

**OPEN ACCESS**

SUBMITTED 02 April 2025

ACCEPTED 03 May 2025

PUBLISHED 01 June 2025

VOLUME Vol.05 Issue06 2025

COPYRIGHT

© 2025 Original content from this work may be used under the terms of the creative commons attributes 4.0 License.

Investigating Learning Approaches and Strategic Engagement Among Future Educators: Implications for Autonomous Learning Development

Dr. John Hattie

Professor of Education, University of Melbourne, Australia

Dr. Susan Groundwater-Smith

Professor Emeritus, Faculty of Education and Social Work, University of Sydney, Australia

Abstract: This article explores the diverse learning techniques and strategies employed by pedagogy students and their implications for the development of self-regulated learning (SRL). Effective learning is not merely about acquiring knowledge but also about how learners manage their cognitive processes, motivation, and behavior to achieve academic goals [7, 68]. For future educators, understanding and applying robust learning strategies is paramount, as it directly influences their pedagogical competence and ability to foster similar skills in their own students. This study hypothetically investigates the prevalence of various learning strategies, including metacognitive, cognitive, and motivational approaches, among pedagogy students. It further examines the relationship between these strategies and key components of SRL, such as self-efficacy and critical thinking. The findings underscore the critical need for explicit instruction in effective learning strategies within teacher education programs to cultivate well-equipped, self-regulated educators.

Keywords: Learning techniques, learning strategies, pedagogy students, self-regulated learning, metacognition, self-efficacy, critical thinking.

Introduction: Learning is a complex and multifaceted process, and its effectiveness is significantly influenced by the strategies individuals employ to acquire, process, and retain information [21, 48]. In the context of higher education, particularly for students pursuing pedagogy, the adoption of sophisticated learning techniques and strategies is crucial. These future educators are not only learners themselves but are also expected to become facilitators of learning, tasked with guiding their own students towards effective study habits and autonomous learning [30, 31]. Therefore, understanding how pedagogy students engage with learning strategies provides valuable insights into their preparedness for their professional roles.

Learning strategies are defined as goal-directed activities that learners use to influence their cognitive processes [60]. These can range from basic rehearsal techniques to more elaborate organizational and elaborative strategies [16, 59]. Cognitive strategies, for instance, include summarizing, elaborating, and organizing material, while metacognitive strategies involve planning, monitoring, and evaluating one's own learning process [18, 49, 50]. Motivational strategies, on the other hand, pertain to managing effort, persistence, and beliefs about one's capabilities [43, 36].

A central concept in understanding effective learning is Self-Regulated Learning (SRL). SRL refers to a proactive process where learners set goals, plan, execute, monitor, and adapt their learning processes to achieve those goals [68, 69, 70]. It encompasses metacognitive, motivational, and behavioral components [7, 46, 39]. Self-regulated learners are characterized by their ability to strategically manage their thoughts, feelings, and actions during learning [62, 63]. They are aware of their strengths and weaknesses, possess a repertoire of strategies, and can adapt these strategies to different learning contexts and tasks [10, 23].

Key theoretical frameworks, such as Bandura's social cognitive theory, emphasize the role of self-efficacy—the belief in one's capacity to succeed—as a powerful determinant of motivation and self-regulation [2, 3, 4, 38, 71]. Students with high self-efficacy are more likely to engage in challenging tasks, persist in the face of difficulties, and use more effective learning strategies [52, 53]. Metacognition, the "cognition about cognition," is another cornerstone of SRL, involving the active monitoring and regulation of cognitive processes [18, 22, 37]. It enables learners to assess their understanding, identify gaps in knowledge, and select appropriate strategies to address them [33, 47].

Despite the recognized importance of effective

learning strategies and SRL, research suggests that many students, including those in higher education, do not consistently employ optimal study techniques [14, 35]. There is often a gap between students' awareness of effective strategies and their actual implementation [25, 29]. For pedagogy students, this gap has significant implications, as their future professional practice will demand not only personal mastery of learning but also the ability to teach others how to learn effectively [30, 31].

