Iranian Journal of Applied Educational Research

# The Role of Self-Regulated Learning Strategies in Predicting Students' Academic Performance in Online Learning Environments

**Reza Yousefi**[1]✉

1. Master of Science in General Psychology, Department of Psychology, Faculty of Educational Psychology, University of Sistan and Baluchestan, Zahedan, Iran. E-mail: rezayosefimailfa@gmail.com

**Article Info**

**Article type:**

Research Article

**Article history:**

Received: 6 April 2026

Accepted: 11 June 2026

Published online: 29 June 2026

**Keywords**:

Self-regulated learning, academic performance, online learning, learning management system, students

**ABSTRACT**

The present study investigated the role of self-regulated learning strategies in predicting students' academic performance in online and blended learning environments. In terms of purpose, this was an applied study; methodologically, it adopted a quantitative descriptive-correlational design. The statistical population comprised students enrolled in universities in the city of Qom who were studying in online learning environments supported by learning management systems (LMSs). A sample of 384 students was selected using proportionate stratified random sampling. Data were collected using a standardized self-regulated learning questionnaire based on the Motivated Strategies for Learning Questionnaire (MSLQ) framework and students' academic performance indicator, measured by grade point average (GPA). Construct validity was assessed through confirmatory factor analysis, while the reliability of the instrument was evaluated using Cronbach's alpha coefficient. The findings confirmed the questionnaire's satisfactory reliability. Data were analyzed using descriptive statistics, Pearson's correlation coefficient, and multiple regression analysis.

The findings revealed significant positive relationships between the dimensions of self-regulated learning, including planning, monitoring, cognitive control, and self-evaluation, and students' academic performance. Regression analysis further indicated that self-regulated learning strategies explained a substantial proportion of the variance in academic performance. Among these dimensions, planning was identified as the strongest predictor of students' academic performance.

Based on these findings, strengthening self-regulated learning strategies can play an important role in improving students' academic performance in online learning environments. Accordingly, greater attention to teaching self-regulation skills and designing e-learning environments that support the development of such skills may contribute to enhancing the quality of learning in higher education.

**Cite this article:** Yousefi, R. (2026). The Role of Self-Regulated Learning Strategies in Predicting Students' Academic Performance in Online Learning Environments. *Iranian Journal of Applied Educational Research*, 2(2), 35-44. DOI: 10.22111/ijaer.2026.55901.1045

Publisher: University of Sistan and Baluchestan

## Introduction

In recent years, the expansion of online and blended learning supported by Learning Management Systems (LMSs) has fundamentally transformed the structure of higher education and the ways in which students learn. Although this transformation has enabled broader access, greater temporal and spatial flexibility, and the expansion of non-face-to-face education, it has also introduced challenges related to learner engagement, continuity of learning, and the stability of academic performance. International research suggests that, in online learning environments, reduced direct interaction with instructors and increased learner autonomy may make declines or fluctuations in academic performance more likely than in face-to-face education (Bozkurt & Sharma, 2020; Hodges et al., 2020).

Under these circumstances, educational research has shifted its focus from the quality of content and technological infrastructure alone toward learners' cognitive and metacognitive characteristics. In this context, self-regulated learning (SRL), as a key construct in educational psychology, plays a central role in students' academic success in digital learning environments. SRL refers to a set of goal-directed processes, including planning, monitoring, controlling, and evaluating learning, through which learners actively and purposefully manage their own learning pathways (Panadero, 2020).

According to classical and contemporary theories of self-regulation, learning success increases when students are able to effectively regulate their cognitive and metacognitive strategies throughout the learning process (Zimmerman, 2021). Within this framework, Zimmerman's model conceptualizes SRL as a cyclical process comprising the phases of forethought, performance, and self-reflection, during which learners continuously regulate their goals and adjust their performance. Similarly, in Pintrich's model, SRL is viewed as a multidimensional process involving the regulation of cognition, motivation, behavior, and context, with emphasis on the learner's active interaction with the educational environment (Pintrich, 2004). Moreover, Bandura's social cognitive theory highlights the decisive role of self-efficacy in the development and maintenance of self-regulated learning behaviors. In this regard, individuals' beliefs in their own capabilities are considered key factors in initiating and sustaining academic efforts (Bandura, 2006).

