

Citation: Kashif, M. F., & Shahid, R. (2021). Students' Self-Regulation in Online Learning and its Effect on their Academic Achievement. *Global Educational Studies Review*, VI(III), 11-20. [https://doi.org/10.31703/gesr.2021\(VI-III\).02](https://doi.org/10.31703/gesr.2021(VI-III).02)



Students' Self-Regulation in Online Learning and its Effect on their Academic Achievement

Mahvish Fatima Kashif*

Rooha Shahid[†]

Abstract: *The landscape of teaching has been changed due to online learning experiences. Due to its potential for greater flexibility, access, and responsiveness to learning experiences, it has many benefits for learners as well as higher institutions. Thus, the objective of the study was to investigate students self-regulation in online learning and its effect on their academic achievement at the undergraduate level. The study was quantitative in nature; a causal comparative research design was used. A questionnaire (SOL-Q-R) revised by [Jansen et al. \(2017\)](#) was used to measure the self-regulation of students. The total population was 1790 students, 1180 from public and 610 from private universities. A sample of 450 respondents was selected by using a stratified random sampling technique. The result showed that self-regulation has a significant effect on academic achievement. Students who have a high level of self-regulation were shown higher academic achievement.*

Key Words: Online learning, Self-Regulation, Academic Achievement

Introduction

The landscape of teaching has been changed due to online learning experiences. Due to its potential for greater flexibility, access, and responsiveness to learning experiences, it has many benefits for learners as well as higher institutions. It requires different teaching strategies for effective teaching with traditional techniques and learning experiences ([Wuensch et al., 2008](#)). For instance, interaction among students and with the teachers is a limitation in online learning as students are not physically there in the classroom, so it is assumed that it is a necessity to design a different approach towards teaching plan to engage students in different learning activities in online learning ([Wang, et al., 2013](#)). In online learning, the material is usually placed online and easily accessible for the learners as per their needs. The way students accessing and working on the left up to the students become the source of rising in the level of self-regulation in students, which is required for the successful attainment of the goals

of learning. Students in higher institutions must be self-regulated as the development of students' self-regulatory skills is an important element of teaching and learning which results in academic success. There are three features engaged in self-regulation; application of self-regulation approaches, receptiveness to the self-directed feedback about the effectiveness of learning and inter-reliant motivational procedures. These features have been used by the self-regulated students by using their self-learning skills to achieve predetermined objectives (Laurie & Jason, 2016). These learning skills are beneficial for improving not only the learning skills of the students but also for a well paid and fulfilling career. Another key feature of self-regulation is the ability to involve the youth to work as an autonomous persons. It involves the ability to make the right decisions. These self-regulated individuals show control over their psychological aspects and have the ability to adapt to

* Assistant Professor, Faculty of Education, Lahore College for Women University, Lahore, Punjab, Pakistan.
Email: mahvishfatima79@gmail.com

[†]MS Scholar, Lahore College for Women University, Lahore, Punjab, Pakistan.

challenging environments. Academic self-regulation is self-regulated learning which allows individuals to be active and sustain cognitions, behaviors and emotions in a systematic manner towards the attainment of goals through motivational and behavioral processes ([Nicol & Macfarlane, 2007](#)).

It also gets popular both at the secondary and posts secondary level ([Sharp & Sharp, 2016](#)). Development in technology also expands the possibilities and evolution of online learning ([Johnson & Aragon, 2003](#)). To transform the knowledge base economy, online learning is an essential step to educate people nationwide ([Nawaz, 2012](#)).

Statement of the problem

The implementation and reception of the online education system are underutilized in developing countries. It is a critical issue for higher educational institutions in developing countries. Students in developing countries may have a very little acceptance and receiving rate for online education as compared to developed countries (Nabia & Ruhi, 2017). Hence, there are many challenges in achieving goals in the online system. The solution at the student level for online learning is the high level of engagement of students and its inclusion with their self-regulation in the online learning system that ultimately improves academic success (Laurie & Jason, 2016). Therefore the research tried to investigate students self-regulation in online learning and its effect on their academic achievement.

