Chapter 15
Learner' Online Self-regulated Learning Skills: A Comparison Between Chinese Undergraduates and International African Undergraduates

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Abstract The outbreak of the COVID-19 pandemic forced students to move from face-to-face learning to online learning. Online learning has high demands on students' Self-regulated Learning (SRL) skills. In this study, a questionnaire that used five-point Likert scale was administrated between international African undergraduates and Chinese undergraduate students to investigate their online learning behaviors. The questionnaire was composed of six categories: environment structuring, goal setting, time management, help-seeking, task strategies, and self-evaluation. 441 valid responses were received, 89 from international African students and 352 from Chinese undergraduates. The collected data were analyzed with SPSS Version 24.0. The results showed that there was no significant difference between Chinese student' and international African students' SRL skills in the six sub-scales. This may be due to the small sample size of African students and the similar learning environment. Larger samples are needed in future research to further verify the conclusion. The research results can be used as a reference for the future online learning design to strengthen learners' SRL skills.

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15.1 Introduction

Many universities were forced to close temporarily in 2020 due to the COVID-19 pandemic outbreak (UNESCO, 2020). Almost half a million international students returned to their home countries and had to study online from their homes to continue their education in mainland China (Bao, 2020). The pandemic of coronavirus disease 2019 (COVID-19) undoubtedly posed a significant challenge to global education systems, disrupting normal teaching and learning (Li et al., 2021). The COVID-19 pandemic had shifted university teaching and learning activities from physical classrooms to online platforms (Klimova et al., 2022; Li et al., 2021; Zhou et al., 2021). The abrupt change not only impacted the learning mode, but it also raised concerns about students' learning performance, assessment, and self-regulation. Despite being promoted for many years, online learning was still not a popular teaching and learning method in many educational settings (Mou, 2021). Online learning, according to research, increased students' available time because the online environment did not require the student to be physically present to attend class, allowing students to be more flexible in how they manage their time and attention to their work and/or family responsibilities. Students' online self-regulated learning skills were required for successful online learning. Previous research on students' self-regulated learning in online environments found a link between students who used self-regulated learning strategies and their academic achievement. Students could be aware of their learning behaviors and persist in learning when they encounter difficulties, finding possible solutions and thus achieving good learning performance as long as they use self-regulated learning methods (Mou, 2021). In the COVID-19 pandemic, students had to do a lot of self-study, which requires effort, self-determination, and motivation. And if they were not able to do this, they failed. The COVID-19 pandemic had placed a particular emphasis on the need for each student to develop their ability to be a self-regulated learner.

Previous research had concentrated on self-regulating general learning. Few empirical studies had looked into the SRL behaviors of online learners (Li et al., 2021). Many studies had been conducted on university students, but few studies had been conducted on international students. Students from various social backgrounds may perform differently in the learning process. (Peng, 2012a). However, no research had been conducted to compare the characteristics of college students and international students' online self-regulated learning and online self-regulated learning skills. As a result, the primary goal of this study were to uncover the various behaviors and skills of Chinese students and International African students in an online learning environment.

15.2 Literature Review

15.2.1 Definition of SRL

Self-regulated learning (SRL), according to Pintrich (2000), was an active, constructive process in which students set learning goals and then attempted to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features of the environment (Peng, 2012a). Self-regulated learning occurred when learners think and act systematically to achieve their goals. These students were motivated, active participants who thought about the learning process (Zimmerman, 1989). SRL involved students' awareness of their own thoughts and some strategic actions like planning, monitoring, and evaluating, as well as individual motivation. Students could benefit from considering their thinking. If students could understand the learning process and their own relationship to that process, they could improve their ability to successfully plan and perform tasks.

15.2.2 Review of Online SRL

Over the last three decades, extensive research on SRL strategies had been conducted to improve students' academic achievement and learning capacity. Initial attempts were also made to classify the use of SRL strategies in general learning contexts and to investigate how learners' proficiency levels influenced their use of these strategies. Self-regulated learning (SRL) skills had long been recognized as critical to the success of traditional classroom learning. As a result, it was reasonable to expect that they were more prevalent among online students due to the lack of face-to-face interaction and the need for greater autonomy to remain motivated (Barak et al., 2016).

