International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

INTERNATIONAL JOURNAL OF MODERN EDUCATION (IJMOE)
www.ijmoe.com

GLOBAL ACADEMIC EXCELLENCE

OPEN AND DISTANCE LEARNING STUDENTS' PARTICIPATION IN A SELF-REGULATED LEARNING ENVIRONMENT WITHIN THE LEARNING MANAGEMENT SYSTEM

Christnalter Bunsu[1], Noor Dayana Abd Halim[2*]

[1] Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia (UTM), Johor, Malaysia
Email: christnalter@graduate.utm.my
[2] Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia (UTM), Johor, Malaysia
Email: noordayana@utm.my
[*] Corresponding Author

Article Info:

Article history:
Received date: 25.06.2024
Revised date: 11.07.2024
Accepted date: 28.07.2024
Published date: 15.09.2024

To cite this document:

Bunsu, C., & Abd Halim, N. D. (2024). Open And Distance Learning Students' Participation In A Self-Regulated Learning Environment Within The Learning Management System. *International Journal of Modern Education, 6* (22), 47-56.

DOI: 10.35631/IJMOE.622004

Abstract:

Open and Distance Learning (ODL) provides an alternative path for higher education, particularly beneficial for individuals who are unable to attend university full-time on campus, offering the benefits of flexibility, accessibility, and self-directed learning. With ongoing advancements in technology, ODL is becoming more relevant and expands educational access to a wider range of learners across the world. At the same time, distance learning promotes Self-Regulated Learning (SRL) and lifelong learning through the use of technology, often facilitated by Learning Management Systems (LMS). However, one concerning issue is that students have been observed to employ only a limited and suboptimal range of SRL strategies in online learning environments. Past studies have highlighted several common issues, including the digital divide, challenges with self-regulation, and a lack of essential SRL skills. Therefore, this research applied the design of an SRL environment in LMS to encourage effective SRL strategy utilization among ODL students and assessed their participation. Master's students in an Open and Distance Learning (ODL) program at a public university were selected using convenient sampling, with a total of 23 students enrolled in an ODL course. The log data from LMS were analysed to assess students' participation. Overall, the logs indicate a desirable level of participation across the SRL phases, with a significant increase in the Performance phase, suggesting that students were highly active during class activities and discussions. The high frequency of access also indicates active use of the LMS.

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

Keywords:

Learning Management System, Log Data, Open and Distance Learning, Self-Regulated Learning, Student Participation

Introduction

Open and Distance Learning (ODL) provides an alternative path for higher education, particularly beneficial for individuals who unable attend university as full-time on-campus students. ODL offers flexibility, accessibility, and promotes self-directed learning. With the ongoing advancements in technology, ODL is becoming more relevant, expands the educational access to a wider range of learners across the world. Additionally, ODL enables educators to stay competitive and improve their teaching by continuously developing professionally through the use of modern educational technologies and innovative teaching methods (Akintayo et al., 2024). Distance learning encourages the process of Self-Regulated Learning (SRL) and lifelong learning through technological means.

Self-regulation, as defined by Zimmerman (2000), self-regulation refers to self-generated thoughts, feelings, and actions that are planned and cyclically adapted to achieve personal goals. In the context of ODL, learners are required to be independent and self-directed for most of the time. ODL usually lacks the structured setting that can be found in a traditional classroom, and thus requires more responsibility from the learner to manage their time and learning activities. Students can be considered self-regulated when they actively engage in their learning process metacognitively, motivationally, and behaviourally (Zimmerman, 1989). SRL skills empower students to control their learning processes, helping them stay focused and complete tasks autonomously.

To sustain the delivery of distance learning, Learning Management System (LMS) play crucial role. Whether it is Moodle, Edmodo, Canvas, or any other LMS, most platforms today offer similar features, providing a centralized, structured, and interactive learning environment for both students and instructors. Students log in to LMS to access course materials, participate in discussions, and complete assignments, ensuring continuous engagement with their studies (Watson & Watson, 2007). Furthermore, LMS platforms offer personalization options that allow instructors to customize course content to meet the specific needs of their students, leading to more effective learning experiences. As ODL continues to grow and evolve, LMS will play an essential role in shaping the future landscape of distance education.

