Metacognitive Knowledge in Relation to EFL Reading and Writing Achievement

Amina HAMDOUD [1*]
Ecole Normale Supérieure-Bouzareah

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Abstract: Metacognitive knowledge refers to one's awareness of cognitive processes and actions, It is the initial stage of metacognitive thinking without which upcoming thought operations are not possibly accomplished, This Mixed Methods study was conducted to describe eighty (80) year one and year two undergraduate students' metacognitive knowledge in EFL reading and writing, It relied on two research tools of data collection: the Metacognitive Awareness Inventory for the quantitative part and a semi-structured interview for the qualitative part; The results revealed lack of procedural knowledge among students and a mismatch between task requirements and strategic knowledge; The study, therefore, called for direct instruction in metacognitive knowledge for students and further investigation about teachers' metacognition.

Key words: metacognition; metacognitive knowledge; EFL reading and writing.

ملخص: معرفة ما فوق الإدراك تعني معرفة الفرد وإدراكه بأفكاره وأعماله وتعتبر المرحلة الأولية في التفكير الما فوق إدراكي الذي لا يمكن بدونه الوصول إلى مستويات تفكير أعلى, تهدف هذه الدراسة ذات المنهجية المختلطة إلى وصف معرفة ما فوق الإدراك لعينة تتكون من 80 طالب جامعي عند القراءة والكتابة باللغة الانجليزية, استعملت في هذه الدراسة وسيلتان لجمع البيانات: الاستبيان والمقابلة; بينت النتائج نقص في معرفة كيفية استعمال استراتيجيات القراءة والكتابة وكذلك عدم وجود علاقة بين المعرفة الإستراتيجية وشروط القراءة والكتابة، تدعو الدراسة إلى تعليمية وتدريب معرفة ما فوق الإدراك في وسط طلبة الجامعة وكذا إجراء بحوث إضافية فيما يخص معرفة ما فوق الإدراك للأساتذة.

*Corresponding author, e-mail:

1- Introduction

Metacognition as a crucial concept in learning and studying has gained much consideration among scholars and educational researchers, This is because it has contributed in developing autonomous and self reliant learners, It is commonly defined as 'thinking about thinking' and consists of knowledge of cognition and regulation of cognition (Brown, 1987). Kluwe (as cited in Hacker, Dunlosky & Graesser, 1998, 19), demonstrated the importance of metacognitive research 'as a way to gain greater understanding of humans, not only as thinking organisms but as self-regulatory mechanisms who are capable of assessing themselves and others and directing their behaviour toward specified goals'.

The study at hand deals with one of the components of metacognition and that is metacognitive knowledge, According to Flavell (1979), metacognitive knowledge refers to 'one's stored world knowledge that has to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions and experiences' (as cited in Hacker et al. 1998, 16).

The reason behind focusing on this component is the assumption that undergraduate students start their university studies with underdeveloped knowledge of what the requirements of high education are, This view is backed up with the grades the students usually obtain in the first semester of year one as illustrated in this study, Most students are either average or low achievers in reading and writing. This factor motivated research on undergraduate students metacognitive knowledge that is crucial for effective study skills at university, Therefore, this research objective is to describe the students' metacognitive knowledge in EFL reading and writing, The research question addressed is:

What metacognitive knowledge do students have about EFL reading and writing?

Metacognitive knowledge is defined as 'what individuals know about themselves and others as cognitive processors' (Corkill, 1996, 275), It is 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 oneself 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, 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.

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, 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.

According to Brown (1987), knowledge of cognition is the 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, Jacobs and Paris, in Schraw & Moshman 1995), Declarative knowledge refers to knowing 'about' things, It includes knowledge about oneself as a learner and about factors influencing one's performance, Procedural knowledge refers to knowing 'how' to do things, In other words, it is knowledge about the execution of procedural skills, Conditional knowledge refers to knowing the 'why' and 'when' aspects of cognition i.e. knowing when and why to apply various cognitive actions.

These aspects of metacognitive knowledge are complementary and help define the concept in an accurate manner, This knowledge component is dealt with in relation to reading and writing which are combined in this study to give it more focus. The reason is that in the context of teaching EFL in the department of English at University of Algiers-2 where the study was conducted, the two skills are integrated and taught as one module.

Reading and writing are interrelated processes since research in writing instruction corresponds largely with work on reading and also on metacognition. Reading and writing are

generally defined as 'parallel processes' or 'natural partners' (Trosky & Wood, Tierny & Pearson, Sarasota, Tsai, in Farahzad & Emam, 2010, 597) in which the activities of readers match the activities of writers (Smith, in Farahzad & Emam, 2010), There is a link between what readers do and what writers do as they prepare to read or write: as they create meaning through text (in writing), and as they reflect on the text (in reading), Thus, writing in this study is the process of meaning making and creation and reading is a critical reflection and comprehension of that meaning.

