Exploring the Relationship of All Strategies in Writing

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ABSTRACT

Writing skills are vital in higher education for preparing students for the professional world. Although writing is a challenging task that requires careful planning and thorough revision, this study finds a strong relationship between cognition, behaviour, and the environment in writing, which can help improve writing instruction and foster self-directed learning. Peer support also plays an important role in enhancing students' writing skills. This study examines the use of writing strategies—namely metacognitive, cognitive, effort regulation, social, and affective—and their connection to Bandura's Social Cognitive Theory. A total of 127 students from a public higher education institution, enrolled in Arabic as a third language or as an elective for basic communication, participated in the survey, which was conducted via Google Forms. At this university, students in elective language courses are required to complete listening tests, writing assessments, and role-play evaluations, thus highlighting the need for effective writing skills, whether for answering written test questions or preparing role-play scripts. The study's findings indicate a significant relationship among various writing strategies. The roles of metacognitive, effort regulation, cognitive, social, and affective strategies are interdependent and collectively contribute to the development of effective and coherent writing. These relationships include correlations between metacognitive and effort regulation strategies, effort regulation and cognitive strategies, cognitive and social strategies, social and affective strategies, and affective and metacognitive strategies. All these interconnected components form a meaningful and positive network that supports and enhances students' writing performance.

Keywords: Writing Strategies, cognitive Strategy

INTRODUCTION

Background of Study

As is widely acknowledged, writing constitutes an indispensable component in language acquisition. Students must develop robust writing skills to generate work of high quality. The conceptualizations of writing skills delineated by Torrance, Thomas, and Robinson (1994) as well as Yahya Othman (2014) characterize writing as a multifaceted process. This process encompasses ideation, the selection of task-relevant ideas, the translation of these ideas into coherent text, and the subsequent refinement of the text's structure for enhanced clarity and presentation. Through the act of writing, individuals can augment their intellectual faculties within both scholarly and academic domains. In a similar vein, Alfaki (2015) asserts that writing represents a fundamental facet of language proficiency, serving a pivotal role in the effective communication of ideas, thoughts, and opinions. Nevertheless, students engaged in the study of a third language frequently encounter significant challenges and obstacles in the writing process. To ameliorate these issues, the implementation of various writing strategies is recommended. Li et al. (2022) contends that to produce exemplary writing, students must be equipped with efficacious writing strategies, as these are integral to writing pedagogy and exert a profound influence on the mastery of writing skills.

Statement of Problem

Writing is a complex cognitive task that often requires sustained mental effort, self-regulation, and the implementation of specific strategies to produce high-quality work. Language learners struggle with writing due to various factors, including writer's block, procrastination, and lack of motivation. These challenges highlight the need for effective effort regulation strategies—those cognitive, emotional, and behavioural techniques used to manage and sustain effort during the writing process. Despite the growing body of literature surrounding writing instruction and the importance of self-regulated learning, there remains a gap in understanding the specific effort regulation strategies most effective for different writing contexts and populations (Zimmerman, 2002; Pintrich, 2000).

Furthermore, while some strategies such as goal setting, self-monitoring, and time management have been identified, it is unclear how these strategies can be systematically implemented or adapted to meet the diverse needs of writers across academic and professional settings (Schunk & Zimmerman, 2012; Graham & Harris, 2000). The lack of clarity on effective effort regulation strategies limits the ability of educators and practitioners to support writers in developing the necessary skills to manage their writing processes efficiently.

Therefore, this research aims to identify and analyse the most effective effort regulation strategies in writing, focusing on how these strategies can be adapted for various contexts and individual differences. This statement lays the foundation for exploring effective strategies for effort regulation in writing contexts, emphasizing the importance of tailored approaches to enhance individual writing performance.

Objective of the Study and Research Questions

This study is done to explore learners' perceptions of writing strategies. Specifically, this study is done to answer the following questions.

- How do learners perceive their use of metacognitive writing strategies?

- How do learners perceive their use of effort-regulation writing strategies?

- How do learners perceive their use of cognitive writing strategies?

- How do learners perceive their use of social writing strategies?

- How do learners perceive their use of affective writing strategies?

- Is there a relationship between all writing strategies?

