



Nigerian Undergraduates' Awareness of Self-Regulation Strategies in ESL Academic Writing

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Abstract

This research focuses on investigating the awareness and perception of self-regulation strategies in academic writing among undergraduate students. Specifically, it aims to explore the level of undergraduates' awareness in various aspects of self-regulation, such as goal setting, adopting powerful strategies, self-monitoring, restructuring social and physical context, time management, self-evaluation, attributing causation to results, and adapting future methods. The study adopts a cross-sectional survey research design and includes a sample of eighty-seven (87) third-year undergraduates majoring in English in Nigeria. To collect data, a questionnaire was employed as the primary research instrument. The data collected were analyzed using the SPSS software to address the research questions of the study. The findings indicate the respondents' moderate level of awareness regarding self-regulation strategies in ESL academic writing. This moderate level of awareness cuts across all aspects of self-regulation analyzed in this study. Based on the study's findings, several recommendations are proposed for both practical implementation and future research. These recommendations aim to enhance undergraduates' awareness of self-regulation strategies in ESL academic writing and improve their overall writing skills. Further studies are also suggested to delve deeper into the effectiveness and impact of various self-regulation strategies on undergraduate students' academic writing performance.

Keywords: *academic writing; awareness; ESL; Nigerian undergraduates; self-regulation.*

1. Introduction

Academic writing is an essential skill for undergraduates to achieve success in their studies. It is a complex task that requires multiple cognitive and metacognitive skills, including planning, organizing, revising, and self-evaluation (Hyland, 2016). Additionally, academic writing has been a difficult task to many undergraduates because it involves many types of knowledge, skills, cognitive and social activities such as critical thinking and problem-solving skills, background knowledge, vocabulary, diction and grammar among others (Mbato & Cendra, 2019). The problems faced by undergraduates in their academic writing in English are more worrisome especially among English as a Second Language (ESL) contexts like Nigeria. Recently, various studies have shown that many Nigerian undergraduates face a lot of challenges with their academic writing despite learning English since primary and high school. Their writings mostly display incompetence in the areas such as grammar, expression, vocabulary, mechanics, critical thinking and rhetorical style of the particular writing genre among other problems (Abdulkareem, 2013; Khoja, Mohapatra & Sarma, 2018). The problems could be attributed to various factors such as motivation,

anxiety, method of instruction and writing strategies. Previous studies have shown that poor motivation, anxiety or fear of failure, poor teaching approach and writing strategies influence students' academic writing performance.

Several studies have been carried out to investigate the writing problems of Nigerian undergraduates and propose solutions towards improving the student's writing performance (Shammout, 2020). However, the problems persist. This necessitates the need to examine other strategies in the writing process. One of the skills/strategies that are proven, by many scholars, to be effective in developing writing skills is self-regulation (Kha & Yen 2022). Through effective use of self-regulation strategies, students can improve their academic writing skills. Zimmerman (1986) explains the concept of self-regulation as a process whereby learners focus on how they personally activate, alter, and sustain their learning practices in a specific learning context. Zimmerman (2002) further explains the major components of self-regulation as (a) setting specific proximal goals for oneself, (b) adopting powerful strategies for attaining the goals, (c) monitoring one's performance selectively for signs of progress, (d) restructuring one's physical and social context to make it compatible with one's goals, (e) managing one's time use efficiently, (f) self-evaluating one's methods, (g) attributing causation to results, and (h) adapting future methods.

In the writing process, self-regulation could be applied by learners to achieve their writing goals. This is because writing involves many cognitive activities that require self-regulation such as planning, translating, executing, evaluating, monitoring and revising (Flower & Hayes, 1981). Writing need to generate ideas, convert the ideas into words, and write the content. Thus, according to Magno (2009), self-regulation in writing involves a writer's adaption of his/her strategies, based on certain requirements such as tasks, audience, and intrapersonal states, to achieve his/her writing goals.

Many studies on self-regulation and academic writing have been carried out in the U.S., U.K. and Asia (Mbato, & Cendra, 2019) and found out that self-regulation enables writers to adapt their strategies to plan and execute their writing goals, based on certain requirements such as tasks, audience, and intrapersonal states (Magno, 2009). It is not only effective in helping students to overcome challenges and accomplish their writing tasks (Mbato, & Cendra, 2019) and develop their writing performance (Zimmerman & Kitsantas, 1999), but it is also effective in. However, in Nigeria, there appears to be a lack of studies on undergraduates' awareness of self-regulation in academic writing. Despite the emphasis on academic writing skills in higher education, little research has been conducted on undergraduates' self-regulation and academic writing. Therefore, this study aims to investigate the awareness of self-regulation in academic writing among Nigerian undergraduates. The study would create awareness of teachers and researchers to provide methodologies that would enhance students' awareness and use of self-regulation strategies in writing processes which would eventually develop their academic writing performance.