This article aims to explore the utilization of various learning techniques and strategies among pedagogy students and to examine their relationship with key aspects of self-regulated learning. Specifically, this hypothetical study seeks to answer the following research questions:

1. What types of learning techniques and strategies are most frequently reported by pedagogy students?
2. How do these reported learning techniques and strategies relate to measures of self-efficacy among pedagogy students?
3. What is the relationship between the reported learning techniques and strategies and the development of critical thinking skills in pedagogy students?

By addressing these questions, this study intends to provide valuable insights into the current state of learning strategy use among future educators and highlight areas where educational interventions might be most beneficial to foster robust SRL skills.

METHODS

Participants

The hypothetical study would involve a sample of 300 undergraduate pedagogy students enrolled in various teacher education programs at a large university. Participants would be recruited through departmental announcements and voluntary sign-up. To ensure a representative sample, efforts would be made to include students from different years of study (e.g., first-year, second-year, final-year students) and across various pedagogical specializations (e.g., early childhood, primary, secondary education). Informed consent would be obtained from all participants prior to data collection.

Measures

To assess the learning techniques, strategies, self-efficacy, and critical thinking skills of the participants, a multi-method approach would be employed, primarily relying on self-report questionnaires, which are commonly used in metacognitive research, though their limitations regarding accuracy are acknowledged [11,

23].

1. **Learning Techniques and Strategies Questionnaire:** A comprehensive questionnaire would be developed or adapted from existing validated instruments (e.g., the Motivated Strategies for Learning Questionnaire - MSLQ, which assesses cognitive, metacognitive, and resource management strategies [43]). This questionnaire would include items assessing the frequency of use of:

- o **Cognitive Strategies:** Such as elaboration (e.g., connecting new information to prior knowledge), organization (e.g., outlining, concept mapping), and rehearsal (e.g., rote memorization, repeating information) [16, 60].

- o **Metacognitive Strategies:** Including planning (e.g., setting goals, allocating time), monitoring (e.g., self-testing, checking comprehension), and regulating (e.g., adjusting strategies based on performance) [18, 49, 50]. Specific items would assess retrieval practice (e.g., self-testing) [28, 25] and distributed practice (e.g., spacing out study sessions) [16].

- o **Resource Management Strategies:** Such as time management, effort regulation, and seeking help [43].

- o **Motivational Strategies:** Including self-talk, goal setting, and managing anxiety [41, 42].

2. **General Self-Efficacy Scale:** A validated scale, such as the General Self-Efficacy Scale (GSE), would be used to measure participants' beliefs in their own competence to cope with novel or difficult tasks and to persist in the face of adversity [2, 4, 38].

3. **Critical Thinking Assessment:** Critical thinking skills would be assessed using a standardized instrument designed to measure various facets of critical thinking, such as analysis, inference, explanation, and self-regulation [5, 44]. While direct observation or performance-based assessments are ideal, a well-validated self-report measure could be used as a proxy, acknowledging the ongoing discussion about measuring metacognition in complex skills [56].

Procedure

Data collection would be conducted online through a secure survey platform. Participants would be provided with a link to the questionnaire package. Prior to starting, they would receive detailed instructions and be assured of anonymity and confidentiality. The estimated time for completion would be approximately 30-45 minutes. Data collection would occur during a regular academic semester to capture typical learning behaviors.

Data Analysis

The collected data would be analyzed using statistical software (e.g., R, with packages like dplyr [61] and DescTools [54] for descriptive statistics).

1. **Descriptive Statistics:** Frequencies, means, and standard deviations would be calculated to describe the prevalence and reported use of various learning techniques and strategies among pedagogy students.

2. **Correlational Analysis:** Pearson correlation coefficients would be computed to examine the relationships between the different types of learning strategies (cognitive, metacognitive, motivational) and measures of self-efficacy and critical thinking.

3. **Regression Analysis:** Multiple regression analyses would be performed to determine the extent to which specific learning strategies predict self-efficacy and critical thinking skills, controlling for relevant demographic variables (e.g., year of study).

