



07th Asia-Pacific International Conference on Quality of Life

Wina Holiday Villa, Kuta, Bali, Indonesia, 30 Sep – 02 Oct 2023

Self-Regulated Learning and Academic Achievement in Blended Learning in China

Gaoge Chang^{1,2,*}, Sheiladevi Sukumaran², Jie Wang¹

**Corresponding Author*

¹ School of Foreign Languages, Qilu Normal University, Jinan, China

² Faculty of Education, Languages, Psychology, and Music, SEGi University, Kota Damansara, Malaysia

jollymelody@126.com, sheiladevisukumaran@segi.edu.my, jamie_wang@outlook.com
Tel: +60166239728

Abstract

College students who participate in blended learning face a greater challenge because they cannot achieve good academic achievement without self-regulated learning (SRL). The purpose of this study is to examine the SRL level of students, investigate the correlation between SRL and achievement, and determine the predictive power of SRL on achievement. A questionnaire was distributed to 90 students at a university in Shandong, China. The data were analyzed using descriptive analysis, correlation analysis, and regression analysis. As a result of the findings of this study, instructors will gain a better understanding of how to design language curricula that incorporates SRL into blended learning to enhance students' SRL.

Keywords: self-regulated learning; academic achievement; blended learning

eISSN: 2398-4287 © 2023. The Authors. Published for AMER & cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia.
DOI: <https://doi.org/10.21834/e-bpj.v8i26.5175>

1.0 Introduction

1.1 Research Background of Blended Learning in China

Student enrolment has increased dramatically in recent years in Chinese colleges and universities, which causes some problems, including large class sizes, limited time, and few classroom communication opportunities. In addition, students in China were used to the traditional teacher-centered model, preferring to listen to teachers' instruction during class time, which caused their passive engagement in the classroom. The Chinese Ministry of Education requires integrating Web-based teaching models to improve the current teacher-centered teaching pattern, enhance students' ability to apply comprehensively, and improve their learning efficiency. The advent of the blended classroom model, which has become increasingly popular in the past two decades, has improved the situation.

Blended learning is gaining popularity in China. During the coronavirus in 2019, many online courses were conducted successfully, accelerating the construction of online courses, and stimulating the implementation of blended learning after the coronavirus. In 2020, the Chinese Ministry of Education launched the first batch of national first-class courses, including 868 first-class blended learning courses, 38 of which are language learning courses. At the same time, most colleges and universities create their own blended learning courses to meet their students' demands. Blended learning is also increasingly encouraged at every educational level in China, especially at the university level, where students are old enough to arrange their own learning.

eISSN: 2398-4287 © 2023. The Authors. Published for AMER & cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia.
DOI: <https://doi.org/10.21834/e-bpj.v8i26.5175>

1.2 Importance of Self-regulation in Blended Learning

The advent of blended learning provides more paths for learning. However, several studies have shown that in technology-based learning, such as blended learning, learners do not fully benefit from the advantages of the blended classroom due to their lack of self-directed learning strategies and their passive participation in classroom teaching.

There is little research on how self-regulation plays a role in a blended learning environment in higher education, though it is critical for students learning. In self-regulation studies, many unexplored causes need further investigation for college teachers to identify self-regulation's role in helping their students achieve better in blended learning environments. Blended learning environments can only sometimes meet their expectations and pose some challenges when it comes to increasing students' learning efficiency. Self-regulation is critical to achieving autonomous learning and lifelong learning. However, studies on SRL in blended learning environments have been limited.

Therefore, the purpose of this study is to investigate students' SRL levels, as well as correlations and causal relationships between SRL levels and academic achievement.

1.3 Research Questions

This study attempts to answer the following questions by analyzing students' use of SRL strategies:

- (1) What are the levels of SRL strategies among students in blended learning?
- (2) Is there a significant relationship between the use of SRL strategies and academic achievement?
- (3) How well a set of variables can predict academic achievement?
- (4) Which SRL strategies can influence academic achievement mostly?

2.0 Literature Review

2.1 Blended Learning

Blended learning combines face-to-face instruction and online learning, breaks the time and space limitations, enriches the learning environment and learning resources, and enhances student learning by allowing students to learn at their own pace, in a student-centered manner, and with a flexible schedule (Anthonysamy et al., 2020). Integrating a blended learning model into traditional language instruction has improved student achievement (Ghazizadeh, 2017). Blended learning opens additional avenues for students to immerse themselves in learning inside and outside the classroom (Albiladi & Alshareef, 2019). With blended learning, students can learn whenever and wherever they want, free from the constraints of the classroom setting (Albiladi & Alshareef, 2019). Blended learning can help students become autonomous learners, giving them increased control over their learning, thus lessening their dependence on teachers. Blended learning has numerous benefits; however, its success depends more on the learner's ability to control digital learning processes than traditional classroom settings (Anthonysamy et al., 2020).