However, research on online learners' SRL was limited, despite the fact that the number of online learners had grown dramatically in recent years, particularly following the worldwide COVID-19 pandemic (Lin et al., 2021). The need to research and comprehend how online learners could use self-regulation strategies to succeed in online learning environments was becoming increasingly important. Previous research on students' self-regulated learning in online environments found a link between students who used self-regulated learning strategies and their academic achievement. Time management, online interaction, peer learning, metacognition, reflection, rehearsal, and self-learning management were examples of these strategies (Mou, 2021).

Broadbent and Poon (2015) conducted a review of the literature on SRL strategies as predictors of academic achievement in online higher education settings published between 2004 and December 2014. This systematic review found nine strategies linking online educational success and the use of SRL strategies such as metacognition, time management, effort regulation, peer learning, elaboration, rehearsal,

organization, critical thinking, and help-seeking. The study found that four of these SRL strategies were significantly related to academic achievement (metacognition, time management, effort regulation, and critical thinking).

15.2.3 University Students' SRL

SRL was used to close academic performance gaps in students based on cognitive ability, socioeconomic status, and educational quality (Zimmerman & Schunk, 2001). SRL focused on motivational and metacognitive strategies a result. It was critical for students to take ownership of their metacognitive actions. SRL students demonstrated proactive strategies for managing academic work. When students engaged in high-quality forethought rather than reactive responses, they engaged in metacognitive actions. Students with SRL skill sets could self-select strategies for approaching course assignments or exams. They created and used study guides, as well as organized study groups. They could also take feedback on academic work and processed it before incorporating it into revisions or future assignments. This list of behaviors assisted students in directing and supervising their own learning practices.

Because SRL skills improved student performance and progress, improved motivation and focus emerge, enriching the overall learning experience. For campus-based college students, the role of self-regulated learning (SRL) in academic success has been extensively researched. Sun, et al. (2018) investigated the link between academic achievement and three key self-regulatory constructs: prior domain knowledge, self-efficacy, and learning strategy use. The study included 151 undergraduate students from 16 flipped Calculus I and II sections at a large Midwestern university. The study's findings revealed that students' self-efficacy in learning math, as well as their use of help-seeking strategies, were all significantly and positively related to academic achievement in both pre-and in-class learning environments.

Previous research on online self-regulated learning primarily focused on SRLS self-regulated learning strategies and indicators of self-regulated learning. More research was now being conducted on approaches to improving self-regulated learning. Mou (2021) claimed that a weekly learning diary was beneficial to students' goal setting, time management, self-monitoring, and self-evaluation, or some factors that are related to student performance. Wolters and Hussain (2014) investigated grit and its relationships with college students' self-regulated learning and academic achievement metacognition learning and concluded that students' engagement in SRL may serve as a mediating pathway through which this aspect of grit is associated with improved academic outcomes.

University students' continuous intention to learn online has also been studied from the perspectives of learning motivation and capability, perceptions or attitudes, and online learning experiences. Zhu et al. (2020) investigated 94 university students' attitudes and experiences with online learning in a blended course. The researchers looked at how participants' attitudes toward online learning changed over time, as

well as the relationships between their self-regulated learning capability, online interactions, attitudes, and online learning intention. Xu (2021) investigated Chinese university students' attitudes toward written corrective feedback (WCF) and their use of self-regulated learning (SRL) strategies in online English writing courses during COVID-19.

During COVID-19, students generally had positive attitudes toward online WCF, and teachers provided more tutorials and feedback that could be reviewed indefinitely, creating a comfortable learning environment for students. (Xu, 2021) The online interactions between teachers and students in response to the teachers' feedback motivated students to engage more in their subsequent writing practices. (Zhou et al., 2021) stated that the COVID-19 pandemic has shifted university teaching and learning activities that were previously held in physical classrooms to online platforms. There was an urgent need to investigate university students' experiences and perceptions of online learning during the pandemic in order to optimize online learning strategies in tertiary education during and after the pandemic.