At the component level, self-regulated learning includes the major dimensions of planning, monitoring, cognitive control, and self-evaluation. Planning refers to the process of setting goals, selecting strategies, and organizing time, and it plays an important role in directing learning activities. Research has shown that students with stronger planning abilities tend to perform better in online learning environments (Dörrenbächer & Perels, 2020). Learning monitoring refers to the continuous assessment of one's progress throughout the learning process and enables timely adjustments to the learning path, particularly in LMS-based environments where learning structures may be non-linear (Gašević et al., 2021). Cognitive control involves the use of strategies such as reviewing, summarizing, and organizing information, which are especially important in digital environments characterized by large volumes of content (Jivet et al., 2020). Finally, self-evaluation refers to the process of assessing one's performance after learning and plays a key role in internal feedback and the continuous improvement of performance (Panadero et al., 2021).

In addition to these components, academic performance in online learning environments is conceptualized as a multidimensional construct encompassing course grades, participation in learning activities, and the successful completion of online courses. Unlike traditional education, academic success in LMS-based environments is strongly influenced by the extent to which learners are able to direct their own learning (Richardson & Swan, 2021). Features such as temporal and spatial flexibility, high levels of autonomy, and a greater reliance on intrinsic motivation have increased the importance of self-regulated learning skills in these settings. In the absence of a face-to-face instructional structure, responsibility for managing the learning process is placed largely on the student (Broadbent et al., 2022).

A review of the international literature indicates that self-regulated learning is one of the strongest predictors of academic performance in online education. For example, studies based on LMS data have shown that SRL-related behaviors, such as time management and engagement with learning materials, are directly associated with academic success (Cho & Kim, 2021). Meta-analytic evidence further suggests that

SRL not only directly influences academic performance but may also mediate the relationship between academic motivation and educational success (Panadero & Broadbent, 2022).

At the national level, studies conducted in recent years similarly indicate that self-regulated learning is a key factor in predicting students' academic performance in online education. Eghbali (2023) found a positive and significant relationship between self-regulated learning strategies and academic achievement, with dimensions such as planning and monitoring playing an important role in improving academic performance. Likewise, Rezaei Rad, et al. (2023) reported that training in self-regulation skills can significantly enhance students' academic performance in online learning environments by increasing motivation and improving time-management practices. Furthermore, Kord et al. (2024) showed that the use of learning management systems without adequate self-regulation skills may lead to poorer academic performance. They emphasized that educational technology alone does not guarantee success; rather, students' ability to manage their own learning process plays a more decisive role.

Overall, a review of domestic and international studies indicates that, although there is a relative consensus regarding the positive importance of self-regulated learning in improving academic performance, most previous research has been limited to direct and linear relationships. Less attention has been paid to more complex mechanisms, such as the mediating roles of academic motivation and self-efficacy, as well as interactions with LMS-related characteristics. This limitation points to an important theoretical and empirical gap in the literature and underscores the need for model-based studies employing structural analyses.

Building on the theoretical foundations outlined above, the theoretical framework of this study is based on explaining the role of self-regulated learning strategies in predicting students' academic performance in online learning environments. Within this framework, self-regulated learning is considered the primary independent variable, which affects academic performance through its cognitive and metacognitive components, including planning, monitoring, and self-evaluation. Academic performance is conceptualized as the dependent variable and is reflected in indicators such as course grades, participation in educational activities, and the successful completion of online courses.

The proposed conceptual model of this study posits a direct and significant relationship between self-regulated learning and academic performance. Specifically, the higher students' self-regulation skills, the greater their academic success in online learning environments. This relationship is based on the assumption that students with stronger abilities to regulate learning goals, monitor their progress, and evaluate their own performance are better able to adapt to the challenges of online learning environments and, consequently, demonstrate more favorable academic outcomes.