2.2 Self-regulated Learning

Self-regulated learning (SRL) is crucial in contemporary education since the emergence of technology stimulates learners to govern their learning processes. Self-regulation research has expanded, and SRL ideas have emerged quickly in the social cognitive field. Self-regulation studies have increased, and SRL theories have developed rapidly in the social cognitive field. As an important area of educational research over the past two decades, SRL has been addressed in various disciplines. Zimmerman (2000) defined self-regulation as self-generated thoughts, feelings, and behaviors toward attaining goals. SRL consists of goal setting, environment structuring, time management, task strategy, help-seeking, and self-evaluation (Barnard et al., 2009).

The SRLs of students differ based on their educational level and the situation in which they learn. Kizilcec et al. (2016) discovered that students engaged in Massive Open Online Courses (MOOCs) used SRL at a medium level. Except for help-seeking, older learners reported higher SRL levels, according to the study. Women reported lower levels of strategic planning and self-evaluation than men, but higher levels of goal setting, task methods, and help-seeking.

Self-regulated learning is beneficial to students at all levels of education. In tertiary education, students with high SRL abilities can achieve better learning outcomes. In a systematic review of SRL, several components, including goal setting and time management, were significantly related to academic success in online higher education (Lee et al., 2019). According to research, students who develop self-regulated learning abilities will be more successful in digital learning (Greene et al., 2018). Yu et al. (2021) demonstrated that SRL has predictive power by examining the academic performance of 449 undergraduates who had taken blended courses within the last three years. Kosnin (2007) reported on similar studies and claimed that by looking at undergraduates in conventional classrooms, SRL can help with achievement.

Despite this, there needs to be more consistency between SRL and achievement. Several studies have demonstrated no significant correlation between SRL and academic success. According to Lim et al. (2020), a study of 347 undergraduates who took a blended learning course showed that SRL was not associated with academic achievement, which agrees with the findings of Cho and Heron (2015). This study investigated college students in an online course. Various academic disciplines and educational levels were examined in the study.

While most studies on SRL have focused on traditional learning environments or online learning, only some have examined how SRL can be incorporated into blended learning, especially for university students. Self-regulation in a blended learning environment requires further investigation since blended learning is more complex than traditional classroom learning and online learning.

2.3 SRL and Blended Learning

As technology has become more integrated into education, the study of SRL has moved away from traditional classrooms and towards online and blended learning. Researchers have demonstrated that ICT tools have several potentials in technology-enhanced learning environments (Chapelle, 2010). These potentials have been shown to enhance the formal instructional context and extend instruction beyond the classroom (Kitsantas, 2013). Even though university students are skillful in digital devices, current studies indicate that the inability to self-regulate leads to low achievement when it comes to blended learning (Anthonysamy et al., 2020). Using blended learning strategies requires students to possess and apply various SRL strategies.

Students' self-regulation is context-specific. In blended learning, SRL may differ from a traditional classroom or online environment (Su et al., 2018). Compared to the research on SRL in online or traditional learning environments, research on self-regulated learning in blended learning environments is limited. In a survey of 140 online students and 466 blended learners, Broadbent (2017) compared SRL and the academic performance of online and blended learners and found that online students use SRL more often than blended learners. Thus, to maximize student performance, it is essential to understand the current state of students' SRL use in a blended learning environment.

This study was undertaken to investigate the status of students' learning in blended learning environments and to fill the gaps in previous studies of SRL and learners' achievement in blended environments.

3.0 Methodology

3.1 Research Participants

The study involved the distribution of 90 online questionnaires to first-year English majors at a teacher training college in Shandong Province, and 88 questionnaires were returned, 11 of which were males and 77 of which were females. A blended learning classroom is utilized to teach the research course, which is an English phonetics class in which students participate. Through the online course on the "Zhihuishu" platform, students can acquire the basic knowledge of the course, such as the rules and regulations of pronunciation, on their own. In the classroom, the teacher examines the students' phonetics through group cooperation and classroom activities. As part of the 16-week course, students are provided with theoretical information as well as practice in English pronunciation. Face-to-face instruction was combined with an online learning mode that included online delivery of course materials, participation in online learning, communication through online learning, and completion of course tasks and assignments.

