



Unveiling Self-regulation in the Online Environment as a Predictor of Academic Performance and Satisfaction

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RESEARCH ARTICLE INFORMATION	ABSTRACT
<p>Received: August 1, 2024 Reviewed: November 15, 2024 Accepted: December 28, 2024 Published: December 30, 2024</p> <p> Copyright © 2025 by the Author(s). This open-access article is distributed under the Creative Commons Attribution 4.0 International License.</p>	<p>The concept of self-regulated learning (SRL) has not been comprehensively explored in Isabela State University-Echague (ISU-E), and there is still relatively little information available regarding this topic in online settings. Hence, this study represents a significant milestone in understanding this concept in this particular context. This paper presents a quantitative analysis of multidimensional relations of SRL in an online learning environment to predict academic performance and academic satisfaction using five dimensions, specifically environmental structuring, goal setting, computer self-efficacy, social dimension, and metacognitive strategies. Using purposive sampling method, 357 students from various colleges of ISU-E were selected as the study respondents. Multiple regression analysis proved that goal setting and computer self-efficacy have a positive impact on the academic performance of students, while revealing that only environmental structuring and social dimensions have a significant relationship with academic satisfaction. This implies that students are self-conscious of their abilities and what things they need to improve on, however, this leads to setting unrealistic goals promoting dissatisfaction. This mirrors the need for a more adaptive teaching approach or strategies that are geared and tailored towards the improvement of students' ability to prepare and restructure their places before</p>

synchronous or asynchronous classes or hybrid setup. These findings contribute to enhancing academic support strategies in higher education institutions (HEIs).

Keywords: *Self-Regulated Learning (SRL), academic performance, academic satisfaction, online learning*

Introduction

Since information and communication technologies are now present in practically every part of human life, they are becoming increasingly significant in the field of education. One of the main benefits of online learning over conventional, classroom-based instruction is its flexibility in terms of time and place (Waschull, 2001), while still being effective and efficient (Weichhart et al., 2018). At the same time, many educational institutions have been using Internet resources in recent years to provide students with their course materials. The effectiveness and success of online learning depend on a number of things.

Self-regulation is one of the most significant factors contributing to the successful adoption of online learning (Rakes & Dunn, 2010; Sun et al., 2008; You & Kang, 2014; Yukselturk & Bulut, 2007). Although there is plenty of research and empirical evidence regarding students' independence in traditional classroom settings and a strong link between their autonomy and academic achievement, there is relatively little information available regarding this topic in online settings (Russell, 2013).

One of the most eminent researchers of SRL, Zimmerman (2000), defined self-regulation as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals". As online learning gives learners complete power, they must accept responsibility for organizing, planning, monitoring, reflecting on, and assessing their learning processes (Ejubović & Puška, 2019). Therefore, students who engage in online learning must have the skills to necessitate good learning outcomes and to become autonomous and independent—as the essence of successful online learning is self-direction and self-management (Broadbent & Poon, 2015; Serdyukov & Hill, 2013).

Consequently, Isabela State University-Echague (ISU-E) has gradually adopted the new normal of learning, and students are required to attend classes and complete their degree requirements via synchronous and asynchronous platforms or hybrid learning. However, using online applications poses challenges for students and higher education institutions, affecting the quality of learning. Therefore, it is of high importance to research the impact that SRL has on the satisfaction and academic performance of students (Ejubović & Puška, 2019).

Although in some universities outside the region, there are studies on the assessment of SRL on higher education students such as in the study of Manuel (2022) in Pasig, Duterte and Importante (2022) in Davao, and Abun and Magallanes (2023) in Region I. The investigation of SRL in the context of the online environment has not been studied at ISU-E thus far. This study then significantly contributes to the minimal study of SRL conducted in the area.

Furthermore, since ISU-E already adopted online learning (via synchronous and asynchronous platforms) and given that all participants are pursuing board courses, the study will facilitate policies and programs that will improve students' general

knowledge and skills, improving ISU-E Board Licensure Examination ratings. The study can also serve as a foundation for future research and can be applied to different colleges for the same reasons and goals if the same circumstances occur, such as hybrid learning and the indefinite use of synchronous and asynchronous modalities.

