

# Self-Regulated Learning Strategies and Literacy Skills among Senior High School Students in Blended Learning

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## Abstract

**Background:** Blended learning places greater responsibility on students to plan, monitor, and evaluate their learning. Self-regulated learning may therefore be especially important for literacy development in environments that combine face-to-face and technology-mediated instruction. **Objective:** This study examined the relationships between three dimensions of self-regulated learning - motivation, cognitive strategies, and metacognitive strategies - and the reading and writing skills of senior high school students. **Methods:** A quantitative descriptive-correlational design was used. Data were obtained from 342 senior high school students in a blended learning setting through an adapted Motivated Strategies for Learning Questionnaire. Pearson product-moment correlation was used to test the associations among the study variables. **Results:** Reading and writing skills were positively associated with motivation ( $r = .526, p < .001$ ), cognitive strategies ( $r = .621, p < .001$ ), and metacognitive strategies ( $r = .597, p < .001$ ). The self-regulated learning dimensions were also positively interrelated: motivation with cognitive strategies ( $r = .648$ ), motivation with metacognitive strategies ( $r = .612$ ), and cognitive with metacognitive strategies ( $r = .644$ ), all  $p < .001$ . Cognitive strategies showed the strongest association with the combined reading and writing outcome. **Conclusion:** The findings indicate that students who report stronger motivational, cognitive, and metacognitive regulation also tend to demonstrate stronger literacy performance. Because the design is correlational, causal conclusions are not warranted. Literacy instruction in blended settings may benefit from explicit support for goal setting, strategic processing, comprehension monitoring, reflection, and sustained motivation.

## Keywords

Blended Learning; Cognitive Strategies; Literacy Skills; Metacognition; Self-Regulated Learning.

## 1. Introduction

Blended learning expands access to instruction and gives students greater flexibility, but it also requires learners to manage time, attention, effort, and academic tasks with less continuous supervision. In this environment, self-regulated learning (SRL) is central to how students set goals, select strategies, monitor comprehension, sustain motivation, and evaluate progress. Rather than treating learning as a passive response to instruction, SRL positions students as active participants who adapt their cognition, motivation, and behavior to meet academic demands (Zimmerman, 2002; Schunk & DiBenedetto, 2022; Panadero et al., 2022).

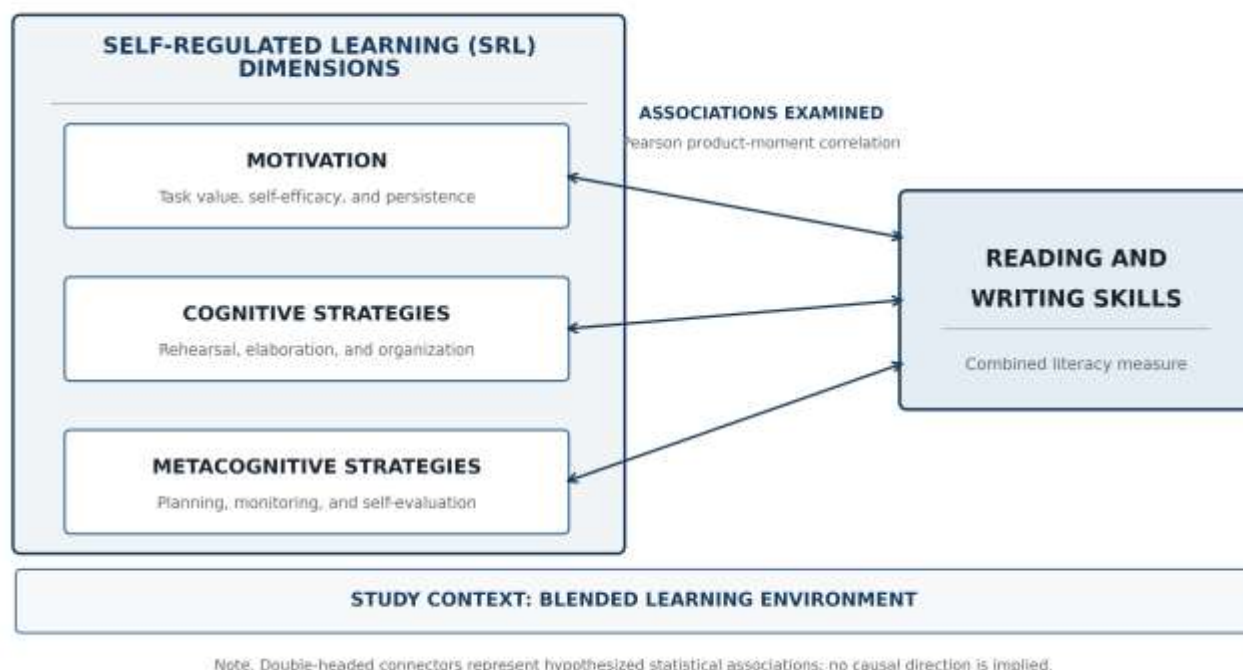
SRL is commonly understood as an interaction among motivational, cognitive, and metacognitive processes. Motivation supports persistence, effort, and confidence; cognitive strategies help learners rehearse, organize, elaborate, and integrate information; and metacognitive strategies enable planning, monitoring, and evaluation (Pintrich, 2004). These dimensions are theoretically distinct but mutually