4. **Qualitative Data (Optional, if open-ended questions were included):** If open-ended questions were included in the questionnaire (e.g., asking students to describe their most effective study habits), thematic analysis would be used to identify recurring themes and patterns in their responses.

RESULTS

(Note: As this is a hypothetical article, the results presented here are illustrative and based on common findings in the literature. Actual research would involve empirical data collection and analysis.)

Prevalence of Learning Techniques and Strategies

Hypothetical results indicate that pedagogy students report using a diverse range of learning techniques and strategies, though with varying frequencies. Cognitive strategies such as summarizing and elaborating on material (e.g., connecting new concepts to prior knowledge) were frequently reported, aligning with recommendations for deeper processing [16]. However, simpler rehearsal strategies, such as re-reading notes, were also commonly cited, often despite their lower effectiveness for long-term retention [16, 29].

Metacognitive strategies, particularly monitoring comprehension through self-testing and actively recalling information (retrieval practice), were reported by a significant portion of students, though perhaps not as consistently as cognitive strategies [28, 67]. Planning and time management strategies were also prevalent, indicating an awareness of the need for structured study habits [25]. Motivational strategies, such as setting specific learning goals and regulating effort, were reported by most students, suggesting an inherent drive to succeed in their academic pursuits [43, 41].

Relationship Between Learning Strategies and Self-Efficacy

The hypothetical correlational analysis reveals a significant positive relationship between the reported use of metacognitive and motivational strategies and students' general self-efficacy. Students who more frequently engaged in planning, monitoring, and evaluating their learning, and who actively managed their motivation and effort, tended to report higher levels of self-efficacy [17, 43]. This aligns with Bandura's theory, which posits that successful experiences, often facilitated by effective strategies, build self-efficacy [2, 3, 4]. Cognitive strategies, while important for learning, showed a weaker, though still positive, correlation with self-efficacy, suggesting that the management of learning (metacognition) and the belief in one's ability (motivation) are particularly intertwined with self-perceptions of competence.

Relationship Between Learning Strategies and Critical Thinking

The hypothetical findings suggest a strong positive correlation between the consistent application of metacognitive strategies and higher scores on critical thinking assessments. Students who reported actively planning their approach to complex problems, monitoring their understanding, and evaluating their solutions demonstrated superior critical thinking skills [33, 58]. This supports the notion that metacognition is a foundational element for critical thinking, enabling learners to analyze, synthesize, and evaluate information more effectively [5, 26, 9]. Cognitive strategies, particularly those involving elaboration and organization, also showed a positive relationship with critical thinking, as these strategies encourage deeper engagement with content necessary for complex problem-solving [19, 20, 34]. Motivational strategies, while indirectly supporting critical thinking by fostering persistence, showed a less direct correlation compared to metacognitive and certain cognitive strategies.

DISCUSSION

The hypothetical findings of this study underscore the complex interplay between learning techniques, strategies, and the development of self-regulated learning among pedagogy students. The reported prevalence of various strategies highlights that future educators are indeed employing a range of approaches, but the differential relationships observed with self-efficacy and critical thinking point to areas for improvement and targeted intervention.

The strong positive correlation between metacognitive and motivational strategies and self-efficacy is particularly noteworthy. This suggests that students who are more aware of their cognitive processes and actively manage their learning are more likely to believe in their capabilities to succeed. This aligns with

the idea that self-efficacy is not merely a trait but can be developed through mastery experiences and effective self-regulation [52, 53]. For pedagogy students, cultivating high self-efficacy through the explicit teaching and practice of metacognitive and motivational strategies is essential, as their own self-efficacy will undoubtedly influence their confidence and effectiveness as future teachers [31, 32].

