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Integrated Practice Of Metacognitive Strategies And Second Language Writing

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Writing is a cardinal skill for effective communication practised extensively from primary education, but the students are not exhibiting adequate writing proficiency in their higher education and at their workplace. This experimental study focuses on enhancing the students' writing skills by promoting metacognitive strategies in the classroom. The participants of this study are 51 pre-final year Diploma students belonging to the Department of Instrumentation and Control Engineering of an autonomous polytechnic institute in Tamil Nadu. The teacher-researcher has facilitated students' cognizance with metacognitive strategies employed in the writing tasks administered during the course. The results have exhibited improvement apropos of coherence and unity in the students' writing skill. It implies the indispensable role of metacognitive strategies in developing the capacity of the learners' strategic thinking and guiding them to plan, progress, and process their writing into a coherent text.

Keywords: Metacognitive Strategies, Integrated Writing Practice, Writing Skills

Introduction

Writing is a predominant skill in the process of communication involving recursive composing process, which entails strategic and reflective thinking. The process of writing comprises three main stages say, before writing, during writing and after writing. Sarfo-Adu (2015) has emphasized, "the seemingly

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fondness for research into university writing is imperceptibly creating a gap in scholarship in polytechnic writing". This insists that there is a need for the enhancement of polytechnic students' writing skill. These students not only require an adequate knowledge in writing skill to perform academic tasks but also are in necessity to discharge their workplace requirements. So, to promote their writing skill, metacognitive strategies are effectuated in the present study. Defazio (2010) have opined, "effective writing is a skill that is grounded in the cognitive domain". This prominent writing skill is a methodical process that acts as the representation of our thoughts demanding regulated thought process. In order to achieve such effective writing through regulated thinking, the study proposes metacognitive strategies. This paper expounds on the effect of metacognitive strategies towards the development of coherence in the writing skills of the polytechnic students. Metacognitive strategies play a crucial role in fostering the students' thinking ability and reflective skill in turn capacitating them to plan, organize and evaluate their writing tasks. In addition, it enables their cognitive ability to generate ideas fluently and to reflect on their performance strategically. In congruence with this, Danuwong (2006) has opined that insight into metacognitive strategies when learning a language promotes language learning autonomy of students. Further, the study focuses on the metacognitive strategies such as, planning, organizing, monitoring and evaluating in order to hone the students' knowledge of writing skill gradually. The metacognitive knowledge of learning, task and strategy are explored in the study through these strategies. These strategies guide the students in the requisite process of writing. The study has facilitated integrated writing practice by enabling the students' metacognition through the implementation of metacognitive strategies.

Theoretical Background

Classification of Learning Strategies

Scarcella and Oxford (1992) define language learning strategies as "specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferrable to new situations" (Oxford, 2003). These learning strategies guide the students in their learning process. There are several classifications of learning strategies. As cited by Chilkiewicz (2015), Rubin has classified the learning strategies into process which may contribute directly to learning and process which may contribute indirectly to learning. Then, Carver classified the learning strategies into strategies for coping with TL rules, strategies for receiving performance, strategies for producing perforance and strategies for organizing learning. Following these two classifications, Ellis classified it into hypothesis

formation, hypothesis testing and automatization. Besides these, O'Malley et al., have classified the learning strategies into cognitive, metacognitive and socio-affective strategies. Further, Oxford has categorized the learning strategies into direct strategies – memory strategies, cognitive strategies, compensatory strategies, and indirect strategies – metacognitive strategies, affective strategies, social strategies. As Hsaio and Oxford (2002) have emphasized, "a comparative analysis of various kinds of strategy classifications reported so far supported the view that O'Malley et al.'s classification of strategies into cognitive, metacognitive and socio-affective strategies as well as Oxford's six-subset strategy taxonomy are more consistent with learners' use of strategies than the direct and indirect dimensions" (Gamage, 2003). The present study focuses on the metacognitive strategies to enable the writing skill of the polytechnic students as these strategies would instigate the students to ponder on their consciousness and promote their strategic thinking required to process the writing.