reinforcing. Students who value an academic task and believe they can succeed are more likely to employ effective strategies, while successful strategy use can strengthen confidence and engagement (Bai & Guo, 2021; Bai & Wang, 2021; Katsantonis, 2021).

Reading and writing provide a particularly relevant context for examining SRL because both require sustained attention, strategic processing, and continuous evaluation. Skilled readers identify main ideas, connect new information with prior knowledge, and monitor understanding. Skilled writers plan, organize, revise, and evaluate their work. Evidence across educational settings links SRL with academic achievement, reading comprehension, and writing performance (Dent & Koenka, 2021; Köse & Güneş, 2021; Teng, 2022). In online and blended learning, however, students' use of these strategies is shaped by technology access, learning conditions, and institutional support (Rasheed et al., 2022; Broadbent & Fuller-Tyszkiewicz, 2022). Technology-mediated learning can also introduce participation and coordination demands: virtual exchange research has identified student engagement, technological limitations, and the practical coordination of online collaboration as consequential features of digitally mediated learning (Nuryanti et al., 2025). At the senior high school level, digital-literacy policy research similarly indicates that curriculum integration, resource allocation, stakeholder involvement, and institutional commitment influence how digital competencies are embedded in educational practice (Werdingnsih et al., 2024). Taken together, this literature suggests that effective participation in technology-supported learning depends on both learner self-regulation and the conditions through which digital learning is organized and supported.

Despite growing interest in SRL, evidence remains context-sensitive, and the relative contribution of motivational, cognitive, and metacognitive strategies to literacy performance requires continued examination among senior high school learners. Evidence specific to blended senior high school literacy settings remains comparatively limited. This study therefore focused on the pattern and strength of associations between SRL dimensions and students' combined reading and writing skills in a blended learning setting. The emphasis is on correlation rather than prediction or causation.

**Figure 1. Analytical Framework of the Associations Between Self-Regulated Learning Dimensions and Reading and Writing Skills.**



*Note.. The framework presents the hypothesized statistical associations between the dimensions of self-regulated learning and students' reading and writing skills. The connectors represent relationships tested using Pearson correlation and do not indicate causal effects.*

### 1.1 Research Objective and Hypothesis

The study aimed to determine whether students' motivation, cognitive strategies, and metacognitive strategies were significantly associated with their reading and writing skills. It addressed the following question: To what extent are the three dimensions of self-regulated learning associated with students' reading and writing skills in a blended learning environment?

The null hypothesis stated that motivation, cognitive strategies, and metacognitive strategies have no significant linear relationships with students' reading and writing skills.