The objectives of the study were to describe the participants by their age, sex, curricular level, program courses, and the online sources they use for studying; identify which SRL dimensions are the most and least used by the students of ISU-E in an online environment when grouped according to their profile; and examine whether students who practice self-regulation more in online learning environments have better academic performance and whether better self-regulation strategies facilitate academic satisfaction. The researcher considered the online sources used by students for research as one of the criteria for the participants; this was not included as a variable in the study and was only used to describe the participants.

Furthermore, since SRL has a lot of dimensions, different authors based their study concepts on different dimensions. However, the researcher made use of Computer Self-Efficacy (CSE), which refers to the students' efficacy in using various computer skills; Social Dimension (SD), which refers to the students' peer-aided help from their interaction online; Metacognition Strategies (MCS), which refers to student's awareness of their cognitive and learning processes; Goal Setting (GS), which refers to how students set their goals in online environment; and lastly, Environmental Structuring (EV), which refers to how comfortable environments and distraction affect students' learning process.

In light of the objectives of the study, the researcher then outlined two hypotheses. First, there is no significant relationship between self-regulated learning and academic performance in an online environment, and second, there is no significant relationship between self-regulated learning and academic satisfaction in an online environment.

Methods

Research Design

The study utilized a quantitative research design. Specifically, a descriptive-correlational research design was used to describe the relationship between the independent and dependent variables. This type of design is considered a non-experimental design which means the variables were not manipulated, but only measured and assessed, particularly the relationship between them. It is important to note that correlation does not equal causation, hence this could validate the variables whether it is the causal reason for the other variable (Price et al., 2015).

Research Respondents

The respondents of the study were students from the different colleges of Isabela State University- Echague (ISU-E), Echague, Isabela, Philippines, particularly a total of 357 students enrolled during the Second Semester of the Academic Year 2021-2022 in program courses that are eligible for the licensure examination.

It was contended that the licensing exam is one of the last phases in the licensing procedure. A board's ultimate mission is to ensure that the examination satisfies technical, professional, and legal requirements, as well as to protect the public's health, safety, and welfare by evaluating candidates' ability to practice competently (Chinn & Hertz, 2000). Students who will take board licensing exams in the future will need

additional preparation to meet the standards. One technique to determine how prepared students are is to examine their self-regulated learning. According to one study, conscious self-regulation serves as a mediator between students' anxiety and exam results. The greater the degree of conscious self-regulation, the better the exam outcomes (Fomina & Morosanova, 2016). This means that, given the current state of higher education institutions (HEIs), it is critical to include students while evaluating their self-regulated strategies in preparation for the board licensure exam.

The purposive sampling method was used to select participants; this strategy seeks to investigate the entire population depending on the study's objective, which has a specific set of characteristics. Thus, students who would take the Board Licensure Examination in the future were selected.

Research Instrument

To answer the objectives of the study, a survey questionnaire with three parts was utilized to gather the data. Part I of the questionnaire includes questions to identify the profile of the participants and their characteristics such as age, sex, curricular level, program course, and the online sources they used for studying. Part II of the questionnaire contains the five different dimensions of SRL such as environment structuring, goal-setting, computer self-efficacy, social dimension, and metacognitive strategies that were answered by the participants in the form of a Likert scale of five levels, having a qualitative description of strongly disagree to strongly agree. Each construct was composed of a minimum of three items, with a total of eighteen items.

Three items related to academic satisfaction and four items related to academic performance were grouped as separate factors, respectively, as the dependent variables comprising Part III. Both constructs used a 5-point level of the Likert scale. Academic performance was determined from far below standard to far above standard while academic satisfaction was determined from being unsatisfied to completely satisfied. In total, there were twenty-five items.

The questionnaire was directly adopted from a study conducted by Ejubović and Puška in 2019 with college respondents. The researcher asked permission to use the tool for the same purpose and was permitted for administration. The previous authors used factor analysis and tested its reliability using the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy and Bartlett's test of sphericity (Puška et al., 2018). The findings of the factor analysis revealed that the KMO index value is larger than 0.6 and less than 0.05 on Bartlett's test of sphericity.

To ensure the reliability of the tool, a simple Cronbach's alpha test was also used, and the alpha coefficient results ranged from 0.755 to 0.922. According to Ejubović and Puška (2019), the questionnaire met all necessary parameters and demonstrated reliability and internal consistency. Since the tool had already undergone reliability testing, tested on college students, checked by subject matter experts, and had a good reliability coefficient, the tool was ready for administration. Furthermore, to ensure the credibility of the tool, data treatment, and interpretation, a professional statistician was also consulted.