15.2.4 International Students' SRL

The number of online learners had grown dramatically in recent years, especially since the worldwide COVID-19 pandemic. As a result of the worldwide COVID-19 pandemic, international students enrolled in Chinese universities were required to take Chinese language classes in their home countries via the internet (Ministry of Education, 2020). Online classes were very different from traditional classroom settings in that they require learners to be more autonomous and self-regulated (Stevens & Switzer, 2006). Furthermore, research showed that international students face significant pressure and difficulties with online learning. Li et al. (2021) conducted a survey of international students at a Chinese university and discovered that only 36.5 percent were pleased with their online education. Teachers' professional titles, students' years of study, their continent of origin, and current residence all had a significant impact on online education satisfaction. Michael et al. (2021) conducted research to investigate the impact of COVID-19 on international students enrolled in a higher education institution in Sarawak, Malaysia. They discovered that, while the majority of international students perceived their studies to be impacted, the majority planned to continue with the programs in which they were currently enrolled. The students expressed deep concerns about the impact of the pandemic on their exams and classes and preferred reassurance in terms of updates on information related to academic matters.

According to the above two types of research, the ongoing spread of the virus, strict isolation measures, and delays in the opening of schools, colleges, and universities across the country had influenced the mental health of international students who were facing significant challenges and obstacles as a result of the COVID-19 epidemic.

Nonetheless, previous research on student academic performance had placed a high value on motivational and cognitive components in learning. In addition, many

recent types of research had examined the contextual differences in these components. Pintrich (2000) created a broad conceptual framework with various motivational, cognitive, emotional, and conceptual components (Peng, 2012a). The self-regulated learning model assumed that students are active participants in the learning process. Individuals established learning standards or goals, tracked their progress toward these goals, and then adapted and regulated their cognition, motivation, and behavior to achieve their goals. The model's emphasis on the context of learning was one of its most notable features. Considerable evidence suggested that students with different contextual differences, different growing experiences, different social backgrounds, and being educated in different social backgrounds might perform differently in their learning process. These distinctions could be found in self-regulated behavior when completing a specific task. Peng (2012b) concluded that students from different social backgrounds, or more specifically, students from different growing and educational environments, performed differently in motivational and self-regulated behaviors after conducting research on students from big cities, middle and small towns, and the countryside.

Furthermore, there was mounting evidence that individuals differ in SRL (Barnard-Brak et al., 2010; Dörrenbächer & Perels, 2016). Learners in SRL might combine their motivation and learning strategies in an unusual way (Vansteenkiste et al., 2009). The majority of studies on SRL had used a variable-centered approach rather than a person-centered approach. To identify different groups of online learners with different SRL profiles, a person-centered approach should be taken. Klimova et al., 2022) conducted a study to determine whether Central European students, specifically Slovak and Czech students, were able to perform self-regulated learning during their online classes during the COVID-19 pandemic to achieve their learning goals and improve academic performance and whether there were any differences between these students in terms of year of study, gender, or nationality. The results showed no significant differences between Czech and Slovak students. Nonetheless, Slovak students (particularly females) appeared to be more self-disciplined and goal-oriented in their learning.

Liu, et al. (2010) published the findings of a case study that examined international students' perceptions of the impact of cultural differences on their learning experiences in an online MBA program. The study also revealed that online instructors must design courses in such a way that potential cultural barriers, such as language, communication tool use, plagiarism, time zone difference, and a lack of multicultural content, are removed, as these may affect international students' learning performances. According to the study, a culturally inclusive learning environment should consider diversity in course design to ensure full participation by international students.

Chinese and international students came from different learning contexts, different growing experiences, and different social backgrounds, and were educated in different social contexts. And there were numerous differences between them. How do they differ in their online learning processes, and what caused the differences? The current study was carried out in order to provide answers to these questions.

15.3 Research Design

15.3.1 Research Instruments

Barnard, et al. (2009) demonstrated that the Online Self-regulated Learning Questionnaire OSLQ is a reliable and valid instrument for measuring self-regulation in the online learning environment. The OSLQ was a 24-item scale with a 5-point Likert-type response format, with values ranging from strongly agree (5) to strongly disagree (1). It was developed from an 86-item pool and then examined for its internal consistency and exploratory factor analysis results for the data collected. Students with higher scores on this scale demonstrated better self-regulation in online learning. The OSLQ consisted of six subscale constructs, including environmental structuring; goal setting; time management; help-seeking; task strategies; and self-evaluation. This study redesigned the OSLQ scale into a five-point Likert scale questionnaire by adding some demographic information questions based on the research objectives. Two electronic version questionnaires were created based on the OSLQ scale. The questionnaire for international African students was written in English, while the questionnaire for Chinese undergraduates was translated into Chinese.