Objectives

The objectives of the study were as following:

- Explore the level of students' self-regulation in online learning at undergraduate.
- Explore the effect of self-regulation in online learning on student's academic achievement at the undergraduate level.
- Find out the difference of self-regulation in online learning on the basis of (gender and public/ private institutes).

Research Question

What is the level of students' self-regulation in online learning at the undergraduate level?

Hypotheses

- H₀:** There is no significant effect of self-regulation in online learning on student's academic achievement.
- H₀:** There is no significant effect of gender on self-regulation in online learning.
- H₀:** There is no significant difference between students' self-regulation in online learning of public or private universities.

Literature Review

Online learning becomes a leading avenue in developed countries for education. There is a need to substitute traditional pedagogy with online learning models in developing countries like Pakistan. In the developed world, the idea of online learning introduced the advancement in knowledge and opportunities available globally. In developing countries, this initiative was not adopted in the same way, but it has been proved very beneficial in uplifting the gap between the developing and developed extremes. This modern online learning covers many dimensions in content, procedures, moderators and service providers. The online learning industry is continuously progressing and suggests a bright future (Nabia & Ruhi, 2017).

Many researchers discussed the issues related to factors and characteristics of a successful online environment, and their studies recommended that user's satisfaction was one of the important factors in evaluating the learning environment. User satisfaction refers to the integration of users feelings, experiences and acceptance levels into the learning environment. Four factors that involve in online learning success are; effective learning environment, learner satisfaction towards the environment, useful learning activities and learner characteristics ([Liaw & Haung, 2013](#)). Researches also explain that users' satisfaction was highly related to self-regulated learning and that fundamental factor explained learners self-regulation in the online learning environment (Zaho & Chen, 2016). Theories also perceived learning as an activity that students do in their own way to achieve their goals. In this process, learners are active participants and generally are more effective in learning. Adoption of self-regulatory theories perspective in online learning helps to understand learners' investment in time, capacity and energy for the process of

their education and training opportunities in online learning. It also identifies numerous self-regulatory attributes that contribute to performance (Sharma et al., 2007). In the categorization of Zimmerman (1990), the allied concept of theories for the self-regulated method is as following:

Operant Theories

These theories illustrate and support descriptions such as self-instruction, self-recording, self-reinforcement etc. These theories determine the external reward/punishment of self-regulated learning responses.

Social Cognitive Theories

These theories focus on the positive characteristics of feedback. They claim the factors such as self-efficacy, cognitive stability, academic success, and actual drive are at the rear of self-regulation.

Phenomenological Theories

These theories depict the self-oriented feedback process related to perceptions. They define self-regulated learning in the form of a complete sense of self-actualization and self-esteem.

An important perspective of these theories of self-regulation is that studying experience and inspiration are independent, and they cannot be fully understood apart from each other. Self-synchronized learners are not hasty to their learning outcomes. They are proactive and seek opportunities to learn. They involve in activities that promote self-observation, self-evaluation and self-improvement, such as practice sessions,

specialized training and competitive events. Thus self-regulated learning executes self-control to a new or changing condition from negative feedback. At this stage, learners are not self-directed, they are self-motivated, and that is an integral part of self-regulation (Nodushan, 2012).

Online Learners and Self-Regulatory Attributes

SRL theories indicate that in an online learning environment, learners must involve in self-regulatory attributes to succeed. Online learning and computer-based learning is different from traditional learning, but for effective learning, self-regulation is required. One of the major differences between online and face to face learning is the removal of traditional classrooms. As well as many motivating and supportive factors also missing like group pressure, familiar learning environment and social characteristics (Hodges, 2005). There is usually no direct communication between instructor and learner in online learning, and this may experience a sense of isolation. Consequently, successful online learning relies on individual abilities and the use of SRL strategies.

Like several strategies for the self-regulation process, various models also exist, such as Boekaerts model, Winne's model and Zimmerman's model for self-regulation learning. In all these models, Zimmerman's model has been broadly acknowledged. In that model, self-regulation learning occurs in three cyclical phases: forethought, performance and self-reflection. In each phase, the self-regulated learner is engaged, and the first phase influences the next one and second to the third and third in turn influences the first again.

