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The Effect of Planned Instruction on Metacognitive Awareness of Reading Strategies

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Abstract

Metacognition, often used as a component of reading strategy instruction, has two dimensions - knowledge about cognition and regulation of cognition. Though many studies explore the connection between metacognitive strategies and development of reading comprehension abilities, not many examine how the two dimensions of metacognition interact to affect the general metacognitive awareness of reading strategies. This study aims to fill this gap by investigating how planned instruction incorporating knowledge about cognition affects general metacognitive awareness of reading strategies of non-native ESL learners in tertiary education. It reports on the effect of a planned instructional intervention carried out in the first semester of an Academic Reading course. A statistical analysis reveals that such planned instruction results in slightly improved metacognitive awareness of reading strategies, and does not lead to significant change in terms of relative preference of use of individual reading strategies. The study also finds that students with lower level of perceived awareness prior to the instruction benefit more than those with higher level of perceived awareness, and that it helps reduce the gap between students with higher level and those with lower

	level of awareness, and prepares the group to learn higher order strategies for regulation of cognition

1. Introduction

Reading strategy instruction has been the focus of second language reading research for many years now. Empirical evidence indicates that strategy instruction leads to improved reading comprehension and strategy use, and independent reading behaviour (Aghaie & Zhang, 2012). Strategic knowledge and awareness are considered to be vital for skilled reading (Maasum & Maarof, 2012) and a strong predictor of academic reading comprehension (Nergis, 2013).

Recent discussions on the processes of reading inform about the role of cognitive processing in reading comprehension. Grabe and Stoller (2013) define reading processes as 'cognitive operations that occur in working memory and that draw upon long-term memory' (p. 292). Working memory processing involves the active use of both higher and lower level cognitive processes accessing lexical information, cueing grammatical information, inferencing, using background knowledge, etc. Readers often need to use attentional processing as a component of working memory for monitoring comprehension (Grabe, 2010). When the reader faces difficulties, such cognitive processes do not operate efficiently, affecting reading fluency. Such difficulties commonly arise in L2 reading contexts requiring the reader to use strategies to cope with such difficulties.

Various reading strategies help readers in carrying out such cognitive operations efficiently as approaching reading as a strategic process helps the reader balance the many skills needed for comprehension and be a fluent reader (Grabe & Stoller, 2013). Three broad categories of reading strategies are often discussed – Global Reading Strategies, Problem Solving Strategies, and Support Strategies. Mokhtari and Shorey (2002) defines Global Reading Strategies as

> intentional, carefully planned techniques by which learners monitor or manage their reading', Problem Solving Strategies as actions and procedures that readers use while working directly with the text; these are localized, focused techniques for use when problems develop in understanding textual information, and Support Strategies as basic support

> mechanisms intended to aid the reader in comprehending the text. (p.4)

Newton et al. (2018) adapt this classification as global reading strategies, monitoring reading strategies, and support reading strategies.

However, it is argued that simply teaching cognitive strategies does not necessarily lead to a better reader, because besides what strategies to use and how to use the strategies, when and why to use them are important (Eskey, 2005).

In academic contexts, students need to be able to read to learn by giving careful attention to details, reducing the speed as needed, interpreting information in relation to background knowledge, and using combinations of reading strategies to comprehend difficult concepts (Newton et al, 2018). While skilled readers often achieve automaticity in using lower-level processing that require calling upon vocabulary knowledge, syntactic knowledge, etc. through practice, higher level processing like inferring, reading texts strategically, using background information, etc. requires conscious awareness. Therefore, practice, conscious awareness of reading strategies and cognitive resources are needed for developing reading comprehension.

For second language readers in academic settings, besides giving exposure to a large variety of academic reading strategies, it is considered important to give them opportunities to practice using those strategies so that they are better equipped to use strategic reading as needed in a university (Anderson, 2015). Evans et al. (2015) suggests explicit instruction for improving metacognitive awareness of strategy use for developing strategic readers.

Considering the importance of strategy instruction in developing comprehension and academic reading skills, attempts are made to explore possible effective ways to achieve successful strategy training. One potential component of strategy training is metacognition because of its role in improving language proficiency in general and reading efficiency in particular. The term 'metacognition' is frequently associated with Flavell (1978) who states that metacognition is 'probably best defined loosely or broadly, viz., as knowledge or cognition that takes as its object or regulates any aspect of any cognitive endeavor' (p. 4). Metacognition has two aspects or dimensions – knowledge about cognition and executive function or regulation of cognition (Baker & Brown, 1984).

Knowledge about cognition includes declarative, procedural and conditional knowledge. Carrell et al., (1998) defines these three types of knowledge:

> 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 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: 134). 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. Conditional knowledge is necessary if a reader is to know whether or not a certain strategy is appropriate, and whether or not it is working effectively for that learner. (p.101)

The second aspect, i.e. regulation of cognition, involves orchestration of various reading strategies requiring the ability to monitor the use of own reading strategies. It includes planning, monitoring, and evaluation of cognitive processes and products (Moshman, 2020).