Problem Statement

Effective Self-Regulated Learning (SRL) strategies are crucial for achieving academic success in online education, but their impact appears to weaker compared to traditional face-to-face learning environments (Broadbent & Poon, 2015). One of the concerning issues is that students tend to use a limited and less effective range of SRL strategies in online learning contexts (Pedrotti & Nistor, 2019). The digital divide, shaped by socio-cultural and economic factors, can contribute to weak SRL abilities, with research showing that rural students typically score lower in online SRL compared to their urban counterparts (Guo et al., 2022; Zheng et al., 2023).

In fact, Open and Distance Learning (ODL) classes tend to be limited per semester, and some do not have any face-to-face synchronous meetings for ODL students at all. Although students

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

may become more engaged with the online learning environment over time, their SRL skills do not develop automatically (Barnard-Brak et al., 2010). Consequently, they often achieve lower academic outcomes than those who are more reflective and persistent in their learning (Xu et al., 2022). Similarly, students with lower SRL skills who are given too much flexibility in their coursework may struggle with planning, leading to poor performance (Men et al., 2023). In the long term, an inability to self-regulate in the online environment can result in academic failure and dropout. Instructors, too, need to assess students' individual needs and competencies, but many are not familiar with SRL assessment (Karlen et al., 2023).

SRL skills can be taught and learned (Schunk & Zimmerman, 1998), and they can be supported by appropriate techniques and tools in online learning. Based on the SRL environment designed by Bunsu and Abd Halim (2024), this research assessed ODL students' participation in an SRL environment within a Learning Management System (LMS). The designed SRL-supportive environment aimed to encourage students to fully utilize the LMS and enhance their SRL skills. The use of students' log data played a crucial role in this study, as it provided detailed insights into their interaction frequency and the effectiveness of the SRL strategies implemented.

The Design of Self-Regulated Learning Environment in Learning Management System

Barry Zimmerman is highly regarded for his extensive research on Self-Regulated Learning (SRL). Over the years, Zimmerman's SRL model has undergone several updates, with the latest version published in 2009, incorporating new metacognitive and volitional strategies during the performance phase. Each model shares one similarity, which is that SRL is described as a cyclical process. Figure 1 below provides an overview of his model.

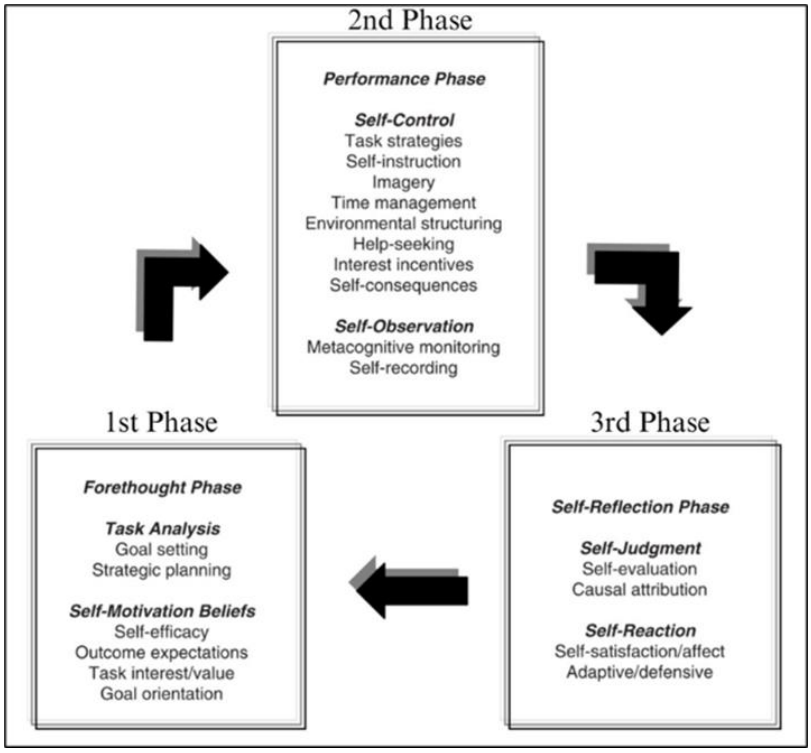

Figure 1: Self-Regulated Learning Model

Note. Adopted from Zimmerman and Moylan (2009)

