Brown (1987) essentially. Flavell's framework referred to metacognitive awareness of self, task and strategies and

metacognitive experience (Flavell, 1979). In the same vein, Brown's (1987) framework described metacognitive knowledge in terms of its components such as knowledge of cognition that comprises declarative, procedural and conditional knowledge, as well as regulation of cognition.

The aim of this study was to seek a possible relationship between metacognitive knowledge and academic achievement in reading and writing and to find out how first and second year students deal with knowledge, monitoring and regulation under examination conditions.

The research approach adopted to investigate this phenomenon was the Mixed Methods Design for data collection and analysis. The design was Explanatory Sequential whereby first, students' quantitative data were collected, followed by a qualitative phase that complemented the quantitative data. The aim of this mixed design was to understand and explain the students' illusions of knowing from different perspectives, taking into account their own views as well as those of the teachers of reading and writing.

For the quantitative phase, the first step undertaken was to provide an account of the students' metacognitive knowledge. For this purpose the Metacognitive Awareness Inventory (MAI) was used to elicit data on students' declarative, procedural and conditional knowledge necessary for the description of metacognitive processes. These data provided measurable scores for the 'metacognitive knowledge' variable.

Then, a second tool of data collection was used to tap into students' monitoring. This consisted of the Taxonomy of Metacognitive Judgments (TMJ) which is made of

statements about the degree of students' performance before, while and after doing the reading/writing exam task. These also provided measurement for the 'metacognitive monitoring' variable.

In addition to the MAI and the TMJ, the reading/writing examination scores were analyzed (including first and second year high, average and low achievers) in order to measure 'the achievement variable'. After describing the students' metacognitive knowledge and their levels of monitoring and regulation (in order to answer RQ1) a comparison was made between the students' metacognitive processes and their reading and writing achievement across the two years of study (in order to answer RQ2). Finally, a correlation was drawn between the main variables of the study i.e. metacognitive processes and levels of achievement, thus, providing an answer to RQ3 of the study.

Regarding the follow- up qualitative phase, it relied on a semi-structured interview to gather data on students' knowledge of self, knowledge of task and knowledge of strategy. The semi-structured interview also elicited their responses on recognition and monitoring of failure along with regulation of comprehension and composition processes. In addition to the students, the two reading/writing teachers were interviewed on task and strategy requirements because these two aspects seemed essential to the identification of students' difficulties when dealing with reading and writing tasks especially in examination situations. The teachers' responses were compared with the students' responses.

The results obtained from the quantitative tools of the study concern the variables of reading/writing achievement, students' metacognitive knowledge and metacognitive monitoring and regulation.

For the students' reading/writing achievement variable, the results indicate that 77.5% of first and second year participants were either low or average achievers, whereas only 22.5% are high achievers. Thus, the poor English proficiency level of the students can be attributed, on the one hand, to the nature of the academic reading and writing skills that are quite demanding at university and to their perceptions on how best to learn and to monitoring and regulate the reading/writing process.

In relation to metacognitive knowledge, the majority of students (89.6%) demonstrated declarative knowledge of self in terms of strengths and weaknesses, of important information to learn and how to learn especially when they are motivated. Yet, many of them (65.9%) said they are not good at organizing information; they do not know what teachers expect them to do and are not good at remembering. They also reported lack of control over the reading/writing process.

As far as procedural knowledge is concerned, 65% of the participants mentioned that the reading/writing strategies they currently use, worked effectively in the past. However, they did not seem to set specific goals for the strategies they used in the R/W tasks under study, they lacked awareness of what strategies to use and they did not employ effective strategies automatically.

In terms of conditional knowledge, most students (78.3%) stated that they read and write better when they have prior knowledge of the topic, they can motivate

themselves and they can compensate for their weaknesses. Yet, they declared they cannot vary strategies depending on the situation nor did they know when reading or writing strategies are most effective.

Thus, the students' results seemed to confirm a deficit of procedural and strategic knowledge since most of their statements related either to lack of knowledge of the range of strategies to employ or to their effective use. In this respect, Anderson (1991, p. 19) stated:

‘Successful second language reading comprehension is not simply a matter of knowing what strategy to use, but the reader must also know how to use it successfully and [to] orchestrate its use with other strategies. It is not sufficient to know about strategies, but a reader must also be able to apply them strategically’

This remark can also apply to writing since reading and writing are taught as integrated skills in the context of this research.

As far as metacognitive monitoring is concerned, the results attained demonstrate that the majority of the study participants monitored their reading/writing task performance at less than 50%. This is clear evidence that their level of monitoring is quite low. In addition, a comparison between the three achievement levels regarding monitoring reveals that, quite expectedly, high achievers had higher metacognitive monitoring than their average and low achieving counterparts with significant variance between high and low achievers, whether they were first or second year students.

The results obtained through statistical analysis indicate that the subjects had similar levels of **metacognitive knowledge** regardless of their achievement level (as evidenced by the p-value). However, these results are more significant in relation to metacognitive monitoring; this implies that high achievers monitor more than average and low achievers especially before and while reading and writing.

Comparing the results between the two levels of English degree instruction (i.e. year 1 and year 2), they are different with respect to metacognitive knowledge and monitoring: as expected, the second year undergraduates displayed higher monitoring levels than the first year subjects.

One of the objectives of this study was to find out any correlation between metacognition and academic achievement. This objective was attained by the calculation of the correlation coefficient. The score obtained (Pearson ' r '=.4) revealed that the relationship between the two variables of metacognitive processes and reading/writing achievement is positive and significant. However, it was more significant for the relationship between monitoring and reading/writing achievement. It is worth noting, though, that the metacognitive deficit in terms of monitoring is the most significant. This is supported by the students' results of low procedural knowledge and low strategic processing of reading and writing tasks.

As regards the qualitative data elicited through the semi-structured interview, students' knowledge of self, of task demands and of strategies and also their monitoring of failure in reading/writing tasks were compared to teachers' interview

data on task requirements and reading/writing strategies. They provided the following results.

For self knowledge, five students out of six (5/6), except one low achiever demonstrated awareness of their level of achievement which correlated with the teacher's responses. The low achiever, however, displayed inaccuracy of self knowledge.

As regards knowledge of task demands, the findings show a difference between achievement levels and how students perceive the reading/writing task. High achievers seem to perceive it more as a top-down process activating schema knowledge. But average and low achievers consider reading extensively and practicing as essential requirements of the task. These responses can be attributed to their lack of practice in the two skills and possibly their under-achievement in these two skills. For teachers, the task of reading and writing requires doing extensive reading, practicing writing, understanding grammar and moving from general reading to critical reading.

As concerns strategy knowledge, and similarly to task knowledge, high achieving participants appear to be using more top-down processing in R/W tasks, through 'brainstorming' and 'using context'. However, average and low achievers seem to rely more on bottom-up processing of text using 'key words', 'highlighting', 'checking dictionary' that might result from language difficulties they still encounter when reading and writing.

For recognition and monitoring of failure, most students (5/6) except the first year low achiever, admitted they can recognize failure when they read and write. The low

achiever, however, expressed uncertainty about her reading/writing breakdowns and thus gave evidence of metacognitive monitoring deficit.

What is also worth mentioning in students' monitoring is that only high achievers stated explicitly that they tried to fix reading/writing problems when they occurred; they used self-questioning and they reflected on the answers they provided. They undoubtedly displayed better metacognitive control over reading and writing.