In an extended version of the conceptual model, the role of mediating variables is also noteworthy. In this regard, academic motivation and self-efficacy may function as mediating variables that explain the mechanism through which self-regulated learning affects academic performance. In other words, self-regulated learning strategies may contribute to improved academic performance by enhancing intrinsic motivation and strengthening students' beliefs in their own capabilities. At the environmental level, variables such as digital literacy and the quality of the Learning Management System (LMS) may play moderating roles. That is, they may strengthen or weaken the magnitude and direction of the relationship between self-regulated learning and academic performance. For example, in environments with higher-quality LMSs, or among students with higher levels of digital literacy, the effect of self-regulation on academic performance may be stronger.

Accordingly, the conceptual model of the study suggests that the interaction among individual characteristics (self-regulated learning), psychological factors (motivation and self-efficacy), and contextual factors (LMS quality and digital literacy) ultimately leads to a more comprehensive explanation of academic performance in online learning environments.

In line with the developed theoretical framework, the research hypotheses can be stated as follows. First, self-regulated learning is hypothesized to have a positive and significant effect on students' academic performance in online learning environments. In addition, the major components of this construct are expected to have independent predictive roles. Specifically, academic planning is expected to significantly predict academic performance; learning monitoring is expected to be positively and significantly associated

with academic performance; and learning self-evaluation is expected to have a positive and substantial effect on improving students' academic performance. Taken together, these hypotheses provide the analytical framework for empirically testing the relationships among the study variables.