The two tasks of reading and writing inform each other: writers read their texts and often produce 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 more on the production of texts rather than on their comprehension. One area where the two activities clearly intertwine 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 curricula whereby the two skills are taught as one subject which is the case of this study.

Participants and setting

The participants of this study are eighty first and second year students from the Department of English (academic year 2015-2016) at University of Algiers-2 Abu Elkacem SaadAllah, They are enrolled in a three year English degree course and study reading and writing as a module in year 1 and year 2. The sample of the students is divided into three categories of high, average and low achievers according to the marks they obtained in a reading/writing examination, This classification is needed later in the study to describe metacognitive knowledge of each level of achievement.

2- Method and Tools:

For data collection, the researcher first relied on the reading and writing examination scores (provided by the two teachers of the module) to classify the participants into three categories of achievers, The purpose is to depict metacognitive knowledge of eighteen high achievers, thirty average achievers and thirty two low achievers from the sample (See table 1 below), The reading and writing tasks used in the exams comprised comprehension and vocabulary questions (for year 1 and year 2), paraphrasing, summary writing, paragraph writing (for year 1), and essay writing (for year 2), The teachers did not rely on the same exam and evaluation procedure and this does not affect the study findings since it is rather descriptive not predictive, The main objective is to describe students' metacognitive knowledge rather than study its effect on reading and writing achievement.

The study adopted a Mixed Methods Design that uses both quantitative and qualitative instruments of data collection and analysis, The first quantitative instrument is the *Metacognitive Awareness Inventory* (MAI) that was designed by Schraw and Dennison (1994). The inventory is composed of 17 items: 8 items describe declarative knowledge, 4 items refer to procedural knowledge and 5 items are related to conditional knowledge (See Appendix A). As for the second instrument, it consists of a *semi-structured interview* designed by the researcher as a qualitative tool (See Appendix B), It contains three questions that elicited students' responses about knowledge of the self as reader/writer, of the task of reading/writing and of the strategies used in reading and writing.

Data collection proceeded by the distribution of the MAI, It was handed to the eighty students to select the items that relate to their metacognitive knowledge, The students selected the items that apply to them and handed back the inventories. Out of the eighty students, six students were selected to conduct the interview: two high achievers, two average achievers and two low achievers, The students' responses were recorded and later on transcribed by the researcher for content analysis.

Data presentation and analysis

The students' scores of the reading/writing exam are presented first to allow their classification into levels of achievement. 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 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.

Table (1) Number and percentage of students in each level of achievement in R/W

Level	Frequency	Percentage (%)
High achievers ≥13	18	22.5%
Average achievers 12.99-09	30	37.5%
Low achievers ≥ 08.99	32	40%
Total	80	100%

The table shows 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% consecutively.

Presentation and analysis of data from the MAI: Metacognitive knowledge

The MAI, as discussed earlier, aims to measure the students' metacognitive knowledge 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 in each level of achievement. The aim of using the MAI is to answer the research question of the study:

What metacognitive knowledge do students have about EFL reading and writing?

a. Presentation of students' responses on declarative knowledge (DK)

This section presents the frequency and percentage of students' responses in relation to declarative knowledge, These data are meant to partly answer the research question on students' metacognitive knowledge, Declarative knowledge 'involves what we know about how we learn and what influences how we learn' (Young & Fry, 2008, 1), Eight statements 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 and percentage.

Table (2) Students' declarative knowledge (DK)

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

The results obtained for declarative knowledge indicate that the majority of students demonstrate knowledge of self with a high frequency and percentage for items 1, 2, 7 and 8. However, four items (3, 4, 5 and 6) have a lower frequency and percentage.Thus, the majority of students demonstrate:

- Understanding of their strengths and weakness in reading/writing.

- Knowledge of the kind of information that is more important to learn in reading/writing.
- Knowledge of how well they learn in reading/writing.
- Learning more when they are interested in the topic of reading/writing.

Yet, they are:

- Not good at organizing information in reading/writing.
- Do not know what the teacher expects them to learn from reading/writing.
- Not good at remembering information in reading/writing.
- Do not have control over how well they read/write.

b. Presentation of students' responses on procedural knowledge (PK)

This section presents the students' responses on procedural knowledge, These responses are meant to answer the research question on students' metacognitive knowledge, Procedural knowledge is 'our knowledge about different learning and memory strategies/procedures that work best for us' (Young & Fry, 2008, 1), In this section, the four items from the MAI are presented in Table 3 that shows the frequencies and percentages attributed to each statement by the students.