As far as teachers' responses are concerned regarding task and strategy knowledge, the findings show that students and teachers' reading/writing requirements and strategies do not match, generally. The first year teacher of reading/writing' answers correspond more to his average and low students' responses than to the high achievers, especially in relation to the need to read extensively and practice writing. But the second year teacher's responses and her students' responses are more divergent. On the basis of these findings, a number of recommendations were suggested that can apply to reading and writing metacognitively so that the students' 'illusions of knowing' can be partially cleared.

Limitations of the study

This piece of research is far from being flawless. Although the area of metacognition has been treated in relation to many other topics in educational psychology and first language learning and studying in general, linking it to reading and writing in EFL was highly challenging. This research attempted to find a relationship between students' metacognitive processes and their achievement on reading and writing tasks in an examination situation. But the study of the relationship between metacognitive

knowledge, monitoring and regulation, which are highly demanded for classroom activities, and specially for examinations, still needs further investigation, with a larger sample of study to produce more valid outcomes. Therefore, the generalization of the present research results cannot be made possible without replicating the study on similar contexts with larger samples (Curwen, Miller, White-Smith and Calfee, 2010, p.130).

The methodology used to conduct this investigation was also challenging as the right conditions for data collection were not always met. Eliciting students' responses while they are answering examination questions is far from being natural or easy. Furthermore, other intervening variables such as motivation and self-efficacy which are related to metacognition have not been measured. This is due to the scope of the research that targeted two variables related to the students 'metacognitive processes used for R/W tasks: their level of achievement and their year of English degree study. Also the issue of L1 transfer in reading and writing has not been addressed. But this research study has paved the way to the investigation of other variables in future research.

Suggestions for further research

Teachers' metacognition and metacognitive instruction is a fertile area of investigation for those concerned with the development of strategic, active learning and critical thinking. A number of recommendations were made in order to improve students' metacognitive processes and enhance their critical thinking when doing academic tasks, such as including more literature in the skills courses and encouraging

discussion between teachers and students on their successes, failures and illusions of knowing. It is axiomatic that taking charge of learning through monitoring and regulation processes in reading and writing courses, as well as any other study context should be the aim of instruction in any educational setting in so far as the ultimate goals of these courses is to develop in students, at any level of education, the metacognitive knowledge necessary to produce autonomous students and reflective decision-makers.

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Appendices

Appendix A: Metacognitive Awareness Inventory (original)

	True	False
1. I ask myself periodically if I am meeting my goals.		
2. I consider several alternatives to a problem before I answer.		
3. I try to use strategies that have worked in the past.		
4. I pace myself while learning in order to have enough time.		
5. I understand my intellectual strengths and weaknesses.		
6. I think about what I really need to learn before I begin a task		
7. I know how well I did once I finish a test.		
8. I set specific goals before I begin a task.		
9. I slow down when I encounter important information.		
10. I know what kind of information is most important to learn.		
11. I ask myself if I have considered all options when solving a problem.		
12. I am good at organizing information.		
13. I consciously focus my attention on important information.		
14. I have a specific purpose for each strategy I use.		
15. I learn best when I know something about the topic.		
16. I know what the teacher expects me to learn.		
17. I am good at remembering information.		
18. I use different learning strategies depending on the situation.		
19. I ask myself if there was an easier way to do things after I finish a task.		
20. I have control over how well I learn.		
21. I periodically review to help me understand important relationships.		
22. I ask myself questions about the material before I begin.		
23. I think of several ways to solve a problem and choose the best one.		
24. I summarize what I've learned after I finish.		
25. I ask others for help when I don't understand something.		
26. I can motivate myself to learn when I need to		
27. I am aware of what strategies I use when I study.		
28. I find myself analyzing the usefulness of strategies while I study.		
29. I use my intellectual strengths to compensate for my weaknesses.		
30. I focus on the meaning and significance of new information.		
31. I create my own examples to make information more meaningful.		

32. I am a good judge of how well I understand something.		
33. I find myself using helpful learning strategies automatically.		
34. I find myself pausing regularly to check my comprehension.		
	True	False
35. I know when each strategy I use will be most effective.		
36. I ask myself how well I accomplish my goals once I'm finished.		
37. I draw pictures or diagrams to help me understand while learning.		
38. I ask myself if I have considered all options after I solve a problem.		
39. I try to translate new information into my own words.		
40. I change strategies when I fail to understand.		
41. I use the organizational structure of the text to help me learn.		
42. I read instructions carefully before I begin a task.		
43. I ask myself if what I'm reading is related to what I already know.		
44. I reevaluate my assumptions when I get confused.		
45. I organize my time to best accomplish my goals.		
46. I learn more when I am interested in the topic.		
47. I try to break studying down into smaller steps.		
48. I focus on overall meaning rather than specifics.		
49. I ask myself questions about how well I am doing while I am learning something new.		
50. I ask myself if I learned as much as I could have once I finish a task.		
51. I stop and go back over new information that is not clear.		
52. I stop and reread when I get confused.		

Schraw, G. & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19, 460-475.

Appendix B: Adapted (MAI)

Dear student,

This questionnaire is designed to inform research on reading/writing. Could you please tick the item that applies to you when reading and writing.

Thank you for your cooperation

1. I understand my intellectual strengths and weaknesses.
2. I know what kind of information is most important to learn.
3. I am good at organizing information.
4. I know what the teacher expects me to learn.
5. I am good at remembering information.
6. I have control over how well I learn
7. I am a good judge of how well I understand something.
8. I learn more when I am interested in the topic.
9. I try to use strategies that have worked in the past.
10. I have a specific purpose for each strategy I use.
11. I am aware of what strategies I use when I study.
12. I find myself using helpful learning strategies automatically.
13. I learn best when I know something about the topic.
14. I use different learning strategies depending on the situation.
15. I can motivate myself to learn when I need to
16. I use my intellectual strengths to compensate for my weaknesses.
17. I know when each strategy I use will be most effective.

Appendix C: Taxonomy of Metacognitive Judgments (TMJ)

Dear students,

Would you please answer the questions below as truthfully as possible. Thank you very much for your cooperation

Circle the percentage that applies to you in each of the items below ranging from

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

Question1: please circle the percentage before reading/writing

- (a) I can recollect/remember what I learned in the course of reading/writing the day of the exam.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

- (b) I think the reading writing exam is easy.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

- (c) I feel I know what the content of the reading writing exam is.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

Question 2: please circle the percentage while reading/writing

- (d) I feel confident in my reading writing exam.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

- (e) I find it easy to answer the reading writing exam questions.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

- (f) I think I am answering the questions correctly.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

Question 3: please circle the percentage After reading/writing

- (g) I think the reading/writing exam was easy.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

- (h) I think I performed well in the reading/writing exam.

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

Appendix D: S1 Reading/Writing Exam

University of Algiers 2/ Department of Anglophone Studies/ Reading and Writing/ S1/ 2016

Full Name: **Group:** **Mark:**/ 20.

FIRST READING AND WRITING EXAM

PART ONE: READING (8 points)

Read the text below, and then do the activities that follow.