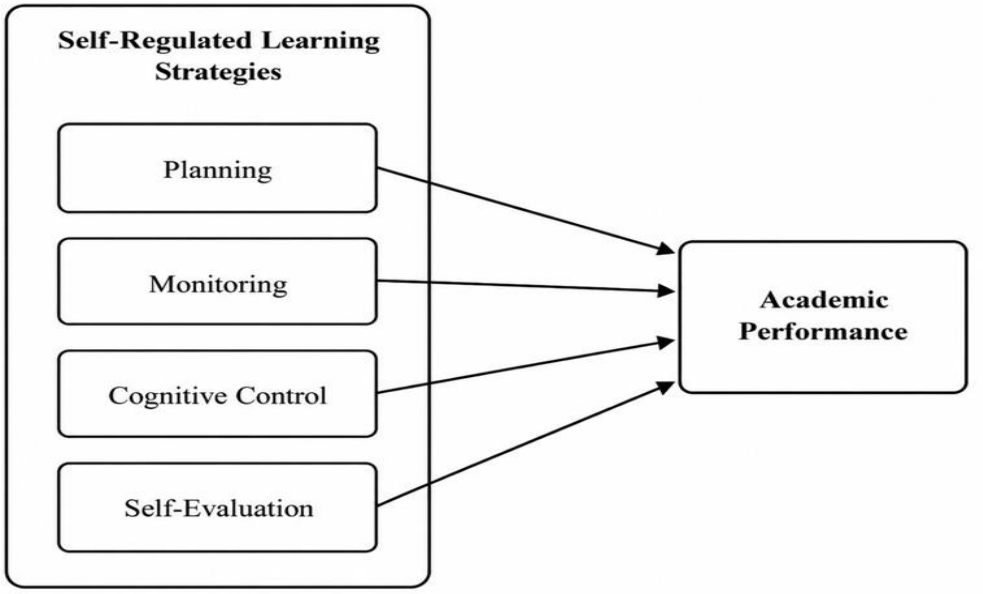


**Figure 1. Conceptual Model of the Study**

## Method

### Sample and Sampling Method

This study was applied in terms of purpose and descriptive-correlational in terms of method, employing structural equation modeling (SEM) to simultaneously examine the relationships among the components of self-regulated learning and academic performance.The statistical population of the study comprised all students enrolled at universities in the city of Qom who, during the academic semester under investigation, were studying in online or blended learning environments supported by Learning Management Systems (LMSs). Based on educational estimates, the number of eligible students across the major universities in Qom was approximately 8,500. Given the requirements of multivariate analysis and structural equation modeling, the sample size was determined using Morgan's table, considering a 95% confidence level and a margin of error of 0.05, yielding a sample of 384 students. This sample size was deemed statistically adequate for testing the relationships specified in the study's conceptual model. The sampling method employed was proportionate stratified random sampling, whereby students from different academic disciplines and educational levels (undergraduate, master's, and doctoral) were represented in the final sample in proportion to their population. Where access to certain strata was limited, controlled convenience sampling was used to complete the required quota for each stratum. The inclusion criteria consisted of active enrollment during the current semester, use of the university's virtual learning systems, and informed willingness to participate in the study; guest students and those with less than one semester of LMS usage experience were excluded from the study.

## Tools Used

**Self-Regulated Learning Questionnaire:** This instrument was a standardized, culturally adapted version of the Motivated Strategies for Learning Questionnaire (MSLQ), which measured four components: planning, monitoring, cognitive control, and self-evaluation. The questionnaire consisted of 24 items rated on a five-point Likert scale (ranging from strongly disagree to strongly agree). The distribution of items across components was as follows: planning (6 items), monitoring (6 items), cognitive control (6 items), and self-evaluation (6 items).

**Academic Performance Measure:** Students' academic performance was assessed using their cumulative grade point average (GPA) for the most recent semester, as well as their average grade in major-specific courses. The mean GPA of the sampled students was 15.8 out of 20, indicating a moderately above-average level of academic performance within the study population. The face and content validity of the questionnaire were confirmed through consultation with several experts in educational psychology and educational sciences. Construct validity was further examined through confirmatory factor analysis (CFA), the results of which indicated an adequate fit between the items and the theoretical constructs of the model (fit indices, including CFI, RMSEA, and $\chi^2/df$, fell within acceptable ranges).

The reliability of the instrument was assessed using Cronbach's alpha coefficient. The overall reliability coefficient of the questionnaire was found to be 0.89, indicating satisfactory internal consistency. The reliability coefficients for the planning, monitoring, cognitive control, and self-evaluation components were 0.84, 0.86, 0.81, and 0.83, respectively.

## Procedure

The study was conducted in several stages. In the first stage, following a review of the theoretical and empirical literature, the conceptual model of the study was designed based on the components of self-regulated learning and their relationship with academic performance. The research questionnaire was then administered to eligible students at universities in Qom via an online form, and following the acquisition of informed consent, data were collected over a specified time period.

In the data analysis stage, descriptive statistics were first employed to examine the demographic characteristics of participants and the distribution of the study variables. Next, Pearson's correlation coefficient was calculated to examine the initial relationships among the variables. Simultaneous multiple regression analysis was then conducted to assess the predictive power of the self-regulated learning components with respect to academic performance.

Finally, structural equation modeling (SEM) was employed, using appropriate statistical software (such as AMOS or SmartPLS), to test the study's conceptual model. The results indicated that the proposed model demonstrated acceptable fit and that self-regulated learning strategies significantly predicted the academic performance of university students in Qom.

## Result

In the first stage, descriptive statistics, including the mean and standard deviation, were used to describe the data. The variables examined included the components of self-regulated learning—planning, monitoring, cognitive control, and self-evaluation—as well as students' academic performance. The descriptive statistics are presented in Table 1.

**Table 1. Descriptive Statistics of the Study Variables (n = 384)**

| Variable | Mean | Standard Deviation |
|---|---|---|
| **Planning** | 3.62 | 0.71 |
| **Monitoring** | 3.55 | 0.68 |
| **Cognitive Control** | 3.48 | 0.73 |
| **Self-Evaluation** | 3.59 | 0.69 |
| **Academic Performance (GPA)** | 15.80 | 1.82 |

As shown in Table 1, the mean scores of the self-regulated learning components were at a relatively favorable level, exceeding 3 on the five-point scale. The highest mean score was observed for planning (M = 3.62), whereas the lowest was found for cognitive control (M = 3.48). In addition, the students' mean GPA was 15.80, indicating a moderate-to-high level of academic performance among the participants.