Metacognition

Metacognition was first introduced by Piaget (1950) as, "knowing the knowing and thinking the thinking" in the early years of cognitive development (Akturk & Sahin, 2011). Flavell (1976) is the first researcher to introduce metacognition to the realm of education and psychology referring to the "the knowledge and control children have over their own thinking and learning activities" (Baker & Brown, 1984). Flavell defined metacognition as "one's knowledge concerning one's own cognitive processes and products or anything related to them" (Akturk & Sahin, 2011). Besides, Brown (1978) defined metacognition as, "students' awareness and organization of thinking processes that they use in planned learning and problem-solving situations" (Akturk & Sahin, 2011). Further, Wellman (1985) defined metacognition as, "thinking about thinking or a person's cognition about cognition" (p.1). Flavell (1979) introduced two facets of metacognition as, "metacognitive knowledge (knowledge about our own and other people's cognitive processes) and metacognitive experiences (conscious cognitive or affective experiences that accompany current behaviour" (Weil et al., 2013). As stated by Nazarieh (2016), "the term the seventh sense was used by Nisbet and Smith (1986) to refer to metacognition". In addition to Flavell's classification, Brown (1987) proposed two dimensions of metacognition: knowledge about cognition and regulation of cognition. Later, J. E. Jacobs and Paris (1987) characterized knowledge about cognition into declarative knowledge, procedural knowledge, and conditional knowledge.

Review Of Literature

Metacognition and Learning

Cartwright (2010) opined, "metacognition is the ability to reflect on mental processes, and determine their effectiveness, allowing adjustments to facilitate effective learning" (Gurbin, 2015). In congruence with this, Gurbin (2015) explained, "it is interesting to note that metacognition is essential to one's ability to monitor and regulate learning successfully in different disciplines and learning situations (Veenman, Wilhelm, & Beishuizen, 2004)". Metacognition is employed in various disciplines such as psychology, mathematics, medicine, language learning, etc. Baker and Brown (1984) identified the relationship between metacognition and reading, "Most characterizations of reading include skills and activities that involve metacognition". Later, Wang, Haertel, and Walberg (1990) revealed, "metacognition is the most important predictor of learning outcomes, surpassing other cognitive and motivational characteristics of students" (Veenman, 2015). Ruan (2004) investigated the metacognitive knowledge displayed by 16 bilingual Chinese/English first-graders (Williams & Atkins, 2009). Nazarieh (2006) asserted, "metacognition, also has been appeared to be one of the essential prognosticators of learning (Wang, Heartal, & Walberg, 1990) and the benefits of metacognitive instruction have been irrefutable in areas such as listening, reading, and mathematics (Goh, 2008)". Karaali (2015) illustrated how metacognition can be incorporated into a repeated exercise in the mathematics classroom, through a specific case study in the context of a liberal arts mathematics course (Jaleel & Premachandran, 2016). These literatures show the role of metacognition in learning, reading, problem-solving, critical thinking, mathematics, etc. but there are fewer studies that state the impact of metacognitive strategies on second language writing.

Metacognition and Writing

Tanner (2012) asserted the introduction of metacognition to a classroom benefits the students by making them better learners. The relation between metacognition and writing are investigated in diminutive number. Mynlieff (2014) exhibited that writing tasks should have both an analytical component and a metacognitive component, requiring both analysis and reflection (Paris & Paris, 2001; Zumbrunn et al., 2011). They experimentally tested whether the writing interventions that have metacognitive components offer academic benefits to students. In addition, they demonstrated that writing interventions that include a metacognitive component in large-enrolment introductory biology courses have significant impact on the student learning compared

with other traditional teaching methods. The study of Raphel, Kirschner, and Englert (Xiao, 2011) was one of the first attempts among the few studies that intend to improve the learners' writing performance by enhancing their metacognitive knowledge. As cited in Akturk and Sahin (2011), ELT practitioners defined metacognition in their unique terminology as, individual's awareness of their ability to monitor, regulate and control their own activities concerning learning (Swanson, 1990); knowledge and awareness of thinking processes and strategies (together with the ability to evaluate and organize these processes: Wilson, 1998); individuals' awareness and comprehension of processes of regulating their mental state, skills, memory and behaviour (Scarr & Zanden, 1984). In a nutshell, it is the knowledge about one's own thought process.