Concussions are brain injuries that occur when a person receives a blow to the head, face, or neck. Although most people who suffer a concussion experience initial bouts of dizziness, nausea, and drowsiness, these symptoms often disappear after a few days. The long-term effects of concussions, however, are less understood and far more severe. Recent studies suggest that people who suffer multiple concussions are at significant risk for developing chronic traumatic encephalopathy (CTE), a degenerative brain disorder that causes a variety of dangerous mental and emotional problems to arise weeks, months, or even years after the initial injury. These psychological problems can include depression, anxiety, memory loss, inability to concentrate, and aggression. In extreme cases, people suffering from CTE have even committed suicide or homicide. The majority of people who develop these issues are athletes who participate in popular high-impact sports, especially football. Although new sports regulations and improvements in helmet technology can help protect players, amateur leagues, the sports media, and fans all bear some of the responsibility for reducing the incidence of these devastating injuries.

In response to the growing understanding of this danger, the National Football League (NFL) has revised its safety regulations. Players who have suffered a head injury on the field must undergo a “concussion sideline assessment”—a series of mental and physical fitness tests—before being allowed back in the game. In an effort to diminish the amount of head and neck injuries on the field, NFL officials began enforcing stricter penalty calls for helmet-to-helmet contact, leading with the head, and hitting a defenseless player. It is hoped that these new regulations, coupled with advances in helmet design, will reduce the number of concussions, and thus curb further cases of CTE.

Efforts by the NFL and other professional sports leagues are certainly **laudable**; we should commend every attempt to protect the mental and physical health of players. However, new regulations at the professional level cannot protect amateur players, especially young people. Fatal cases of CTE have been reported in victims as young as 21. Proper tackling form—using the arms and shoulders to aim for a player’s midsection—should be taught at an early age. Youth, high school, and college leagues should also adopt safety rules even more stringent than those of the NFL. Furthermore, young athletes should be educated about the serious dangers of head injuries at an early age.

Perhaps the most important factor in reducing the number of traumatic brain injuries, however, lies not with the players, the coaches, or the administrators, but with the media and fans. Sports media producers have become accustomed to showcasing the most aggressive tackles and the most intense plays. NFL broadcasts often replay especially violent collisions while the commentators marvel at the players’ physical prowess. **Some sports highlights television programs** even feature weekly countdowns of the “hardest hits.” When the media **exalts** such dangerous behavior, professionals are rewarded for injuring each other on the field and amateurs become more likely to try to imitate their favorite NFL athletes. Announcers, commentators, television producers, and sportswriters should engage in a collective effort to cease glorifying brutal plays. In turn, fans should stop expecting their favorite players to put their lives on

the line for the purposes of entertainment. Players must not be encouraged to trade their careers, their health, their happiness, and even their lives for the sake of a game.

1- Circle the letter corresponding to the right answer.(2,5pts)

- 1) The author apparently believes that
- a. NFL officials have not thoroughly implemented stricter safety regulations
 - b. doctors need to do more research about the potential long-term effects of CTE
 - c. amateur athletes suffer more serious long-term effects of CTE than professional athletes
 - d. fans share some of the blame for athletes' injuries
 - e. young people should not be encouraged to play football due to CTE risks
- 2) Based on information in the passage, it can be inferred that all of the following statements are true except
- a- tackling is not always dangerous; however, players who use improper tackling form may injure others
 - b- scientists have established a link between players who die untimely deaths and the onset of CTE
 - c- NFL officials have done little to address the problem of CTE
 - d- athletes who are praised for exceptionally brutal hits are likely to continue engaging in such dangerous behavior
 - e- the NFL has done more to mitigate future cases of CTE than youth, high school, or college leagues have done

3) According to the passage, which of the following factors contribute(s) to the incidence of CTE in amateur players?

- I. inconsistent application of safety regulations for all levels
- II. lack of education about the dangers of head injuries
- III. amateur players' desire to emulate professionals

a- I only b- II only c- I and II only d- II and III only e- I, II, and III

4) As used in paragraph 3, which is the best synonym for **laudable?**

a- praiseworthy b- ineffectual c- memorable d- audacious e- satisfactory

5) As used in the final paragraph, which is the best antonym for **exalts?**

a- ignores b- misrepresents c- praises d- reports e- criticizes

2- What is the general idea of the text?(1 pt)

.....

.....

.....

3- Answer the following questions according to the text. (2 pts)

a- What does the author emphasise when describing sports media? Justify your answer

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- b- *Explain in your own words the author's last sentence, 'Players must not be encouraged to trade their careers, their health, their happiness, and even their lives for the sake of a game'.*

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4- Summarise the passage into one paragraph.(2,5 pts)

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PART TWO: WRITING (10 points)

Activity 01: (3 pts.) Add an appropriate topic sentence (1pt.) and a concluding sentence (1pt.), and also underline the sentence(s) that break unity (1 pt.).

.....
.....

First of all, a good add is simple. It lets pictures, not words, tell the story. Of course, all ads need some words, but a good ad has a powerful headline and only a small amount of text. Second, a good ad is directed to a particular group of consumers. For example, ads for face creams are for older women, and ads for motorcycles are for unmarried young men. Third, a good ad appeals to emotions. Women in the thirty-to-fifty age group, for instance, want to look and feel younger, so face creams ads tell them women who use XYZ cream will look like the twenty-year-old models pictured in the ad. Teenagers want to feel popular, so ads directed at teens often show a happy, confident-looking group of young people using the product in the ad. Teenagers have a surprising amount of money to spend, so advertisers research teenage fads and fashions.

.....
.....

Activity 02: (3 pts) Determine the type of mistake (fragment –F- or parallel structure –PS-), and then rewrite the sentences correcting the mistakes when necessary; otherwise, write Correct –C-.

- 1- Stoics deny the importance of such things as wealth, good looks, and having a good reputation.(.....).
- 2- Bruce Wayne enjoys donning his Batman costume, answering the Commissioner's phone calls, and saving Gotham City from cruel villains like the Penguin. (.....).
- 3- After they tried to defraud the government on their federal income tax return. (.....).
- 4- Many people vacation in Maine because the state offers outdoor activities and historical sites.(.....).
- 5- He tried hard to convince the jury, but to no avail. (.....).
- 6- Sir Humphry Davy, the celebrated English chemist, was an excellent literary critic as well as being a great scientist. (.....).

Activity 03: Choose ONE of the following topics to write a meaningful paragraph. (6pts)

Topic 1: Studying at the secondary school VS. Studying at the university.

Topic 2: Qualities of a good boss.

Topic 3: Describe a person who has had an influence on your life.

Chosen Topic nb.....

[illegible]

Appendix E: S3 Reading/Writing Exam

UNIVERSITY OF ALGIERS II - BOUZAREAH
FACULTY OF FOREIGN LANGUAGES
DEPARTMENT OF ENGLISH & ANGLOPHONE STUDIES
LECTURER / TUTOR: Mrs. A. BEZZAZI

READING & WRITING
SECOND YEAR - LMD / Groups: 2 & 3
2015-2016

SECOND SEMESTER (S4) EVALUATION TEST IN READING & WRITING (April 2016)

PART ONE: READING (07 points)

Read carefully the excerpt below from Ngugi wa Thiong'o's *The Martyr*, and then answer the questions that follow it.

Mrs Hill had not yet gone to bed. She had sat up, a multitude of thoughts crossing her mind. Ever since that afternoon's conversation with the other women, she had felt more and more uneasy. When Njoroge went and she was left alone she had gone to her safe and taken out her pistol, with which she was now toying. It was better to be prepared. It was unfortunate that her husband had died. He might have kept her company.

