RESEARCH ARTICLE

A REVIEW OF RESEARCH INTO METACOGNITIVE STRATEGIES IN THE PROCESS OF EDUCATION: TEACHING AND LEARNING OF ENGLISH SKILLS

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ABSTRACT

Metacognition has been an area of interest to educational researchers for more than 40 years. A large body of literature exists on this topic, both theoretical and empirical. However, there are few studies that summarize specific instructional practices for improving students' capacity for metacognitive thinking. Similarly, there is a dearth of evidence showing how specific practices are implemented to affect student achievement. This review addresses gaps in these areas by identifying instructional approaches in the empirical literature that promote metacognitive thinking in primary and secondary student populations using analytical literature review methods. The review of empirical studies is considered as an important aspect of any research. It is a fact that review of past knowledge and studies will helps us equip ourselves for the present. A review of related studies helps the Investigator to eliminate the duplication of what has been done so far, review of literature is an essential component of a research process. For the purpose of the study, the literature regarding metacognition has been reviewed to ascertain whether metacognitive process has been found to be associated with improved student outcomes in the secondary school setting.

INTRODUCTION

It seems that metacognition plays an important role in a successful process of foreign or second language learning. The aim of this review is to investigate empirical research focused on mutual relation of metacognition or metacognitive strategies and a process of education, especially of foreign/second language learning. The review deals with scientific outcomes of studies which carried out the research of metacognition during the course of last years.

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The main focus is placed on sphere of scientific investigation within the area. This paper also gives an overview of scientific practices used in the field of metacognitive knowledge and language learning. Metacognition plays an important role in the process of learning including variety of processes and activities such as communication, language acquisition, problem solving, reading comprehension, and many others. According to Ma and Oxford, (2014. p.54) "metacognition consists of the learners understanding of his or her own knowledge and thinking processes and the learner's ability to regulate his or her own learning". It is a special type of ability and knowledge which is continually developed via personal experience and education throughout learner's life. Metacognition refers to learner's awareness and understanding of one's process of thinking. Moreover, metacognitive skills

are important not only at school and professional career, but they are used throughout whole learner's life. This is the reason why metacognitive learning strategies play significant role in the process of foreign language learning. According to Rebecca Oxford (1990, p.135) "metacognitive strategies allow learners to control their own cognition – that is, to coordinate the learning process by using functions such as cantering, arranging, planning, and evaluating". Foregoing research indicates that language learning strategies are among the main factors that help determine how and how well students learn foreign language. It also shows that the teaching metacognitive learning strategies in content courses improve student's learning; however, few teachers at tertiary education explicitly teach study strategies. They probably assume that students have already learned most of the strategies at lower levels of education. As Ma and Oxford state (2014, p.53) "good language learners have a range of learning strategies to call on". Furthermore, they know "how to select and implement strategies that are appropriate for the task". There is an important role of the teacher even at the tertiary education to explain to the learner the importance of metacognitive learning strategies. Moreover, the teachers should demonstrate them how to use the learning strategies efficiently and encourage their students in their endeavour to become more self-regulated learners.

Considering a growing number of studies investigating metacognition in foreign/second language learning, it seems to be necessary to do a continuous review of research into metacognitive learning strategies in the process of foreign/second language education. To gather a collection of current studies on metacognition in the realm of foreign/second language learning, the electronic databases were employed to collect all possible research studies aimed at investigation of metacognitive language learning strategies. The research was carried out online and only no-charged materials published between 2003 and 2016 were included into investigation. The online research included the combinations of the following key terms: metacognition, metacognitive awareness, learning strategies, second language and foreign language. This initial research provided a total of 86 studies which were further reviewed/analysed in more detail to meet two following criteria selected for this review: 1. what fields of social science are treated by scientific research within the area of metacognition and learning process, 2. if the research covers learning process of foreign language, what language skills are being investigated. Studies not related to foreign/second language learning were excluded in this synthesis. The scope of the research performed in the field of metacognition ranged from perceived stress and negative emotions affecting language learning, through self-confidence and learning

Table 1. Sources of data collection

	Data Source	Reviewed	Selected	Deleted
1	International Journal of English Language and Literature Studies	17	7	10
2	The Journal of Teaching Language Skills (JTLS	13	6	9
3	, International Journal of Language Learning and Applied Linguistics World (IJLLALW)	16	6	10
4	Google scholar	24	8	14
5	Journal of Language and Linguistic Studies, TESOL Journal	7	4	3
6	*Modern Journal of Language Teaching Methods (MJLTM)*	9	4	4
	Total	86	35	50