Foreign language learners with strong metacognitive skills are better prepared than others because they are aware about their own decisions, and this results in better learning (Šliogerienė et al., 2016). In reading development and reading success also, metacognition is recognized as an important factor (Afflerbachet al., 2013). The strong relationship between metacognition and successful EFL reading comprehension is also found (Zhang, 2010). Such findings underline the importance of metacognition as a component of reading strategy instruction.

In a classroom setting, the relation between the two aspects of metacognition needs to be considered for designing strategy instruction. Knowledge about cognition is more about self-awareness, whereas regulation of cognition is about self-regulation. Empirical evidences suggest that both these aspects are crucial for academic performance of second language learners (Narang & Saini, 2017). Therefore, effective reading strategy training should include both these metacognitive dimensions (Carrell, 1998).

Baker and Brown (1984) claim that self-awareness is a prerequisite for self-regulation. Therefore, the knowledge of cognitive strategies is probably a prerequisite for developing metacognitive strategies. While defining metacognitive knowledge, Grabe (2010) also mentions that it is conscious awareness of one's knowledge that allows a reader to plan, regulate and monitor reading. If this is so, teachers need to consider whether all the students in a particular group undergoing reading strategy instruction have the necessary level of self-awareness or knowledge about cognition to be prepared for developing regulatory skills and metacognitive strategies in reading.

These research studies have significant implications and relevance for second language learners in higher education because they need academic reading skills in a second language for negotiating a large amount of materials in order to succeed in their university education, and they need to be trained in such a way that they "metacognitively ready to become efficiently strategic readers" (Zhang, 2008, p. 90). There is no single coherent theory explaining second language reading and the processes involved, experts believe that reading in a second language may depend on greater metalinguistic and metacognitive awareness than does first language reading (Hedgcock & Ferris, 2009).

Though there are many studies on reading strategy instruction in general context, there are not many in TESOL context (Janzen, 2010). Even less number of empirical studies examining the interaction of the two dimensions of metacognition (knowledge about cognition and regulation of cognition) and the development of metacognitive awareness of reading strategies are available. Many available studies (Ceylan & Harputlu, 2015; Dabarera et al., 2014; Fitrisia et al., 2015; Magogwe, 2013) focus on the relation between the students' metacognitive awareness and their proficiency in reading comprehension.

This study aims to fill this gap by examining the effect of strategy instruction incorporating knowledge about cognition on the metacognitive awareness of reading strategies of non-native ESL learners. The study reports on an instructional intervention conducted in the first semester of a two-semester long Academic Reading course. Pedagogic activities were used incorporating elements for improving the first aspect of metacognition (self-awareness) with the plan that the second semester activities would focus more on the second aspect of metacognition (self-regulation). Since the students were struggling to negotiate academic

texts, it was believed that It was assumed that focusing more on developing knowledge about cognitive strategies would contribute to the general metacognitive awareness of reading strategies in such a way that it will prepare, for the next semester, all the students for higher level of processing demanded by the regulatory or monitoring function. Though these two aspects are not necessarily independent of each other, this paper reports how pedagogical interventions particularly intended to improve the first aspect affect the general metacognitive awareness of second language learners.

Thus, this study intends to investigate how planned instruction incorporating knowledge about cognition affects students' general metacognitive awareness of reading strategies. The research questions are:

1. Does teaching of knowledge about cognition lead to significant improvement of metacognitive awareness of reading strategies?
2. What impact does planned instruction incorporating knowledge about cognition have on students' awareness of various kinds of reading strategies (Global, Problem Solving and Support strategies)?
3. Does teaching of knowledge about cognition lead to any change in the most used and the least used reading strategies?
4. What effect does a planned instruction for teaching knowledge about cognition have on a group of students with mixed level of metacognitive awareness?

2. Method

A case study approach (Newby, 2014) was used because it aimed to present the findings in a specific context rather than aiming to generalize the findings. It considered the relevance of the established reading research findings in terms of metacognition in the context of teaching Academic Reading to non-native ESL students. The case study had an explanation purpose where the study started with an assumption that teaching of cognitive knowledge would improve students' general metacognitive awareness of reading strategies.

2.1 Participants

This study was conducted with 27 MA first semester students of the Linguistics and English Language Teaching programme in a university in India. Twenty three were female, and four were male. Most of the students reportedly knew at least three languages, and their reported mother tongues included Assamese (17), Bengali (5), Kuki (Thadou) (1), Nepali (1), Hindi (1), Meitei (1) and Khasi (1). Twenty two did their schooling with English medium schools, whereas five did in Assamese medium schools. Though their medium was different during schooling, all of them had studied English as a subject since the beginning stage of their education. Therefore, all the participants had exposure to the language to different extents since their school days.