Data Gathering Procedure

Before the conduct of the study, a communication signed and approved by the research adviser, the department chairperson of the Social Sciences, and the Dean of

the College of Arts and Sciences was sent to the college deans of the different colleges for permission to conduct the study.

Upon confirmation from the deans of the college, the researcher immediately administered the questionnaire to the participants with the consent letter and all the essential information about the study. An electronic version of the survey questionnaire was sent to the respective official group chats of the participants with the help of the student leaders from respective colleges using google forms as the medium. At the same time, the researcher purposively sent the link of the survey questionnaire to the participants via the Messenger app.

The researcher approached the participants with utmost convenience and respect. After the participants finished answering the survey questionnaire electronically, and met the required number of participants, the researcher then collected and then input the data in Microsoft Excel for analysis and interpretation. The conduct of the research lasted for four weeks.

Statistical Treatment of Data

The collected data was analyzed using the Statistical Package for Social Sciences (SPSS). Particularly, descriptive statistics such as simple frequency counts and percentages were utilized to describe the participants' profile by age, gender, curricular level, program courses, and the online sources they use for studying; while weighted mean was utilized to identify which SRL strategy is the most and least applied for the students of ISU-E in an online environment when grouped according to their profiles; and multiple regression analysis was employed to examine and test the formulated hypotheses of the study.

Ethical Considerations

Informed consent was obtained from the respondents. They were provided with detailed information about the study's goal, procedures, benefits, risks, and their rights, with an emphasis on voluntary participation, and the freedom to withdraw at any point. Also, data anonymization and secure storage all helped to ensure confidentiality and anonymity.

Results and Discussion

This section analyzes and interprets the research findings. The researcher compares and contrasts the findings with those of other studies, and discusses and explains these findings comprehensively.

Table 1. Participants' Online Sources Used for Studying

	Online Sources Used for Studying	Frequency	Percentage
Applications	Google	271	75.9 %
	Classrooms		
	Messenger App	258	72.3 %
	Edmodo	252	70.6%
	Facebook	189	52.9 %
	Group/s		
	ISU-Orange	43	12.0 %
	Discord	18	5.0 %

Gadgets	Mobile Phone/s	349	97.8 %
	Laptop/s	216	60.5 %
	Tablet/s	18	5.0 %
Others		12	3.4 %

Applications like Google Classroom, Messenger app, and Edmodo top the list in terms of the participants' online sources used for studying followed by Facebook groups, ISU-Orange, and Discord respectively. This implies the applications' use and benefits for online learning. It has been determined that the former applications like Google Classroom and Messenger are more user-friendly and easier to use than the latter applications because of their features that cannot be found in other applications (Pappas, 2015).

On the other hand, in terms of gadget usage, the majority of the participants used mobile phones. Mobile phone technologies provide numerous educational benefits, including easy access to content, integration of a wide range of educational activities, support for independent study and student organization, encouragement of student enthusiasm, classroom-based collaboration and interaction, and support for inquiry-based instruction and learning (Roschelle, 2003). Additionally, the enhanced possibilities of mobile phones being utilized as educational aids, owing to greater processing capacity, memory, and connectivity, make these devices significantly more interactive (Pea & Maldonado, 2006), thereby enabling students to access material from the internet easily. Mobile phones may be regarded as more practical compared to other gadgets for studying, and they become an almost essential part of daily life (Ling, 2000)—proving that using more familiar gadgets or applications during online learning is contributory to having better SRL for the students of ISU-E.

Table 2. Mean Scores of SRL Dimensions (Computer Self-efficacy and Social Dimension) According to the Profile of the Respondents

	Computer Self-efficacy		Social Dimension	
	Overall Mean	Descriptive Equivalent	Overall Mean	Descriptive equivalent
Age	3.63	Agree	3.48	Agree
Sex	3.57	Agree	3.64	Agree
Program Courses	3.56	Agree	3.63	Agree
Curricular Level	3.50	Agree	3.59	Agree

Table 3. Mean Scores of SRL Dimensions (Metacognition Strategies, Goal-Setting, and Environmental Structuring) According to the Profile of the Respondents