Research Questions

The paper is said to answer the following questions:

1. What is the Nigerian undergraduates' awareness and perception of self-regulation in academic writing?
2. What are the self-regulating strategies used by Nigerian undergraduates in their academic writing?

Literature Review

Theoretical and empirical work on self-regulation in academic learning first emerged in the field of educational psychology in the middle of the 1980s, fusing four distinct study areas on cognition/metacognition, behavioural control, motivation and developmental processes (Zimmerman and Schunk 2011). Over the past decades, there have been changes in how self-regulated learning is conceptualized (Zheng, Huang, Li, Lajoie, Chen, & Hmelo-Silver, 2020). The cognitive and metacognitive components of learning were primarily emphasized in the early notion of self-regulated learning (Zimmerman, 2013). To achieve personal objectives, self-regulated learners must be able to activate and retain cognitions, emotions, and behaviours (Zimmerman and Kitsantas 2014).

The early theories of self-regulated learning, however, fell short of illuminating the reasons why some students can self-regulate their learning while others are unable to. Contemporary researchers often characterize self-regulated learning as a multi-dimensional phenomenon that also incorporates motivational, emotional and contextual components apart from cognitive and metacognitive ones, to provide a more thorough explanation of self-regulated learning (Greene & Schunk, 2018). Even though self-regulated learning is a multi-component phenomenon, in empirical studies, researchers continue to discuss its cognitive and metacognitive components. For instance, self-regulated learning was assessed in terms of cognitive and metacognitive strategies by Mega et al. (2014) when they looked at how emotions, motivation, and self-regulated learning influence academic achievement.

The first area of research that has drawn interest is self-regulated learning. It is interesting to note that there exist six models of self-regulated learning that are commonly used in the literature, and they all view self-regulated learning as a dynamic, cyclical process that is inherently cognitive and metacognitive (Panadero, 2017). They share virtually the same components and processes. Self-regulation refers to self-generated ideas, feelings, and actions that are planned and cyclically tailored to the achievement of personal goals, according to Zimmerman's (2005) self-regulation model. Zimmerman (2005, 2011) and Zimmerman and Moylan (2009) outline three cyclical phases of self-regulated learning processes in terms of the social cognitive viewpoint: forethought, which analyses the task and takes into account self-motivational beliefs like perceptions of one's self-efficacy, performance, which applies the strategies chosen during the forethought phase, and self-reflection, which starts self-judgmental and self-regulation processes that involve metacognitive aspects like comparing one's performance against some standards as well as motivating factors.

The Taxonomy of Zimmerman's self-regulated learning activities involves six micro-level processes such as orientation, planning, execution, monitoring elaboration and evaluation. Specifically, the self-regulated learning activities of orientation and planning fall within the forethought phase because they involve learners making an effort to familiarize themselves with the task settings and requirements. Learners carry out execution and monitoring tasks to finish a task during the performance phase. Elaboration and evaluation of learners' learning outcomes are eventually initiated at the self-reflection stage. As a higher-order model, this framework separates self-regulated learning processes according to the task's specific characteristics (Zheng et al., 2020).

It should, however, be noted that self-regulated learning involves using three main types of strategies: cognitive strategies, which deal with the actions a learner will do while learning, like rehearsing, reviewing, retrieval practice, and spacing; social-emotional strategies, which have to do with controlling motivation and relationships with others, include delaying gratification, building self-efficacy, and asking for help; metacognitive strategies,

which concern with monitoring and regulating learning, including planning, choosing which strategies to use, monitoring how well a learning activity is going, and adapting strategies based on that assessment. (Zimmerman, 1990; Ardasheva et al., 2017; Taylor, Butts-Wilmsmeyer, 2020).