Though most of the students claimed that they had intermediate level of proficiency in reading skills, the interaction of the researcher with them revealed that the participants had limited fluency in academic reading with very little awareness of academic reading strategies and were not very confident in dealing with academic texts independently. Their immediate needs for academic reading includes reading informational texts relating to the discipline of English language teaching.

2.2 Instruments

The Survey of Reading Strategies (SORS) questionnaire (Mokhtari & Shorey, 2002) (Appendix A) was administered to measure the metacognitive awareness of reading strategies before and after the instructional intervention. Three broad kinds of reading strategies – Global Reading Strategies, Problem Solving Strategies, and Support Strategies are measured through this instrument. Mokhtari and Shorey suggest identifying three levels of reading strategy usage depending on the scores obtained – high (mean of 3.5 and higher), moderate (mean of 2.5 to 3.4), and low (mean of 2.4 and lower).

This questionnaire was considered appropriate for three reasons. First, it was designed to assess non-native ESL learners' metacognitive awareness and their perceived use of reading strategies while reading academic texts. The respondents in this study were non-native speakers of English who needed to negotiate academic texts to develop own language skills and to prepare themselves for a profession in Linguistics and English language teaching. Second, the reliability of the instrument had been established (internal reliability =.89 or better) by the developers through

field-testing. Finally, it had been used extensively in various studies (Aziz et al, 2011; Jafari & Shokrpour, 2012; Magogwe, 2013; Rastegar et al., 2017; Yüksel & Yüksel, 2012).

2.2 Procedures

To assess the students' metacognitive awareness of reading strategies before the instructional phase, the survey instrument (SORS) was administered at the very beginning of the first semester.

In line with the suggestions provided by Newton et al. (2018) for training of strategic readers, pedagogic actions carried out for this study include providing explicit introductions to reading strategies, incorporating multiple opportunities for guided practice in strategy use, guiding class discussions about strategy use, and recycling strategies with new passages.

In the instructional phase, 'preparing to read' activities and 'after you read' activities around eight texts from a standard ELT textbook were used. Through each text, students were given opportunities to practice multiple strategies as "reading curricula that are committed to train strategic readers, rather than teaching strategies one at a time, are better positioned to help students develop skilled reading abilities" (Newton et al., 2018, p. 33). The activities, aimed to teach a number of reading strategies (See Appendix B), were adapted keeping in mind the students' needs and their context.

While discussing the strategies, a three-step instruction intended to teach knowledge about cognition was used. It included:

Step 1: Teacher explanation of *what* a strategy is and *why* they need to learn it (*Declarative knowledge*)

Students were given direct information about the strategy to be used in an activity by explicitly stating the strategy and discussing why the strategy was useful.

Step 2: Exploring *how* a strategy is used through experiential learning (*Procedural knowledge*)

Students did an activity using the strategy, and through this experience, they were expected to discover how the strategy was used. For doing the activities, a combination of various interaction patterns (individual work, pair work, group work, and whole class) were used.

Step 3: Eliciting/Supplying information about *why and where* a strategy is used (*Conditional knowledge*)

Students were encouraged to think about rationale once again and possible contexts where the strategy might be useful. The teacher supplied information, if required.

After the instructional phase, the survey questionnaire (SORS) was administered again at the end of the semester to measure the effect of the planned instruction.

Data were analyzed by using statistical procedures through the Statistical Package for Social Sciences. A paired samples t-test was used to find out if planned instruction resulted in significant improvement in the metacognitive awareness. The mean scores of the usage of various types of strategies were calculated to find out the effect of the instruction on the students' awareness of each strategy type. The mean score for individual strategies was used to identify any pattern of change in the most used and the least used strategies. The mean scores of each student were sorted to find out the highest and the lowest scorers, and then a line graph was generated to show the trend in both the assessments.

3. Findings and Discussion

Research question 1: Does teaching of knowledge about cognition lead to significant improvement of metacognitive awareness of reading strategies?

In order to find out if the planned instruction led to significant improvement in awareness of reading strategies, a paired samples t-test was conducted where the students' performance in the pre-instructional assessment was compared to their performance in the post-instructional assessment. The results of the t-test are shown in the following table.

The overall mean score for metacognitive awareness of reading strategies was 3.63 in the pre-instructional assessment, while it was 3.79 in the post-instructional assessment. These data were subjected to t-test for paired samples, with the results showing a statistically significant gain ($t=2.43$; $n=27$; $p=.022$). However, the effect size was .37, which meant that there was a medium effect size. Thus, though the instructions incorporating knowledge about cognition led to the increase of general metacognitive awareness of reading strategies, it was not a very significant increase. This indicates that teaching of knowledge about cognition did

have a positive effect on the development of metacognitive awareness, but additional inputs (possibly involving the other dimension of metacognition, that is, regulation of cognition) for the next phase of instruction (in the second semester in the context of this study) would probably be needed for significant improvement. This is consistent with the view that strategy training needs to include regulation of cognition as well for better result.