	Author (s)	Year	Title	Results
1	Ong	2014	How do Planning Time and Task Conditions Affect Metacognitive Processes of L2 Writers?	The results show that the manipulation of the task conditions had a stronger effect than the planning time conditions on the five metacognitive processes of L2 writers. Specifically, the effects of task conditions were significant on the frequencies of generation and organization of new ideas during planning and on the frequencies of elaboration and organization of new ideas during writing. However, the effects of planning time were significant only on the frequency of thinking of language aspects of the task during writing.
2	Ruan	2014	Metacognitive awareness of EFL student writers in a Chinese ELT context	Findings show that motivation, self-efficacy, and writing anxiety constitute students' awareness of person variables influencing their EFL writing, whereas their task awareness involves task purposes, task constraints, and cross-language task interference. Strategy awareness of planning, text generating, and revising was found typical of novice EFL student writers.
3	Stewart, Seifert, and Rolheiser	2015	Anxiety and Self-efficacy 's Relationship with Undergraduate Students' Perceptions of the use of Metacognitive Writing Strategies	The findings have implications for both theory and practice. They demonstrate that writing metacognition is influenced by emotional factors, such as the level of anxiety and the extent of self-beliefs around writing
4	Kent and Wanzek,	2016	The Relationship Between Component Skills and Writing Quality and Production Across Developmental Levels: A Meta-Analysis of the Last 25 Years	The findings document that each of the component skills demonstrates a weak to moderate positive relationship to outcomes assessing writing quality (rs = .33 - .49) and the amount students write (rs = .20 - .48). Moderator analyses were generally not significant with the exception that the relationship between reading and writing production was significantly higher for students in the primary grades.
5	Teng	2016	Immediate and delayed effects of embedded metacognitive instruction on Chinese EFL students' English writing and regulation of cognition.	Results indicated that the COOP + META condition yielded the highest mean scores in writing and regulation of cognition, followed by the COOP condition and the control group. In addition, IMPROVE students exhibited different kinds of cognitive regulation processes. However, no significant improvement was noticed in the knowledge about cognition. Interviews conducted at the end of the intervention further corroborated these findings
6	Wischgoll	2016	Combined Training of One Cognitive and One Metacognitive Strategy Improves Academic Writing Skills	the results found that learners who received the additional self-monitoring strategy intervention benefited significantly more in terms of acquisition of academic writing skills and the quality of their texts than learners who did not receive this intervention. Thus, the results underline the importance of self-monitoring strategies in academic writing. Implications and further research opportunities are discussed.
7	Bowman	2016	The Use of portfolios to Support Metacognitive Practice in a First-Year Writing Program	Findings indicate that while both types of portfolios, electronic and traditional paper, contribute positively to students' learning related to "connections to the course," students completing an portfolio show heightened levels of metacognition in relation to "connections to learning" and "connections to career or personal goals."
8	Zhang and Qin	2018	Validating a Questionnaire on EFL Writers' Metacognitive Awareness of Writing Strategies in Multimedia Environments	The findings show that there were substantial differences between the two effective and two less effective learners. Typically, these differences played out in their use of metacognitive strategies for planning, organising, evaluating and resourcing.

Table 3. The focus of research in the field of metacognition and reading comprehension