## 2. Materials and Methods

### 2.1 Research Design

The study used a quantitative, cross-sectional, descriptive-correlational design. This design was appropriate because the analysis examined naturally occurring relationships among variables without manipulating the learning environment or assigning participants to experimental conditions (Bloomfield & Fisher, 2019). The design permits estimation of the direction and strength of associations but does not establish causal effects.

### 2.2 Participants and Learning Context

The analysis included 342 senior high school students studying in a blended learning environment. This context combined classroom-based and technology-mediated learning activities and therefore required students to exercise a degree of independence in managing academic tasks. Findings are interpreted within this study context and should be generalized cautiously to populations with different instructional arrangements or student characteristics.

### 2.3 Instrument and Measures

Self-regulated learning was assessed through an adapted Motivated Strategies for Learning Questionnaire (MSLQ), an established framework for examining students' motivational beliefs and strategy use (Pintrich et al., 1991). The submitted instrument contained 27 statements organized into three nine-item dimensions: motivation, cognitive strategies, and metacognitive strategies. Responses were recorded on a four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). Higher responses indicated more frequent or stronger use of the stated self-regulatory behaviors.

The study dataset also included a combined reading and writing skills measure used in the correlational analysis. The survey instrument was subjected to validation, pilot testing, and reliability checking before administration, consistent with the data-collection workflow documented in the original study protocol. The questionnaire reproduced in Appendix A provides the SRL items used in the study.

### 2.4 Data Collection Procedure

The research process proceeded through instrument formulation, validation, pilot testing, reliability checking, implementation of data-privacy procedures, survey administration, data analysis, and interpretation. Standardized survey administration supported consistency in the collection of student responses (Taherdoost, 2022). The analysis used the completed records of 342 participants.

### 2.5 Statistical Analysis

Pearson product-moment correlation coefficients were calculated to examine the linear relationships among motivation, cognitive strategies, metacognitive strategies, and reading and writing skills. Statistical significance was evaluated using the reported p-values. The interpretation emphasized the direction and relative magnitude of the coefficients and avoided causal language because of the correlational design.

## 3. Results and Discussion

### 3.1 Relationships among Self-Regulated Learning Dimensions and Literacy Skills

**Table 1 Descriptive Statistics for Study Variables (N = 342)**

| Variable                   | <i>M</i> | <i>SD</i> | Skewness | Kurtosis |
|----------------------------|----------|-----------|----------|----------|
| Motivation                 | 3.12     | 0.54      | −0.32    | −0.18    |
| Cognitive Strategies       | 2.98     | 0.61      | −0.21    | −0.35    |
| Metacognitive Strategies   | 3.05     | 0.58      | −0.28    | −0.22    |
| Reading and Writing Skills | 78.4     | 9.2       | −0.15    | 0.08     |

Note. Literacy skills scored on 0–100 scale; SRL variables on 1–4 scale.

**Table 2. Pearson Correlations among Self-Regulated Learning Dimensions and Reading and Writing Skills**

| Variable                   | Motivation | Cognitive | Metacognitive | Reading and writing |
|----------------------------|------------|-----------|---------------|---------------------|
| Motivation                 | -          |           |               |                     |
| Cognitive strategies       | .648***    | -         |               |                     |
| Metacognitive strategies   | .612***    | .644***   | -             |                     |
| Reading and writing skills | .526***    | .621***   | .597***       | -                   |

Note. Values are Pearson's *r*. \*\*\**p* < .001.

All reported correlations were positive and statistically significant (*p* < .001). Motivation was positively associated with cognitive strategies (*r* = .648) and metacognitive strategies (*r* = .612), while cognitive and metacognitive strategies were also positively associated (*r* = .644). This pattern supports the view that motivational beliefs, strategic processing, and metacognitive regulation operate as connected components of SRL rather than as isolated learner characteristics. Students who sustain effort and value learning tasks may be more likely to organize information, connect ideas, monitor understanding, and adjust their approach when difficulties arise (Bai & Guo, 2021; Bai & Wang, 2021; Schunk & DiBenedetto, 2022). Reading and writing skills were positively related to motivation (*r* = .526), cognitive strategies (*r* = .621), and metacognitive strategies (*r* = .597). Cognitive strategies had the strongest association with the combined literacy outcome, followed by metacognitive strategies and motivation. The result suggests that students who rehearse, organize, elaborate, and integrate information tend to demonstrate stronger reading and writing performance. Metacognitive regulation is also relevant because learners must monitor comprehension, identify gaps, and evaluate whether a reading or writing strategy is working (Köse & Güneş, 2021; Teng, 2022).