Table 1

Paired Samples Test for Pre-instructional and Post-instructional Scores

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	Df	Sig. (2-tailed)
				Lower	Upper			
Overall Score_Pre-instructional phase – Overall score_Post-instructional phase	-.1605	.3427	.0660	-.2961	-.0249	-2.434	26	.022

Research question 2: What impact does planned instruction incorporating knowledge about cognition have on students' awareness of various kinds of reading strategies (Global, Problem Solving and Support strategies)?

To answer this question, the mean scores of the students' in terms of the awareness of the three kinds of reading strategies in the pre-instructional assessment and those in the post-instructional assessment were compared. The following table presents the results.

The mean scores of the students in the sub-strategies pointed towards an improvement in the level of metacognitive awareness of each kind of reading strategy. If the relative usage of each sub-strategy is considered, in both the assessments, the level of awareness was reported as the highest in Problem Solving Strategies and the lowest in Global Strategies in comparison to the other strategies. Therefore, though the perceived level of awareness increased in case of each sub-strategy, the

relative preference for using each sub-strategy remained generally the same after the instructional phase.

Table 2

Mean scores for Each Type of Reading Strategies

	Pre-instructional assessment	Post-instructional assessment
Overall Score	3.6247	3.785
Global Strategies	3.4046	3.624
Problem Solving Strategies	3.9815	4.148
Support Strategies	3.6255	3.695

After the instructional phase, the respondents continued to have the highest level of awareness of the Problem Solving Strategies, that is, the techniques that were used while dealing with a text directly. Readers face might problems or difficulties due to their inadequate background information, lack of necessary linguistic resources, or lack of practice in reading (Grabe & Stoller, 2013). This is probably more so in cases of non-native readers as they need to manage heavy reading demands. Rajab et al (2017) and Yuksel &Yuksel (2012) also found that non-native readers mostly prefer Problem Solving Strategies because these strategies are very useful for comprehension. This preference remained unchanged after the intervention in this study.

Among the three types of strategies, students mostly report using the Global strategies the least probably because they are difficult to teach (Bishop et al., 2006). In this study also, the level of awareness continued to be the lowest in Global Strategies, that is, in perceived usage of the techniques for monitoring or managing their reading. Thus, there was no change in the least preferred type of strategy as well after the intervention.

Madhumathi and Ghosh (2012) also found that Problem Solving Strategies were the most preferred strategies and Global Strategies were the least preferred strategies among Indian ESL students. In the context of this study, similar result was found in the pre-instructional assessment, and such preference was not subsequently changed by planned instruction incorporating knowledge about cognition.

Thus, the findings revealed that the participants mostly focused on dealing with problems in comprehension by using localised, focused techniques, and used monitoring strategies the least before and after the intervention. This is probably because the instructional strategies included activities to increase their level of awareness about strategies by discussing what, why, how and where strategies were used, but did not focus on activities to help them carry out regulatory or executive control of strategies by encouraging them to monitor and evaluate strategy use and learning.

Research question 3: Does teaching of knowledge about cognition lead to any change in the most used and the least used reading strategies?

In each assessment (pre-instructional and post-instructional), strategies with the five highest mean scores and the five lowest mean scores were identified in order to answer this question. Strategies with the highest mean scores were the most used and those with lowest mean scores were the least used strategies according to the perception of the students in this study.

In the list of the most used strategies, five of the strategies figured in the pre-instructional assessment, while seven strategies did in the post-instructional assessment as shown in the following table.

Table 3

Strategies with Top Five Mean Scores

Pre-instructional assessment			Post-instructional assessment		
Strategy Code	Description	Mean	Strategy Code	Description	Mean
PROB7	I read slowly and carefully to make sure I understand what I am reading.	4.41	PROB25	When text becomes difficult, I re-read it to increase my understanding.	4.63
PROB19	I try to picture or visualize information to help remember what I read.	4.37	SUP10	I underline or circle information in the text to help me remember it.	4.44

PROB25	When text becomes difficult, I re-read it to increase my understanding.	4.33	PROB14	When text becomes difficult, I pay closer attention to what I am reading.	4.44
GLOB4	I take an overall view of the text to see what it is about before reading it.	4.19	PROB11	I adjust my reading speed according to what I am reading.	4.26
SUP10	I underline or circle information in the text to help me remember it.	4.15	PROB7	I read slowly and carefully to make sure I understand what I am reading.	4.22
			PROB9	I try to get back on track when I lose concentration.	4.22
			PROB19	I try to picture or visualize information to help remember what I read.	4.22

Note. GLOB = Global Reading Strategies; PROB = Problem Solving Strategies; SUP = Support Strategies; n = Serial number of the statement in the SORS questionnaire

The table shows that except one strategy (GLOB4: 'I take an overall view of the text to see what it is about before reading it.'), all strategies reported as the highest used ones in pre-instructional phase were also reported as the highest used in the post-instructional phase, but with higher average usage of each strategy. Additionally, three new strategies (PROB11: 'I adjust my reading speed according to what I am reading', PROB7: 'I read slowly and carefully to make sure I understand what I am reading', PROB9: 'I try to get back on track when I lose concentration') were reported as the highest used strategies in the post-instructional assessment indicating that the number of frequently used strategies increased. This indicated that besides improving the students' awareness

of the already used strategies, the planned instruction helped students use more number of strategies increasingly.