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

Panadero (2017) noted the existence of several other widely used SRL models, but Zimmerman's model remains the most frequently cited due to its comprehensiveness and clarity. In contrast, other SRL models may require a strong grasp of the underlying theory for proper implementation. Based on this specific model, Bunsu and Abd Halim (2024) designed an SRL-supportive learning environment intended to stimulate students' SRL skills as well as make full use of the Learning Management System (LMS).

The weekly learning activities were designed according to SRL phases to foster students' SRL in a complete cyclical phase. Fortunately, modern LMS platforms are now equipped with SRL functionalities such as to-do lists, self-assessment tools, and online discussion forums, which encourage the use of SRL strategies (Araka et al., 2021). Table 1 below provides an overview of the weekly learning activities and their alignment with the SRL model. These activities may be repeated in subsequent synchronous sessions, depending on the availability of synchronous classes each semester or as needed.

Table 1: Overview of the Weekly Learning Activities and the Application of SRL

Meeting	Topic	Activity		SRL Phase Applied
Synchronous Meeting 1 (Week 1)	1, 2	Pre-class	○ Self-instructional material: video ○ Information searching activity	(1st) Forethought
		During Class	○ Online lecture ○ Group discussion ○ Forum discussion (post-class)	(2nd) Performance
		Post-class	○ Self-reflection activity	(3rd) Self-reflection

Note. Adopted from Bunsu and Abd Halim (2024)

The first phase, known as the *Forethought* phase, takes place before the synchronous class. During this phase, course instructor prepared the LMS by uploading educational resources like videos, notes, and articles ahead of time. As suggested by Bunsu and Abd Halim (2024), the prepared materials may be categorised as 'Independent Study'. Students were expected to access the materials, actively engage in their learning, set personal goals and strategies, and continuously monitor their performance and understanding (Zimmerman & Moylan, 2009). This forethought phase is crucial for preparing learners for the next phase in the Self-Regulated Learning (SRL) model, which is the Performance phase.

The second phase, known as the *Performance* phase, took place during the synchronous class. Course instructor delivers an online lecture on the weekly topics, followed by some class activities in LMS. Right before the class ended, students were instructed to participate in forum discussions that have been setup earlier. Students were encouraged to read and respond to their classmates' posts by expressing agreement or disagreement, asking questions, and more. Forum discussions were highly valued by students and widely used in online learning (Green et al., 2014). Within the SRL model, online discussion forums provide a platform for learners to

International Journal of Modern Education
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

actively engage, apply strategies, and work towards their goals, aligning with the performance phase.

The *Self-Reflection* phase is the final stage in the selected SRL model. As shown in Table 1, self-reflection is a post-class activity. Questions may include, but not limited to self-evaluation, goal setting, and action planning. This phase is essential for fostering self-awareness, reflecting on learning experiences, identifying strengths and weaknesses, and making connections between different pieces of information. By reflecting on their understanding and progress, learners can adjust their strategies and enhance their SRL processes over time.

Methodology

This research was conducted quantitatively using a pre-experimental design. The designed Self-Regulated Learning environment was tested on Master's students in an Open and Distance Learning (ODL) program at a public university. A total of 23 students enrolled in an ODL course were selected using convenience sampling. These students experienced the true ODL setting and were the primary users of the LMS. The figure below provides an overview of the process.