In practice, the ability to control oneself has effects on classroom behaviour. While entering kindergarten, pupils with good self-control are seen by teachers as having better work habits later in the school year (Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). As they exhibit fewer behavioural issues, learners who are well-regulated may benefit from more class time. positive behaviour in the classroom influences students' relationships with teachers, and via these interactions, learning is accelerated (Liew, 2012; Hernández, et al., 2018). However, a student's lack of self-regulation may be offset by a strong teacher-student interaction (Liew, Chen, & Hughes, 2010). Students with strong self-regulation do well regardless of their relationship with their teacher, but when partnered with a supportive teacher, students with weaker self-regulation did just as well as their counterparts without self-regulation (Savina, 2020). Yet, a lack of self-regulation is linked to a hostile relationship with teachers (Bery, 2012).

Concerning English writing, three general stages of the writing process—before, during, and after—were suggested by Flower and Hayes in 1981. For planning, generating, and editing their writing at the various writing phases, self-regulated learners often actively employ a variety of self-regulated learning strategies. Before writing, learners utilize planning to define objectives, produce and arrange their writing ideas (Chien, 2012). During writing, learners modify what has been planned or written by translating their thoughts into clear words, sentences, and paragraphs (de Larios, Manchón, Murphy, & Marn, 2008; Chien, 2012). After writing, they edit their writing after receiving input from teachers, peers, or parents and fix any lexical and grammatical issues that surface (de Larios et al., 2008; Bai & Guo, 2021)

Besides, a multidimensional model of self-regulated writing strategies was developed and validated by Teng and Zhang (2016). The model was developed using a three-phase procedure that included item production, preliminary piloting, and psychometric evaluation (Teng, & Huang, 2019). With this model, one may view self-regulated writing strategies from a more analytical standpoint. The theoretical foundation for this study is created by this model, which emphasizes the dynamic nature of learning.

In the context of related studies, various studies have been conducted in many parts of the world to establish the relationship between self-regulation and the academic writing performance of undergraduates. For instance, Mbato and Cendra (2019) examine the use of self-regulation in the thesis writing of Indonesian EFL undergraduates and its impact on their motivation. The study revealed that self-regulation had a positive, significant, and moderate correlation with help-seeking and a positive, significant, and high correlation with motivation-regulation which have a significant influence on the students' thesis writing.

2. Method

The study adopts a cross-sectional survey research design to investigate undergraduates' awareness and perception of self-regulation strategies in ESL academic writing. This research design is most popular form of survey design used in education settings because it enables a researcher collects data at one point in time (Creswell, 2012).

2.1. Participants

A total of eighty-seven (87) third-year undergraduates majoring in English from a university in Nigeria were selected to participate in the study. All participants were enrolled in an Advanced English Composition course for a duration of 14 weeks.

2.2. Instruments for Data Collection

A questionnaire was employed for the data collection of the study. The questionnaire is adopted from Kanlapan, & Velasco (2009) and consists of 9 sections: 1. Personal data (1) setting specific proximal goals for oneself, (2) adopting powerful strategies for attaining the goals, (3) monitoring one's performance selectively for signs of progress, (4) restructuring one's physical and social context to make it compatible with one's goals, (5) managing one's time use efficiently, (6) self-evaluating one's method, (7) attributing causation to results, and (8) adapting future methods (see Appendix A).

2.3. Method of Data Analysis

The data collected from the questionnaire underwent analysis using descriptive statistics to summarize the participants' responses to each section. The analysis was conducted utilizing the statistical software package SPSS.

Firstly, the respondents' self-regulation awareness frequencies were categorized into three levels: high, moderate, and low usage. This categorization was based on a classification developed by Oxford and Burry-Stock (1995), which had been adapted from Mokhtari and Sheorey's (2002) framework for general learning strategy use. According to this classification, a mean score of 3.5 and above indicated high usage, while a mean score within the range of 2.5-3.4 denoted moderate usage. On the other hand, a mean score of 2.4 and below indicated low usage.

With the aim of effectively analyzing the collected data, descriptive statistics such as frequencies and percentages were employed. These statistical measures provided a comprehensive overview of the participants' responses to each section of the questionnaire. By using SPSS, the analysis was conducted efficiently and accurately, allowing for a more thorough understanding of the participants' self-regulation awareness in ESL academic writing.

3. Results

In this section, we present the results and discussion of the respondents' self-regulation awareness levels, as measured by mean scores and standard deviations.

3.1. Findings

The table below displays the mean scores and standard deviations for each dimension, along with a classification of the awareness level (high, moderate, or low). These findings provide important insights into the undergraduates' current level of awareness and engagement in self-regulation strategies in ESL academic writing.