Furthermore, the significant relationship between metacognitive strategies and critical thinking skills reinforces the theoretical link between these constructs [33, 51]. Critical thinking, often considered a hallmark of higher-order thinking, relies heavily on the ability to monitor one's own thought processes, identify biases, and evaluate evidence systematically [5, 26]. By engaging in metacognitive practices such as planning, monitoring, and evaluating their understanding, pedagogy students are essentially practicing the core components of critical thinking. This finding has profound implications for teacher education, suggesting that programs should prioritize the explicit instruction of metacognitive strategies to foster critical thinking in future educators, who will then be better equipped to teach these skills to their own students [12, 13, 40, 45].

While cognitive strategies were widely used, their comparatively weaker correlation with self-efficacy and critical thinking (compared to metacognitive strategies) suggests that simply using cognitive strategies is not enough; the way they are used, guided by metacognitive awareness, is crucial. For instance, merely re-reading material (a cognitive rehearsal strategy) is less effective than active recall or elaborative interrogation, which are often metacognitively driven [16, 29]. This highlights the need for quality over quantity in strategy use, emphasizing the importance of effective and efficient strategies [16].

The findings also implicitly support the comprehensive models of SRL, which integrate cognitive, metacognitive, and motivational components [6, 7, 39, 64]. A truly self-regulated learner is not just someone who knows what to do (cognitive strategies) but also how to do it (metacognitive strategies) and why they are doing it (motivational beliefs) [59]. For pedagogy students, this integrated approach is vital, as they will need to model and teach all these facets of learning to their future students.

Implications for Teacher Education

The hypothetical results of this study carry significant implications for the design and implementation of teacher education programs. There is a clear need to:

1. Explicitly Teach Effective Learning Strategies: Rather than assuming students will acquire these skills implicitly, teacher education curricula should include

dedicated modules or integrated instruction on evidence-based learning techniques, particularly focusing on metacognitive and effective cognitive strategies [13, 16, 45].

2. Foster Metacognitive Awareness: Programs should emphasize activities that encourage students to reflect on their learning processes, set realistic goals, monitor their comprehension, and evaluate their learning outcomes [18, 57, 67]. This can be achieved through guided reflections, self-assessment tasks, and peer feedback [10].

3. Cultivate Self-Efficacy: Interventions aimed at enhancing self-efficacy should be integrated into the curriculum. This could involve providing opportunities for mastery experiences, observational learning (e.g., observing effective teachers), and constructive feedback [52, 53].

4. Promote Critical Thinking through SRL: Teacher education should explicitly link the development of SRL skills to critical thinking, demonstrating how metacognitive control enhances analytical and problem-solving abilities [33, 9].

Limitations and Future Research

As a hypothetical study, the primary limitation is the absence of empirical data. Future research should involve actual data collection from a diverse sample of pedagogy students using robust measures, including both self-report and performance-based assessments to triangulate findings and mitigate the limitations of self-report data [11]. Longitudinal studies would also be beneficial to track the development of learning strategies and SRL over the course of teacher education programs and into early professional practice. Furthermore, research could explore the impact of specific SRL interventions on pedagogy students' academic performance and their subsequent teaching effectiveness in fostering SRL in their own classrooms [12, 27, 30]. Investigating the role of contextual factors, such as curriculum design and instructional methods within teacher education, on students' strategy use would also provide valuable insights [23].

CONCLUSION

The hypothetical examination of learning techniques and strategies among pedagogy students highlights their crucial role in developing self-regulated learning and fostering critical thinking. The findings suggest that while students employ various strategies, there is a particular need to strengthen metacognitive and motivational approaches to enhance self-efficacy and critical thinking skills. By integrating explicit instruction in effective learning strategies and nurturing SRL

within teacher education programs, we can better prepare future educators to be not only knowledgeable professionals but also autonomous learners capable of guiding the next generation towards effective and independent learning.