Pearson's correlation coefficient was used to examine the preliminary relationships among the study variables. The results are presented in Table 2.

**Table 2. Correlation Matrix of the Study Variables**

| Variables | Planning | Monitoring | Cognitive Control | Self-Evaluation | Academic Performance |
|---|---|---|---|---|---|
| **Planning** | 1 | | | | |
| **Monitoring** | .54** | 1 | | | |
| **Cognitive Control** | .47** | .51** | 1 | | |
| **Self-Evaluation** | .49** | .56** | .45** | 1 | |
| **Academic Performance** | .41** | .38** | .33** | .36** | 1 |

**Note. Correlation is significant at the 0.01 level.**

The results indicate positive and significant correlations among all components of self-regulated learning. In addition, each component was positively and significantly associated with academic performance. The strongest correlation with academic performance was observed for planning ($r$ = .41), whereas the weakest correlation was found for cognitive control ($r$ = .33). These findings suggest that greater use of self-regulated learning strategies is associated with improved academic performance among students.

Regression Analysis: Predicting Academic Performance

Simultaneous multiple regression analysis was conducted to examine the extent to which the components of self-regulated learning predicted academic performance. The results are presented in Table 3.

**Table 3. Results of the Multiple Regression Analysis Predicting Academic Performance**

| Predictor Variable | Standardized Beta (β) | *t* Value | *p* Value |
|---|---|---|---|
| **Planning** | .29 | 5.84 | .001 |
| **Monitoring** | .21 | 4.17 | .001 |
| **Cognitive Control** | .15 | 3.02 | .003 |
| **Self-Evaluation** | .18 | 3.61 | .001 |

$R = .52$
$R^2 = .27$
$F = 35.41$
$p < .001$

The results indicate that the regression model was statistically significant. The coefficient of determination ($R^2 = .27$) shows that approximately 27% of the variance in academic performance was explained by the components of self-regulated learning. Among the predictor variables, planning, with a standardized beta coefficient of .29, was the strongest predictor of students' academic performance. This was followed by monitoring, self-evaluation, and cognitive control, respectively.

Four main hypotheses were examined in this study. The results are presented in Table 4.

**Table 4. Results of Hypothesis Testing**

| Hypothesis | Statistical Result | Hypothesis Status |
|---|---|---|
| **There is a significant relationship between planning and academic performance.** | $r = .41$, $p < .01$ | Supported |
| **There is a significant relationship between monitoring and academic performance.** | $r = .38$, $p < .01$ | Supported |
| **There is a significant relationship between cognitive control and academic performance.** | $r = .33$, $p < .01$ | Supported |
| **There is a significant relationship between self-evaluation and academic performance.** | $r = .36$, $p < .01$ | Supported |

The results showed that all components of self-regulated learning were positively and significantly associated with students' academic performance. The regression results further indicated that these components could predict a substantial proportion of the variance in academic performance. Among them, planning played the most prominent role in predicting students' academic success.

## Discussion & Conclusion

The present study examined the role of self-regulated learning (SRL) strategies in predicting students' academic performance in online and blended learning environments supported by Learning Management Systems (LMSs). The findings demonstrated that all four components of self-regulated learning—planning, monitoring, cognitive control, and self-evaluation—were positively and significantly associated with academic performance, jointly explaining a substantial proportion of the variance in students' GPA, with

planning emerging as the strongest predictor. These results directly address the problem this study set out to investigate: namely, that the expansion of LMS-based online education has reduced direct instructor supervision and increased learner autonomy, conditions under which academic performance has been shown to fluctuate more than in face-to-face settings (Bozkurt & Sharma, 2020; Hodges et al., 2020). The present findings confirm that, under such conditions, students' capacity to regulate their own learning—rather than the technological infrastructure alone—functions as a decisive determinant of academic success (Broadbent et al., 2022; Richardson & Swan, 2021).