15.3.2 Research Questions

The main research question of this study was: what were the differences in students' SRL levels between Chinese undergraduates and international African undergraduates? The sub-questions were listed as follows:

RSQ1: What are the characteristics of Chinese undergraduates' Online SRL?

RSQ2: What are the characteristics of International African students' online SRL?

RSQ3: Are there any differences between Chinese undergraduates' and international African undergraduates' online self-regulated learning skills?

RSQ4: What may contribute to the differences?

15.3.3 Participants and Context

The research team contacted Wenzhou University Chinese teachers and EMI teachers who teach international African students and asked them to invite their students to complete the online questionnaires. Students were informed that their participation was entirely voluntary and that their data would be kept strictly confidential and used for research purposes only. Through the link provided by the researchers, both Chinese undergraduates and international African students completed e-questionnaires. The e-questionnaires were completed by 441 students. However, due to Covid-19, most of the international African students in the universities in Wenzhou were locked in

their hometowns, thus, only 89 participants joined the study. The rest 352 participants were all Chinese undergraduates. There were 57 males and 32 females among the valid international African student questionnaires, 65 were undergraduates and 24 were postgraduates. The majority of international African students were from Ghana and Zimbabwe. Around 80% of the students have spent more than a year studying in China. The majority of the international African students who took part in this study were from Wenzhou University. They were also from various majors. Meanwhile, of the 352 valid Chinese undergraduate questionnaires, 90 were male and 262 were female. And the majority of them were freshmen, sophomores, and juniors, with 221 majoring in liberal arts and 106 majoring in science.

15.4 Results and Data Analysis

As previously stated, 441 valid responses were received. Among them were 89 international African students and 352 Chinese undergraduates. Data were imported from the web into MS Excel and then into SPSS (version 12.0). Environmental structuring, goal setting, time management, help-seeking, task strategies, and self-evaluation were all analyzed.

15.4.1 Descriptive Statistics of the Variables

The descriptive statistics of the SRL variables of Chinese students and international African students are listed in Table 15.1. Since each dimension of the questionnaire contained 3–5 questions, the highest score for each question is 5, the total score of a dimension may range from 15–25. Thus, the mean score may over 10. Overall, international African students had a higher level of self-regulated learning skills with a total mean score of (M = 86.7386). International African students seemed to have stronger "goal setting", "environment structuring", "time management", "help-seeking" and "self-evaluation" skills but weaker "task strategies" skills than Chinese students. Furthermore, the data shown in Table 15.1 showed that among the six dimensions, both Chinese and foreign students performed best in goal settings: Chinese students (M = 17.4432, SD = 3.62893), vs. international African students (M = 18.5277, SD = 4.67071), while both Chinese and foreign students scored lowest in time management: Chinese students (M = 10.1932, SD = 2.56796), vs. international African students (M = 10.7045, SD = 3.20258). And it was also worth noticing that Chinese students score slightly higher than international African students in task strategies and help-seeking, while in the other four sub-scales, goal setting, environmental structuring, time management, and self-evaluation, Chinese students scored lower than international African students, especially in goal setting. Chinese students (M = 17.4432, SD = 3.62893) vs. international African students (M = 18.5277, SD = 4.67071).