LITERATURE REVIEW

Theoretical Framework

Writing Strategies

Over the years, studies on the process approach in teaching writing across education levels have produced many studies promoting more thought about writing strategies in teaching writing (Matsuda, 2003). Writing strategies are part of writing elements that guide and monitor writers to produce a good written text. These strategies could be any specific processes, methods, or techniques used by the writers to improve and reinforce their writing (Bai et.al, 2014). Writing strategy use is among the aspects that help determine students' success in writing courses.

According to Bloom (2008), based on its stages, writing strategies can be divided into pre-writing strategies (resourcing, elaboration, and grouping), writing strategies (rereading, substitution, and strategic use of the L1), and revising strategies (guided proofreading, resourcing, and recombining). Writing strategies also can be categorized into various types. According to Mu' (2005), there are five types of writing strategies recognized

and acquired from ESL writing theories. The five writing strategies are metacognitive, cognitive strategies, communicative strategies, social/affective strategies, and rhetorical strategies.

Proficient writers typically manage to utilize writing strategies effectively. Penuelas (2012) in her study found that proficient writers employed a broad range of writing strategies with women as prominent users. Nevertheless, Masyitoh (2021) reported that there was no significant difference in the use of strategies and writers' language achievement as all writers employed the strategies and were aware of the importance of using the strategies in their writing process. A similar result was reported by Al-Moqbali et.al (2020), who also found no significant relationship between the use of strategies and language performance. Additionally, the study revealed that female writers tend to use more strategies in their writing than male writers. Based on the discussion of previous studies, it is shown that writing strategies are crucial in the writing process as they help the writers to reinforce and improve their writing.

Past Studies

Past Studies on Writing Strategies

Many studies have been done to explore the relationship between writing strategies. The study by Sazali et al., (2023) looked at the issue of writing strategies. This research focused on the writing strategies used by Malaysian university students learning Arabic as a foreign language. This paper briefly discusses these writing strategies' influences on the writing process. This quantitative study also aims to find the relationship between variable writing processes. A survey with 6 main sections with 27 items and a 5-point Likert scale has been conducted on 179 participants from a public University in Malaysia, UiTM Shah Alam. The findings of the study revealed that writing strategies have big influences on the writing process in various ways. It was also found that the variable processes are strongly and positively associated. It shows that these strategies are also related to each other, with the Metacognitive strategy having a highly significant association with the other four strategies: Cognitive, Effort Regulation, Social, and Affective.

Next, the study by Baharudin et al. (2024) conducted research to determine ESL learners' perceptions of the use of five writing strategies namely, metacognitive, cognitive, social, affective, and self-regulation writing strategies in academic writing as well as to determine the relationship between of all the writing strategies. A five-likers scale survey questionnaire consists of six sections with 27 items distributed to 112 ESL learners at the Centre of the Foundation Studies, Malaysia to determine their perceptions of writing strategies. Based on the findings of this study, the majority of ESL learners employed a metacognitive strategy when writing followed by cognitive, self-regulation, affective, and social. This study also revealed that there are strong relationships between all the writing strategies.

Aside from the study, Ghazali et al., (2024) aimed to identify learners' perception of the use of strategies in academic writing, especially ESL writers. The instruments used for this quantitative survey were adapted from Raoofi, Miri, Gharibi & Malaki (2017) framework on the use of strategies in writing. The questionnaire comprised six sections including the five strategies sections: metacognitive, effort regulation, cognitive, social, and affective. The 94 respondents involved were undergraduates from Universiti Teknologi MARA who have completed academic writing courses. Generally, the findings discovered most of the respondents employed all five strategies in academic writing moderately.

Conceptual Framework

Writing is a complicated process because when writers write, they need to use a variety of strategies to complete a writing task. According to Rahmat, et. al. (2020), writers need to plan their writing, write their drafts, and after that, they need to review what was written. Figure 1 shows the conceptual framework of the study. This study (refer to figure 1) is rooted in Raoofi, et.al (2017) writing strategies. Firstly, the first strategy is metacognitive writing strategies, and they refer to the mental processes that writers use when they begin writing. The second strategy is effort regulation. This refers to the writer's effort to monitor and sustain the writing task even when they find the task difficult or less appealing. The third strategy is cognitive. This strategy involves the write making mind maps, graphical planning, or other activities towards the planning and