The coefficients do not show that SRL strategies directly cause higher literacy achievement. They nevertheless indicate a consistent association between students' regulation of motivation and cognition and their reading and writing performance. This pattern aligns with broader evidence that SRL is positively related to academic achievement and that strategic instruction can help students become more deliberate and independent learners (Dent & Koenka, 2021; Panadero et al., 2022).

### 3.2 Instructional Implications

The findings support embedding SRL routines within literacy instruction rather than treating self-regulation as a separate topic. Teachers can make the learning process visible by modeling how to set a reading or writing goal, choose an appropriate strategy, monitor progress, and reflect on the result. In reading tasks, this may include previewing, questioning, annotating, summarizing, and checking comprehension. In writing tasks, it may include planning, organizing ideas, drafting, using criteria to review work, and revising in response to feedback.

In blended environments, these routines can be reinforced through short progress checks, guided reflection prompts, strategy checklists, staged deadlines, and timely feedback. Such supports should gradually shift responsibility to students while ensuring that technology access and the learning environment do not become barriers to participation. Because motivation was significantly associated with both strategy use and literacy performance, instruction should also include attainable goals, meaningful tasks, feedback that emphasizes improvement, and opportunities for students to recognize progress. Pedagogical design also matters. Sugiharti and Osma (2024) reported that guided inquiry combining student-centered activity with structured guidance enhanced student engagement and scientific

literacy, while implementation required responses to time and resource constraints. Although their study addressed scientific rather than reading-writing literacy, it supports the broader implication that learner engagement depends not only on students' self-regulatory resources but also on how learning activities are designed, sequenced, and supported.

**Table 3. Illustrative Self-Regulated Learning Scaffolds for Blended Literacy Instruction**

| Literacy phase  | SRL emphasis                           | Classroom practice                                            | Blended-learning support                     |
|-----------------|----------------------------------------|---------------------------------------------------------------|----------------------------------------------|
| Pre-reading     | Goal setting and activation            | Set a purpose, activate prior knowledge, and predict content. | Goal prompt or short readiness check         |
| During reading  | Cognitive and metacognitive monitoring | Annotate, summarize, self-question, and repair comprehension. | Embedded prompts or strategy reminders       |
| Post-reading    | Reflection and transfer                | Evaluate understanding and connect ideas to a writing task.   | Reflection journal or exit response          |
| Writing process | Planning, monitoring, and evaluation   | Plan, draft, review against criteria, revise, and edit.       | Staged submissions, checklists, and feedback |

Note. Practices are instructional applications derived from the study findings and the SRL literature; they were not evaluated as interventions in this correlational study.

### 3.3 Limitations and Directions for Further Research

The study has several limitations. First, the cross-sectional correlational design cannot establish temporal order or causation. Second, the SRL dimensions were based on self-report and may be affected by response bias or differences between perceived and actual strategy use. Third, combining reading and writing into one outcome limits domain-specific interpretation. Finally, the findings reflect one blended learning context and may not generalize to other institutions, grade levels, or delivery modes. Future studies should report the sampling procedure, institutional context, reliability coefficients, and the derivation of literacy scores in full; analyze reading and writing separately; and use longitudinal, observational, or intervention designs to examine how SRL develops and whether targeted instruction improves literacy outcomes.

### 4. Conclusion

Motivation, cognitive strategies, and metacognitive strategies were each positively and significantly associated with senior high school students' reading and writing skills in a blended learning environment. Cognitive strategies showed the strongest relationship with the combined literacy outcome, while the three SRL dimensions were themselves closely interrelated. The null hypothesis of no significant relationship was therefore rejected.