She sighed over and over again as she remembered her pioneering days. She and her husband and others had tamed the wilderness of this country and had developed a whole mass of unoccupied land. People like Njoroge now lived contented without a single worry about tribal wars. They had a lot to thank the European for.

Yet she did not like those politicians who came to corrupt the otherwise obedient and hard-working men, especially when treated kindly. She did not like this murder of the Garstones. No! She did not like it. And when she remembered the fact that she was really alone, she thought it might be better for her to move down to Nairobi or Kinangop and stay with friends a while.

But what would she do with her boys? Leave them there? She wondered. She thought of Njoroge. A queer boy. Had he many wives? Had he a large family? It was surprising even to her to find that she had lived with him so long, yet had never thought of these things. It was a shock to her. It was the first time she had ever thought of him as a man with a family. She had always seen him as a servant. Even now it seemed ridiculous to think of her houseboy as a father with a family. She sighed. This was an omission, something to be righted in future.

Appendix E: S3 Reading/Writing Exam

QUESTIONS: Do not exceed the space provided for the answers. Leave the left margin.

1- What is/are the key idea(s) in each paragraph? USE YOUR OWN WORDS.

Paragraph One:

40

Paragraph Two:

Paragraph Three:

Paragraph Four:

2- In a short paragraph, of about 6-7 lines, explain the significance of paragraph four (from the extract above) in the whole story, especially in relation to what it reveals about Mrs Hill.

In a well-structured ESSAY of four paragraphs (introduction, two body paragraphs, conclusion), describe that restaurant in detail. Respect the special order, and use sensory details as well as a vivid language. Mind your handwriting and the presentation of your paper. Do NOT exceed eighteen (18) lines. Leave the left margin.

***** END OF THE ANSWER *****

GOOD LUCK!

Appendix F: Semi-structured interview to students

1. How do you qualify as a reader/writer? Justify
2. What techniques do you usually use in reading/writing?
3. What are the requirements/demands of the reading/writing task?
4. What is/are the factors that you think are necessary for high achievement in reading/writing?
5. Do you think about how well you are doing while reading and writing?
6. What do you do when you recognize that you are not doing well in reading/writing?

Appendix G: Semi-structured interview to teachers

1. What are the requirements of the reading/writing task? What does the reading/writing task require from the students to do?
2. What techniques should students use for effective reading/writing?

Appendix H: Students' interview transcripts

First year high achiever interview transcript

Interviewer: *I have some questions for, so the first question I want you to tell me how you qualify as a reader?*

Student: *How do...*

Interviewer: *how do you qualify as a reader or writer?*

Student: *How do...how do ...qualify myself?*

Interviewer: *qualify yourself yes.*

Student: *I am more of a reader but they say every reader can be a writer so I hope I will be*

Interviewer: *yes, but what is your level in reading? I mean in reading/writing, what do you, how do you qualify your level in R/W?*

Student: *you mean if it is average, intermediate or eh*

Interviewer: *that's it.*

Student: *I may go with advanced*

Interviewer: *very good*

Student: *yea I love reading*

Interviewer: *why do you think you are of an advanced level?*

Student: *why do...because while reading I am not only reading the words but also I can also use my critical thinking which is a must in reading.*

Interviewer: *right*

Student: *it goes beyond words and you have to read between the lines too.*

Interviewer: *yes, another thing is: what are the common techniques you use in R/W? You have a R/W task (student: eh)*

Interviewer: *or the R/W test, so what are the most common techniques you mostly use in R/W?*

Student: *like, for example for reading I take the text if it is like a long one, I read it like from the first beginning to the end once and then I check the questions and then I reread again so I know which part I have to base on more so like so later on I can*

answer the questions correctly and as for writing I use a lot of brainstorming, you know like the spider map so I don't (interviewer: ok) I don't miss any details later because you know while the exams I may just be stressful.

Interviewer: *yes*

Student: *in order to not lose any details I use that*

Interviewer: *right*

Interviewer: *so basically brainstorming in writing, rereading*

Student: *rereading, using drafts, and correcting again*

Interviewer: *yes, drafting*

Student: *well, if I can I could just check the vocabulary like from the dictionary if I can*

Interviewer: *the dictionary*

Student: *if it is not a test of course*

Interviewer: *yes, common reading, everyday reading*

Student: *yes*

Interviewer: *now, for example, what do you think are among the factors for high achievement, so which factor do you think is the most important or which factors are the most important for high achievement in R/W? How do you achieve better?*

Student: *don't stop at just reading, like emmm if you read something and you learn from it and try to practice it (interviewer: outside) too, so emm your reading will get errrrrr*

Sorry, I said about reading, for the reading part you have to use like if got example I learn new vocabulary I better use it in my writing again so that I don't lose it or...

And if there is an information or a new style that I have noticed I try to practice that style while writing so kind of one thing helps the other one like ...

Interviewer: *yes*

Student: *that's why the model exists in R/W? (Interviewer: ehem)*

Student: *it goes, it's a completion, one completes the other so if you learn something in reading, you have to practice it in writing and while you learn writing you know how to like while you start reading an article for example you know if it is an argumentative essay or if it is an opinion one (Interviewer: ehemmm)*

Student: *so yeah*

Interviewer: *so basically you mean ...*

Student: *writing helps reading, reading helps writing*

Interviewer: *ok, so you mean that the key factor for achievement is to make use of what you...*

Student: *make use of what you learn*

Interviewer: *thank you*

Student: *being the structure or the vocabulary or...*

Interviewer: *yes, yes, you, you practice the style, yes*

Student: *style yeah more*

Interviewer: *another question yes, you are, you are in the process of R/W (Student :ehemm) whether emmm it means in the session or in the day of the exam. Now, do you think about how well you are doing?*

Student: *yes, I think how well, how far I can go like I try my best that's all I can say, yes like I try to make the best of it even if sometimes it really gets complicated but I try to like ...(interviewer: how?)*

Student: *how?*

Interviewer: *for example, let me, let me (student: give me an example) do you recognize, the first question do you recognize when you are doing well and do you recognize when you are doing badly?*

Student: *yea, yea*

Interviewer: *do you make the difference?*

Student: *yes I do*

Interviewer: *ok so, what do you do when you recognize that you are not doing well*

Student: *when I am not doing well!*

Interviewer: *yes what do you do?*

Student: *when I am not doing well, since I know there is something wrong somewhere so I just try to err think again about the question, I forget my first opinion or the first*

thought, either I think it's wrong and try to ask myself like why do I think it's wrong? What's wrong in that idea or the thing I am writing, I try to fix it

Interviewer: *do you remember, do you still have in mind (student: yea) the things you do to fix the problems you encounter when you read and write?*

Student: *emmm, well I can say like generally I may go back to the text, read it again, if the problem is with the answer for the question like the comprehension questions, I just go to the text, like reflect like or you know what I do, what else I do is stop the question I stop it (interviewer: answering, yes) yea, put a pause on that, go to do another activity, like a different one and then I go back because otherwise I'll be just complicating things and that wouldn't make it any better so, I go, put do another activity or finish a paragraph or synonyms, antonyms etc, and I go back to that question so and then I have a clearer mind and clearer set of mind then I be able to answer correctly*