Table 15.1 Descriptive Analysis of t-Test Table

Variables	Source of students	M	SD	Min	Max
Goal setting	Chinese students	17.4432	3.62893	5.00	25.00
	International African students	18.5227	4.67071	5.00	25.00
Environment structuring	Chinese students	15.2614	3.18940	4.00	20.00
	International African students	15.6705	3.98769	4.00	20.00
Task strategies	Chinese students	13.3068	3.34718	4.00	20.00
	International African students	13.2500	4.13355	4.00	20.00
Time management	Chinese students	10.1932	2.56796	3.00	15.00
	International African students	10.7045	3.20258	3.00	15.00
Help-seeking	Chinese students	14.4205	3.33467	4.00	20.00
	International African students	14.1250	3.92988	4.00	20.00
Self-evaluation	Chinese students	13.9773	3.41726	4.00	20.00
	International African students	14.4659	3.77210	4.00	20.00
Total	Chinese students	84.6024	19.4854		
	International African students	86.7386	23.69651		

15.4.2 Independent Sample t-Test

The independent-sample t-test analysis revealed no significant difference in SRL scores between Chinese and international African students. International African students (M = 86.7386, SD = 23.69651), on the other hand, reported significantly lower SRL skills than Chinese students (M = 84.6024, SD = 19.4854, t [88] = 3.896, p > 0.05). This finding highlighted the lack of a significant difference in "goal-setting," "environment structuring," "time management," "help-seeking," "self-evaluation," and "task strategies" skills between Chinese and international African students (see Table 15.2).

15.5 Discussion

In general, the self-regulated learning ability of students taking the questionnaire differed significantly depending on their growth environment, cultural background, education level, and other factors (Peng, 2012a; Klimova et al., 2022).

As can be seen from the tables above, the independent sample t-test analysis did not reveal a significant difference in SRL scores between Chinese and international African students. That is, few differences were found in the categories of environment structuring, goal setting, time management, help-seeking, task strategies; and self-evaluation. However, the total score of international African students (M = 86.7386, SD = 23.69651) was higher than Chinese students (M = 84.6024, SD = 19.4854, t [88]

Table 15.2 Descriptive Analysis of Independent Sample t Test Table

Variables		F	Sig	t	df	Sig. (2-Tailed)
Goal setting	Equal variances assumed	3.997	0.047*	1.712	174	0.089
	Equal variances not assumed			1.712	163,983	0.089
Environment structuring	Equal variances assumed	2.252	0.135	0.752	174	0.453
	Equal variances not assumed			0.752	165.986	0.453
Task strategies	Equal variances assumed	4.484	0.036*	−0.100	174	0.920
	Equal variances not assumed			−0.100	166.788	0.920
Time management	Equal variances assumed	7.196	0.008**	1.169	174	0.244
	Equal variances not assumed			1.169	166.153	0.244
Help-seeking	Equal variances assumed	1.341	0.248	−0.538	174	0.591
	Equal variances not assumed			−0.538	169.509	0.591
Self-evaluation	Equal variances assumed	2.808	0.096	0.901	174	0.369
	Equal variances not assumed			0.901	172.329	0.369

$= 3.896, p > 0.05$). This result emphasized that international African students perform better than Chinese students in online self-regulated learning. It was assumed that Chinese students could perform better than international African students due to the fact that Chinese students were more accustomed to Chinese education, had a higher sense of safety in China, and received more social support. Online learning lessons brought huge challenges and barriers to international African students since they may have experienced more academic and cultural differences (Cao, et al., 2021). However, the similarity in scores between the two groups of participants rejected the assumption. The reasons behind this could be: first, although the majority of international African students were Ghana and Zimbabwe where the levels of education and information technology were relatively lower than in China, around 80% of them have spent more than one year studying in China. In the same teaching and learning environment, the two groups' learning styles, academic control beliefs, and student self-evaluation which were key constructs of SRL skill (Cassidy, 2011) may gradually converge, thus, resulting in a similar level of self-regulated learning skill development; second, the concept of self-regulated learning was closely relevant to one's learning and academic

achievement, especially in higher education, thus, the same higher education environment structuring may bring a similar impact on the two groups' self-regulated learning skill development.