The Problem Solving Strategies continued to dominate the list of the highest used strategies in the post-instructional assessment as well. In fact, except one strategy, all the reportedly most used strategies in the post-instructional assessment were Problem Solving Strategies. This indicated that the planned instructions led to the students' improvement primarily in using localized, focused techniques to deal with problems in comprehension while working with a text directly.

Reading slowly and carefully to ensure understanding of what is read figured as one of the highest used strategies in both the tests. This has some implications for the "reading rate" (Eskey, 2005, p.568). The student participants are probably yet to develop fluent decoding skills and automaticity as non-native readers might need to deal with the problem of limited linguistic resources. However, in the post-test, students reported using the strategy of adjusting reading speed according to what is read. This might be a result of their attempt to use background knowledge while reading which might be an indicator of their increased awareness about reading strategies as a result of the pedagogical intervention.

The following table presents the five least used strategies in pre-instructional and post-instructional assessment.

Table 4

Strategies with Five Lowest Mean Scores

Pre-instructional assessment			Post-instructional assessment		
Strategy Code	Description	Mean	Strategy Code	Description	Mean
PROB16	I stop from time to time and think about what I am reading.	2.70	PROB16	I stop from time to time and think about what I am reading.	3.07
GLOB20	I use typographical features like bold face and italics to identify key information.	2.81	GLOB8	I review the text first by noting its characteristics like length and organization.	3.15
GLOB21	I critically analyze and evaluate the	2.85	GLOB15	I use tables, figures and pictures in text	3.19

	information presented in the text.			to increase my understanding.	
GLOB15	I use tables, figures and pictures in text to increase my understanding.	3.04	GLOB21	I critically analyze and evaluate the information presented in the text.	3.19
SUP2	I take notes while reading to help me understand what I read	3.11	SUP26	I ask myself questions I like to have answered in the text.	3.22

Note. GLOB = Global Reading Strategies; PROB = Problem Solving Strategies; SUP = Support Strategies; n = Serial number of the statement in the SORS questionnaire

There were three common strategies (PROB16: 'I stop from time to time and think about what I am reading', GLOB 21: 'I critically analyze and evaluate the information presented in the text', and GLOB 15: 'I use tables, figures and pictures in text to increase my understanding' that were the least used in both the assessments. All these three strategies demand the use of higher-level processes (Grabe & Stroller, 2013) requiring the use of readers' background knowledge and inferencing abilities.

Though all the three kinds of strategies were seen among the reportedly least used five strategies, three of them were Global Strategies, i.e. strategies used for monitoring or managing reading.

A careful observation of the two tables reveals an interesting finding. Though Support Strategies had been reported as the least used strategies in this group, one support strategy (SUP10: 'I underline or circle information in the text to help me remember it') found place among the most commonly used strategies. Similarly, though Problem Solving Strategies were reported as one of the most used strategies, one Problem Solving Strategy (PROB 16: 'I stop from time to time and think about what I am reading.') was reported as one of the least used strategies among the entire list of strategies in both the assessments. Both these cases probably indicated that students were generally aware of all the three kinds of strategies more or less. Though the results of the survey clearly indicated their perceived awareness of one type of strategy to be more than another, any pedagogical intervention also needs to consider the exceptions to help them improve the overall awareness of reading strategies.

The analysis showed that though the average of strategy usage awareness increased for both the most used and the least used strategies, there was not much change in terms of relative preference of using the individual reading strategies. Students continued to primarily Problem Solving Strategies that required them to use localised, focused techniques to deal with problems in comprehension while working with a text directly. On the other hand, Global strategies requiring the use of conscious strategies for monitoring or managing reading continued to be the least used strategies in the post-instructional assessment.

However, there were a few exceptions that called for careful consideration of individual strategies by any further planned instruction aimed to improve overall awareness of reading strategies. The improved mean scores for both the most used and the least used strategies indicated that the planned instruction helped students use more number of strategies increasingly in general.

Thus, while participants reportedly used both lower-level identification skills and higher-level comprehension abilities simultaneously as in the interactive approach to reading (Grabe, 2010), and they had increased level of awareness in using both lower-level and higher-level skills after the intervention, the data also revealed that the participants used the lower-level processes to deal with comprehension difficulties more than the higher-level processes to monitor or regulate their reading.