In the last two decades, researchers have attempted to prove that making students metacognitive learners is beneficial not only in general learning, but also in specific subject areas such as reading, writing, mathematics, social studies, and problem solving (Xiao, 2011). O'Malley and Chamott (1990) perceived writing to be a complex cognitive skill (Kim, Melissa & Joyce, 2016). Kasper (1997) in his experimental study, found a positive correlation between student's metacognitive growth and their writing performance using a combination of autobiographical writing and cognitive inventories. Yanyan (2010) used a similar approach and found metacognitive knowledge to be positively correlated with English writing performance as well as learner autonomy. These studies emphasize the role of metacognition in improving the writing skills. Metacognition and Self-Regulated Learning: Guidance report (2011) reported, metacognitive strategies are used to monitor or control our cognition. Laplante (2010) and Tebeaux (1983) established the importance of writing skills in the workplace as, competence in writing in English could be an added value to any future employees when seeking a job since English language has become an important and global medium of communication widely (Isnin, 2017). Lu and Liu (2011), Ruan (2005) and Yanyan (2010) stated, the development of metacognition, or thinking about thinking, is clearly beneficial for second language writers of English in both enhancing writing achievement and increasing learner autonomy (Kim, 2016)). Taylor (1999) stated metacognition as an appreciation of what one already knows, together with a correct apprehension of the learning task and what knowledge and skills it requires. Combined with the ability to make correct inferences about how to apply one's strategic knowledge to a particular situation and to do so efficiently and reliably. This shows the importance and role of metacognitive strategies in the development of writing skills.

Shabitha (2014) studied the effectiveness of integrated writing practice to improve the cohesive writing skills of the 27 MSC OR & CA students of NIT - Tiruchirappalli. In addition to the existing literature, this study emphasizes

the predominant role of metacognitive strategies in second language writing of polytechnic students through integrated writing practice.

Research Rationale

Gatbonton and Seglowitz (1988) and Myers (1997) insisted, the traditional writing approach has failed to make correct grammar automatic because it has been aimed, not at particular utterances, but at structures. The resultant effect is that while so much is being done in the name of teaching of writing, so little is being achieved in terms of producing skilful, self-sustaining writers which is a core objective of the nation's polytechnic education (Lekan, 2013). It is evident from the statement that focusing just on grammar doesn't produce adequate writing ability to the polytechnic students emphasizing the need for improvement in the writing skills of polytechnic students with regard to content generation. Lekan (2013) conducted a study on the integrated writing practice to polytechnic students comprising process, product and genre-oriented approach. The results indicated that the polytechnic students could produce publishable writing through narrative genre approach. Lam and Chong (2013) investigated the polytechnic students' perceptions on their language learning experiences during their Communicative English course and revealed that more than half of the students agreed that the English language curriculum did not help them to improve their English (Isnin, 2017). These studies have ensured the need for enhancing the writing skills of polytechnic students. In order to enhance their writing skills, the present study has incorporated metacognitive strategies in the classroom for establishing coherence and unity in their writing.

Research Questions

The study attempts to answer the following research questions:

1. How often the students have used metacognitive strategies in their writing?

2. Do metacognitive strategies influence the students' writing skill?

3. Is there a difference in the writing performance of control and experimental group?

4. Does Medium of instruction have an impact on the writing skills of the students?

Research Methodology

The present quasi-experimental study was conducted at Seshasayee Institute of Technology (SIT), an autonomous Polytechnic Institution located in Tiruchirappalli, Tamil Nadu, India. The participants (N = 73) of this study were the pre-final year students belonging to the Instrumentation and Control Engineering (ICE) and Electronics and Communication Engineering (ECE) branches. These students were chosen for the study considering their need of project report submission in the final year and their workplace requirements of report writing, letter writing, instructions, etc. The pre-study questionnaire was administered in the beginning of the study to examine their social background and to analyse their awareness of metacognitive strategies pertaining to the writing skill. The pre-study questionnaire exhibited that most of the students hailed from rural background, regional medium of instruction and were not aware of metacognitive strategies. Pre-Proficiency test was conducted to diagnose the proficiency level of the students, which indicated their low-level of writing proficiency. Besides, the participants were divided into control and experimental group based on their performance in the pre-proficiency test which, revealed that the ICE (experimental: N=51) branch students were low proficient in their writing skill compared to the ECE (control: N=22) branch. A schedule of 30 classes with 60 minutes duration was conducted to the experimental group facilitating the students to employ metacognitive strategies in their writing process. 20 writing tasks were administered to the students in a graded structure. At the end of the course, Post study questionnaire was administered to analyse the students' strategy use in their writing after the employment of metacognitive strategies and post proficiency test was conducted to assess the improvement in the students' performance. Besides these tests, delayed-proficiency test was conducted after three months of the course to analyse if the students have sustained their improvement.