Interviewer: *ehemmm right*

Student: *well, or less badly*

Interviewer: *yes, it means you just fix, so at the end of, at the end of your test, what do you do? You finish your test ...*

Student: *finish like before, before (interviewer: submitting back the paper)*

Student: *just read I'll check because... it happens that I always forget something, a little detail...so now what I try to do is whenever I finish I feel like finishing, it is over, I reread again all the answers and then I check like if there in one in that question one there is an a,b,c I check if I have like all the answers a,b,c or written again and then I reread my paragraph or of course before writing them again all on the exam paper, I have them like, I already use the draft so I'll check again the grammar, any punctuation mistakes, any questions that I may have missed answering, that's it.*

Interviewer: *great! That's it I think yes eh I forgot one, I skipped one. Do you think that, what are the demands of the R/W task?*

Student: *the demands*

Interviewer: *the demands, what does it require?*

Student: *ehemmm you have to like really open your mind, like use it, literally use your brain (Interviewer: use your brain yeah) everything, any like any background or information you have, if it, you know if it's a topic that we are familiar with, if it's most of the time about something new, so yeah, most of the time it's new or different, so I just take time, don't panic, like if it's a new subject, you have never heard that*

word, try to understand the word from context instead of like I don't know it, I'm not gonna do anything (Interviewer: yes) because that one helps it'll stress you out

Interviewer: yes, yes the demands

Student: take your time to read clearly, don't rush to go to the questions and answer them without really understanding the text

Interviewer: I think that's it

Student: use draft papers

Teacher: thank you very much

Student: Thank you

First year average achiever interview transcript

Interviewer: *tell me how you qualify as a reader or writer? How do you qualify yourself?*

Student: *emmm, qualify a reader...?*

Interviewer: *as a reader, where are you exactly, which level are you as a reader/writer?*

Student: *average*

Interviewer: *average reader, yes, yes, why?*

Student: *I don't, I don't read a lot* (Interviewer: *ehem*) student: *yes*

Interviewer: *what else?*

Student: *I read articles on the net (yes)*

Interviewer: *is this enough?*

Student: *not a lot, not a lot I think it's not enough*

Interviewer: *so this is why you are an average ...* (student: *yes*)

Interviewer: *even in writing! Same thing for writing? So what are the...we have, you know when we read and write we use certain techniques ok? We have certain techniques to be used, what are your techniques of reading and writing? What do you use when you read and write? In the usual sessions or in the test?*

Student: *emm I use key words in the test* (interviewer: *ehem*) *errrr to I use key words to more ehhhh* (interviewer: *to understand*) *to understand*

Interviewer: *yes, what else? Use key words, what else?*

Student: *brainstorm techniques yes... I learn it from study skills* (interviewer: *yes, in study skills, right*) *yes*

Interviewer: *any other techniques? You use key words, you brainstorm*

Student: *I (unclear word) the headline*

Interviewer: *you highlight, ok*

Student: *yes, that's it*

Interviewer: *headlines, yes, now, what do you think, what are the demands of the task? What does the R/W task demand from you?*

Student: *emm I think you have to read a lot to... (ehem) to better yourself in reading and writing.*

Interviewer: *read a lot, what else? Try to remember what the teacher all the time tells you about what you are required to do in R/W?*

Student: *you have to practice (ehem) essays*

Interviewer: *writing essays, what else? Try to remember what the requirements are? What are you required to do when you have a task in R/W?*

Student: *to concentrate...*

Interviewer: *to concentrate, ok right so for example of course you have some friends who are, may be your classmates, some friends who are not average, who are high achievers, why do you think, what is the key factor that makes them, key factor one or many factors that you think make them good in R/W? They achieve better, what is this thing that is special about them?*

Student: *em they read books* (interviewer: *reading*)

Student: *yes*

Interviewer: *it means outside the session, yes they read a lot, extensively, what else?*

Student: *they write*

Interviewer: *they practice* (student: *yes*)

Interviewer: *they practice, ehem, what else?*

Student: *they do their homework* (Interviewer: *usually*)

Student: *yes*

Interviewer: *yes, what else?*

Student: *they are clever in class, they understand rapidly*

Interviewer: *yes, understand rapidly, yes so you think this is important?*

Student: *what?*

Interviewer: *I mean understanding rapidly*

Student: *yes it helps a lot*

Interviewer: *yes, so it makes you... work with the task easily*

Student: *yeah*

Interviewer: *great! Now you are having the, you are in the task, while you are doing the task, do you know exactly when you are doing well and when you are not doing well?*

Student: *yes*

Interviewer: *yes, you can say, so if you are doing well, that's fine, now if you are not doing well, what do you do when you recognize that you are not doing well?... there are problems.*

Student: *I try to correct ...faults, answers I read the text more and more I try to focus on the text to...*

Interviewer: *you focus on the text, what else?*

Student: *that's it*

Interviewer: *yes it means you read the question and you recognize clearly that you are answering the wrong answer, so you try to...*

Student: *I try to correct*

Interviewer: *to what extent you notice that you are doing the right thing, it means while you are correcting, you are doing the right thing, to what extent? Is it to a large extent?*

Student: *I don't think so*

Interviewer: *so you are not...*

Student: *I'm not sure about ...I am correcting well*

Interviewer: *correcting, yes. Ok thank you very much*

First year low achiever interview transcript

Interviewer: *please tell me, how do you qualify as a reader or writer?*

Student: *err the percentage or?*

Interviewer: *percentage, level, what do you think about your level?*

Student: *because I don't read a lot before emm*

Interviewer: *so do you...*

Student: *I have a big story I was scientific and I didn't read so much about English books so it's just destiny but it's not something bad I enjoyed it. Now when I am...*

Interviewer: *so, what is your level in R/W?*

Student: *I took 08 as a mark 08*

Interviewer: *yes 08 but do you think...*

Student: *I am near of the average but I need some, I don't know some some hard work, some individual hard work*

Interviewer: *you are below average you think?*

Student: *yea, I am so near, because if I work in the future I am sure that I will...because I never read and I take 08 as simple as it is*

Interviewer: *no the mark is not reflection, a total reflection of your level, you see!*

Student: *I took some techniques from the teacher and I try to develop it in the future by reading and writing*

Interviewer: *so you are going to tell me this, now since you are saying that you have problems in R/W, what are the techniques that you use in R/W usually, what are you using now? In the sessions or in the exam?*

Student: *I try to take the simple model sometimes err, the model in which the teacher said for example in emm in the topic sentence for example the teacher said that emm we have to learn it emmm sorry we have to write in general and er I don't know something like that so I try to check, I don't know, I try to take emm may be only the most important point because I don't have a high level of writing but I try to do, I don't know, at least the average of writing that's all*

Interviewer: *so what do you use as well? You take the model, you take into consideration the example from the teacher*

Student: *yea I try to check something short and select, I select some, I try to select the main point*

Interviewer: *you mean in the text?*

Student: *make it general, easy, simple correct something like that. I try to write something correct without mistakes and simple. May be I can't create, my problem in writing is that because I didn't read so much so I can't write something original, I only check the ...*

Interviewer: *you are limited*

Student: *yes of course that's my problem, I take the technique, but I can't create something*

Interviewer: *it means you follow the teacher but can't do more*

Student: *exactly*

Interviewer: *because you don't read much*

Student: *yes*

Interviewer: *so what is the, what do you think are the demands of R/W?*

Student: *to when we read so much I think that we get more experience in writing as style or I don't know we can do some I don't know but we have to read, listen also*