Table 1: Respondents' Self-regulation Awareness Levels

| S/N | Self-regulation in Writing | Mean | SD | Level |
|-----|------------------------------|------|------|----------|
| 1 | Goal setting | 3.35 | 0.48 | Moderate |
| 2 | Adopting powerful strategies | 3.15 | 0.38 | Moderate |
| 3 | Self-monitoring | 3.23 | 0.45 | Moderate |

| | | | | |
|---|---|------|------|----------|
| 4 | Restructuring social and physical context | 3.37 | 0.50 | Moderate |
| 5 | Time management | 3.13 | 0.37 | Moderate |
| 6 | Self-evaluation | 3.33 | 0.46 | Moderate |
| 7 | Attributing causation to results | 3.39 | 0.49 | Moderate |
| 8 | Adapting future methods | 3.40 | 0.50 | Moderate |

The results indicate that the respondents have moderate awareness of regulation strategies used in ESL writing based on the classification of Mokhtari and Sheorey (2002), as mean scores of all the components of regulation strategies in writing fall between 2.5-3.4. For example, adapting future methods has the highest mean score (M= 3.40, SD=0.50) while Time management has the lowest mean score (M= 3.13, SD=0.37). All other components fall between these two.

The results further reveal that all the self-regulation strategies (goal setting, adopting powerful strategies, self-monitoring, restructuring social and physical context, time management, Self-evaluation, attributing causation to results, and adapting future methods) are utilized by the students in their writing processes.

3.2. Discussion

The first research questions addressed students' awareness and perception regarding academic writing. Based on the results, the Nigerian undergraduates in this study demonstrated a moderate level of awareness and perception of self-regulation in academic writing, with some variation observed across different components of self-regulation. The mean scores of all the components of self-regulation strategies fell within the moderate range (2.5-3.4), indicating that students possess some knowledge of these strategies. This suggests that Nigerian undergraduates are aware of the importance of self-regulation in enhancing their writing performance.

The second research question focuses on students' self-regulating strategies. The study also identified various self-regulating strategies employed by Nigerian undergraduates in their academic writing. These strategies include goal setting, adopting powerful strategies, self-monitoring, restructuring social and physical context, time management, self-evaluation, attributing causation to results, and adapting future methods. The mean scores for all the strategies fell within the moderate range, indicating that students apply these strategies to a moderate extent. Notably, adapting future methods received the highest mean score, indicating that Nigerian undergraduates are relatively more inclined to modify their writing approaches based on past experiences. Conversely, time management received the lowest mean score, suggesting potential areas for improvement in this aspect of self-regulation.

These findings align with some previous studies conducted in the field of self-regulation in academic writing. For example, research conducted by Mokhtari and Sheorey (2002) on general learning strategy use also found similar categorizations of high, moderate, and low awareness levels. Additionally, studies focusing on self-regulation strategies in academic writing among other student populations have also reported moderate levels of awareness, indicating that this might be a common trend across different contexts. This consistency

strengthens the credibility of the findings. The observed moderate level of awareness of self-regulation strategies among Nigerian undergraduates can be attributed to several factors. One possible explanation is the lack of explicit instruction and guidance on self-regulation skills in academic writing within the educational system in Nigeria. It is also possible that students may not fully appreciate the importance and benefits of self-regulation in enhancing their writing performance. Additionally, external factors such as limited access to resources and time constraints may hinder students' ability to fully engage in self-regulation practices.

The results highlight the need for interventions and programs aimed at enhancing self-regulation skills in academic writing among Nigerian undergraduate students. The moderate levels of awareness suggest that there is need for improvement. By providing targeted training and support, students can be equipped with effective self-regulation strategies to enhance their writing performance. The findings also underscore the importance of incorporating self-regulation instruction into the curriculum, as it can potentially improve students' awareness and adoption of these strategies.

The results highlight the need for interventions and programs aimed at enhancing self-regulation skills in academic writing among Nigerian undergraduate students. The moderate levels of awareness suggest that there is room for improvement. By providing targeted training and support, students can be equipped with effective self-regulation strategies to enhance their writing performance. The findings also underscore the importance of incorporating self-regulation instruction into the curriculum, as it can potentially improve students' awareness and adoption of these strategies. The results, therefore, contribute to the existing literature on self-regulation in academic writing among Nigerian undergraduate students. The findings highlight the current levels of awareness and shed light on specific areas that require attention and improvement. This knowledge can inform the development of interventions and instructional strategies to enhance students' self-regulation skills, ultimately benefiting their writing performance and academic success. However, it is important to acknowledge the limitations of this study. First, the research was conducted among a specific sample of Nigerian undergraduate students, which may limit the generalizability of the findings to other populations or educational contexts. Additionally, self-report measures were used to assess awareness, which might be subject to response biases. Furthermore, the study focused solely on undergraduate students, and the results might not apply to other educational levels.