These findings position self-regulation as a practical instructional priority for blended literacy education. Teachers and school leaders may strengthen reading and writing instruction by explicitly developing students' capacity to set goals, select and apply strategies, monitor comprehension and performance, regulate effort, and reflect on progress. The results should be used as a basis for instructional planning rather than as evidence of causal effects. More rigorous longitudinal and intervention research is needed to determine which SRL supports produce sustained improvements in reading and writing.

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### Conflict of Interest

The author declares no conflict of interest.

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### Data Availability

The data are not publicly available because they concern student participants. Requests for access may be directed to the corresponding author and remain subject to applicable institutional and data-privacy requirements.

### References

- Bai, B., & Guo, W. (2021). Motivation and self-regulated strategy use: Relationships to primary school students' English writing in Hong Kong. *Language Teaching Research*, 25(3), 378-399. <https://doi.org/10.1177/1362168820912331>
- Bai, B., & Wang, J. (2021). Hong Kong secondary students' self-regulated learning strategy use and English writing: Influences of motivational beliefs. *System*, 96, 102404. <https://doi.org/10.1016/j.system.2020.102404>
- Bloomfield, J., & Fisher, M. J. (2019). Quantitative research design. *Journal of the Australasian Rehabilitation Nurses Association*, 22(2), 27-30.
- Broadbent, J., & Fuller-Tyszkiewicz, M. (2022). Profiles in self-regulated learning and their role in online learning success. *Educational Technology Research and Development*, 70(6), 2261-2281. <https://doi.org/10.1007/s11423-022-10129-6>
- Dent, A. L., & Koenka, A. C. (2021). The relation between self-regulated learning and academic achievement: A meta-analysis. *Educational Psychology Review*, 33(3), 983-1015. <https://doi.org/10.1007/s10648-020-09520-1>
- Katsantonis, I. G. (2021). Self-regulated learning and reading comprehension: The effects of gender, motivation and metacognition. *Hellenic Journal of Psychology*, 17(3), 286-307.
- Kose, N., & Gunes, F. (2021). Undergraduate students' use of metacognitive strategies while reading and the relationship between strategy use and reading comprehension skills. *Journal of Education and Learning*, 10(2), 99-108. <https://doi.org/10.5539/jel.v10n2p99>
- Nuryanti, D., Kusumastuty, I., & Osma, A. N. (2025). Virtual exchange programs for cross cultural communication and global collaboration among university students. *International Journal of Educational Technology and Society*, 1(3), 52-61. <https://doi.org/10.61132/ijets.v1i3.413>
- Panadero, E., Andrade, H., & Brookhart, S. M. (2022). A review of classroom assessment and self-regulated learning: Research, theory, and practice. *Educational Psychology Review*, 34(1), 1-31. <https://doi.org/10.1007/s10648-021-09615-5>
- Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1991). A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ). National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan.
- Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, 16(4), 385-407. <https://doi.org/10.1007/s10648-004-0006-x>
- Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2022). Challenges in the online component of blended learning: A systematic review. *Computers & Education*, 144, 103701. <https://doi.org/10.1016/j.compedu.2019.103701>
- Schunk, D. H., & DiBenedetto, M. K. (2022). Self-regulation, self-efficacy, and academic motivation. *Educational Psychologist*, 57(4), 239-251. <https://doi.org/10.1080/00461520.2022.2106369>
- Sugiharti, T., & Osma, A. N. (2024). Guided inquiry learning model to improve scientific literacy on energy and its transformation. *International Journal of Science and Mathematics Education*, 1(3), 34-43. <https://doi.org/10.62951/ij sme.v1i3.296>
- Taherdoost, H. (2022). Questionnaire design in survey research: A guide to design, reliability, and validity. *International Journal of Academic Research in Management*, 11(1), 1-13.