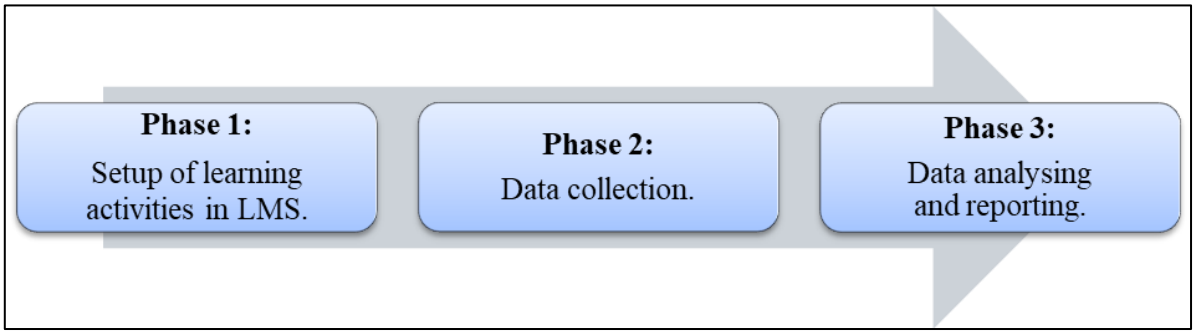

Figure 2: Flow Chart of the Data Collection Process

The data collection phase spanned two weeks. Throughout this period, students engaged in the three phases of self-regulated learning: forethought, performance, and self-reflection. The breakdown of each phase has been covered in the previous section. In the meantime, LMS effortlessly recorded log data, including student interactions, participation in discussion forums, interactions with course materials, and so forth. This comprehensive data capture provided a detailed view of the students' self-regulated learning processes.

Findings and Discussion

Students' log data in the LMS were analysed to assess their participation in this learning environment. The analysis focused on the completion of activities, providing insights into each student's interaction with the course materials and completion of tasks. Within the SRL cyclical phase, the log data offers may valuable information about students' engagement during the forethought, performance, and self-reflection phases. The logs were analysed using descriptive methods afterward. The following Figure 2 provides an overview of the students' logs, specifically their visits to the LMS site.

International Journal of Modern Education
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

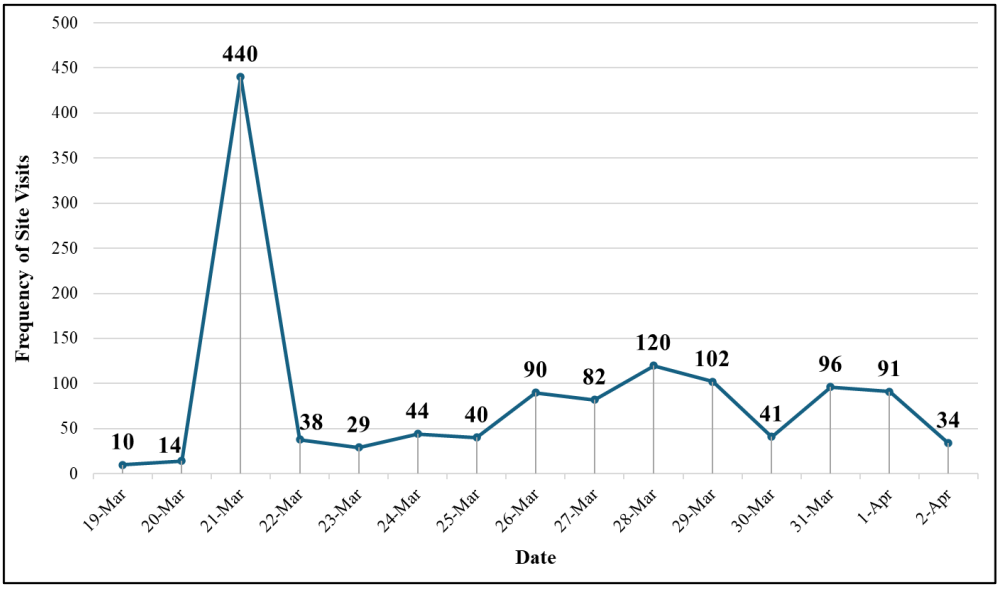

Figure 3: Distribution of Logs

The first synchronous class was held on 21st March. Figure 2 above presents the number of logs from 19th March to 2nd April, covering the period before, during, and after the first synchronous session. The daily analysis showed that the highest number of site visits occurred on the day of the first synchronous session, with a total of 440 visits. Similarly, the analysis indicated that the highest amount of time spent occurred on the same day, totalling 598 minutes (9 hours and 58 minutes). Figure 3 below indicates time spent on the site by students.