drafting of the writing. The fourth strategy is the social strategy. When learners use this strategy, they refer to the people around them to facilitate the writing task. The last strategy is affective. This refers to the feelings that the writer has developed in the writing process.
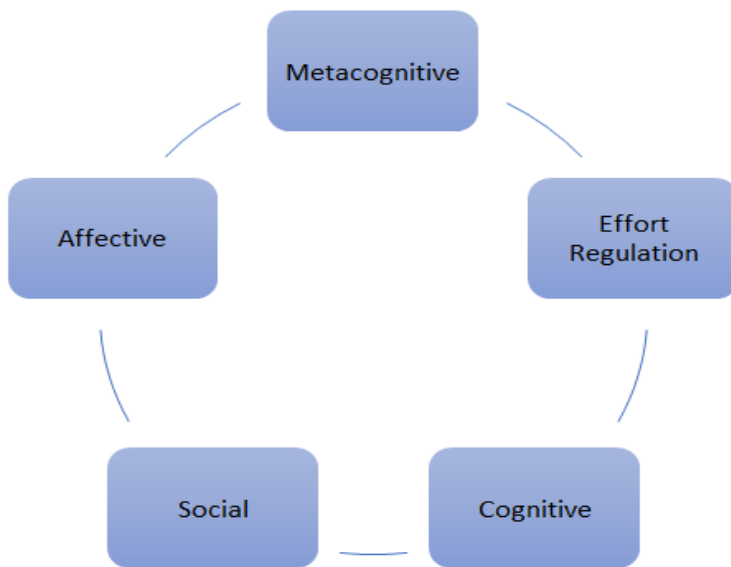

Figure 1- Conceptual Framework of the Study- Exploring the relationship of all strategies in writing.

METHODOLOGY

This quantitative study is done to explore motivation factors for learning among undergraduates. A purposive sample of 127 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted in Raoofi, et.al (2017) to reveal the variables in Table 1 below. The survey has 4 sections. Section A has items on the demographic profile. Section B has 10 items on Metacognitive Strategies. Section C has 5 items on Effort Regulation. Section D has 6 items on Cognitive Strategy. Section E has 4 items on Social Strategy and section F has 3 items on Affective Strategy.

Table 1- Distribution of Items in the Survey

SECTION	WRITING STRATEGY	NO OF ITEMS
B	Metacognitive	10
C	Effort Regulation	4
D	Cognitive	6
E	Social	4
F	Affective	3
		26

Table 2- Reliability of Survey

Reliability Statistics

Cronbach's Alpha	N of Items
.966	27

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of .966; thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

FINDINGS

Findings for Demographic Profile

Table 3- Percentage for Q1- Gender

NO	ITEM	PERCENTAGE
1	Male	31%
2	Female	69%

Table 3 displays the distribution of respondents according to gender. It shows that thirty-one (31%) of the respondents were male and sixty-nine (69%) were female in the survey.

Table 4- Percentage for Q2 - Basic Arabic

NO	ITEM	PERCENTAGE
1	Yes	81%
2	No	19%

Table 4 displays the distribution of respondents based on their familiarity with basic Arabic. A significant majority of respondents (81%) had some basic understanding of Arabic, whereas a smaller segment (19%) did not have any background in the language. Including respondents from diverse backgrounds could help academics examine the breadth of various viewpoints and ideas.

Table 4- Percentage for Q3 - Arabic Course

NO	ITEM	PERCENTAGE
1	Introductory Arabic Level 1 (TAC 401)	9%
2	Introductory Arabic Level 2 (TAC 451	9%
3	Introductory Arabic Level 3(TAC 501)	26%
4	Arabic for Business Communication 1(TAC 402)	11%
5	Arabic for Business Communication 11 (TAC 452)	45%

Table 4 presents the percentages for the Arabic elective subject course codes. Students from the Business Management Faculty have different course codes from other faculties and only take two levels instead of three. Consequently, the percentages for students enrolled in TAC401 and TAC402 are combined and categorized as level 1, while those for TAC451 and TAC452 are combined and categorized as level 2. Based on this classification, 20% of the students are enrolled in level 1, 54% in level 2, and 26% in level 3.