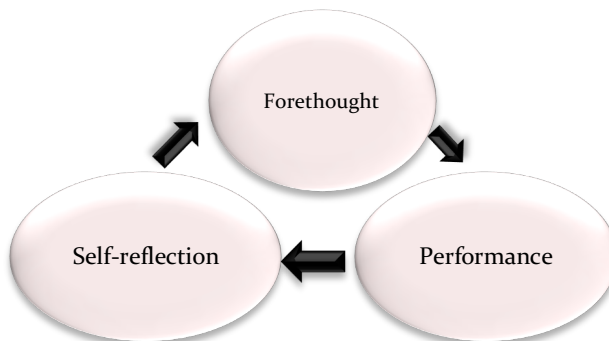


Figure 1: Phases of Zimmerman's Self-Regulation Learning Model (Wandler & Imbriale, 2017).

In the first phase, firstly, they set their goals and value their task by passing through the forethought phase. After this, in the performance phase, they employ different working strategies for the completion of the task. Meanwhile, in the self-reflection phase, they evaluate their own work towards progress. In the end, students use this complete three cyclic phase information for their future decision about completing long term goals or for the beginning of the new one. These levels of customization are essential for the promotion of self-regulation of students in online learning courses, and ultimately, this leads to academic achievement ([Wandler & Imbriale, 2017](#)).

Self-Regulation and Academic Achievement

The interrelation between self-regulation and academic achievement has been conceptualized by three interrelated characteristics: a) anticipation, b) introspection, and c) progression. This anticipation is not a fixed trait to claim, but it influences the aims of academic achievement outcomes directly. Learners utilize many SRL approaches as a component of idiomatic SRL behavior like thoughtfulness, metacognitive and resource management strategies. Cognitive strategies help learners to get knowledge at the surface level by maintaining it in sequence. On the other hand, metacognitive strategies are concise on the monitor and regulate plans. Meanwhile, resource management focuses on utilizing the surrounding resources such as peers. Self-regulation has an impact on acquired information and maintains it in a controlled sequence. Strategies are the components of the self-regulation process, and some skills are required to teach students to put self-regulation at a practical level. The implication level of these self-regulation strategies shows an increase in academic performance in a conventional learning atmosphere ([Wang, Shanon & Ross, 2013](#)). Academic achievement in both traditional and online learning is defined or predicted in the form of numerical grades in assignments, tests, exams, and subjects or in degree (Richardson et al., 2012). Many researches on self-regulation show that

there is a positive relationship between self-regulation and academic achievement in traditional learning. On the other hand, some comparative studies on self-regulation and online learning show strategies of self-regulation work in online learning as it gives the advantage to students to manage their work easily in online courses with flexibility. These self-regulation strategies target high academic achievement in online courses. This phenomenon is investigated from empirical studies that evaluate self-regulation strategies associate with online learning academic outcomes in the online learning environment. That specific review correlates self-regulation strategies with higher academic achievement in the education environment ([Broadbent & Poon, 2015](#)).

Methodology Research Design

A quantitative research design was utilized in this study and to explore students self-regulation in online learning and its effect on their academic achievement causal-comparative research method was used as it finds differences in existing behavior or status of groups and individuals ([Gay, Millis & Ariasian, 2005](#)).

Population

The target population of the study was all the undergraduate students of the education department of public and private universities of Lahore. In Lahore, there were a total of thirty-two HEC recognized universities (public and private) under the general category, and twelve universities were offering education degrees ([Higher Education Commission Pakistan, 2021](#)).

Sampling

Stratified random sampling was applied to select the sample. In stratified random sampling, rather than selecting from the entire population, the researcher divides the population into subgroups called strata, and all members of the sample are selected from each stratum randomly. Strata were made by dividing the universities into two groups on the basis of their nature, i.e. public and private.

Table 1. Sample Size

Universities	Population N	Sample n
Public Universities	1180	277

Universities	Population N	Sample n
Private Universities	610	173
Total	1790	450

Instrument

A general information sheet was employed to accumulate data from the participants. It includes participants' demographical information (gender, nature of institution, institution name, CGPA). Student online learning self-regulation revised questionnaire of [Jansen et al. \(2017\)](#) (SOL-Q-R) was used in data collection to accomplish specific objectives of the study.