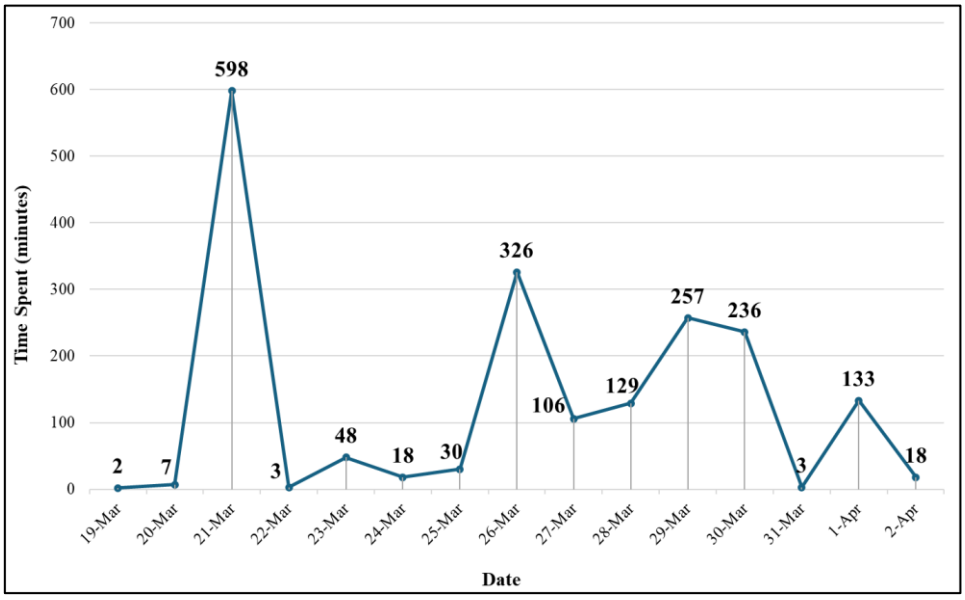

Figure 4: Time Spent on Site (minutes)

This spike in activity suggests that students were likely engaged in both the Forethought and Performance phases. The synchronous session likely prompted students to engage in various SRL processes such as goal setting, strategic planning, and self-observation, thereby enhancing their self-regulation skills. In addition, the synchronous class seemed to be a significant factor

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

in motivating students to access the LMS, likely due to the need to participate in real-time class activities. It was also found that students spent a lot of time on sites on March 26th. LMS logs revealed that some students participated in forum discussions and engaged with their group members outside of synchronous sessions.

Table 2: Access Frequency of Learning Materials and Activity in LMS

SRL Phase	Learning Materials / Activity	Access Frequency
(1st) Forethought	Notes 1	45
	Notes 2	32
	Notes 3	45
	Related Website I	30
	Related Website II	26
(2nd) Performance	Class Activity 1	238
	Forum Discussion	531
(3rd) Self-reflection	Self-Reflection	150

The data in Table 2 illustrates student engagement with various learning materials and activities in the LMS across different phases of Self-Regulated Learning (SRL). In the first phase, known as Forethought, logs reveal how proactively students access and utilize the provided resources, reflecting their planning and goal-setting efforts. During this phase, students are involved in setting their learning goals, planning their strategies, and preparing to engage with the course material.

In terms of notes, each set can be downloaded for offline viewing, which likely contributes to the low access frequency (≤ 45 times). Websites on the other hand, have much less access frequency than the notes. The websites likely provide comprehensive or specific resources that students can quickly absorb and apply, reducing the need for repeated visits. Afterall, students may prefer to keep the browser tab open, minimizing the need to return to the sites frequently.

Although the log frequency seemed to be low, but it could reflect on students' ability to organize and manage their learning environment effectively, ensuring that they have immediate access to necessary resources, which is one of the element in Forethought phase – *Strategic Planning*. This may reflect on students' strategic planning and organization; by downloading the notes and keeping web browser tab open, they ensure they have consistent access to study materials, allowing them to access and learn at their own pace without relying on an internet connection and frequent visits.