Based on these results, the central research question of this study—whether self-regulated learning strategies can predict students' academic performance in online learning environments—can be answered affirmatively. Students who plan their study activities, continuously monitor their progress, apply cognitive-control strategies, and engage in self-evaluation are better equipped to manage the reduced structure characteristic of LMS-based education and, consequently, achieve more favorable academic outcomes. This conclusion is consistent with Zimmerman's (2020) cyclical model of self-regulation, which conceptualizes forethought, performance, and self-reflection as interdependent phases through which successful learners continuously adjust their goals and strategies, as well as with Pintrich's (2004) multidimensional framework, which emphasizes that academic success depends not only on cognitive strategy use but also on the regulation of motivation, behavior, and learning context.

The particularly strong predictive role of planning observed in this study converges with national findings reported by Eghbali (2023), who identified planning and goal-orientation as central predictors of academic performance among Iranian university students, and with the broader conclusions of Broadbent and Lodge's (2021) systematic review, which found that time-management and planning behaviors are among the most consistent behavioral correlates of academic achievement across diverse online learning contexts. Similarly, the significant contributions of monitoring and cognitive control align with Gašević et al. (2021) and Jivet et al. (2020), who argued that continuous progress-tracking and active information-processing strategies are essential for navigating the non-linear, content-dense structure of LMS environments. The mediating and reinforcing function of self-evaluation observed here is also consistent with Panadero et al. (2021), who emphasized its role in generating the internal feedback necessary for sustained performance improvement.

From a practical standpoint, these findings underscore the necessity of treating self-regulated learning not as a peripheral learner trait but as a core design consideration in online education. As Cho and Kim (2021) demonstrated using LMS behavioral data, students' self-regulatory engagement with course platforms is directly tied to academic outcomes; this suggests that institutions cannot rely on content delivery and technological access alone to ensure student success. In line with Rezaei Rad et al. (2023), who showed that strengthening self-regulation and self-efficacy improved academic outcomes during large-scale shifts to virtual instruction, the present study recommends the design and implementation of targeted training programs in goal-setting, time management, progress monitoring, and self-evaluation, allowing students to assume a more active role in managing their own learning trajectories.

At the institutional and systems level, the findings support Kord et al.'s (2024) conclusion that the mere availability of learning management systems does not guarantee academic success in the absence of adequate self-regulation skills; rather, educational technology must be deliberately designed to scaffold these skills. Accordingly, LMS platforms should incorporate task-reminder systems, real-time progress-tracking dashboards, automated and instructor-mediated feedback mechanisms, and structured interactive activities that prompt students to plan, monitor, and reflect on their learning—features shown by Wong et al. (2021) to meaningfully support self-regulated learning in digital environments.

At the same time, the present findings should be interpreted in light of the structural limitations inherent to online learning environments. As Jansen et al. (2022) noted in their systematic review of SRL and learning analytics, reduced social interaction, delayed or absent instructor feedback, and unequal access to reliable technology can constrain students' capacity to develop and exercise self-regulatory skills, regardless of their underlying motivation. Students entering online environments with weaker baseline self-regulation may therefore be disproportionately vulnerable to academic decline (Dörrenbächer & Perels, 2020), reinforcing the need for proactive institutional support rather than an assumption that learners will develop these competencies unassisted.

In conclusion, this study contributes to the growing body of evidence indicating that self-regulated learning is a central mechanism through which students achieve academic success in technology-mediated educational settings (Panadero & Broadbent, 2022). The consistency of these findings with both classical theoretical models (Zimmerman, 2020; Pintrich, 2004; Bandura, 2006) and recent empirical research—both international (Cho & Kim, 2021; Broadbent & Lodge, 2021) and domestic (Eghbali, 2023; Rezaei Rad et al., 2023; Kord et al., 2024)—suggests that the role of self-regulation in online academic performance is robust across educational contexts. Future research should extend this model by empirically testing the mediating roles of academic motivation and self-efficacy, and the moderating role of LMS quality and digital literacy, as proposed in the study's conceptual framework, in order to develop a more comprehensive, structurally validated account of academic success in digital learning environments.