Interviewer: *you have to read and listen*

Student: *yea that's my opinion*

Interviewer: *yes sure so for example what does the teacher usually tell you about what you are required to do in R/W? What are you supposed to do?*

Student: *I don't know I think that our teacher said that we have to read too much and she said that we have to practice too much and try to create or introduce something original and practice more, she always say that practicing helps us to develop and...develop our level*

Interviewer: *to practice, yes, yes now of course you have some classmates, you have your friends with you who are high achievers in reading and writing, why do you think she is or they are achieving better, what is the, what is the factor that lead them to be good in R/W?*

Student: *I think that not only that student, the others, they had many information, they read, sometimes they had, I don't know, information about American life, British life,*

some topics I don't know they can create when they had a lot of information, they can create they can have special style

Interviewer: *so creativity is important because they have a lot of background information*

Student: *yea to have special style and original style is important I think to be in the high level*

Interviewer: *now you are in the task, you are in the task in class or in the exam what happens is that, you have the task in front of you, in class or in the exam, do you know when you are doing well and when you are not doing well?*

Student: *I feel, sometimes I didn't understand the topic but I try to check may be I don't know I try to get some points may be sometimes of the form or the context. I try to check sometimes I know it before, I don't know, I try sometimes to write something not let it as it is*

Interviewer: *so you recognize, you are reading and writing in the exam or in the session and then you recognize that you are not answering in the right way, you know it, you are using the rough paper. You are telling me that you feel it. You feel that you are not doing well. Now*

Student: *I think that sometimes I think I haven't control I can't I don't know, I try, I work, I listen to the teacher, I follow but it is still a percentage of hard work, of habit, by time may be if I read or I don't know or usually, I practice more or may be if I be ready may be I give more*

Interviewer: *this is the last question, you finished your exam, usually what is the extent of your achievement t when you finish the exam, most of the time?*

Student: *I don't understand it*

Interviewer: *it means you finished your exam or you finished the R/W task, what is the extent that you have learned something*

Student: *yes sometimes I learn something new by reading the passage for example may be not a lot but I think that I learn something new every day, I don't know, new vocabulary, new techniques and so on*

Interviewer: *thank you very much*

Second year high achiever interview script

Interviewer: *so my first question please is how do you qualify as a reader or writer?*

Student: *myself*

Interviewer: *yes, what is your level in reading and writing?*

Student: *Well, I quite feel confident about myself in both reading and writing and I see myself improving especially in writing and I would like to say thanks to the teacher of this year because she contribute in this a lot*

Interviewer: *so what is your level?*

Student: *I can say (interviewer: high, medium??) high*

Interviewer: *great so, number two, now, what are, do you know about the requirements, the demands of the reading/writing task? When you are given a task in reading/writing either in the usual sessions or in the examination, what are you supposed to do?*

Student: *eh I am supposed to of course to read, to read it carefully many times and try to understand the hard terms words of the text through the context and then writing I try to follow the instructions that the teacher taught us on class and the for example the steps of a descriptive essay or a narrative essay each one alone*

Interviewer: *so what are the things you learn from the task, for example?*

Student: *I learn how to first to assess myself, how to pay attention o my mistakes, to not repeat them again another time to make to improve my style of writing more and make and... that's it*

Interviewer: *ok, right! So what kind of techniques do you use in reading/writing? Different techniques you use most of the time let us say whenever you have a reading task, it means what are the usual the frequently used techniques you employ as a reader/writer in your reading/writing*

Student: *do you mean the techniques the teacher give us or my own techniques*

Interviewer: *your own techniques, that most of the time you use whenever you have*

Student: *generally, I don't have that like an academic or specific technique to follow, I just go for it (interviewer: yes, go for it meaning! Imagine, try to remember again your task and then what you were doing?*

Student: *in reading I read the text (interviewer: yes) I if there is difficult words I look for them*

Interviewer: *how do you look for them?*

Student: *if I could understand from the context so it's good, if I can't I have to look in the dictionary and in writing I, I brainstorm my ideas and then I try to organize them and then I try to connect those ideas and then I try to put them in a good way to make the style of writing interesting*

Interviewer: *great, yes, so you are saying that eh you are among the high achievers in reading/writing. Now, what do you think, it's about you and it's about your colleagues who are also high achievers in the classroom or elsewhere about reading/writing. What do you think is the key reason behind their high achievement or the key factors that help them to be high achievers in reading and writing, or what made you a high achiever in reading/writing?*

Student: *reading (interviewer: reading) yea reading help me a lot because when I read a novel for example, I pay attention to some expressions and then I, I put them down on a notebook and then I, I to use them for, for further use and also I learned some new terms, I see the style of the writer, I'd like to like to imitate him which this really help me a lot to improve my writing*

Interviewer: *is it the same for the others, do you believe that it's same for the others, this is what they do, or is there any thing*

Student: *for my colleague we all experience the same the same, we all agree on that reading really improve even speaking (interviewer: yes, it's related) yea*

Interviewer: *great, so for example now you are doing you are working on the task whether in examination or in usual sessions, now do you recognize clearly when you are making or when you are writing or when you are answering correctly and when you are not answering correctly, do you recognize it do you realize it*

Student: *yea sometimes I do I feel that my answer is not that sufficient for the question I let it for aside and I go to answer the easy ones and then I come back to it read it more and more and several times to try to go straightforward to the right answer and sometimes if I can't I just write what I can*

Interviewer: *you mean if you don't find the answer, yes you are satisfied with what you have, great, when you are doing well what do you do?*

Student: *I just try to to confirm that the it is relevant to the question, I mean I don't rush just because I'm happy I found the right answer I confirm more so I don't make a mistake and then I'll get the bad mark (interviewer: ok that's great thank you)*

Second year average achiever interview transcript

Interviewer: *can you tell me please how do you qualify as a reader/writer?*

Student: *myself?*

Interviewer: *yes, what is you general level in R/W?*

Student: *ehhh, reading, it's ok I have a good level, I understand quite good, but in writing perhaps I have to make more effort and (yes) because I don't write that much and yes I like perhaps some... (you need training)*

Student: *yes training*

Interviewer: *so what is your level? High, average, below average?*

Student: *average, I will say average (average?) average yes*

Interviewer: *an average reader and writer*

Interviewer: *so now you have the task of reading and writing, now what are the demands of the reading/writing task? What does it require from you as a reader and writer?*

Student: *reader we have to start just first we have to write eh to read to have a general view then eh what I do generally that's why...(interviewer: no, no, no this is the other question, carry on, it's ok) I read a general view to have a general view about the topic and ehh what is the text about yes and then I start to understand more deeply and read between lines and what we have behind this text and the purpose of it and for writing it depends of the topic if we have a task like if the teacher demands us to write about something, we are guided so we have to write something about that topic and if ti is free writing about what I want to write that's another thing perhaps I don't know to be creative and like poems we have to have rhymes it depends (interviewer: yes, great yes)*

Interviewer: *so we come back to the question I don't mean yes I need those ideas but you anticipated anyway it is not a problem...I mean do you know about what you are supposed to do, what is your task as a reader/writer, what you are supposed to do when you have a reading/writing task?*

Student: *yes (interviewer: for example, give me examples)*

Student: *for reading for example we have the text and we have a question to questions to answer and then perhaps we have words to explain especially in the context and perhaps for example no it is writing (interviewer: it's ok both of them)*

And for writing, we have a task to do and we are guided as I said before we are guided the teacher give us something to write about and we have to follow, we have to have an outline and to (interviewer: you have to write an outline) yes because we are guided as I said before so we have to have a specific (interviewer: organization) yes and answer

Interviewer: for reading, it's questions to answer, words to explain and (pause) title, she give us ...title (interviewer: yes) and perhaps the meaning of some sentences like I said before read between lines and to perhaps some hidden (interviewer: meanings) meanings yes

Interviewer: so how do you find this reading between the lines?