Self-Regulated Online Learning Questionnaire-Revised

The self-regulated online learning questionnaire (SOL-Q) was used to measure students' self-regulation in online learning. The SOL-Q was revised by [Jansen et al. \(2017\)](#). It has total of 42 items with seven subscales measured on 7 points Likert type scale from not all true for me = 1 to very true for me = 7.

Table 2. Student Online Learning Self Regulation Revised Questionnaire (SOL-Q-R)

S. No.	Subscales	Items
1	Meta cognitive activities before learning	1 – 7
2	Meta cognitive activities during learning	8 – 14
3	Meta cognitive activities after learning	15 – 20
4	Time management	21 – 25
5	Environmental structuring	26 – 29
6	Persistence	30 – 36
7	Help seeking	37 – 42

Data Collection

Data was collected online from standardized questionnaires by using Google forms and email, Whatsapp and connected with concerned department students due to covid-19.

Reliability of Scale

Self Regulation Online Learning questioner SOL-Q-R by [Jansen et al. \(2017\)](#) was used in this study. Overall reliability of the scale was 0.87 Cronbach alpha, and the sub-scale-wise reliability was as follows:

Table 3. Reliability of Components of SOL-Q-R

S. No	Subscales	Cronbach's alpha	No. of Items
1	Meta Cognitive Activities Before Learning	0.72	7
2	Meta Cognitive Activities During Learning	0.71	7
3	Meta Cognitive Activities After Learning	0.72	6
4	Time Management	0.71	5
5	Environmental Structuring	0.70	4
6	Persistence	0.70	7
7	Help-Seeking	0.70	6

Data Analysis

Research question: What is the level of students' self-regulation in online learning at the undergraduate level?

Table 4. Dimension wise Average Score of Undergraduate Students Self Regulation

Variables	N	Mean	Std. Deviation
Meta Cognitive Activities Before Learning	450	37.27	5.55
Meta Cognitive Activities During Learning	450	37.20	5.67

Variables	N	Mean	Std. Deviation
Meta Cognitive Activities After Learning	450	31.67	5.18
Time Management	450	26.22	4.42
Environmental Structuring	450	24.93	1.84
Persistence	450	39.87	3.71
Help-Seeking	450	34.54	3.37
Overall Self Regulation	450	231.73	21.44

Results show undergraduate students self-regulation on 7 points Likert scale. Self-regulation (Mean = 231.73, SD = 21.44) shows a high level of self-regulation in students maximum of 294 scores on the scale. Means and Std. Deviation values of factors with 7 items were as Metacognitive activities before learning (Mean = 37.27, Std. Deviation = 5.55), Metacognitive activities during learning (Mean = 37.20 Std.Deviation = 5.67), Persistence (Mean = 39.87, Std. Deviation = 3.71) with maximum score 49, Metacognitive activities after learning (Mean = 31.67, SD 5.18), and Help-

seeking (Mean = 34.54, Std. Deviation = 3.37) with maximum score 42. Time management (Mean = 26.22, Std. Deviation = 4.42) with maximum score 35, and Environmental structuring (Mean = 24.93, Std. Deviation = 1.84) with maximum score 28. For all these factors, average scores tended towards maximum scores, which indicated that undergraduate students had a high level of self-regulation.

H₀: There is no significant effect of self-regulation in online learning on student's academic achievement.

Table 5. Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.732 ^a	.536	.529	.21497

Predictors: (Constant), HS, ES, MDL, P, TM, MAL, MBL

Table 5 explains variance in academic achievement (criterion variable) by self-regulation (predictor variable). Here R square 0.536 describes

that self-regulation predicts 53.6% variance in academic achievement.

Table 6. Multiple Regression Test Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.642	7	3.377	73.086	.000 ^a
	Residual	20.426	442	.046		
	Total	44.068	449			

a. Predictors: (Constant), HS, ES, MDL, P, TM, MAL, MBL

b. Dependent Variable: GPA GOT IN ONLINE SCHEDULED SEMESTER

Results in Table 6 show the good fit of the model. It explains that the p-value for this model is .000 <.05, which indicates that self-regulation has a

significant effect on academic achievement (GPA got in online scheduled semester).