3.2 Research Instrument

In 16 weeks of study, the respondents are required to complete a phonetics test and a questionnaire to assess their phonetics achievement and SRL level. It consisted of a validated English pronunciation test, which is intended to measure learners' understanding of theories related to English pronunciation as well as their abilities to pronounce English correctly. The questionnaire of this study consists of two parts, the first part containing demographic information about the students, including their gender and age, and the second part is adapted from Barnard and Land's Online Self-Regulated Learning Questionnaire (OSLQ, the Online Self-Regulated Learning Questionnaire). On a Likert scale of five points (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree), the options are rated from Strong to Strongly Agree. In addition to basic information and gender, six perspectives were examined in the questionnaire: goal setting (items 3-5), environment structuring (items 6-9), task strategies (items 10-13), time management (items 14-16), assistance seeking (items 17-20), and self-evaluation (items 21-24). The reliability of the questionnaire was assessed using the data analysis software SPSS 27.0. Table 1 indicates that the Cronbach Alpha of the questionnaire was 0.936 (>0.7).

Table 1 Reliability of Questionnaire

Reliability Statistics	
Cronbach's Alpha	N of Items
0.927	22

4.0 Findings

4.1 Levels of SRL

SRL use was classified into low (Mean: 1.00-2.33), moderate (Mean: 2.34-3.67), and high (Mean: 3.68-5.00) categories, each with a range of 1.33. Students showed high levels of SRL in the blended learning environment, with the overall SRL being 3.76. In addition, two constructs of SRL are at a medium level, with goal setting showing the lowest (Mean=3.29, SD=0.66) and help-seeking indicating the second lowest (Mean=3.58, SD=0.60). And four constructs of SRL are at a high level, in descending order, environment structuring (Mean=4.08, SD=0.60), task strategies (Mean=3.87, SD=0.62), self-evaluation (Mean=3.86, SD=0.64), and time management (Mean=3.76, SD=0.70).

Table 2 Descriptive of constructs/variables

constructs/variables	Mean	SD
----------------------	------	----

Goal-setting	3.29	0.66
Environment-structuring	4.08	0.60
Task strategies	3.87	0.62
Time management	3.76	0.70
Help seeking	3.58	0.60
Self-evaluation	3.86	0.64
SRL	3.76	0.52
Academic achievement	79.41	5.918

(Source: Author)

4.2 Correlation Between SRL and Academic Achievement

A correlation analysis was conducted using SPSS 27.0, with the results showing that all constructs in SRL are positively correlated with academic achievement. A correlation from 0 to 0.3 is a weak correlation, from 0.3 to 0.7 is a moderate correlation and more than 0.7 is a strong correlation. According to Table 4.2, the correlation between goal setting and achievement is 0.279, which indicates a positively weak correlation. The correlation between other SRL variables (including environment structuring, task strategies, time management, help-seeking, and self-evaluation) and achievement is a positively moderate correlation, with correlations at 0.553, 0.513, 0.531, 0.394, and 0.536 respectively. Besides, Table 3 illustrates that the overall SRL is correlated with achievement.

Table 3 Correlations between SRL and academic achievement

	GS	ES	TS	TM	HS	SE	SRL	Achievement
GS	1							
ES	.507**	1						
TS	.435**	.774**	1					
TM	.400**	.671**	.790**	1				
HS	.438**	.556**	.559**	.592**	1			
SE	.525**	.719**	.796**	.730**	.614**	1		
SRL	.653**	.862**	.891**	.849**	.767**	.897**	1	
Achievement	.279**	.553**	.513**	.531**	.394**	.536**	.573**	1

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

(Source: Author)

4.3 Multiple regression analysis of SRL on academic achievement

Table 4 presents the results of the multiple regression analysis. According to Table 4, the R square is 0.368 and the significance is 0.000 (less than 0.05), which indicates the set of the six constructs of SRL together contribute to 36.8% of the variation of achievement.

Table 4 Model Summary of Multiple Regression Analysis of SRL on Academic Achievement

Model	R	R Square	Adjusted R Square	Change Statistics			Durbin-Watson
				R Square Change	F Change	Sig. F Change	
1.000	.607a	0.368	0.322	0.368	7.872	0.000	1.532

a Predictors: (Constant), SE, GS, HS, ES, TM, TS

b Dependent Variable: Achievement

(Source: Author)

4.4 Stepwise regression analysis of SRL on academic achievement

The outcome of the stepwise regression analysis was shown in Table 5. According to the table, the R square of model 1 (the model of ES and AC) is 0.306, the R square of model 2 (the model of ES, TM, and AC) is 0.353, the R square change is 0.046, and the significance is 0.000 (less than 0.05). It is indicated by Table 5 that ES is the best predictor, followed by time management, the second-best predictor. ES can explain a 30.6% variance in achievement, and TM contributes to 4.6% variance in achievement.