Results Of The Study

Descriptive Analysis of Students' Metacognitive Strategy Use

The frequency of Students' Metacognitive Strategy use has been analysed and is tabulated in Table 1. Metacognitive strategies have been classified into four major categories say, planning, organizing, monitoring and evaluating. Students plan their task before writing, organize the content during writing and monitor and evaluate it after writing. Berieter and Scardamalia (1987) described planning as, the selection of appropriate strategies and the allocation of appropriate resources that affect performance. Instances include making

predictions before doing a task, sequencing strategies, and allocating time or thoughtfulness selectively before starting a specific; Schraw and Moshman (1995) defined monitoring as, one's on-line and regular awareness of comprehension and presentation of a task. For instance, being able to involve in self-testing periodically, while learning, is a good example. Studies also indicate that monitoring as ability develops quite slowly and is quite poor in children and even adults; Evaluating strategies referred to assessing the products and regulatory processes of an individual are learning. They also referred to assessing the outcome of comprehension or the learning processes after accomplishing a task. Re-evaluating one's goals and conclusions after a specific task is a representative example for that (Nazarieh, 2016).

It is indicated in Table 1 that in the stage of planning, 49.2% of students are able to think and discuss the topics handled in the class outside the classroom in English, 41% of students are 'sometimes' conscious of their thought process, 42.6% of students are 'always' able to think effectively to gather ideas, 72.1% of them are 'always' able to brainstorm and draw mind map before writing, 37.7% of them are able to think about the topic in detail before writing, and 39.3% of them use feedback given for the previous task. Next, for Organising the content, 47.5% of students 'always' show concentration and focus on their thoughts, 44.3% revise their thought process during writing, and 34.4% ask doubts to their instructor during writing. Students monitor their writing with metacognitive strategy knowledge as shown in Table 1, 36.1% of them are able to edit their content for clarity, 47.5% of them are able to edit grammar, vocabulary, spelling and punctuation, 52.5% of them have stated that they are able to write in English on their own, and 37.7% of them clarify doubts to their teacher-researcher in English. In the Evaluation stage, 50.8% of students revise and organize their content, 37.7% of them are able to revise their content for coherence and unity, 42.6% of them are able to use journal entry technique while assessing their writing progress, 45.9% of them re-examine their thoughts in revision, 39.3% of them are able to identify their errors, and 55.7% of them 'sometimes' evaluate their peers' task sheets. These results exhibit that the students frequently use metacognitive strategies in their writing. This indicates the effect of awareness provided to the students on metacognitive strategies during the course and their employment of these strategies in the writing tasks administered to them.

Table 1

Descriptive Analysis of Students' Metacognitive Strategy Use.

S.No.	Metacognitive Variable	N	Always (%)	Sometimes (%)	Rarely (%)	Never (%)	Mean	SD
Planning								
1	Thinking outside the classroom	51	3.3	49.2	9.8	21.3	2.41	0.92
2	Conscious of thought process	51	21.3	41	14.8	6.6	2.92	0.87
3	Thinking effectively to gather ideas	51	42.6	31.1	4.9	4.9	3.33	0.84
4	Brainstorming and mind mapping	51	72.1	8.2	3.3	0	3.82	0.48
5	Thinking about the topic of writing in detail	51	37.7	37.7	6.6	1.6	3.33	0.71
6	Use of feedback	51	36.1	39.3	6.6	1.6	3.31	0.71
Organising								
7	Concentration and focus of thoughts	51	47.5	29.5	3.3	3.3	3.45	0.76
8	Revision of thoughts	51	26.2	44.3	8.2	4.9	3.09	0.81
9	Clarification of doubts to the instructor during writing	51	32.8	34.4	13.1	3.3	3.16	0.83
Monitoring								
10	Revision of content for clarity	51	36.1	36.1	4.9	6.6	3.22	0.88

Continued on next page

Table 1 continued

S.No.	Metacognitive Variable	N	Always (%)	Sometimes (%)	Rarely (%)	Never (%)	Mean	SD
11	Revision of grammar, vocabulary, spelling and punctuation	51	23.0	47.5	8.2	4.9	3.06	0.79
12	Writing in English on own	51	52.5	23.0	4.9	3.3	3.49	0.78
13	Clarification of doubts in English	51	31.1	37.7	9.8	4.9	3.14	0.85
Evaluating								
14	Revision and organisation of content	51	18.0	50.8	8.2	6.6	2.96	0.79
15	Revision of content for coherence and unity	51	37.7	36.1	8.2	1.6	3.31	0.73
16	Assessment through Journal Entry	51	21.3	42.6	14.8	4.9	2.96	0.82
17	Re-examination of thoughts in revision	51	24.6	45.9	9.8	3.3	3.09	0.76
18	Identification of Errors	51	39.3	37.7	3.3	3.3	3.35	0.74
19	Evaluation of Peers' Task sheets	51	16.4	55.7	6.6	4.9	3.00	0.72