Based on the results of this study, several recommendations can be made. Firstly, educational institutions should consider integrating explicit instruction and support for self-regulation strategies into the curriculum, particularly in the context of academic writing. This could be achieved through workshops, training programs, or the incorporation of self-regulation activities in writing assignments. Additionally, future studies could explore the factors influencing the development of self-regulation skills, such as the role of individual characteristics, educational practices, and cultural factors. Furthermore, investigating the effectiveness of interventions designed to enhance self-regulation in writing among Nigerian undergraduates would be valuable. Finally, researchers could explore the relationship between self-regulation skills and writing performance outcomes, such as writing quality and academic achievement, to gain a more comprehensive understanding of the impact of self-regulation in academic writing.

4. Conclusion

This study aimed to investigate the students' awareness and perception of self-regulation in academic writing, as well as the self-regulating strategies they employed. The findings provide insights into the students' level of awareness, their perception of self-regulation, and the strategies they employ in their academic writing, with implications for theory and practice. The findings of the study reveal that the respondents have a moderate level of awareness of self-regulation strategies in ESL academic writing. It is also shown that respondents use the following strategies moderately: Goal setting, adopting powerful strategies, self-monitoring, restructuring social and physical context, time management, Self-evaluation, attributing causation to results and adapting future methods. The study has some limitations. It is limited to a small number of respondents and only a questionnaire is used in the data collection.

Despite the limitations, the findings of this study will provide valuable insights into the relationship between self-regulation and academic writing performance among Nigerian undergraduates. The results of this have important theoretical and practical implications. The theoretical implications of this study contribute to the existing literature on self-regulation in academic writing. The findings highlight the current levels of awareness and shed light on specific areas that require attention and improvement. They provide valuable insights into the self-regulated writing performance of Nigerian undergraduate students and can inform the development of theoretical frameworks and models for understanding and promoting self-regulation in academic writing. Moreover, the practical contribution of the study is that it unveils the moderate levels of awareness and application of self-regulation strategies among Nigerian undergraduates suggest the need for interventions and programs aimed at enhancing self-regulation skills in academic writing. By providing targeted training and support, educators can equip students with effective self-regulation strategies to enhance their writing performance. Incorporating self-regulation instruction into the curriculum can improve students' awareness and adoption of these strategies.

References

- Adeyemo, D. A., & Akinwunmi, F. O. (2020). Predictors of academic writing performance among Nigerian undergraduates. *Journal of Educational and Social Research*, 10(4), 61-70.
- Akiri, A. A & Ugborugbo, N. M. (2009). Teachers' effectiveness and students' academic performance in public secondary schools in Delta State, Nigeria. *Stud Home Comm Sci*, 3(2), 107-113.
- Alsamadi, H. A. (2010). The relationship between Saudi EFL students' writing competence, L1 writing proficiency, and self-regulation. *European Journal of Social Sciences*, 16, 53-63.
- Ardasheva, Y., Wang, Z., Adesope, O. O., & Valentine, J. C. (2017). Exploring effectiveness and moderators of language learning strategy instruction on second language and self-regulated learning outcomes. *Review of Educational Research*, 87(3), 544-582.