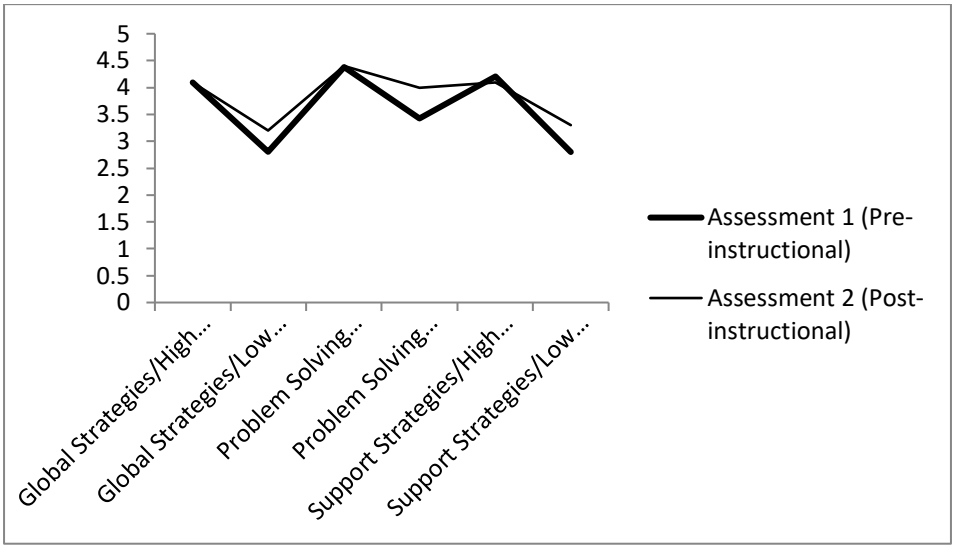
Research question 4: What effect does a planned instruction for teaching knowledge about cognition have on a group of students with mixed level of metacognitive awareness?

Though there was no low strategy user in this group as reflected in the scores of pre-instructional assessment and post-instructional assessment in the line of the interpretation of the scores by Mokhtari and Shorey (2002), most of the students were high strategy users (18 in pre-instructional assessment; 22 in post-instructional assessment) and a few (nine in pre-instructional assessment; five in post-instructional assessment) were moderate strategy users. Therefore, rather than comparing between the high strategy users and moderate strategy users, individual mean scores of the students in each assessment were sorted to identify the students with lowest mean scores and with highest mean scores, and then performance of these two groups were compared.

Therefore, in an attempt to find out what effect the planned instruction had on a group of students with mixed level of metacognitive awareness, a comparison was made between the performance of the highest scorers (students with the five highest average scores) and that of lowest scorers (students with the five lowest average scores) in both the assessments. The following graph is a representation of this comparison.

Figure 1

Comparison between the Performance of the Highest Scorers and the Lowest Scorers



The comparatively less fluctuation in the pattern of the lighter line (the line representing the post-instructional assessment) indicated that the gap between the high scorers and low scorers decreased in the post-instructional assessment as a result of the instructional intervention. A closer look at both the lines revealed that the decrease was caused more by the improvement of the low scorers than of the high scorers. The level of overall awareness of high scorers remained more or less the same, whereas it increased in case of low scorers. It entailed that the instructional intervention benefited the low scorers more than the high scorers, and the high scorers needed enhanced instructions, probably incorporating regulation of cognition, for further improvement. This means that students who had lower level of perceived awareness prior to

the instructional phase had benefited more by the planned instruction in comparison to those who already had comparatively higher level of perceived awareness.

In the context of this study, one advantage of the lower scorers being more benefited was that the reduced gap in awareness probably prepared all the students for more demanding cognitive processes, in this case for self-regulation, as this would hopefully make regulation of cognitive strategies less challenging for the students who previously had lower level of awareness. Therefore, it can be said that after the planned instruction, the group of students was better prepared for activities incorporating regulation of cognition in the next phase of instruction as planned for the second semester of the course.

However, one methodological strategy also might play a role in the reduced gap between the high scorers and low scorers. Since various collaborative interaction patterns (for example, pair work and group work) were used in the course delivery process, the reduced gap might also be a result of scaffolding where the low scorers were benefited by working with the high scorers and the high scorers awareness remained more or less of the same level. This explanation can be linked to the finding that high achievers and the teacher have equal contributions to the knowledge acquisition in low achievers (Khodamoradi et al., 2013). This is also in line with the finding of Pishghadam & Ghadiri (2011) that by working with high ability learners, low ability learners get help in learning appropriate learning strategies. Thus, in this study, by working in a collaborative mode, the high scorers probably contributed to the learning of the low scorers. However, further investigations will be needed to make a concluding remark in this regard.

4. Conclusion

Planned instruction incorporating knowledge about cognition can lead to marginally improved metacognitive awareness of reading strategies. However, for significant improvement, students need additional inputs (possibly including the other dimension of metacognition, that is, regulation of cognition) for significant improvement of metacognitive awareness of reading strategies.