Table 5 Model Summary of Stepwise Regression Analysis of SRL on Academic Achievement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			Durbin-Watson
					R Square Change	F Change	Sig. F Change	
1.000	0.553a	0.306	0.298	4.958	0.306	37.974	0.000	

2.000	0.594b	0.353	0.337	4.818	0.046	6.075	0.016	1.596
-------	--------	-------	-------	-------	-------	-------	-------	-------

a Predictors: (Constant), ES

b Predictors: (Constant), ES, TM

c Dependent Variable: Achievement

(Source: Author)

5.0 Discussion

The relationship between students' SRL and academic achievement was investigated using a questionnaire and test. Descriptive analysis evaluated the levels of SRL, and correlation analysis explored the connection between SRL and academic success. Multiple regression was employed to gauge the influence of six SRL constructs on outcomes, while stepwise regression identified the SRL constructs that best predict academic performance.

Several studies have found that students in blended learning environments show significant levels of SRL. Flexibility and control over the learning pace seem to be the main drivers of success. This research also uncovered that students' levels of goal-setting and help-seeking are notably low. In contrast, environment structuring, task strategies, self-evaluation, and time management levels are relatively high. This finding aligns with previous research by Kizilcec et al. (2016) on MOOCs, where help-seeking was the most common strategy.

Interestingly, this contrasts with their suggestion that goal setting is often employed in SRL, a finding that our study does not support. Time management is higher online than blended learning (Broadbent et al., 2021). This discrepancy may stem from the varying requirements of SRL in different contexts, like how online learning demands more autonomy than blended learning (Broadbent et al., 2021). An intriguing result is that this study observed a low use of help-seeking, differing from previous blended learning studies. This might be due to the specialized nature of English pronunciation learning, where success relies on understanding theory and extensive imitation, setting it apart from other subjects.

As a result of this study, there was a significant positive correlation between SRL and academic achievement. A correlation analysis revealed that all six SRL constructs correlate with academic achievement at different levels. This study's result is consistent with previous studies' findings (Lee et al., 2019). SRL is crucial in traditional classrooms or online learning and integral to blended learning. SRL-enhancing activities should be integrated into the course curriculum to facilitate the successful completion of courses. The results of the multiple regression analysis indicate that six SRL constructs can be positively and significantly related to academic achievement. According to the stepwise regression analysis, time management is the best predictor of achievement. The findings are consistent with previous studies (Yu et al., 2021; Greene et al., 2018; Kosnin, 2007). Therefore, it is recommended that more attention should be paid to SRL strategies, such as environment structuring and time management when integrating SRL into the future design of blended learning.

6.0 Conclusion & Recommendations

In this study, the research objectives were achieved, including an investigation of students' SRL levels, an examination of the correlation between SRL and achievement, and an analysis of the influence of SRL on achievement. Based on the findings, students' SRLs are high in a blended learning environment, and their SRL contributes to academic achievement. Therefore, there should be a focus on using self-regulated learning strategies and cultivating self-regulated learning among students. Despite this, varied interactions and high-quality personalized learning resources are essential for implementing blended learning effectively. Moreover, implementing blended learning effectively helps improve teaching and learning outcomes. It is necessary to explore the design of blended learning in greater depth to maximize self-regulated learning.

Based on the findings of this study, learners in a blended learning setting can better understand how to self-regulate their learning, especially improving the SRL strategies they lack. Additionally, it provides instructors with a better understanding of creating a more effective language curriculum by integrating SRL into blended learning environments. Lecturers and course designers of blended learning environments should be aware that different self-regulation strategies are important, and students should be equipped with these SRL strategies. Policymakers and school management are suggested to offer a more flexible environment to instructors to design the blended course that is suitable for their courses.

This study has three limitations: first, the overall sample size should be increased. In addition, the data were collected from learners' self-reports, which has some limitations in terms of objectivity. The use of self-reported measures in education research is common. However, some researchers have stated that inaccurate results may result from self-reported response bias, and students below average tend to overstate their abilities and accomplishments the most. Additionally, only the quantitative method is employed in this study.

Hence, future studies will require a larger sample size in other regions and in other learning contexts. Researchers should use data from rich sources, such as in an LMS, teachers' observations, or interviews, to assess and understand SRL strategies among students and their ability to interact with others. Moreover, qualitative methods can be added in the future to explore the relationships more deeply.