Table 5- Percentage for Q4 - Level of Writing Proficiency

NO	ITEM	PERCENTAGE
1	Low	45%
2	Intermediate	52%
3	High	3%

Table 5 illustrates the level of writing proficiency among students. In this study, 45% of the students have low writing proficiency, 52% have intermediate writing proficiency and 3% have high writing proficiency.

Findings for Metacognitive

This section presents data to answer research question 1- How do learners perceive their use of metacognitive writing strategies?

Table 6- Mean for METACOGNITIVE (MWS)

ITEM	MEAN
MWSQ1, I organize my ideas before writing.	3
MWSQ 2 I revised my writing to make sure that it includes everything I want to discuss in my writing.	3.3
MWSQ 3 I check my spelling.	3.5
MWSQ 4 I check my writing to make sure it is grammatically correct.	3.4
MWSQ 5I evaluates and re-evaluates the ideas in my essay.	3.4
MWSQ 6I monitors and evaluates my progress in writing.	3.3
MWSQ 7 I revise and edit an essay two or more times before I hand it in to my teacher.	3.4
MWSQ8, I go through the planning stages in my writing.	3.3
MWSQ9, I go through the drafting stages in my writing.	3.3
MWSQ10, I go through the revising and editing stages in my writing.	3.4

Table 6 provides the mean scores for metacognitive writing strategies used by the learners. Each item represents a specific metacognitive writing strategy used during the writing process. The mean scores range from 3.0 to 3.5, indicating the frequency of the strategies applied by the learners. The highest mean score is 3.5, corresponding to item MWSQ3, showing that learners most frequently use the strategy of checking their spelling. Several strategies have a mean score of 3.4, the second highest. These include checking for grammatical accuracy (MWSQ4), evaluating and re-evaluating ideas (MWSQ5), revising and editing the essay a few times before handing it in (MWSQ7), and going through the revising and editing stages (MWSQ10). Meanwhile, strategies like revising the writing (MWSQ2), monitoring and evaluating writing progress (MWSQ6), and going through the planning and drafting stages in writing (MWSQ8, MWSQ9) have slightly lower mean which is 3.3. The lowest mean score is 3.3, corresponding to item MWSQ1 which is organizing ideas before writing, suggesting it is the least frequently used strategy.

Findings for Effort Regulation

This section presents data to answer research question 2- How do learners perceive their use of effort regulation writing strategies?

Table 7- Mean for EFFORT REGULATION (ERS)

Item	Mean
ERSQ 1 I write a lot to develop my writing skills.	2.8
ERSQ 2 I often work hard to do well in my writing even if I don't like English writing tasks.	3.2
ERSQ 3 Even if the writing activities are difficult, I don't give up but try to engage in them.	3.5
ERSQ 4 I concentrate as hard as I can when doing a writing task.	3.6

Table 7 illustrates the average scores for effort regulation strategies (ERS) as perceived by students regarding their writing abilities, addressing research question 2 about learners' views on the application of effort regulation strategies in writing. The results indicate that participants generally adopt effort regulation strategies to improve their writing capabilities. They showed a moderate level of agreement with statements like dedicating time to extensive writing for skill enhancement (ERSQ1: 2.8) and committing effort despite personal preferences towards certain writing tasks (ERSQ2: 3.2). Furthermore, participants exhibited a stronger dedication to persevering through difficult writing exercises (ERSQ3: 3.5) and sustaining high levels of concentration during writing projects (ERSQ4: 3.6). These results suggest that learners acknowledge the significance of effort regulation in reaching their writing objectives, even when faced with challenges, highlighting the importance they attribute to consistent practice and focused engagement in their writing skills and strategies.

Findings for Cognitive

This section presents data to answer research question 3- How do learners perceive their use of cognitive writing strategies?