- Teng, L. S. (2022). Self-regulated learning-based instruction in second language literacy: Effects on reading comprehension and writing performance. *System*, 106, 102761. <https://doi.org/10.1016/j.system.2022.102761>
- Werdiningsih, R., Osma, A. N., & Nursanty, E. (2024). Coding futures: Rethinking digital literacy policies in senior high schools as catalysts for inclusive economic growth. *International Journal of Educational Evaluation and Policy Analysis*, 1(1), 33-49. <https://doi.org/10.62951/ijeepa.v1i1.395>
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, 41(2), 64-70. [https://doi.org/10.1207/s15430421tip4102\\_2](https://doi.org/10.1207/s15430421tip4102_2)

### Appendix A. Self-Regulated Learning Questionnaire

Direction: Indicate the extent to which each statement describes your learning behavior using the response scale below.

| Score | Response          | Interpretation                                                 |
|-------|-------------------|----------------------------------------------------------------|
| 4     | Strongly agree    | The behavior is consistently characteristic of the student.    |
| 3     | Agree             | The behavior is often characteristic of the student.           |
| 2     | Disagree          | The behavior is sometimes characteristic of the student.       |
| 1     | Strongly disagree | The behavior is rarely or never characteristic of the student. |

| No.                             | Statement                                                                                    | 4 | 3 | 2 | 1 |
|---------------------------------|----------------------------------------------------------------------------------------------|---|---|---|---|
| <b>Motivation</b>               |                                                                                              |   |   |   |   |
| 1                               | I prefer class work that is challenging so I can learn new things.                           |   |   |   |   |
| 2                               | It is important for me to learn what is being taught in this class.                          |   |   |   |   |
| 3                               | I like what I am learning in this class.                                                     |   |   |   |   |
| 4                               | I am certain I can understand the ideas taught in this course.                               |   |   |   |   |
| 5                               | I expect to do very well in this class.                                                      |   |   |   |   |
| 6                               | I am sure I can do an excellent job on the problems and tasks assigned for this class.       |   |   |   |   |
| 7                               | Even when I do poorly on a test, I try to learn from my mistakes.                            |   |   |   |   |
| 8                               | I think that what we are learning in this class is interesting.                              |   |   |   |   |
| 9                               | I know that I will be able to learn the material for this class.                             |   |   |   |   |
| <b>Cognitive Strategies</b>     |                                                                                              |   |   |   |   |
| 10                              | It is easy for me to decide what the main ideas are in what I read.                          |   |   |   |   |
| 11                              | When work is hard, I do not give up or study only the easy parts.                            |   |   |   |   |
| 12                              | I try to understand what the teacher is saying even when it does not immediately make sense. |   |   |   |   |
| 13                              | I work on practice exercises and answer end-of-chapter questions even when I do not have to. |   |   |   |   |
| 14                              | I use what I learned from previous assignments and the textbook to complete new assignments. |   |   |   |   |
| 15                              | I keep up with the assigned reading and understand what it is about.                         |   |   |   |   |
| 16                              | When the teacher is speaking, I focus my attention and listen carefully.                     |   |   |   |   |
| 17                              | When I study a topic, I try to make the ideas fit together.                                  |   |   |   |   |
| 18                              | When I read, I pause occasionally and review what I have read.                               |   |   |   |   |
| <b>Metacognitive Strategies</b> |                                                                                              |   |   |   |   |
| 19                              | When I study for a test, I combine information from class and from the book.                 |   |   |   |   |

| No. | Statement                                                                              | 4 | 3 | 2 | 1 |
|-----|----------------------------------------------------------------------------------------|---|---|---|---|
| 20  | I ask myself questions to make sure I understand the material I have studied.          |   |   |   |   |
| 21  | When I study, I put important ideas into my own words.                                 |   |   |   |   |
| 22  | When I study for a test, I try to remember as many relevant facts as I can.            |   |   |   |   |
| 23  | When I study for a test, I rehearse important information to help me remember it.      |   |   |   |   |
| 24  | Before I begin studying, I think about what I will need to do to learn effectively.    |   |   |   |   |
| 25  | When I read materials for class, I repeat key words or ideas to help me remember them. |   |   |   |   |
| 26  | I outline chapters or learning materials to help me study.                             |   |   |   |   |
| 27  | When reading, I connect new information with what I already know.                      |   |   |   |   |