Acknowledgement

Funding for this research and conference is supported by the 2021 Undergraduate Teaching Reform Research Project of Qilu Normal University: Research on the Practice Path of Ideological and Political Development in Translation Courses for Applied Undergraduate Universities in Shandong Province, China.

Paper Contribution to Related Field of Study

In blended learning environments, policymakers should assist students in cultivating self-regulation of their learning. University instructors will benefit from these findings in designing more effective curriculums to increase students' self-regulation of learning and academic achievement.

References

- Albiladi, W. S., & Alshareef, K. K. (2019). Blended learning in English teaching and learning: A Review of the Current Literature. *Journal of Language Teaching and Research*, 10(2), 232. <https://doi.org/10.17507/jltr.1002.03>
- Anthonyamy, L., Koo, A.-C., & Hew, S.-H. (2020). Self-regulated learning strategies and non-academic outcomes in higher education blended learning environments: A One Decade Review. *Education and Information Technologies*, 25(5), 3677–3704. <https://doi.org/10.1007/s10639-020-10134-2>
- Barnard, L., Lan, W. Y., To, Y. M., Paton, V. O., & Lai, S.-L. (2009). Measuring self-regulation in online and blended learning environments. *Internet and Higher Education*, 12(1), 1–6. <https://doi.org/10.1016/j.iheduc.2008.10.005>
- Broadbent, J. (2017). Comparing online and blended learner's self-regulated learning strategies and academic performance. *Internet and Higher Education*, 33, 24–32. <https://doi.org/10.1016/j.iheduc.2017.01.004>
- Broadbent, J., Sharman, S., Panadero, E., & Fuller-tyszkiewicz, M. (2021). How does self-regulated learning influence formative assessment and summative grade? Comparing online and blended learners. *The Internet and Higher Education*, 50, 100805. <https://doi.org/10.1016/j.iheduc.2021.100805>
- Chapelle, C. (2010). Evaluating computer technology for language learning. *Teachers of English as a Second Language of Ontario*, 36(2), 56–67.
- Cho, M.-H., & Heron, M. L. (2015). Self-regulated learning: The Role of Motivation, Emotion, and Use of learning Strategies in Students' Learning Experiences in a Self-paced Online Mathematics Course. *Distance Education*, 36(1), 80–99. <https://doi.org/10.1080/01587919.2015.1019963>
- Ghazizadeh, T. (2017). The effect of blended learning on EFL learners' reading proficiency. *Journal of Language Teaching and Research*, 8(3), 606–614.
- Greene, J. A., Copeland, D. Z., Deekens, V. M., & Yu, S. (2018). Beyond knowledge: Examining Digital Literacy's Role in the Acquisition of Understanding in Science. *Computers and Education*, 117, 141–159. <https://doi.org/10.1016/j.compedu.2017.10.003>
- Kitsantas, A. (2013). Fostering college students' selfregulated learning with learning technologies. *Hellenic Journal of Psychology*, 10(3), 235–252.
- Kizilcec, R. F., Pérez-sanagustín, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers & Education*, 104, 18–33. <https://doi.org/10.1016/j.compedu.2016.10.001>
- Kosnín, A. M. (2007). Self-regulated learning and academic achievement in Malaysian undergraduates. *International Education Journal*, 8(1), 221–228.
- Lee, D., Watson, S. L., & Watson, W. R. (2019). Systematic literature review on self-regulated learning in massive open online courses. *Australasian Journal of Educational Technology*, 35(1), 28–41. <https://doi.org/10.14742/ajet.3749>
- Lim, C. L., Jalil, H. A., Ma'rof, A. M., & Saad, W. Z. (2020). Peer learning, self-regulated learning and academic achievement in blended learning courses: A structural equation modeling approach. *International Journal of Emerging Technologies in Learning*, 15(3), 110–125. <https://doi.org/10.3991/ijet.v15i03.12031>
- Su, Y., Zheng, C., Liang, J. C., & Tsai, C. C. (2018). Examining the relationship between English language learners' online self-regulation and their self-efficacy. *Australasian Journal of Educational Technology*, 34(3), 105–121. <https://doi.org/10.14742/ajet.3548>
- Yu, L., Chen, S., & Recker, M. (2021). Structural relationships between self-regulated learning, teachers' credibility, information and communications technology literacy and academic performance in blended learning. *Australasian Journal of Educational Technology*, 37(4), 33–50. <https://doi.org/10.14742/ajet.5783>
- Zimmerman, B. J. (2000). Attaining self-regulation: A Social Cognitive Perspective. In *Handbook of self-regulation* (pp. 13–39). Academic Press.