	Author (s)	Year	Title	Results
1	Carretti, Caldarola, Tencati, and Cornoldi	2014	Improving reading comprehension in reading and listening settings: The effect of two training programmes focusing on metacognition and working memory	results showed that both the training programmes focusing on specific text comprehension skills were effective in improving the children's achievement, but training in reading comprehension generated greater gains than the listening comprehension programme
2	Dabarera, Renandya, and Zhang	2014	The impact of metacognitive scaffolding and monitoring on reading comprehension	The findings corroborated previous research that there is a relationship between metacognitive awareness-raising and reading comprehension improvement. In addition, metacognitive strategy instruction was found to be effective in increasing metacognitive awareness, and was linked to small but statistically significant reading comprehension gains.
3	Fitrisia, Tan, and Yusuf	2015	Investigating Metacognitive Awareness Of Reading Strategies To Strengthen Students' Performance In Reading Comprehension	The findings suggest direct instruction in MARS may help students increase their attention to the reading process. Becoming aware of their own thinking as they read and solve problems allows students to seize the advantages of learning opportunities to become strategic and thoughtful readers
4	Furnes, and Norman,	2015	Metacognition and Reading: Comparing Three Forms of Metacognition in Normally Developing Readers and Readers with Dyslexia	the results indicate that dyslexic reading and spelling problems are not generally associated with lower levels of metacognitive knowledge, metacognitive strategies or sensitivity to metacognitive experiences in reading situations.
5	Meniado	2016	Metacognitive Reading Strategies, Motivation, and Reading Comprehension Performance of Saudi EFL Students	The findings of this study interestingly contradict previous findings of most studies, thus invite more thorough investigation along the same line of inquiry
6	Trapman et al.	2017	Reading Comprehension Level and Development in Native and Language Minority Adolescent Low Achievers: Roles of Linguistic and Metacognitive Knowledge and Fluency	This finding seems to suggest that language minority students profit from gains in vocabulary, more so than native students.
7	Asikcan, and Saban	2018	Prospective teachers' metacognitive awareness levels of reading strategies	Results show that prospective teachers' global reading and problem solving strategies levels are high while their support reading strategies level is medium. Female participants' metacognitive awareness level was found to be higher compared to males. Prospective Turkish language teachers' problem solving strategies level is higher than that of prospective primary teachers. Prospective primary teachers preferred historical and psychological books more while prospective Turkish Language teachers favoured all types of books equally.

Table 4. The focus of research in the field of metacognition and Listening

	Author (s)	Year	Title	Results
1	Movahed	2014	The Effect of Metacognitive Strategy Instruction on Listening Performance, Metaconitive awareness and Listening anxiety of Beginner Iranian EFL Students	The results revealed that the experimental group significantly outperformed the control group on the post-tests and so the positive effect of the metacognitive strategy instruction on students' listening performance, metacognitive awareness and listening anxiety were verified.
2	LinandGan,	2014	Taiwanese College Students' Use of English Listening Strategies and Self-Regulated Learning	The major findings were, first, the metacognitive strategies were frequently used and the metacognitive knowledge were least used in the metacognitive awareness of listening; secondly, the students hold a moderate awareness of their self-regulated learning. Also, the students hold a preference for environment control, followed by satiation, emotional, metacognitive, commitment control.
3	Chang and Chang	2014	Developing students' listening metacognitive strategies using online videotext self-dictation-generation learning activity	the results revealed that the online video-SDG learning activity could effectively engage students in reflecting upon their perceptions of specific problems countered, listening strategy usages, and strategic knowledge exploited in the metacognitive instructional process
4	Zafarghandi, and Dokoohaki	2015	Interactional Modification Vs. Metacognitive Strategy Training In Listening Instructions	The results indicate that MST and IMI respectively had a greater impact on listening comprehension than the traditional listening instructions. The reasonable conclusion can be made from these results that the incorporation of interactive approaches as well as strategy instructions into traditional listening instructions can lead to enhanced listening comprehension
5	Maftoon, and FakhriAlamdari,	2016	Exploring The Effect of Metacognitive Strategy Instruction On Metacognitive Awareness and Listening Performance Through a Process-Based Approach	The results showed that metacognitive strategy instruction led to a considerable variance in overall listening performance and metacognitive awareness of learners. Furthermore, the analysis of the five MALQ factors revealed a significant impact of metacognitive strategy instruction on the metacognitive awareness of listeners.

6	Cho	2017	Metacognitive Strategy Instruction in L2 Listening Development for EFL College Students* 1	The findings show that there were significant differences between the two groups in terms of metacognitive strategy use and listening comprehension gains. The learners in the experimental group showed greater outcomes in planning and evaluation and mental knowledge strategy use, as well as listening abilities than learners in the control group. Based on the results, pedagogical implications are suggested on how language educators can integrate these findings into their lessons. (Gwangju University)
7	Zarrabi	2017	Investigating the Relationship between Learning Style and Metacognitive Listening Awareness	The results indicated there is a statistically significant relationship between learner style and metacognitive listening strategy awareness of EFL learners. In other words, each learner type differ in the degree of metacognitive listening awareness. The auditory learners reported a significant difference in the mean scores on MALQ than other learner styles.
8	Golzadeh, and Moiinvaziri,	2017	Metacognitive Strategy Awareness and Listening Anxiety: The role of gender and proficiency level among Iranian EFL learners	the findings showed that there was no difference between males and females in this regard. Regarding learners' level, it was revealed that upper-intermediate learners were more anxious than advanced level ones. However, no difference was detected between these two levels in their strategy use