Instruction incorporating knowledge about cognition helps students use more number of strategies increasingly in general and leads

to the students' improvement primarily in using localised, focused techniques to deal with problems in comprehension while working with a text directly. After such an instruction, students achieve increased level of awareness in using both lower-level and higher-level skills, and they use the lower-level processes to deal with comprehension difficulties more than the higher-level processes to monitor or regulate their reading.

Such instruction involving knowledge about cognition, in general, does not lead to much change in students' relative awareness of various strategy types – Problem Solving, Support and Global Strategies. Similar to their choice prior to the instruction, students continue to report perceived usage of more number of 'localised, focused techniques' for working directly with the text in comparison to the usage of basic support mechanisms assisting comprehension of the text and the usage of 'intentional, carefully used techniques' to monitor learning. It does not result in remarkable improvement in the use of conscious strategies for monitoring or managing reading. It has the pedagogical implication that students probably need to be given systematic support to monitor and manage their learning and improve self-regulation skills for further improving their awareness of reading strategies in the next part of the instruction.

Instruction involving knowledge of cognition does not lead to much change in terms of relative preference of using the individual reading strategies also. Students continue to primarily use localised, focused techniques to deal with problems in comprehension while working with a text directly. On the other hand, the use of conscious strategies for monitoring or managing reading continues to be the least used strategies after the instructional intervention. However, the individual exceptions of particular strategies need to be carefully considered in any further planned instruction aimed to improve overall awareness of reading strategies. .

The findings also have implications for a group of students with mixed levels of reading awareness. Instructions aimed to promote knowledge about cognition might lead to reduction of the gap between students with higher level of awareness and those with lower level of awareness. Though there was not much visible improvement in the reading awareness of high scorers, neither was there any negative effect on their reading awareness probably because all the students received constant and repeated instruction for promoting cognitive knowledge. In the context of this study, the collaborative approach using various

interaction patterns for conducting the activities to promote knowledge about cognition might also work as a scaffolding strategy for the students with lower level of reading awareness. Since knowledge about cognitive strategies can be considered as a prerequisite for developing metacognitive knowledge, such instruction in the initial stage of an instructional plan can prepare the whole class for receiving or experiencing instructions to help them consciously monitor or regulate cognitive strategies and other processing for raising their metacognitive awareness.

This instructional approach used in this study reflected some characteristics of transactional teaching approach (Janzen, 2010) as it was embedded in a content area so that students learnt strategies while engaging in regular reading for different purposes, there was constant recycling of strategies over new texts and tasks, and it aimed to develop strategy use over the long term. However, teacher modelling, another characteristic of transactional teaching approach, was used only when it was felt necessary.

From pedagogical point of view, the study considers the view that an instructional plan for improving metacognitive skills needs to include the component of evaluating strategy use and learning along with that of knowledge about cognition. The study also supports the view that it is worth exploring how besides teaching 'what', 'when' and 'why' of strategy use, teaching how to evaluate and monitor their own strategies might add value to metacognitive strategy training (Carrell, 1998).

The study also supports the assumption that giving exposure to a variety of strategies and giving opportunities to experience the use of the strategies without much training on regulation of cognition does also help in enhancing students' awareness to some extent, and this is a good start for a class with mixed level of awareness, because it helps reduce the gap between students with higher level and those with lower level of awareness. For more significant achievement, training on the monitoring, orchestrating and evaluating strategy use and learning is required. For example, in the context of the present group of students, instructions in the second semester need to incorporate activities on monitoring and evaluating strategy use for achieving higher level of metacognitive awareness.

One of the limitations of the study was that it did not consider the diverse linguistic background of the students as a factor, though it was conducted in a multilingual context. Students' perceptions of the usage of

the reading strategies and their performance during the instructional phase might be affected by their already existing knowledge about their mother tongue and exposure to other languages. Further studies may consider this variable for deeper investigation into the area. Moreover, the data collected in this study need to be treated with caution because it reflects the students' perceptions about awareness of strategy usage, and not actual strategy usage as the very nature of metacognitive knowledge is fallible (O'Malley & Chamot, 1995). Further similar studies with information on actual strategy usage might offer findings with deeper insights.

About the Author

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Appendix A

The Survey Instrument used in the study

Background information

Gender:

Mother tongue:

Medium in school:

Languages known:

How will you rate your own ability in reading English (*Tick an option*): Beginner/Lower intermediate/Upper intermediate/Advanced

Survey of Reading Strategies (SORS) (Mokhtari & Shorey, 2002)
The purpose of this survey is to collect information about the various techniques you use when you read academic materials in English (e.g. reading textbooks for homework or examinations, reading journal articles, etc.).

All the items below refer to your reading of college-related academic materials (such as textbooks, *not* newspapers or magazines). Each statement is followed by five numbers, 1, 2, 3, 4 and 5, and each number means the following:

'1' means that 'I never or almost never do this.'
'2' means that 'I do this only occasionally.'
'3' means that 'I sometimes do this.' (About 50% of the time)
'4' means that 'I usually do this.'
'5' means that 'I always or almost always do this.'