REFERENCES

- Anderson, R. C., Hiebert, E. H., Scott, J. A., & Wilkinson, I. A. G. (1985). *Becoming a nation of readers : The report of the Commission on Reading*. National Academy of Education.
- Bandura, A. (1977). Self-efficacy : toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
- Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of social and clinical psychology*, 4(3), 359–373.
- Bandura, A. (1990). *Self-efficacy : The Exercise of control*. New York : Worth Publisher.
- Beyer, B. K. (1985). Critical thinking : What is it? *Social Education*, 49, 270–276.
- Björk, R., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning : Beliefs, techniques, and illusions. *Annual Review of Psychology*, 64(1), 417–444.
- Boekaerts, M. (1999). Self-regulated learning : Where we are today. *International Journal of Educational Research*, 31(6), 445–457.
- Borkowski, J. G. (1992). Metacognitive theory : A framework for teaching literacy, writing, and math skills. *Journal of Learning Disabilities*, 25(4), 253–257.
- Bransford, J. D., & Stein, B. S. (1993). *The IDEAL problem solver : A guide to improving thinking, learning, and creativity*. Worth Publishers.
- Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning : A theoretical synthesis. *Review of Educational Research*, 65(3), 245–281.
- Craig, K., Hale, D., Grainger, C., & Stewart, M. E. (2020). Evaluating metacognitive self-reports : Systematic reviews of the value of self-report in metacognitive research. *Metacognition and Learning*, 15, 155–213.
- Dignath, C., & Büttner, G. (2008). Components of fostering self-regulated learning among students. A meta-analysis on intervention studies at primary and secondary school level. *Metacognition and Learning*, 3, 231–264.
- Dignath, C., & Veenman, M. V. J. (2021). The role of direct strategy instruction and indirect activation of self-regulated learning – Evidence from classroom observation studies. *Educational Psychology Review*, 33(2), 489–533.
- Dirkx, K. J. H., Camp, G., Kester, L., Kirschner, P. A.

- (2019). Do secondary school students make use of effective study strategies when they study on their own? *Applied Cognitive Psychology*, 33, 952–957.
- Dumas, D. (2020). Strategic processing within and across domains of learning. In D. L. Dinsmore, L. K. Fryer, M. M. Parkinson (Eds.), *Handbook of strategies and strategic processing : Conceptualization, intervention, measurement, and analysis* (pp. 11–28). Routledge.
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques : Promising directions from cognitive and educational psychology. *Psychological Science in the Public interest*, 14(1), 4–58.
- Efklides, A. (2011). Interactions of metacognition with motivation and affect in self-regulated learning : The MASRL model. *Educational Psychologist*, 46(1), 6–25.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring : A new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906–911.
- Frensch, P. A., & Funke, J. (2014). *Complex problem solving : The European perspective*. Psychology Press.
- Gick, M. L. (1986). Problem-solving strategies. *Educational Psychologist*, 21(1–2), 99–120.
- Goldstein, E. B. (2015). *Cognitive psychology : connecting mind, research, and everyday experience* (4th edition; student edition). Cengage Learning.
- Hacker, D. J. (1998). Definitions and empirical foundations. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Metacognition in educational theory and practice* (pp. 15–38). Routledge.
- Hadwin, A. F., Winne, P. H., Stockley, D. B., Nesbit, J. C., & Woszczyna, C. (2001). Context moderates students' self-reports about how they study. *Journal of Educational Psychology*, 93(3), 477–487.
- Hager, P. J. (2012). Formal learning. In N. M. Seel (Ed.), *Encyclopedia of the sciences of learning* (pp. 1314–1316). Springer.
- Hartwig, M. K., & Dunlosky, J. (2012). Study strategies of college students : Are self- testing and scheduling related to achievement? *Psychonomic Bulletin & Review*, 19(1), 126–134.
- Heick, T. (2021, May 6). 60 Critical Thinking Strategies for Learning. TeachThought. <https://www.teachthought.com/critical-thinking/critical-thinking/>.
- Jansen, R. S., Van Leeuwen, A., Janssen, J., Jak, S., & Kester, L. (2019). Self-regulated learning partially mediates the effect of self-regulated learning interventions on achievement in higher education : A meta-analysis. *Educational Research Review*, 28, 100292.
- Karpicke, J. D., Butler, A. C., & Roediger, H. L. III (2009). Metacognitive strategies in student learning : Do students practice retrieval when they study on their own? *Memory*, 17, 471–479.