Table 5. The focus of research in the field of metacognition and speaking

	Author (s)	Year	Title	Results
1				
2	Forbes and Fisher,	2015	The impact of expanding A Level students' awareness and use of metacognitive learning strategies on confidence and proficiency in foreign language speaking skills.	The findings indicate that the use of learning strategies seems to have had a positive impact on pupils' confidence and proficiency in speaking and after the intervention the participants reported an increase in how much they both valued and used a range of metacognitive strategies.
3	Phaiboonnugulkij	2017	Comparative analysis of metacognitive strategies used in the internet-integrated test to enhance English speaking ability in Thai tourism context	The results indicated that the most differently reported total metacognitive strategies between the two groups were in dos and don'ts in Thai culture task (H = 20.77%, L = 5.18%). The most differently reported sub-strategies between the two group were planning in presenting tourism information task (H = 9.09%, L = 2.59%). As a result, low-proficiency students should be trained to effectively use these strategies to improve their speaking ability.
	Forbes and Fisher	2018	The impact of expanding advanced level secondary school students' awareness and use of metacognitive learning strategies on confidence and proficiency in foreign language speaking skills	The findings indicate that the use of learning strategies seems to have had a positive impact on pupils' confidence and proficiency in speaking and after the intervention the participants reported an increase in how much they both valued and used a range of metacognitive strategies.

Table 6. The focus of research in the field of metacognition and general studies

	Author (s)	Year	Title	Results
1	Pellas	2014	The influence of computer self-efficacy, metacognitive self-regulation and self-esteem on student engagement in online learning programs: Evidence from the virtual world of Second Life	The results from the three-step hierarchical regression analysis revealed that computer self-efficacy, metacognitive self-regulation, and self-esteem in online courses were not only positively correlated with student's cognitive and emotional engagement factors, but were also negatively correlated with behavioural factors.
2	Bryce, Whitebread, and Szűcs,	2015	The relationships among executive functions, metacognitive skills and educational achievement in 5 and 7 year-old children	Results indicated that executive functions were more related to metacognitive skills in 5-yearolds than in 7-year-olds, and metacognitive skills were the most important predictors of educational achievement across both age groups.
3	Partanen, Jansson, Lisspers, and Sundin	2015	Metacognitive Strategy Training Adds to the Effects of Working Memory Training in Children with Special Educational Needs	Results were discussed in terms of metacognitive factors being important in optimizing performance in WM training, and that such factors should be taken into consideration when designing interventions for children with SEN. It is also suggested that in referral of children with SEN to remediation with WM training the WM profiles should be taken into consideration to a greater degree.
4	Schwab, and Hessels	2015	Achievement Goals, School Achievement, Self-Estimations of School Achievement, and Calibration in Students With and Without Special Education Needs in Inclusive Education	Students without SEN scored significantly higher in mastery-goal orientation, while students with SEN had a significantly higher performance-avoidance orientation.

5	Korpershoek et al.	2015	The Relation Between Students' Math And Reading Ability And Their Mathematics, Physics, And Chemistry Examination Grades In Secondary	r findings suggest that students with a high score on reading ability benefit from this skill when taking their FSEs in advanced mathematics, physics, and chemistry, at least the pre-university students do.
6	Baltaci, Serdal, AvniYildiz, and Bilal Özcakir.	2016	The Relationship between Metacognitive Awareness Levels, Learning Styles, Genders and Mathematics Grades of Fifth Graders	result has a significant part in education. In fact, parents, teachers and administrators should know metacognitive awareness and learning styles. Thus, knowing these terms can be helpful to understand how the problematic and unsuccessful students show undesirable behaviors since those students' learning styles and metacognitive awareness levels are not considered.
7	Chang et al.	2017	The Effects of a Collaborative Computer-based Concept Mapping Strategy on Geographic Science Performance in Junior High School Students	The findings revealed that the CCBCM and CBCM groups scored better than the NCM group on the post-test. On the retention test, the CCBCM group outperformed the NCM group on all subtests.
8	Bogdanović et al.	2017	Students' Metacognitive Awareness and Physics Learning Efficiency and Correlation between Them	Results analysis shows that 15 years old girls have higher level of metacognitive awareness than 15 years old boys. It is shown that achievement in physics is not dependent on gender. The results indicate significant moderate correlation between metacognitive skills and student achievement in physics ($r = 0.48473$, $p < 0.001$). Important insights about metacognitive awareness and efficiency in physics learning have been generated.
9	Bishara and Kaplan	2018	The Relationship of Locus of Control and Metacognitive Knowledge of Math with Math Achievements	The findings of this study indicate that the higher the level of the internal locus of control, the higher the use of metacognitive knowledge. Furthermore, higher levels of internal locus of control and higher use of metacognitive knowledge resulted in increased math achievement.