Student: if you know the language it's quite easy to understand but if we don't, we are not accustomed to this language it is difficult (interviewer: right) we have to know the language because for me for example when I learned English it is not the same as French (interviewer: sure) when I read French I understand everything but English it is coming but

Interviewer: it is coming it is good

Interviewer: now for example of course you have in your classmates of course as you are may be a good achiever may be in another language in French or in any other domain, there are some of your classmates who are high achievers in reading/writing, now what do you think is the key reason behind good or high achievement in reading/writing?

Student: I think they read a lot perhaps and they write a lot, they because I think that when you have something to, when you want to master something, you have to train you have to train yes because training is the key if you want to be good at something you have to train and you can do, you can reach that level

Interviewer: by training yes, now for example you are in your usual classes reading/writing or you are in the day of the exam, now do you recognize when you are doing well and when you are not doing well

Student: generally yes because I know if I remember something just it pups I know the answer I know that I am going to do, but reading and writing it is more about the level that you have in English because generally it is not what really we do about ehhhh you have the rules the teacher give us the rules when you have the rules then you can it is about the language if you master the language or not because writing we write it's our own words and our own thoughts and our own style and reading perhaps it is more guided but also if we explain a word it is also our own (interviewer: meaning) meaning yes what we understand about (interviewer: your own interpretation)

Interviewer: *so you can make the difference when you are doing well when you..., now you are not doing well, you are not doing well, what do you do? You know you find yourself at the level when*

Student: *I redo for example for writing, I don't like what I write sometimes I put aside all what I wrote and I start over when I have time of course because we are limited* (interviewer: *yes, time constraint, so this is the only thing you do!! you put aside or what do you do? Or other things in case not all the writing is bad so*)

Student: *yes I select critical thinking , we have to choose what is good and what is bad and to select and to have we have to be concentrate and start because generally the stress does all the the stress and ehhh for reading I start I try to remember what perhaps I saw the word and sometimes when I don't know the word I start to, if it is a hard word like a composed word I start to separate the word I try to understand if I can pick up one or I will understand the composed word* (interview: *cutting to pieces*) *and also sometimes it helps me because it is Latin so sometimes the word in French it is the same in English and it helps me a lot this* (interviewer: *not all the time*)

Interviewer: *when you recognize you are doing well, (student: yes) what do you do?*

Student: *I try to make it better sometimes and spelling mistakes the grammar rules and for writing and for reading ehh capitalization I review all my paper and to see if something can, I try to make it better, why not if I had time and I liked what I did and it gives confidence you have you can do better*

Interviewer: *that's great, thank you very much*

Second year low achiever interview transcript

Interviewer: *so my first question for you is how do you qualify as a reader/writer?*

Student: *qualify myself for...*

Interviewer: *yes, how do you qualify yourself? Simply what do you think is your level in R/W?*

Student: *for me personally my level in R/W eh when I compare myself for last year and this year I remarked that I have progressed in my writing and also in my speaking or my reading because I learnt many skills and many new ideas and new methods in order to be good and in order to have more vocabulary and more knowledge about*

Interviewer: *so at the moment what is your level? Very high, medium, low*

Student: *no I am medium, in between*

Interviewer: *so what do you think are the requirements, what are the demands of the task, of the R/W task, what does it demand from you as a reader/writer?*

Student: *of course it demands a lot of reading and also a lot of practicing of writing errr writing essays or writing any text, any brief paragraph in order to ameliorate and to errr to be how to say it? To correct myself*

Interviewer: *right, yes, so what do you do as a reader or as a writer in the task? What kind of techniques do you use in a R/W task or a R/W exam? How do you deal with the task?*

Student: *for my exam in R/W, first of all I start with writing and my process for writing an essay it's, first task is clustering and em because I find this way err make me limited and have my and have er my limit in writing so first of all it is clustering, after this it's an outlining of course about how I will manage these ideas and after this I make the outline. Well I will develop these ideas and after I will write my essay so I need for my writing four drafts and for my reading which will get the last one I read the whole text and after this I read each paragraph individual and I try to have a main idea of each paragraph and then like this I will have my idea, the main idea of this text.*

Interviewer: *right! So at the end you create the main idea*

Student: *sometimes I read I read the question of reading and I start reading the text in order to have what is my question about and to pick up out the idea, the key word*

Interviewer: *right yes, this is about the techniques you use, yes so for example now, you are saying that you have your own way of dealing with the R/W task. Now what do*

you think for example is the key factor, the key reason behind high achievement in R/W? What do you need to have, what do you need to do? What is the key reason so that you become a high achiever in R/W?

Student: emm I my teacher of last year advised me and I found this advice eh help me a lot which is reading and read a lot, err reading makes you develop your reading, enriching your vocabulary and also progressing in writing.

Interviewer: right, yes so, you are for example in the process of R/W in an exam or in the usual classes. Now, do you recognize when you are doing well and when you are doing badly? Do you make the difference?

Student: now it's the same, it is the same way, I usually have a same, a same way and same steps, my teacher when she pass around to see she always told me, it is well organized, it is very clear and so specific, for example, when for description, I make two parts: the moral, the psychological part and the appearance part and the appearance I make then another... how do we say it? another eeeerr.

Interviewer: Let me explain, so this is the process, now for example, you are in the day of the exam, or you are working on your test, do you find out easily, or do you recognize when you are not answering correctly? Do you know it or not?

Student: no I know it, I know it, it depends for reading, it depend of the quality of the text about err sometimes, there is some text who contains a lot of words that may be I have never heard or never saw in my studies, but for writing when I, how to say? When I feel that I am wrong I try to change it and to ameliorate and to correct, in other word to correct myself and to ...this happen to me this last semester when I was writing my essay in the test and I was confusing so I rewrite and recognize my answering

Interviewer: so this is what you do when you feel like you are not answering correctly, you do it again?

Student: I do it again yea

Interviewer: when you are doing well, what do you do? You feel that you are answering correctly

Student: when I am answering correctly, I try to verify like the grammar, the punctuation, the spelling mistakes and the usual mistake the err make students .

Interviewer: you revise

Student: *I revise yea and sometimes I didn't find time so sometimes there is some confusion on revising but when I rewrite the question on the last paper I try to read it again*

Interviewer: *this is the last version*

Student: *when I feel that time is over*

Interviewer: *ok, time is important. Thank you very much*

Appendix I: Teachers interview transcripts

Second year reading/writing teacher transcript

Interviewer: First of all, what are the requirements of the reading/writing task?