Reliability analysis has been computed to identify the internal consistency among the metacognitive strategies. The Cronbach Alpha's value of 0.84 in Table 2, explicates a good level of consistency among the strategies. It implies that the metacognitive strategies are significantly reliable.

Table 2

Reliability analysis of Metacognitive Strategies.

Reliability Statistics	
Cronbach's Alpha	N of Items
0.84	19

Relationship Between Metacognitive Strategies And Second Language Writing

Correlation analysis has been computed to analyse the relationship between the students' metacognitive strategy use and their writing. Table 3 explicates the students' writing that has been evaluated based on the scoring profile of H. L. Jacobs, Zinkagraf, Wormuth, Hartfiel, and Hughey (1981) comprising Content, organization, Vocabulary, Language Use and Mechanics as shown in Figure 1. It is evident from Table 3 that planning strategy and second language writing have significant correlation at 0.05 level. Besides, organizing strategy and writing have significant correlation at 0.05 level. In addition, monitoring strategy also has a significant correlation with writing at 0.05 level as exhibited in Table 3. Further, there is a significant correlation between evaluation strategy and writing at 0.05 level. The results in Table 3 indicate that P values are less than 0.05 which explicates that there is a significant correlation between students' writing skill and metacognitive strategy use. This implies that these strategies have influenced the students in their writing tasks for generating content and planning the task before writing, organizing, and monitoring their content during writing to establish coherence and unity; and evaluating and reflecting their writing for content, diction, mechanics, etc., after writing.

Table 3

Correlation Analysis of Students' Metacognitive Strategies and Writing.

	Cont.	Org.	Voc.	Lang. use	Mech.	Plan.	Arr.	Mon.	Eval.
Cont.									
Org.	0.97** **0.000**								
Voc.	0.96** **0.000**	0.99** **0.000**							

Continued on next page

Table 3 continued

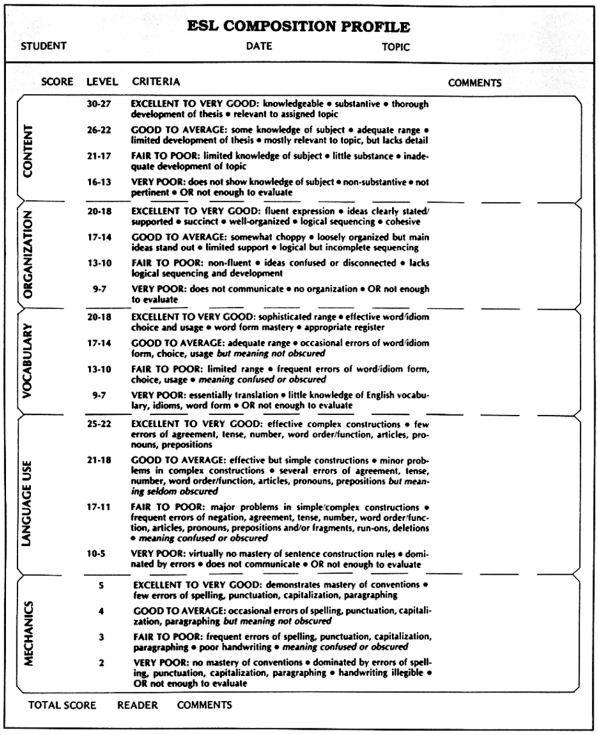
	Cont.	Org.	Voc.	Lang. use	Mech.	Plan.	Arr.	Mon.	Eval.
Lang. Use	0.96** **0.000**	0.98** **0.000**	0.98** **0.000**						
Mech.	0.94** **0.000**	0.95** **0.000**	0.96** **0.000**	0.97** **0.000**					
Plan.	0.31* **0.02**	0.32* **0.01**	0.31* **0.02**	0.33* **0.01**	0.31* **0.02**				
Arr.	0.28* **0.04**	0.30* **0.03**	0.29* **0.03**	0.32* **0.02**	0.30* **0.03**	0.46** **0.00**			
Mon.	0.31* **0.02**	0.27* **0.05**	0.27* **0.04**	0.31* **0.02**	0.30* **0.03**	0.48** **0.000**	0.53** **0.000**		
Eval.	0.38** **0.00**	0.33* **0.01**	0.31* **0.02**	0.33* **0.01**	0.31* **0.02**	0.42** **0.00**	0.36** **0.008**	0.71** **0.000**	

**Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed). Note. The abbreviation in the table is expanded as the following: Cont. – Content, Org. – Organization, Voc. – Vocabulary, Lang. Use – Language Use, Mech. – Mechanics, Plan. – Planning, Arr. – Arranging, Mon. – Monitoring, Eval. – Evaluating.

Students' Writing Performance

The Paired-Samples t-Test has been computed among the pre, post, and delayed proficiency test to analyse the difference and improvement in the students' writing skill. In Table 4, P value greater than 0.809 indicates that there is no significant difference between the performance of control and experimental group in their pre-proficiency test though the mean value 3.3636 exhibits the proficiency level of control group, slightly higher than the experimental group. Moreover, P values less than 0.05 indicate that there is a significant difference between the experimental and control group in the post proficiency test. This implies that the control group students who have been able to perform reasonably good in the pre-proficiency test could not excel in the post-proficiency test, as they have not been subjected to the pedagogical intervention. Besides, the results indicate that there is a significant difference between pre and post proficiency, post and delayed proficiency test performance of experimental group. The mean values of pre, post and delayed proficiency test performance of experimental group indicates that there is an adequate improvement in the students' performance belonging to the experimental group in the Post and delayed proficiency test.

Table 5 exhibits the results of paired-samples t-Test of experimental group comprising the components on which the students have been tested such as,



ESL COMPOSITION PROFILE

STUDENT DATE TOPIC

	SCORE	LEVEL	CRITERIA	COMMENTS
CONTENT		30-27	EXCELLENT TO VERY GOOD: knowledgeable • substantive • thorough development of thesis • relevant to assigned topic	
		26-22	GOOD TO AVERAGE: some knowledge of subject • adequate range • limited development of thesis • mostly relevant to topic, but lacks detail	
		21-17	FAIR TO POOR: limited knowledge of subject • little substance • inadequate development of topic	
		16-13	VERY POOR: does not show knowledge of subject • non-substantive • not pertinent • OR not enough to evaluate	
ORGANIZATION		20-18	EXCELLENT TO VERY GOOD: fluent expression • ideas clearly stated/supported • succinct • well-organized • logical sequencing • cohesive	
		17-14	GOOD TO AVERAGE: somewhat choppy • loosely organized but main ideas stand out • limited support • logical but incomplete sequencing	
		13-10	FAIR TO POOR: non-fluent • ideas confused or disconnected • lacks logical sequencing and development	
		9-7	VERY POOR: does not communicate • no organization • OR not enough to evaluate	
VOCABULARY		20-18	EXCELLENT TO VERY GOOD: sophisticated range • effective word/idiom choice and usage • word form mastery • appropriate register	
		17-14	GOOD TO AVERAGE: adequate range • occasional errors of word/idiom form, choice, usage *but meaning not obscured*	
		13-10	FAIR TO POOR: limited range • frequent errors of word/idiom form, choice, usage • *meaning confused or obscured*	
		9-7	VERY POOR: essentially translation • little knowledge of English vocabulary, idioms, word form • OR not enough to evaluate	
LANGUAGE USE		25-22	EXCELLENT TO VERY GOOD: effective complex constructions • few errors of agreement, tense, number, word order/function, articles, pronouns, prepositions	
		21-18	GOOD TO AVERAGE: effective but simple constructions • minor problems in complex constructions • several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions *but meaning seldom obscured*	
		17-11	FAIR TO POOR: major problems in simple/complex constructions • frequent errors of negation, agreement, tense, number, word order/function, articles, pronouns, prepositions and/or fragments, run-ons, deletions • *meaning confused or obscured*	
		10-5	VERY POOR: virtually no mastery of sentence construction rules • dominated by errors • does not communicate • OR not enough to evaluate	
MECHANICS		5	EXCELLENT TO VERY GOOD: demonstrates mastery of conventions • few errors of spelling, punctuation, capitalization, paragraphing	
		4	GOOD TO AVERAGE: occasional errors of spelling, punctuation, capitalization, paragraphing *but meaning not obscured*	
		3	FAIR TO POOR: frequent errors of spelling, punctuation, capitalization, paragraphing • poor handwriting • *meaning confused or obscured*	
		2	VERY POOR: no mastery of conventions • dominated by errors of spelling, punctuation, capitalization, paragraphing • handwriting illegible • OR not enough to evaluate	

TOTAL SCORE READER COMMENTS

Figure 1. Jacob et al.'s (1981) Scoring Profile.