During the Performance phase, logs reflect students' active participation in synchronous classes and forum discussions. In this phase, students implement their learning strategies, monitor progress, and maintain focus on tasks. The data showed a significant increase in activity during this phase. 'Class Activity 1' was accessed 238 times, indicating that students were highly engaged in real-time class activity. This frequent access reflects the students' commitment to actively participating in the learning process.

Meanwhile, 'Forum Discussion' had the highest access frequency, with students engaging 531 times. This suggests that students were not only participating in these discussions but were also

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

likely engaging in constructive dialogue, information sharing, and collaborating with peers. In fact, online forum has high level of perceived importance by the students and widely used for online learning process (Green et al., 2014). Therefore, such interactions are crucial for deeper understanding and knowledge construction, which are key aspects of the Performance phase.

In the third phase, Self-Reflection, LMS logs indicate how actively students engage with self-reflection activities. The self-reflection can be in the form of self-judgement and self-reaction (Zimmerman, 2002). The log data showed that the 'Self-Reflection' activity was accessed 150 times. This frequency suggests that students were actively visiting the site; evaluating their own performance and learning experiences. Through self-reflection activities, students can develop a better awareness of their learning processes and outcomes, which can inform their future planning and strategy adjustments in the Forethought phase.

Overall, the logs indicate a desirable level of participation across the SRL phases, with a significant increase in the Performance phase, suggesting that students were highly active during class activities and discussions. The high frequency of access also indicates active use of the LMS. Since these activities were designed to stimulate students' SRL skills, their participation and completion are crucial for effectively fulfilling an entire cycle of SRL. Ultimately, SRL skills are critical for success in self-paced distance learning environments where learners study on their own (Kocdar et al., 2018).

Conclusion

To conclude, this research has achieved its objective of implementing the SRL environment in the LMS to encourage active participation among students and foster SRL processes. The log data revealed a significant level of student engagement and active participation within the LMS. This provides valuable insights for LMS developers and educators aiming to design and implement more effective learning activities. With that being said, future research could conduct longitudinal studies to examine the long-term effects of SRL-supportive LMS environments on student outcomes. This would provide deeper insights into the sustained impact of SRL on learning and retention.

Nevertheless, course instructors are always required to play a significant role in sustaining the effective implementation of this SRL-supportive learning environment. Their involvement is crucial for providing guidance, feedback, and support that enhances the SRL processes among students. Supporting SRL in distance learning has proven to have a positive effect on students' motivation and emotion regulation (Edisherashvili et al., 2022), as well as on their academic achievement (Xu et al., 2023). This highlights the importance of instructor engagement and the need for institutional support in creating a conducive learning environment.

Acknowledgement

The researcher would like to thank Universiti Teknologi Malaysia (UTM) for awarding the UTMNexus Scholarship as financial support.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

References

Akintayo, O. T., Eden, C. A., Ayeni, O. O., & Onyebuchi, N. C. (2024). Evaluating the impact of educational technology on learning outcomes in the higher education sector: a systematic review. *International Journal of Management & Entrepreneurship Research*, *6*(5), 1395–1422.

Araka, E., Gitonga, R., Oboko, R., & Kihoro, J. M. (2021). University Students' Perception on the Usefulness of Learning Management System Features in Promoting Self-Regulated Learning in Online Learning. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT)*, *17*(1), 45–64. https://www.researchgate.net/publication/348962345

Barnard-Brak, L., Paton, V. O., & Lan, W. Y. (2010). Self-regulation across time of first-generation online learners. *ALT-J: Research in Learning Technology*, *18*(1), 61–70. https://doi.org/10.1080/09687761003657572

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *Internet and Higher Education*, *27*, 1–13. https://doi.org/10.1016/j.iheduc.2015.04.007

Bunsu, C., & Abd Halim, N. D. (2024). Designing Self-Regulated Learning Environment for Open and Distance Learning Students in the Learning Management System. *6th International Research Conference on Humanities, Social Sciences and Technology 2024 (6th IRCHST 2024)*, 307–313.