Table 7. Results of Multiple Regression Analysis for Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.170	.180	.529	12.029	.000
	MBL	.030	.003	.169	9.877	.000
	MDL	.009	.003	-.016	2.994	.003

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
MAL	.000	.003	.155	-.332	.740
TM	.011	.003	-.030	3.375	.001
ES	-.005	.006	-.057	-.902	.367
P	-.005	.003	-.048	-1.584	.114
HS	-.005	.003	.529	-1.377	.169

a. Dependent Variable: CGPA in online scheduled semester

Table 7 describes the contribution of predictor variables for the criterion variable. Multiple regression analysis was applied to assess the contribution of predictor variables; students' Metacognitive activities before learning (MBL), Metacognitive activities during learning (MDL), Metacognitive activities after learning (MAL), Environmental structure (ES), Persistence (P) and Help-seeking (HS) to academic achievement. Beta

values of ES, P and HS shows a negative effect on academic achievement while MBL, MDL, MAL and TM positive effect on academic achievement. P-values of all factors show the significant effect as all values are less than .05 except MAL which p-value is .74 that shows no significant effect.

H₀: There is no significant effect of gender on self-regulation in online learning.

Table 8. Gender-Based Difference in Self Regulation in Online Learning

Self Regulation	Gender	N	Mean	SD	t	df	Sig (2-tailed)
	Male	184	2.195	19.51	-11.376	448	.000
	Female	266	2.403	18.48			

Table 8 shows t values -11.376 and with p-value .000 < .05 at the level of significance, which indicates a significant difference in self-regulation of male and female students. Female students (M = 2.403) have high self regulation than male

students (M = 2.195).

H₀: There is no significant difference between students' self-regulation in online learning of public or private universities.

Table 9. The difference in Self Regulation of Public and Private Universities Students

Self-regulation	Type of Institute	N	Mean	SD	t	df	Sig(2-tailed)
	Public	277	2.34	20.81	3.390	448	.001
	Private	173	2.27	21.80			

Table 9 illustrates the result of the independent sample t-test. t value 3.390 and p-value .001 < .05 shows a significant difference between students' self-regulation in online learning of public and private universities. The mean value of public institute 2.34 and private institute 2.27 shows higher self-regulation in online learning of students from public sector universities.

positive effect on academic achievement. It was evident that metacognitive activities, time management have a positive effect on academic achievement. Results indicated that female students have high self-regulation than male students; therefore GPA of female students was high.

Conclusion

The study made an effort to investigate students' self-regulation in online learning and its effect on their academic achievement at the undergraduate level. It was observed that self-regulation has a

Discussion

Results showed that self-regulation is an important factor in academic success. Students who have a high level of self-regulation have higher GPAs. Similarly, [Wandler and Imbriale \(2017\)](#) and Broadben and Poon (2015) also explained that self-regulation has a positive

impact on academic achievement. [Inan. et al. \(2017\)](#) found that self-regulation is a key component of online learning and academic achievement. Moreover, results show that all factors of self-regulation have a significant effect on academic achievement accept metacognitive activities after learning. The same findings were expressed by [Lee. et al. \(2020\)](#) that metacognitive activities, time management and environment have a significant effect on academic achievement. It was also revealed from results that metacognitive related factors and time management have a positive effect, and help-seeking and persistence have a negative effect on academic achievement. [Chen \(2020\)](#) described the same results that positive correlation of metacognitive and time management with academic achievement.

Recommendations

On the basis of the result following are few recommendations.

- Results show that the self-regulation of university undergraduates has a positive and significant effect on their academic achievement, so supportive activities must be arranged to inculcate self-regulation in students.
- Departments could also arrange lecturers by mentors, trainers, and motivational speakers to increase the level of self-regulation of students.
- Results showed that male students have less self-regulation than female students. So it is strongly recommended that universities should arrange special workshops and counselling programs for male students only where they can easily discuss their academic problems and increase their self-regulation.
- In online learning, where students have more responsibility to learn, they have to integrate self-regulation skills in their learning process for better academic achievement.