Table 4

Paired-Samples t-Test.

		Mean	SD	*t*	P
Pre-Proficiency	Experimental	3.05	3.89	0.24	0.81
Pre-Proficiency	Control	3.36	4.20		
Pre-Proficiency	Experimental	2.52	3.09	-9.14	**0.00**
Post-Proficiency	Experimental	14.19	9.58		
Post-Proficiency	Experimental	12.95	9.49	2.80	**0.01**
Post-Proficiency	Control	6.70	4.61		
Post-Proficiency	Experimental	14.19	9.58	-2.35	**0.02**
Delayed-Proficiency	Experimental	17.28	12.61		

reading comprehension, note-making, report writing, letter writing, transcoding, writing instructions etc. The P value less than 0.05 shows that there is a difference between the pre and post proficiency test performance of the experimental group students. The mean values in Table 5 indicate the improvement level of experimental group in each component.

The results in Table 4 and 5 explain that the writing skill of the experimental students have exhibited a remarkable improvement in comparison with the control group. It implies that the promotion of metacognitive strategies to the experimental group students have improved their thinking ability to generate ideas on their own before, during and after writing, whereas the control group without the knowledge of metacognitive strategies are not able to exhibit improvement in their writing.

Table 5

Paired Samples t-Test of Experimental Group.

Components		Mean	SD	t	P
Reading Comprehension	Pre-Proficiency	0.86	0.79	-6.91	**0.000**
	Post-Proficiency	1.92	1.14		
Note Making	Pre-Proficiency	0.14	0.43	-8.77	**0.000**
	Post-Proficiency	1.50	1.14		
Report Writing	Pre-Proficiency	0.17	0.52	-6.23	**0.000**
	Post-Proficiency	2.03	2.09		
Letter Writing	Pre-Proficiency	0.37	1.18	-3.42	**0.001**
	Post-Proficiency	1.23	1.82		
Transcoding	Pre-Proficiency	0.20	0.64	-7.89	**0.000**
	Post-Proficiency	2.58	2.05		
Instructions	Pre-Proficiency	0.46	0.79	-5.13	**0.000**
	Post-Proficiency	1.34	1.10		
Visual Inference/ Process Description	Pre-Proficiency	0.12	0.42	-5.21	**0.000**
	Post-Proficiency	1.01	1.11		
Paragraph Writing	Pre-Proficiency	0.14	0.36	-7.92	**0.000**
	Post-Proficiency	2.54	2.22		

Independent Samples t-Test Between Medium of Instruction and Students' Writing

Independent Samples t-Test has been computed to analyse the influence of medium of instruction on the students' writing performance. The P values less than 0.05 in Table 6 indicate that there is a significant difference between the medium of instruction and the students' writing skill. This implies that the

medium of instruction has an impact on the writing performance of the students. Most of the students have been from the regional medium of instruction and they have struggled to write in English.

Table 6

Independent Samples t-Test on Medium of Instruction and Students' Writing.

	Medium of Instruction	N	Mean	SD	Std. Error	t	P
Content	English	18	16.95	1.86	0.44	3.94	**0.05**
	Tamil	33	14.88	1.42	0.25		
Organization	English	18	9.96	1.48	0.35	6.80	**0.01**
	Tamil	33	8.15	1.05	0.18		
Vocabulary	English	18	9.86	1.62	0.38	10.29	**0.00**
	Tamil	33	8.04	1.07	0.19		
Language use	English	18	10.96	2.67	0.63	9.50	**0.00**
	Tamil	33	7.83	1.78	0.31		
mechanics	English	18	2.61	0.42	0.09	12.81	**0.00**
	Tamil	33	2.20	0.26	0.05		