Table (3): Students' procedural knowledge (PK)

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

The data obtained for procedural knowledge demonstrate higher frequencies and percentages selected by students for item (09) compared to the other three statements (10, 11 and 12) which were selected less i.e., only 22, 33 and 31 students out of 80 respectively.

The results further denote that more than half of the students of students (65%):

- Try to use reading/writing strategies that have worked in the past.

But, do not:

- Have a specific purpose for each reading/writing strategy they use.
- know what reading/writing strategies they use.
- Find that they are using helpful reading/writing strategies automatically.

c. Presentation of students' responses on conditional knowledge (CK)

This section presents the students' responses to conditional knowledge and partly answers the research question on metacognitive knowledge, Conditional knowledge is 'the knowledge we have about the conditions under which we can implement various cognitive strategies' (Young & Fry, 2008, 1), The presentation of the frequencies and percentages attributed by the participants to the five remaining statements of the MAI (13, 14, 15, 16 and 17) is shown in table 4 below.

Table (4): Students' conditional knowledge (CK)

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

It is clear from the table that the majority of students selected items 13, 15 and 16 of the inventory. However, the two other statements of the MAI (14 and 17) were selected less: 43.8% and 26.2% of the participants ticked these two last statements, Thus, most students:

- Read/write best when they know something from the topic of reading/writing.
- Can motivate themselves to read/write when they need to.
- Use their intellectual strengths to compensate for their weaknesses in reading/writing.

But they do not:

- Use different reading/writing strategies depending on the situation.
- Know when each reading/writing strategy they use will be most effective.

So far, the results presented were gathered from the quantitative tool, i.e. the MAI. Data collected from the semi-structured interview are presented and analyzed in the following section.

Data presentation and analysis from the interview: Metacognitive Knowlegde

The semi-structured interview is the second tool of data collection in this study, It was used to corroborate the data and thus give more validity to the findings, It contains three questions that address the three components of metacognitive knowledge as defined by Flavell (1979): knowledge of the self, knowledge of the task and knowledge of strategies.

a. Analysis of high achievers data

For **knowledge of the self**, the two students identified as high achievers by their teachers (through R/W exam scores) also reported that they achieved high in the reading/writing exam task. The first student stated '*I may go with advanced*' while the second student 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 justified their high achievement by referring to some of their personal aspects that have contributed to their level in reading and writing, The first student stated '*I am more of a reader*' and that she '*loves reading'*, also that 'she uses her critical thinking which *'is a must in reading*', Whereas the second high achiever argued that the reason behind her high achievement was '*self confidence'* stating that '*I quite feel confident about myself in both reading and writing and I see myself improving'*.

Regarding **knowledge of the task**, both 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 high achiever 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 high achiever 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 in class, for example the steps of a descriptive essay or a narrative essay'*.

As for **knowledge of strategies**, the two high achievers also responded to the questions on their knowledge of strategies as follows, Starting by the first student, she

described 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 student, on the other hand, claimed that she does not use a specific range of techniques in reading/writing stating that: '*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'*.

b. Analysis of average achievers data

Concerning average achievers **knowledge of the self**, two subjects were reported by their teachers of reading and writing and by themselves as average students, The first student stated '*I don't read a lot, I read articles on the net*' and '*I think it's not enough'*, For the second average 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'*.

Knowledge of the task of the two average students was reported as follows: the two participants demonstrated their knowledge of the reading/writing task demands through their responses, 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 the second student, she reported the following demands:

- '*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'*.

Knowledge of the strategies was also described by the two participants and some reading/writing techniques have been highlighted, The first student 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 student, she uses:

- '*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'*.

c. Analysis of low achievers data

Similar to high and average achievers, low achievers responses on their self knowledge, task knowledge and strategy knowledge were analyzed.

For **knowledge of the self**, the first respondent 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, 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 level by lack of reading, One student stated: '*because I don't read a lot before*' and that they are making progress, For the second student, she claimed '*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'*.

As regards **knowledge of the task**, the first student 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' and 'she always say that practicing helps us to develop our level'*.
- *'try to create or introduce something original'*.

Regarding the second students 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'*.

Finally, **for knowledge of strategies**, the two participants listed a number of techniques they frequently use in reading/writing, The first student 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 the second student 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'*.