awareness of foreign language learner, to the field of acquiring four language competencies reading, listening, writing and speaking. As there was such a wide range of subject matter connected with metacognitive learning strategies, the selected articles were sorted into 4 topics general, reading, listening and writing. The topics do not include speaking because there was only one paper containing oral language proficiency in its title, however, the paper focuses on listening comprehension. The classification of the articles was provided according to the criteria which area or skill of foreign/second language learning they treated. Finally, a total of 35 articles from the following as seen in Table 1.

Writing: The writing section of the review includes eight studies mentioned below in more details (see Table 4). Which were published online between 2014 and 2018. The main focus of the research is placed on different targets linked with either assessing metacognitive awareness questionnaire of EFL learners, studying the effects of monitoring and planning skills as metacognitive strategies on writing accuracy of EFL learners or understanding of metacognitive knowledge use of EFL learners' to promote learners' self-regulation in the process of writing skills learning. Writing is one of the most sophisticated and problematic area in foreign language learning because it incorporates complex accomplishment of the language system and linguistic skills such as syntax, spelling, and writing conventions. Moreover, writing is a highly time consuming activity and most EFL learners rarely have writing courses in English.

Reading: This part of the review includes seven studies which are generally dealing with the effect or impact of even metacognitive language learning strategies use, or metacognitive awareness on reading achievement of foreign/second language learners. The studies were available online and they were published between 2014 and 2018. The researchers were concerned with many different areas in their investigation so it will be entirely beneficial to note main aims of their research. They applied variety of research methods to verify or support their scientific expectations. As stated above, the researchers drew their interest to many different areas which are briefly specified in the following table (see Table 3).

Listening: Eight studies concerned with metacognitive language learning strategies and listening comprehension are explored in this section. The papers were published online between 2014 and 2018. Main focus of the investigation was put on various scientific procedures used to examine the impact of metacognitive language learning strategy use on the listening performance of students of English as foreign/second language. In general, all reliable data were collected by combination of various forms of questionnaires, metacognitive strategy instructions or training, language proficiency tests, pre-test and post-tests interviews, language learning orientations scale and other quantitative and qualitative research methods mentioned below in more details (see Table 4).

Speaking: This part of the review includes three studies which are dealing with the effect of metacognitive language learning strategies on speaking skill of foreign/second language learners. The studies were available online and they were published between 2014 and 2018. The researchers were concerned with many different areas in their investigation so it will be entirely beneficial to note main aims of their research. They applied variety of research methods to verify or support their scientific expectations for more details (see Table 5).

General studies: This section covers nine papers where metacognition and foreign language learning in general are involved into research. The investigation includes papers published online between 2014 to 2018. The research area of the papers included varies considerably for more details (see Table 6).

Conclusion

Metacognition and metacognitive learning strategies seem to contribute significantly to success in foreign/second language learning. According to scientific results of studies included into this review, several conclusions concerning the importance of metacognition in the realm of foreign/second language learning can be drawn. Wide range of fields in social science is treated by scientific research within the area of metacognition and learning process. Moreover, All the researchers used a combination of various scientific tools to investigate their subject matter and a combination of

questionnaire, foreign language tests and interview is the most used measure for metacognitive strategies. Considering positive outcomes of all studies, it is possible to state that pedagogical intervention can develop learners' metacognition. It is obvious that teachers should understand the importance of role which metacognition plays in language learning process because it helps learners to become more autonomous and self-regulated language learners. Moreover, teachers should focus on both teaching language content and teaching the ways and processes of learning in order to increase their students' metacognitive knowledge.

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