References

- Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies and academic achievement in online higher education learning environments: A systematic review. *The Internet and Higher Education*, 27, 1-13. doi.org/10.1016/j.iheduc.2015.04.007
- Chen, W. (2020). A study on college students' self-regulated online learning in the home study context. *International Conference on Technology in Education* .189-200. doi:10.1007/978-981-33-4594-2_16
- Gay, L. R., Mills, G. E., & Airasian, P. W. (2005). *Educational research: Competencies for analysis and application*. New Jersey: Prentice hall Inc.
- Higher Education Commission Pakistan (2021). https://webcache.googleusercontent.com/search?q=cache:_8ZSEAg8dr4J:https://www.hec.gov.pk/english/universities/pages/recognised.aspx+&cd=1&hl=en&ct=clnk&gl=pk
- Hodges, C. B. (2005). Self-regulation in web-based courses: A review and the need for research. *Quarterly Review of Distance Education*, 6(4), 375-428.
- Inan, F., Yukselturk, E., Kurucay, M., & Flores, R. (2017). The impact of self-regulation strategies on student success and satisfaction in an online course. *International Journal on E-learning*, 16(1), 23-32.
- Jansen, et al. (2017). Validation of the self-regulated online learning questionnaire. *Journal of Computing in Higher Education*, 29(1), 6-27. doi: 10.1007/s12528-016-9125-x
- Johnson, S. D., & Aragon, S. R. (2003). An instructional strategy framework for online learning environments. *New Directions for Adult and Continuing Education*, 2003(100), 31-43. doi:10.1002/(ISSN)1536-0717
- Lee, D., Watson, S. L., & Watson, W. R. (2020). The influence of successful MOOC learners' self-regulated learning strategies, self-efficacy, and task value on their perceived effectiveness of a massive open online course. *International Review of Research in Open and Distributed Learning*, 21(3), 81-98.
- Liaw, S. S., & Huang, H. M. (2013). Perceived satisfaction, perceived usefulness and interactive learning environments as predictors to self-regulation in e-learning environments. *Computers & Education*, 60(1), 14-24. doi.org/10.1016/j.compedu.2012.07.015
- Nawaz, A. (2012). E-Learning experiences of HEIs in advanced states, developing countries and Pakistan. *Universal Journal of Education and General Studies*, 1(3), 72-83.
- Nicol, D. J., & Macfarlane-Dick, D. (2007). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education*, 31(2), 199-218. doi.org/10.1080/030757070600572090
- Nodoushan, M. A. S. (2012). Self-regulated learning (SRL): Emergence of the RSRLM model. *Online submission*, 6(3), 1-16. <https://eric.ed.gov/?id=ED533138>
- Sharma, S., Dick, G., Chin, W. W., & Land, L. (2007). Self-regulation and e-learning. *Proceedings of European Conference on Information Systems (ECIS)*. <https://www.researchgate.net/publication/221409060>
- Sharp, L. A., & Sharp, J. H. (2016). Enhancing student success in online learning experiences through the use of self-regulation strategies. *Journal on Excellence in College Teaching*, 27(2), 57-75. <https://www.researchgate.net/publication/304073173>
- Siddiquei, N. L., & Khalid, R. (2017). Emerging trends of E-learning in Pakistan: Past, present and future. *International Journal of Law, Humanities & Social Science*, 2(1), 20-35.
- Wandler, J. B., & Imbriale, W. J. (2017). Promoting undergraduate student self-regulation in online learning environments. *Online Learning*, 21(2), 1-16. doi: 10.24059/olj.v21i2.881
- Wang, C. H., Shannon, D. M., & Ross, M. E. (2013). Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. *Distance Education* 34(3), 302-323. doi: 10.1080/01587919.2013.835779
- Wuensch, et al. (2008). Pedagogical characteristics of online and face-to-face

classes. *International Journal on E-Learning*, 7(3), 523-532. <http://www.editlib.org/p/24201>

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An

overview. *Educational psychologist*, 25(1), 3-17.

https://www.tandfonline.com/doi/abs/10.1207/s15326985ep2501_2