- 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.
- Bamidele M. & Bamidele, A. (2013). Influence of cognitive performance on mathematics student's level of achievement. *International Researcher*, 2 (1),142-150.
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes*, 50(2), 248-287.
- Berry, D. (2012). Inhibitory control and teacher–child conflict: Reciprocal associations across the elementary-school years. *Journal of Applied Developmental Psychology*, 33(1), 66-76.
- Crosnoe, R., Johnson, M. K., & Elder, G. H. (2004). School size and the interpersonal side of education: An examination of race/ethnicity and organizational context. *Social Science Quarterly*, 85(5): 1259-1274.
- Daniela, P. (2015). The relationship between self-regulation, motivation and performance at secondary school students. *Procedia - Social and Behavioral Sciences*, 191, 2549–2553. <https://doi.org/10.1016/j.sbspro.2015.04.410>
- Hamman, L. (2005). Self-regulation in academic writing tasks. *International Journal of Teaching and Learning in Higher Education*, 17, 15-26.
- Hernández, M. M., Valiente, C., Eisenberg, N., Berger, R. H., Spinrad, T. L., VanSchyndel, S. K., ... & Thompson, M. S. (2017). Elementary students' effortful control and academic achievement: The mediating role of teacher–student relationship quality. *Early childhood research quarterly*, 40, 98-109.
- Kaplan, A., Lichtinger, E., & Gorodetsky, M. (2009). Achievement goals orientations and selfregulation in writing: an integrative perspective. *Journal of Educational Psychology*, 101, 51-69.
- Liew, J., Chen, Q., & Hughes, J. N. (2010). Child effortful control, teacher–student relationships, and achievement in academically at-risk children: Additive and interactive effects. *Early Childhood Research Quarterly*, 25(1), 51-64.
- Liew, J. (2012). Effortful control, executive functions, and education: Bringing self-regulatory and social-emotional competencies to the table. *Child Development Perspectives*, 6(2), 105-111.
- Magno, C. (2010). Assessing academic self-regulated learning among Filipino college students: The factor structure and item fit. *The International Journal of Educational and Psychological Assessment*, 5, 61-76.

- Mokhtari, K., & Reichard, C. A. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94(2), 249.
- O'Malley, J.M. & Chamot, A.U. (1990). *Learning strategies in second language acquisition*. New York: Cambridge University Press.
- Olusola, S., Omoregie, D., Emmanuel, A., & Olushola, E. (2016). Factors affecting performance of undergraduate students in construction related disciplines. *Journal of Education and Practice*.
- Oluwole, D. A., Ajayi, A. F., & Oludipe, D. I. (2020). Self-regulation and academic writing performance of Nigerian undergraduates. *African Journal of Education and Technology*, 6(1), 20-30.
- Oxford, R. L., & Burry-Stock, J. A. (1995). Assessing the use of language learning strategies worldwide with the ESL/EFL version of the strategy inventory for language learning (SILL). *System*, 23(1), 1-23
- Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology*, 422.
- Rimm-Kaufman, S. E., Curby, T. W., Grimm, K. J., Nathanson, L., & Brock, L. L. (2009). The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom. *Developmental Psychology*, 45(4), 958.
- Savina, E. (2020). Self-regulation in preschool and early elementary classrooms: Why it is important and how to promote it. *Early Childhood Education Journal*, 49(3), 493-501.
- Taylor, A.F., Butts-Wilmsmeyer, C., Self-regulation gains in kindergarten related to frequency of green schoolyard use. *Journal of Environmental Psychology* (2020), doi: <https://doi.org/10.1016/j.jenvp.2020.101440>.
- Teng, F., & Huang, J. (2019). Predictive effects of writing strategies for self-regulated learning on secondary school learners' EFL writing proficiency. *TESOL Quarterly*, 53(1), 232-247.
- Zheng, J., Huang, L., Li, S., Lajoie, S. P., Chen, Y., & Hmelo-Silver, C. E. (2021). Self-regulation and emotion matter: A case study of instructor interactions with a learning analytics dashboard. *Computers & Education*, 161, 104061.
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64-70.
- Zimmerman, B. J. (2013). From cognitive modeling to self-regulation: A social cognitive career path. *Educational Psychologist*, 48(3), 135–147.

- Zimmerman, B.J. & Kitsantas, A. (2014). Comparing students' self-discipline and self-regulation measures and their prediction of academic achievement. *Contemporary Educational Psychology* 39, no. 2: 145–155. doi:10.1016/j.cedpsych.2014.03.004.
- Zimmerman, B.J. & Schunk, D.H. (2011). Self-regulated learning and performance: an introduction and an overview. In handbook of self-regulation of learning and Performance, ed. B.J. Zimmerman and D.H. Schunk, 1–12. New York, NY: Routledge.
- Zimmerman, B.J. & Moylan, A.R. (2009). Self-regulation: where metacognition and motivation intersect. In *handbook of metacognition in education*, ed. D. J. Hacker, J. Dunlosky and A.C. Graesser, 299–315. New York, NY: Routledge.
- Zimmerman, B. (2005). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.). *Handbook of self-regulation* (pp. 13–39). (2nd ed.). San Diego, Calif: Acad. Press
- Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, 23, 614-628.