**Acknowledgments**

The author would like to express sincere gratitude to all the students who participated in this study and to the administrators of the participating universities for their valuable cooperation in the conduct of this research.

## References


Bandura, A. (2006). *Self-efficacy in action: Toward a psychology of human agency*. Cambridge University Press.

Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to COVID-19 pandemic. *Asian Journal of Distance Education, 15*(1), i–vi. https://doi.org/10.5281/zenodo.3778083

Broadbent, J., & Fuller-Tyszkiewicz, M. (2022). Self-regulated learning in online environments: A meta-analysis. *Computers & Education, 178*, 104388. https://doi.org/10.1016/j.compedu.2021.104388

Broadbent, J., & Lodge, J. M. (2021). Self-regulated learning and online academic achievement: A systematic review. *Educational Research Review, 34*, 100394. https://doi.org/10.1016/j.edurev.2021.100394

Cho, M. H., & Kim, B. (2021). Students' self-regulation for interaction with LMS and academic performance. *Internet and Higher Education, 50*, 100808. https://doi.org/10.1016/j.iheduc.2021.100808

Dörrenbächer, L., & Perels, F. (2020). Self-regulated learning in online learning environments. *Educational Psychology Review, 32*, 911–936. https://doi.org/10.1007/s10648-020-09502-7

Eghbali, A. (2023). The role of goal orientation, intrinsic value, organization, and planning in predicting the academic performance of students at Ardabil Farhangian University. *Journal of New Psychological Research, 18*(69), 9–15. https://doi.org/10.22034/jmpr.2023.13657

Gašević, D., Dawson, S., & Siemens, G. (2021). Learning analytics and self-regulated learning. *Journal of Learning Analytics, 8*(1), 1–12. https://doi.org/10.18608/jla.2021.0001

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. https://doi.org/10.2139/ssrn.3479572

Jansen, R. S., van Leeuwen, A., Janssen, J., Conijn, R., & Kester, L. (2022). Self-regulated learning and learning analytics in online higher education: A systematic review. *Computers in Human Behavior, 132*, 107238. https://doi.org/10.1016/j.chb.2022.107238

Jivet, I., Scheffel, M., Drachsler, H., & Specht, M. (2020). Awareness is not enough: Pitfalls of SRL analytics. *Computers in Human Behavior, 107*, 105–121. https://doi.org/10.1016/j.chb.2020.105872

Kord, Z., Shahni Yeylagh, M., & Haji Yakhchali, A. (2024). The relationship between self-regulation and students' academic performance: The mediating role of academic engagement and academic buoyancy. *New Educational Approaches, 18*(2), 33–54. [Article in Persian].

Panadero, E. (2020). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology, 11*, 422. https://doi.org/10.3389/fpsyg.2020.00422

Panadero, E., & Broadbent, J. (2022). Developing SRL in digital learning environments. *Educational Psychologist, 57*(3), 160–175. https://doi.org/10.1080/00461520.2022.2033321

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

Rezaei Rad, M., Zarofian, F., Majani, N., & Rezaei Rad, M. (2023). The relationship of self-efficacy with self-regulated learning in the virtual education of students during the COVID-19 epidemic. *Journal of Nursing Education, 12*(2), 15–24. https://doi.org/10.22034/JNE.12.2.15

Richardson, J. C., & Swan, K. (2021). Examining social presence and student satisfaction in online learning. *Distance Education, 42*(1), 1–18. https://doi.org/10.1080/01587919.2020.1862816

Richardson, J. C., et al. (2023). Online learning engagement and academic performance in higher education. *Internet and Higher Education, 56*, 100880. https://doi.org/10.1016/j.iheduc.2022.100880

Wong, J., Baars, M., Davis, D., et al. (2021). Supporting self-regulated learning in online environments. *Educational Technology Research and Development, 69*, 1–24. https://doi.org/10.1007/s11423-021-09915-6

Zimmerman, B. J. (2020). Attaining self-regulation: A social cognitive perspective. In *Handbook of Self-Regulation of Learning and Performance* (2nd ed.). Routledge. https://doi.org/10.4324/9781315697048