Discussion Of Results

Research Question 1

The analysis of results reveals that metacognitive strategy use has an impact on students' writing skill. Further, it emphasises that the students' metacognitive strategy use has improved their writing skill. Metacognitive strategies enhance the students' strategic thinking thereby developing their writing skill. It is evident from the findings of this experimental study that the employment of metacognitive strategies has validated its objective of improving the students' writing skill. The students of the experimental group have started employing metacognitive strategies in their writing as is evident in Table 1. They plan their writing task using brainstorming and mind mapping techniques. Besides, they use the feedback provided by their teacher-researcher on their previous performance in their present task to improve their writing performance. They are conscious of their thought process which makes them to think effectively and gather ideas during writing. Moreover, they clarify their doubts in English during their writing. After writing, they revise their content, grammar, vocabulary, spelling, and punctuation on their own. In addition, they have even started to evaluate their peers' task sheets. This shows the drastic change in the students' thought process and their approach towards writing. They

have started establishing their Task knowledge and strategic knowledge before writing, during writing and after writing aiming towards a better outcome.

Research Question 2

Kluwe (1982) summarized the two general attributes of metacognition i.e., (a) the thinking subject has some knowledge about his own thinking and that of other persons; and (b) the thinking subject may monitor and regulate the course of his own thinking (Son & Bennett, 2004). In congruence with this, the experimental group students have started analysing their writing as well as their peers' writing by employing metacognitive strategies. The metacognitive strategies have enabled the students to observe and examine the task before performing it that they will not only be able to analyse the task but also be able to sequentially plan the task and their outcome. Table 3 reveals that there is a significant relationship between the metacognitive strategy use and students' writing skill. The dissemination of metacognitive strategies in the classroom have fostered the students' thought process which has positively reflected in their writing. The teacher-researcher's promotion of the strategies such as, planning, organizing, monitoring, and evaluating in the classroom have honed the students' writing skill that they have started to approach their writing tasks strategically. The metacognitive knowledge of the students has capacitated them to think, analyse and reflect on their writing performance.

Research Question 3

The students have been administered a pre-proficiency test to diagnose their level of proficiency which proved their low proficiency in writing skill. The post-proficiency test has been conducted to analyse the improvement in their writing skill after the effectuation of metacognitive strategies in the classroom. The employment of these strategies has exhibited an improvement in their writing tasks as is evident from the Paired-Samples t-test in Table 4 and 5. This implies that the employment of metacognitive strategies in the classroom with the guidance of teacher-researcher has led to an effective outcome in the students' performance.

The control group and experimental group students have been in the same proficiency level in their writing as is evident in the pre-proficiency test, whereas the experimental group students have outperformed the control group in the post-proficiency test. The metacognitive strategies' effect on the experimental group is obvious in Table 4 and 5. This clearly depicts the role of metacognitive strategies in enhancing the students' writing skill. According to Roeschl-Heils, Schneider, and van Kraayenoord (2003), the metacognitive strategy developed based on cognitive knowledge and skills

creates an awareness of learning as a prerequisite for planning, monitoring, controlling, evaluating, and self-regulating the learning process (Cer, 2019). In accordance with this statement, the experimental group students have been able to develop and monitor their writing skill due to their exposure to the metacognitive strategies.

Research Question 4

Lin and Morrison (2010) stated that deciding the language of education is a controversial issue in many newly independent countries/regions and adds that English-medium schools provide students with more exposure to English academic vocabulary, which then enables EMI (English as a Medium of Instruction) students to activate more academic words and also to use them more appropriately in the written work they must undertake in their tertiary education. The exposure to regional medium of instruction and less exposure to English language have affected the writing skill of the learners as is evident from Table 6 exhibiting the influence of medium of instruction on the aspects of students' composing process of writing. The students have been guided by the teacher - researcher in the beginning of the course by providing them thinking tasks in English to work outside the classroom to acquaint the nuances of English language. Apart from this, the aspects of metacognitive strategy use say the brainstorming and mind mapping have fostered them to think in English and has enabled them to write in English on their own.

Conclusions

Writing is a widely practiced productive skill involving systematic and logical thinking to achieve coherence and unity. This paper has analysed the predominance of metacognitive strategies in improving the polytechnic students' writing skill. The results have revealed that the metacognitive strategies such as, planning, organizing, monitoring, and evaluating have honed the polytechnic students' thought process before, during and after writing that they have been able to examine the writing tasks assigned to them and analyse their performance outcome. Besides, the teacher-researcher's guidance in overcoming the impact of medium of instruction in their writing has resulted in effective content generation from the students. Further, they have been capacitated to implement and regulate these strategies in their writing to achieve autonomy in writing.

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