Edisherashvili, N., Saks, K., Pedaste, M., & Leijen, Ä. (2022). Supporting Self-Regulated Learning in Distance Learning Contexts at Higher Education Level: Systematic Literature Review. In *Frontiers in Psychology* (Vol. 12). Frontiers Media S.A. https://doi.org/10.3389/fpsyg.2021.792422

Green, R. A., Farchione, D., Hughes, D. L., & Chan, S. P. (2014). Participation in asynchronous online discussion forums does improve student learning of gross anatomy. *Anatomical Sciences Education*, *7*(1), 71–76. https://doi.org/10.1002/ase.1376

Guo, J., King, R. B., Ding, Q., & Fan, M. (2022). Measuring and Promoting Self-Regulation for Equity and Quality of Online Learning: New Evidence from a Multi-Institutional Survey during COVID-19. *Education Sciences*, *12*(7). https://doi.org/10.3390/educsci12070465

Karlen, Y., Bäuerlein, K., & Brunner, S. (2023). Teachers' assessment of self-regulated learning: Linking professional competences, assessment practices, and judgment accuracy. *Social Psychology of Education*. https://doi.org/10.1007/s11218-023-09845-4

Kocdar, S., Karadeniz, A., Bozkurt, A., & Buyuk, K. (2018). Measuring Self-Regulation in Self-Paced Open and Distance Learning Environments. *International Review of Research in Open and Distributed Learning*, *19*. http://edx.readthedocs.io/projects/edx-guide-for-

Men, Q., Gimbert, B., & Cristol, D. (2023). The Effect of Self-Regulated Learning in Online Professional Training. *International Journal of Mobile and Blended Learning*, *15*(2). https://doi.org/10.4018/IJMBL.318225

Panadero, E. (2017). A Review of Self-regulated Learning: Six Models and Four Directions for Research. *Frontiers in Psychology*, *8*(422). https://doi.org/10.3389/fpsyg.2017.00422

Pedrotti, M., & Nistor, N. (2019). How Students Fail to Self-regulate Their Online Learning Experience. In *Transforming Learning with Meaningful Technologies: Vol. 11722 LNCS* (pp. 377–385). Springer Verlag. https://doi.org/10.1007/978-3-030-29736-7_28

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 47-56
DOI: 10.35631/IJMOE.622004

Schunk, D. H., & Zimmerman, B. J. (1998). Self-Regulated Learning: From Teaching to Self-Reflective Practice. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulated learning: From teaching to self-reflective practice.* Guilford Publications.

Watson, W. R., & Watson, S. L. (2007). An Argument for Clarity: What are Learning Management Systems, What are They Not, and What Should They Become? *TechTrends*, *51*(2), 28–34. https://doi.org/10.1007/s11528-007-0023-y

Xu, L., Duan, P., Padua, S. A., & Li, C. (2022). The impact of self-regulated learning strategies on academic performance for online learning during COVID-19. *Frontiers in Psychology*.

Xu, Z., Zhao, Y., Liew, J., Zhou, X., & Kogut, A. (2023). Synthesizing research evidence on self-regulated learning and academic achievement in online and blended learning environments: A scoping review. *Educational Research Review*, *39*. https://doi.org/10.1016/j.edurev.2023.100510

Zheng, C., Liang, J. C., Chai, C. S., Chen, X., & Liu, H. (2023). Comparing high school students' online self-regulation and engagement in English language learning. *System*, *115*, 103037. https://doi.org/10.1016/J.SYSTEM.2023.103037

Zimmerman, B. J. (1989). A Social Cognitive View of Self-Regulated Academic Learning. *Journal of Educational Psychology*, *81*(3), 329–339. https://doi.org/10.1037/0022-0663.81.3.329

Zimmerman, B. J. (2000). Attaining Self-Regulation: A Social Cognitive Perspective. *Handbook of Self-Regulation*, 13–39. https://doi.org/10.1016/B978-012109890-2/50031-7

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, *41*(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2

Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: Where metacognition and motivation intersect. In *Handbook of Metacognition in Education* (pp. 299–345). Routledge.