Interviewee (teacher): the requirements ehmm it means what I ask students

Interviewer interrupts what you ask students to do

Interviewee: all right, in reading, in reading they are required, first to have a general meaning of the text and second to be able to read behind the lines means having the deep meaning of the text, grasping the deep meaning and third, to be able to have critical mind about this text, to have to develop that critical spirit about the text means to analyse certain aspects from the text. For example, in the first semester, em we have the short story, the literary short story to deal with and so they were required to first give an overall idea about the story and then they read the story and then they were required to em to try to understand the message of the author and then em then they had questions not only on comprehension, vocabulary but also question on responding to that story em through the analysis for example of a passage or the characters from the story, so to develop a critical mind about what they read.

In writing, in writing they are required em in academic writing they are required first em to know how to structure their essay, em and second it means an essay in general and second to be able to write certain genre, genres of essays, for example, descriptive essay, narrative essay em so to be able to know what these texts involve in order to write, to be able to write descriptive text, narrative texts, right, expository texts (interviewee right), this is in academic writing.

In creative writing, eh they are just required to em use their imagination (interviewee: ok) em not to limit themselves to the linguistic constraints that are required in academic writing just to show them the difference between when you write in creative writing and when you write in academic writing, there is a big difference. In academic writing, it is basically about the rules, everything is organized, everything follows ok certain a set of rules. In creative writing, em it's it's just eheh it's not free writing really but it's following one's imagination ok without having at the back of the mind eh the rules that's it the grammatical rules and linguistic rules em, so they are given a bit of freedom in creative writing.

Interviewer: yes

Interviewee: yes

Interviewer: so just to keep in the same idea, the techniques for effective reading and writing, what do you believe the techniques (interruption)

Interviewee: the techniques required for effective reading and writing em well techniques in reading em you mean the method?

Interviewer: yes

Interviewee: used in class for example how to

Interviewer: Strategies yes

Interviewee: strategies

Interviewer: strategies you want them to use for reading better

Interviewee: techniques in reading , well I tell them first I always remind them that it is very important to read all kinds of texts, not to read only texts given to them at the university , try to read all kinds of texts and if em they come across a literary text for example I don't advise them to take the dictionary em right at the beginning so I just tend to tell them to em trust themselves first, to have their own idea about the text without going ok to the dictionary eeem in order not to hinder em em the process of reading because some students complain and say when we read literary texts and go very often to the dictionary yes, we loose that interest in that text (interviewer, yes) and so I just tell them read spontaneously even if you don't understand everything and try to have your own idea of the text first and then you can go to the dictionary and then you can go to the criticism about the text, then you can have summaries from the net so I sometimes I just try to encourage them to be autonomous when they read a text just read it trust your level at English and then when you finish reading the text you can go for further explanations about certain terms ok about certain ideas, paragraphs, em, in class in class I usually give them well before that I usually give them the text to read at home before (interviewer: ehem) especially when it is a bit long like short stories so they are given something like two or three weeks to read it in advance because em the vocabulary used is a bit complex elaborate so they need at least to have an idea at home before , when they come to the classroom, we have em it is not a brainstorming but we have a discussion before starting the text we have a discussion about it just to see whether they have got the main ideas of the text ehhlhm I just ask them for example about the characters, the major characters of the story if it's a story eehhm if they have understood the message if there is any message of course of the author and then I give them questions questions and they start to to answer gradually it means a set of questions about for example comprehension and then some questions about vocabulary and then we have a close reading of the text together so we divide the text into parts then we read one part for example we explain

it in detail so that the meaning is very clear once we do this close reading I give them other sets of questions which are more complex yes which are for example about em finding symbols in the story , symbolism ehh finding imagery, figures of speech em explaining some sentences which sound ambiguous em things like that ok complex things that (Interviewer: so you have two phases general comprehension and then deep comprehension) that's it yes yes yes general comprehension generally it follows the general discussion we have before the text (interviewer the short story) and at the end we always end up with a writing question so responding to the text em responding to the text em in this in this kind of questions I usually em I usually intend to teach them indirectly how to have a critical mind because we have two we have has two short stories and these questions the last question of of these exercises were about for example write an essay analyzing a passage from the story , write an essay in which you answer an open question like for example analyze the character of this short story (open) that's it open question just to see whether they can analyze the text and put the information they have got from the text in a structured way

First year reading/writing teacher transcript

Interviewer: so the first question is what are the requirements of the reading/writing task? What does the reading/writing task require from the students to do?

Teacher: from the students (yes) I think eh the first thing I think would be reading , extensive reading because the more they read the more they get background information about the topics or possible topics of writing, the more they get used to punctuation eh punctuation, capitalization, grammar and different writing styles, different registers that's the first requirement, the second, students need to practice writing ehm they can use models, models or sample paragraph, sample essays and then build on their own paragraphs and essays (pause) if ever students have other difficulties weaknesses in grammar in grammar they need to work on these difficulties too so as to be equipped well equipped with any writing task (yes right) or a reading task too because if students do not understand grammar, they cannot understand reading passages, they may find some structures very difficult , you know punctuation sometimes may may, if the student has problems in punctuation, he or she cannot understand the text (the components of the language) components of the sentences or (structure) the student may interpret some sentences in text differently, if they (organization is) the second question

Interviewer: the second question is what you test your students on in reading/writing? What do you usually target in the test?

Teacher: Well, in reading, I usually target of course the comprehension because it's reading comprehension whether the student understood the ehh what the text is about, the main ideas of the text, the organization of the text, I mean the structure of the text, the layout the different paragraphs, whether it is clear for the student, ehm I also test their ability to predict what is to come in a text, their ability to use background knowledge in order to understand reading passages I mean background information all what they they know before the lecture (make use of) yes whether they make good use of all the knowledge they received throughout their education (yes to understand the text) and all the knowledge they received throughout their readings, their extensive readings in understanding a given text, I also test their ability to infer

Abstract in Arabic

وهم المعرفة ما فوق المعرفة و التحصيل في امتحان القراءة والكتابة
دراسة حالة طلبة السنة الأولى والثانية تدرج بقسم اللغة الانجليزية جامعة الجزائر 2

ملخص

تتناول هذه الدراسة 'وهم المعرفة' كعامل مهم في التحصيل الدراسي للقراءة و الكتابة باللغة الانجليزية خاصة في سياق الامتحانات. تعتبر مهارات القراءة و الكتابة ذات أهمية كبرى في الجامعة أين يحتاج الطلاب لقدرات مافوق المعرفة إلا أنهم يظهرون ضعفا في استراتيجيات التحكم في هذه المهارات. تهدف هذه الدراسة لإستكشاف جانب ما فوق المعرفة للطلاب في امتحان القراءة و الكتابة. و بعد البحث النظري توجهت الدراسة الي إيجاد العلاقة ما بين ما فوق المعرفة و التحصيل في مهارات القراءة و الكتابة. لجمع بيانات كمية و نوعية اعتمدت الدراسة منهجية مختلطة و عينة تتكون من 80 طالب في السنة الأولى والثانية من قسم اللغة الانجليزية بجامعة الجزائر 2. استعملت الدراسة استبيان ما فوق المعرفة و كذلك سلم التحكم بالإضافة إلى مقابلة نصف منظمة. أظهرت النتائج أن المعرفة الإجرائية منخفضة و أن الطلبة لا يعرفون الاستراتيجيات التي يتطلبها الواجب. تدعو الدراسة إلى التدريب المباشر لجانب مافوق المعرفة و التحكم للمهارات اللغوية و خاصة عند إجراء الامتحانات التي تتطلب مجهودا فكريا كبير