Table 8- Mean for COGNITIVE (CWS)

Item	Mean
CWSQ1, I use memorized grammatical elements such as singular and plural forms, verb tenses, prefixes and suffixes, etc, in my writing	3.1
CWSQ2, I put newly memorized vocabulary in my sentences.	3.1
CWSQ3 To generate ideas for my writing, I usually engage myself in brainstorming.	3.3
CWSQ 4 I use different words that have the same meaning.	3
CWSQ 5 I use my experiences and knowledge in my writing.	3.4
CWSQ 6 I try to use effective linking words to ensure clear and logical relationships between sentences or paragraphs	3.2

Table 8 illustrates the frequency of student engagement cognitive in the eyes of the mean score. A score of 3.4 indicates that students use experiences and knowledge in writing, while a score of 3.3, usually engage in brainstorming to generate ideas for their writing. Students also try to use effective linking words to ensure clear and logical relationships between sentences or paragraphs with a score of 3.2, but with a score of 3.1, they use memorized grammatical elements such as singular and plural forms, verb tenses, prefixes, and suffixes, etc, in their writing and put newly memorized vocabulary in the sentences. However, the lowest score was 3 shows that students use different words that have the same meaning.

Findings for Social

This section presents data to answer research question 4- How do learners perceive their use of social writing strategies?

Table 9- Mean for SOCIAL (SWS)

Item	Mean
SWSQ1 To generate ideas for my writing, I usually discuss the writing topic with a friend or classmate.	3.4
SWSQ 2 After revising and editing my essay thoroughly, I ask a friend or my classmate to read and comment on it.	3.3
SWSQ 3 I try to identify friends or classmates whom I can ask for help in my writing.	3.5
SWSQ 4 When I have trouble writing my essay, I try to do it with my classmates or friends.	3.5

Table 9 displays the mean scores related to the Social Component. The highest mean score, 3.5, is associated with two specific items. These items include statements such as "When I try to identify friends or classmates whom I can ask for help in my writing" and "When I have trouble writing my essay, I try to do it with my classmates or friends". On the other hand, the lowest mean score, 3.3, is attributed to the statement: "After revising and editing my essay thoroughly, I ask a friend or my classmate to read and comment on it". Overall, the mean score of the Social Component is 3.4.

Findings for Affective

This section presents data to answer research question 5- How do learners perceive their use of effective writing strategies?

Table 10-Mean for AFFECTIVE (AWS)

Item	Mean
AWSQ1, I try to write an essay in class with confidence and ease.	2.9
AWSQ2, I try to relax whenever I feel afraid of writing.	3.2
AWSQ3, I encourage myself to write even when I am afraid of making mistakes	3.5

Table 10 indicates the mean score for effective writing strategies, with the highest mean score (M=3.5) for item AWSQ3. It shows that the most frequent strategy used by learners of the Arabic language was encouraging themselves to write even when they are afraid of making mistakes. It is followed by AWSQ2 mean score (M=3.2) where the students try to relax whenever they feel afraid of writing. The lowest mean score for affective strategies was (M=2.9) for item AWSQ1 which students try to write essays in class with confidence and ease.

Findings for Relationship between All Writing Strategies

This section presents data to answer research question 6- Is there a relationship between all writing strategies?

To determine if there is a significant association in the mean scores between all writing strategies, data is analysed using SPSS for correlations. Results are presented separately in table 11,12,13,14 and 15 below.

Table 11- Correlation between Metacognitive Writing Strategies and Effort Regulation Writing Strategies

Correlations

		METACOGNII TVE	EFFORTregul ation
METACOGNIITVE	Pearson Correlation	1	.806**
	Sig. (2-tailed)		.000
	N	127	127
EFFORTregulation	Pearson Correlation	.806**	1
	Sig. (2-tailed)	.000	
	N	127	127

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11 shows there is an association between metacognitive and effort regulation writing strategies. Correlation analysis shows that there is a highly significant association between metacognitive and effort regulation writing strategies (r=.806**) and (p=.000). According to Jackson (2015), a coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between metacognitive and effort regulation writing strategies.

Table 12- Correlation between Effort Regulation and Cognitive Writing Strategies

Correlations

		EFFORTregulation	COGNITIVE
EFFORTregulation	Pearson Correlation	1	.754**
	Sig. (2-tailed)		.000
	N	127	127
COGNITIVE	Pearson Correlation	.754**	1
	Sig. (2-tailed)	.000	
	N	127	127

**. Correlation is significant at the 0.01 level (2-tailed).

Table 12 shows there is an association between effort regulation and cognitive writing strategies. Correlation analysis shows that there is a highly significant association between effort regulation and cognitive writing strategies (r=.754**) and (p=.000). According to Jackson (2015), a coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between effort regulation and cognitive writing strategies.