Discussion of the findings

3- Results and Discussion

The results are discussed in light of the research question put forward at the onset of the study: **'What metacognitive knowledge do students have about EFL reading and writing?**' Regarding students' metacognitive knowledge, the findings are discussed in terms of the three sub types: declarative, procedural and conditional, Regarding'declarative knowledge' that is 'knowledge about oneself as a learner and about what factors influence one's performance' (Shraw, 1998, 114), students showed knowledge of a number of items in the inventory at the expense of others, For example, they declared they know about their strengths and weaknesses in reading/writing and they are aware of information that is more important to learn in the two skills, They also know how well they read and write and that learning happens more when they are interested in the topic of reading/writing, However, they declared that they are not good at organizing information in reading/writing, and they do not know what the teacher expects them to learn from the two skills, Moreover, they reported that they are not good at remembering information in reading/writing and that they do not have control over how well they read/write. Thus, students tend to show more knowledge of self as readers/writers than that of strategies since they selected statements that refer to this knowledge more than the other.

In terms of 'procedural knowledge' that relates to knowledge about how to use strategies, the participants of the study selected one item more frequently than the other three items that belong to this type of knowledge, They stated that they try to use reading/writing strategies that worked in the past,Yet, they do not have a specific purpose for each reading/writing strategy they use; that they are not aware of what reading/writing strategies they use and do not find that they are using helpful reading/writing strategies automatically. Thus, it is clear from these results that **students have low procedural knowledge** in general which means that there is **lack of knowledge about reading/writing strategies** among the students, As Hofer et al. & Simpson et al (in Boekaerts, Zeidner & Pintrich, 2000, 470) rightly remark, this gap in knowledge is 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 behaviour 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, in Ahmadi, Ghonsooly & Ghanizadeh, 2016, 121), students selected three statements more frequently out of the six items related to that type of knowledge. 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 do not use different reading/writing strategies according to the situation and do not know when each reading/writing strategy they use will be most effective. Therefore, and out of these results, it can be concluded that **students know about when to read and write effectively; nevertheless, they demonstrate lack of awareness about why to use reading/writing strategies**.

These are the results pertaining to metacognitive knowledge that comprises declarative, procedural and conditional knowledge, Out of the selections students made from the MAI, it is evident that **students' weaknesses appear more in terms of strategic knowledge** since the study findings show low frequency in 'procedural knowledge' and conditional knowledge i.e., 'why' to use reading/writing strategies. Researchers in this area 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, in Hartman, 2001, 4), and use qualitatively different strategies to solve problems (Glaser & Chi, in Hartman, 2001, 4). Typical examples include how to chunk and categorize new information. Consequently automatic processing of reading/writing in an exam situation is lacking among these students translated by low procedural knowledge of effective strategies and the conditions in which they can be used, In addition, conditional knowledge, that is also reported to be low among the participants of the study, 'enables students to adjust to the changing situational demands of each learning task' (Shraw, 1998, 114), Thus, students appear to be unable to alter their performance through the appropriate use of strategies to the required reading/writing task.

As concerns metacognitive knowledge of self, task and strategies, a number of themes emerged out of the participants' responses to the interview and provided further insights to the issue of metacognitive illusions, For self knowledge, the data showed that the majority of students have accurate self knowledge since they ranked themselves in the same level of achievement the teacher attributed them to according to their scores except for one low achiever, This **accuracy of self knowledge** is related to achievement as evidenced by the results presented in the first quantitative phase, more particularly when students measured their declarative knowledge, In the same vein, the qualitative part highlights the significance of this knowledge and its relationship with achievement, According to Pintrich (2002, 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 set through interview responses to the first question.

Task and strategy knowledge, that were explored qualitatively, demonstrated variance in students' responses. This might be related to lack of knowledge of **task specific strategies** and **inexplicit instruction on task specific strategies**. More importantly, students seem to have illusions about the **appropriate use of strategies**, i.e, when and how to employ reading and writing strategies. In relation to these emerging themes (from interview data) Pintrich (2002, 221) noted:

> 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.

Therefore, and out of the findings presented so far, a number of recommendations need to be put forward to promote metacognitive knowledge in reading and writing and in FL learning in general.

Conclusion and recommendations

Metacognitive knowledge was investigated using quantitative and qualitative analysis. More than half of the students (65%) demonstrated **low procedural knowledge** especially in using appropriate and effective reading and writing strategies, The qualitative analysis revealed that the majority of students (5/6) have **accurate self knowledge,** For task knowledge, the students' responses varied considerably in reporting reading and writing task demands. This can be attributed to their levels of achievement on the one hand and possibly to teachers' instructional practices on the other. Regarding strategy knowledge, students' views across the three levels of achievement are different, 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 is either a deficit in the students' repertoire of strategies or lack of teacher explicit instruction on the range of strategies to use and develop in the reading/writing course, or the students' own interpretation of the R/W task.