Furthermore, the data shown in table 15.1 showed that among the six dimensions, both Chinese and International African students performed best in goal setting with Chinese students (M = 17.4432, SD = 3.62893) and international African students (M = 18.5277, SD = 4.67071), while both Chinese and International African students scored lowest in time management with Chinese students (M = 10.1932, SD = 2.56796) and international African students (M = 10.7045, SD = 3.20258). Previous research proved that goal setting and time management are essential factors that will impact students' performance in online learning. Both Chinese undergraduate and international African students had definite goals for their online learning and held on to their study plans during the pandemic (Michael., et al. 2021). But the severity of the COVID-19 epidemic and fluctuating pandemic situation brought barriers to students' time management. Time management might be one of their weak points. The COVID-19 epidemic was difficult to control and predict, resulting in a variety of anti-epidemic measures implemented by the government and universities. As a result, having more extrinsic factors than intrinsic factors made it difficult for students to stick to their study plans and manage their time. Time management, on the other hand, was a significant self-regulatory process in which students actively manage when and for how long they engaged in activities deemed necessary for achieving their academic goals (Wolters & Brady, 2020). More assistance with time management should be provided to students.

As we can see in Table 15.1, Chinese students scored slightly higher than international African students in task strategies and help-seeking, while in the other four sub-scales, goal setting, environmental structuring, time management, and self-evaluation, Chinese students scored lower than international African students, especially in goal setting. Chinese students (M = 17.4432, SD = 3.62893) and international African students (M = 18.5277, SD = 4.67071). Chinese education was more teacher-centered and Chinese students usually relied on teachers for instruction on when to learn in secondary school or high school. Furthermore, when attending university, Chinese students no longer had daily interactions with instructors, parents, or other adults who might have previously provided structure regarding when, how long, and under what conditions they engaged in academic work. As a result, perhaps this explains why Chinese students were lacking in time management skills. Currently, in China, particularly in Wenzhou, the epidemic situation was under control, and students were permitted to maintain close contact with their teachers or classmates, to whom they could turn for assistance when experiencing difficulties with online learning.

Overall, our survey found no significant differences in characteristics between Chinese undergraduates and international African students' online learning, which was consistent with the findings of Klimova et al. (2022), who discovered no significant differences between Czech and Slovak students. However, it contradicted Peng's (2012b) finding that students from different social backgrounds, or more specifically,

students from different growing and educational environments, performed differently in motivational and self-regulated behaviors. The following two reasons were discovered as a result of the analysis: First, the sample size of the questionnaire from international African students was too small, only 88; second, the majority of the international African students who completed the questionnaire were from African countries, and the source of nationality was relatively single; the results of this questionnaire were therefore unrepresentative.

15.6 Conclusion

The purpose of this study was to determine whether Chinese undergraduate and international African students had the skills necessary to conduct online self-study under new and challenging conditions, as well as whether there were differences between them. The findings showed that both Chinese and international African students could engage in self-directed learning online. However, among the six subscales, both international African and Chinese students performed better in goal setting, which might be less easily disrupted by external interference, while their time management was relatively weak. Overall, international African students outperformed Chinese students in terms of online learning ability, but the difference was not statistically significant. The minor differences in SRL skills between the two groups were mainly caused by the similar teaching and learning environment under Chinese context, involving teaching approach, curriculum design, task strategies, etc. Future studies were recommended to increase the sample size and make the sample sources more independent.In the future online learning design, the strengths and weakness of learners' SRL skills could be taken into consideration to improve online learning effectiveness.

15.7 Limitations

There were several limitations to this study that should be mentioned. First, the study's sample size was unbalanced. There were 352 Chinese students and 89 international African students, with 65 undergraduates and 24 postgraduates among them. Due to limitations, there was a sample size mismatch between the two, and the number of Chinese students was significantly greater than the number of foreign students. However, the sample size of international African students was small because collecting data from international African students was extremely difficult because of the Covid-19 pandemic. Second, the majority of international African participants were from two countries in Africa, where economic development and education levels were low, limiting the generalizability of the findings. Third, because previous research had found that different social support and different teachers' feedback would also affect the time limit of data collection as well as the performance

of online learning and learning strategies adopted, there were many variables that might affect the validity of the result. Previous research has found that teachers' feedback, curriculum design, and the school environment all have an impact on students' online learning performance. As a result, if we want to compare the online learning experiences of Chinese students and international students, we should do so in the same course and classroom. Fourth, there was no comparison of male and female performance, despite previous research indicating that female students, in particular, appeared to be more self-disciplined and goal-oriented in their learning than male students (Klimova et al., 2022).

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