Table 13- Correlation between Cognitive and Social Writing Strategies

Correlations

		COGNITIVE	SOCIAL
COGNITIVE	Pearson Correlation	1	.567**
	Sig. (2-tailed)		.000
	N	127	127
SOCIAL	Pearson Correlation	.567**	1
	Sig. (2-tailed)	.000	
	N	127	127

**. Correlation is significant at the 0.01 level (2-tailed).

Table 13 shows there is an association between cognitive and social writing strategies. Correlation analysis shows that there is a highly significant association between cognitive and social writing strategies (r=.567**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between cognitive and social writing strategies.

Table 14- Correlation between Social and Affective Writing Strategies

Correlations

		SOCIAL	AFFECTIVE
SOCIAL	Pearson Correlation	1	.593**
	Sig. (2-tailed)		.000
	N	127	127
AFFECTIVE	Pearson Correlation	.593**	1
	Sig. (2-tailed)	.000	
	N	127	127

**. Correlation is significant at the 0.01 level (2-tailed).

Table 14 shows there is an association between social and affective writing strategies. Correlation analysis shows that there is a highly significant association between social and affective writing strategies (r=.593**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between social and affective writing strategies.

Table 15- Correlation between Affective and Metacognitive Writing Strategies

Correlations

		AFFECTIVE	METACOGNII TVE
AFFECTIVE	Pearson Correlation	1	.666**
	Sig. (2-tailed)		.000
	N	127	127
METACOGNIITVE	Pearson Correlation	.666**	1
	Sig. (2-tailed)	.000	
	N	127	127

**. Correlation is significant at the 0.01 level (2-tailed).

Table 15 shows there is an association between affective and metacognitive writing strategies. Correlation analysis shows that there is a highly significant association between affective and metacognitive writing strategies (r=.666**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level, and positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between affective and metacognitive writing strategies.

CONCLUSION

Summary of Findings and Discussions

There is a significant interrelationship among various writing strategies. The roles of metacognitive, effort regulation, cognitive, social, and affective strategies are interdependent and collectively contribute to the development of effective and coherent writing. These interrelationships include correlations between metacognitive and effort regulation strategies, effort regulation and cognitive strategies, cognitive and social strategies, social and affective strategies, and affective and metacognitive strategies. Together, these interconnected components form a meaningful and positive network that supports and enhances students' writing performance.

In terms of cognitive strategies, students frequently apply their prior knowledge and experiences throughout the writing process. However, the use of varied vocabulary with similar meanings appears to be less common. From the social strategy perspective, data shows that students tend to identify peers or classmates who can assist them in their writing, either through direct help or collaborative efforts.

Regarding affective strategies, students often engage in self-encouragement to write despite the fear of making mistakes. Nonetheless, many still lack the confidence to write fluently in class. This highlights the crucial link between metacognitive strategies and effort regulation. The correlation analysis confirms a strong and significant relationship between these two strategies. As Jackson (2015) suggests, this strong positive correlation supports the application of a holistic approach in writing strategy instruction. When integrated effectively, all five strategies—metacognitive, cognitive, social, effort regulation, and affective—can work synergistically to improve writing competence.

Additionally, findings by Kalaivaani Aluemalai (2020) further support this view. Her study indicates that students employ a range of writing strategies, including writing mechanics, connecting tasks to personal experiences, verbalizing their thoughts, freewriting, outlining, listing, utilizing online resources, seeking assistance, and testing the organization of their writing. These diverse strategies reflect the multifaceted nature of the writing process and reinforce the need for comprehensive pedagogical approaches that support students at various stages of their writing development**.**

Pedagogical Implications and Suggestions for Future Research

Educators should design a curriculum integrating all five writing strategies-metacognitive, cognitive, social, effort regulation, and affective—to develop a holistic writing approach. Guiding students in self-regulation and independent writing through explicit metacognitive instruction enhances their ability to monitor and adjust their strategies. Additionally, fostering a collaborative learning environment encourages peer interaction, improving social strategy use and shared learning experiences. The writer also suggests that future researchers study how digital tools and platforms help with writing strategies, especially in online or mixed-learning settings.

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