After reading each statement, *circle the number* (1, 2, 3, 4, or 5) which applies to you. Note that there are no right or wrong responses to any of the items on this survey.

Category/ Sl. No.	Statement	Never				Always
Global/1	I have a purpose in mind when I read.	1	2	3	4	5
Support/2	I take notes while reading to help me understand what I read	1	2	3	4	5
Global/3	I think about what I know to help me understand what I read .	1	2	3	4	5
Global/4	I take an overall view of the text to see what it is about before reading it.	1	2	3	4	5
Support/5	When text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5
Global/6	I think about whether the content of the text fits my reading purpose.	1	2	3	4	5

Problem solving/7	I read slowly and carefully to make sure I understand what I am reading.	1	2	3	4	5
Global/8	I review the text first by noting its characteristics like length and organization.	1	2	3	4	5
Problem solving/9	I try to get back on track when I lose concentration.	1	2	3	4	5
Support/10	I underline or circle information in the text to help me remember it.	1	2	3	4	5
Problem solving11	I adjust my reading speed according to what I am reading.	1	2	3	4	5
Global/12	When reading, I decide what to read closely and what to ignore.	1	2	3	4	5
Support/13	I use reference materials (e.g., a dictionary) to help me understand when I read.	1	2	3	4	5
Problem solving/14	When text becomes difficult, I pay closer attention to what I am reading.	1	2	3	4	5
Global/15	I use tables, figures and pictures in text to increase my understanding.	1	2	3	4	5
Problem solving/16	I stop from time to time and think about what I am reading.	1	2	3	4	5
Global/17	I use context clues to help me better understand what I am reading.	1	2	3	4	5
Support/18	I paraphrase (re-state ideas in my own words) to better understand what I read.	1	2	3	4	5
Problem solving/19	I try to picture or visualize information to help remember what I read.	1	2	3	4	5
Global/20	I use typographical features like bold face and italics to identify key information.	1	2	3	4	5
Global/21	I critically analyze and evaluate the information presented in the text.	1	2	3	4	5
Support/22	I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5
Global/23	I check my understanding when I come across new information.	1	2	3	4	5
Global/24	I try to guess what the content of the text is about when I read.	1	2	3	4	5

Problem solving/25	When text becomes difficult, I re-read it to increase my understanding.	1	2	3	4	5
Support/26	I ask myself questions I like to have answered in the text.	1	2	3	4	5
Global/27	I check to see if my guesses about the text are right or wrong.	1	2	3	4	5
Problem solving/28	When I read, I guess the meaning of unknown words or phrases.	1	2	3	4	5
Support/29	When reading, I translate from English into my native language.	1	2	3	4	5
Support/30	When reading, I think about information in both English and my mother tongue.	1	2	3	4	5

Appendix B

Strategies taught during the instructional phase

Preparing to read:

1. Looking at and discussing a given photograph to think about the topic (Text 1)
2. Relating the topic to one's own context to think about the topic (Text 2, Text 5)
3. Looking at some photos, captions and some related questions to think about the topic (Text 7)
4. Personalising the topic to think about it by thinking about one's personal connection to the topic (Text 3), looking at a list of ideas (Text 4), discussing some relevant questions (Text 6), thinking about some given situations (Text 8), looking at relevant questions and pictures (Text 9)
5. Skimming to predict contents and/or to get an overview of the text by looking at graphic materials (Text 1), looking at the headings of the text, key words and the introductory paragraph (Text 2), looking at the title and headings (Text 3), quickly using the learnt strategies for skimming (Text 4), previewing the visual materials (Text 6), reading the first sentence of each paragraph (Text 7), giving particular attention to pictures and captions (Text 9)

After you read:

1. Reading for the main idea/s by looking at the introductory paragraph and headings (Text 1), identifying the topic of each

paragraph and by finding out the main idea of the whole text (Text 4)

2. Dealing with difficult or unknown vocabulary by finding the definition in the text, by looking at the context and by using knowledge of unknown words (Text 1), using knowledge of related words (Text 2), looking for definitions by recognizing the structure (Text 3), using context clues (Text 4), finding explanations and examples in the text (Text 5), recognizing form class of the new word (Text 7), using word maps (Text 8)
3. Asking oneself questions about what one is reading to read actively (Text 1)
4. Reading boxed texts (Text 2)
5. Note taking by using outlining (Text 2), by making a chart (Text 9)
6. Learning words related to the topic by grouping (Text 3)
7. Summarising (Text 3)
8. Applying new knowledge in real situations (Text 3), to one's own context (Text 5), in given contexts and in own context (Text 7)
9. Visualising parts of the text (Text 4)
10. Citing studies in writing (Text 4)
11. Reading boxed texts (Text 5)
12. Making use of own experience to remember important information and ideas from the text (Text 6)
13. Scanning the text for specific information (Text 8)
14. Understanding complex sentences (Text 8)