Thus, in order to cater for the students' deficits in metacognitive knowledge researchers have considered the power of metacognitive skill instruction, They have given evidence that instruction in metacognitive development can assist students with the reading and writing skills necessary for independent learning at university, For example, Simpson (1984) and Simpson and Nist (1990) reported that 'first-year college students have limited repertoires for interacting with text' and that 'instructional programs which enhance metacognitive awareness could benefit this population' (El Hindi, 1996, 216).

Therefore, it is essential to teach for metacognitive knowledge explicitly, The reason is that many teachers assume that students will be able to acquire metacognitive knowledge on their own, while others lack the ability to do so, In the works of 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' (Pintrich, 2002, 223), In order to make this feasible, teachers are not expected to teach for metacognitive knowledge in separate courses, although this can possibly be done (Hofer at al., Pintrich et al., in Pintrich, 2002), It is more practical that metacognitive knowledge is embedded within the usual content-driven lessons in different subject areas.

Teachers also play an instrumental role in providing explicit metacognitive instruction to students (Baker, Kintsch & Kintsch, Pressley, RAND Report, in Curwen , Miller, White-Smith & Calfee, 2010), This is because developing students' metacognition requires teachers who are knowledgeable about varied comprehension strategies (in reading for example) and explicit about teaching them. However, while teachers are aware of students' need for comprehension strategies, they often have not provided direct instruction in how to use them (Pressley, in Curwen et al, 2010), There remains 'a need for research into the professional development required to scaffold teachers in developing strategic readers (and writers) across the curriculum, providing supports for integrating instruction'(Duke & Martin, in Curwen et al, 2010, 130) and 'cultivating students as professional thinkers'(Block and Duffy, in Curwen et al, 2010, 130).

Referrals and references

Ahmadi, G.A., & Ghonsooly, B, and Ghanizadeh, A.(2016). An exploration of EFL learners' declarative knowledge, procedural knowledge, and monitoring. *International Journal of Educational Investigations*, 3(7), 120-128.

Boakaerts, M., & Pintrich, P.R., and Zeidner, M.(2000).*Handbook of self-regulation*. Academic Press.

Corkill, A.(1996).Individual differences in metacognition. *Learning and Individual Differences*, 8(4), 276-280.

Curwen, M.S., & Miller, R.G., & White-Smith, K.A., and Calfee, R.C.(2010). Increasing teachers' metacognition develops students' higher learning during content area literacy instruction: findings from the read-write cycle project. *Issues in teacher education*, 19(2), 127-151.

El Hindi, A. E.(1996).Enhancing metacognitive awareness of college learners. *Reading Horizons*, 36 (3), 214-230.

Farahzad, F, and Emam, A.(2010). Reading-writing connections in EAP courses: implications and applications. *Journal of Language Teaching and Research*, 1(5), 596-604.

Flavell, J. H.(1979).Metacognition and cognitive monitoring. A new area of cognitive developmental inquiry. *American Psychologist*, 3(10), 906-911.

Hacker, D., & Dunlosky .J, and Graesser, A.C (Eds.).(1998). *Metacognition in educational theory and practice*. Hillsdale, NJ: Erlbaum.

Hacker, D., & Dunlosky, J., and Graesser, A.C. (Eds.).(2009). *Handbook of Metacognition in Education*. Routledge.

Hartman, H.J.(Ed.).(2001). *Metacognition in Learning and Instruction: Theory, Research and Practice*. Boston: Kluwer

Pintrich, P.R.(2002).The role of metacognitive knowledge in learning, teaching and assessing. *Theory into Practice*, 41(4), 219-225.

Schraw, G., and Dennison, R. S.(1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19, 460-475.

Schraw, G., and Moshman, D.(1995). Metacognitive theories. *Educational Psychological Review*, 7, 351-371.

Schraw, G.(1998). Promoting general metacognitive awareness. *Instructional Science*,26, 113–125

Young, A, and Fry, J.D.(2008). Metacognitive awareness and academic achievement in college students. *Journal of the Scholarship of Teaching and Learning*, 8 (2). Retrieved from: https://pdfs.semanticscholar.org/9e06/f9a6207a49fd83b9d0ce375dba00a21a0514.pdf

Appendices

Appendix A: Metacognitive Awareness Inventory (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.

(Adapted from Dennison & Schraw, 1994)

Appendix B: Semi-structured interview

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?

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