	Metacognition Strategies		Goal-Setting		Environmental Structuring	
	Overall Mean	Descriptive equivalent	Overall Mean	Overall Mean	Descriptive equivalent	Overall Mean
Age	3.89	Agree	3.43	3.89	Agree	3.43
Sex	3.85	Agree	3.44	3.85	Agree	3.44
Program Courses	3.89	Agree	3.50	3.89	Agree	3.50
Curricular Level	3.84	Agree	3.45	3.84	Agree	3.45

The participants' profiles show similarities based on the most and least used SRL dimensions across age, gender, program courses, and curricular levels. Based on the findings, metacognition strategies are the most commonly used SRL among others. Environmental structuring and goal setting, on the other hand, are the least used SRL strategies. This indicates that participants were aware of their cognitive and learning processes during the online classes, as confirmed by Karlen (2016), who claimed that to efficiently manage oneself to achieve better performance and satisfaction, students must be responsible for employing metacognitive strategies.

Consequently, they were less likely to set goals and less likely to prepare their places before online classes. Though setting goals is necessary to help students learn (Bruhn et al, 2017), participants in the study did not find goal setting as the most beneficial. This could be a direct result of the unprecedented synchronous and asynchronous classes they have encountered for the first time, and they may have set unrealistic goals.

Table 4. Relationship Between SRL Dimensions and Academic Performance

Independent variables: Self-regulated learning	Dependent variable: Academic Performance (AP)	
	t-test	p-value
Computer Self-Efficacy (CSE)	0.0589	0.0126**
Social Dimension (SD)	0.0526	0.0870
Metacognitive Strategies (MCS)	0.0599	0.1517
Goal-Setting (GS)	0.0623	0.0000**
Environment Structuring (EV)	0.0563	0.0527

The results of the conducted multiple regression showed that only computer self-efficacy and goal setting have a significant relationship to academic performance, with goal setting having the greatest relationship. Ejubović and Puška (2019) prove that computer self-efficacy has a positive influence and therefore can predict academic performance. This is also true in the study of Chien in 2022, that for students to perform

better academically in the online environment, they must have better computer self-efficacy. This is because as the students navigate to synchronous and asynchronous platforms or hybrid learning, they require the technological skills in using different types of applications, programs, websites, and other forms necessitates for learning. Thus, for the students to be more confident and to achieve better results, training on how to use online learning tools and platforms is essential since mastering the skills on computer-generated tools will better facilitate good learning outcomes.

On the other hand, one study shows that goal-setting strategy has proved to have a negative influence on academic performance (Eubovic & Puska, 2019). This does not conform to the results of the conducted study; however, goal setting plays a significant role in the academic performance of the students at Isabela State University-Echague. In other words, setting goals can greatly help students meet their academic expectations.

In terms of the relationship of self-regulated learning to academic performance, only computer self-efficacy and goal setting have a significant relationship. As a result, the first hypothesis is rejected. Consequently, the remaining dimensions of environmental structuring, metacognitive strategies, and social dimension showed no significant relationship to academic performance. Therefore, the first hypothesis on these specific dimensions of self-regulated learning is accepted.

Table 5. Relationship Between SRL Dimensions and Academic Satisfaction

Independent Variables: Self-Regulated Learning	Dependent variable: Academic Satisfaction (AS)	
	<i>t-test</i>	<i>p-value</i>
Computer Self-Efficacy (CSE)	0.5485	0.5837
Social Dimension (SD)	5.1839	0.0000**
Metacognitive Strategies (MCS)	-1.3992	0.1626
Goal-Setting (GS)	1.6255	0.1049
Environment Structuring (EV)	3.4313	0.0007***

Relating SRL dimensions to academic satisfaction, regression analysis revealed that only environmental structuring and social dimension have a significant relationship with academic satisfaction, with social dimension having the greatest influence. This was proven by the study conducted by Eubovic and Puska (2019), which showed similar results, indicating that the social dimension and environmental structuring yielded a significant relationship. For that reason, students may conduct their synchronous or asynchronous classes in an environment that promotes good learning outcomes. Thus, maintaining good and optimal spaces before online classes is critical. Given that most students stay at home during synchronous or asynchronous classes or hybrid setups and encounter a variety of extraneous variables while learning, they may ensure that they can study comfortably and structure their spaces in the way that they believe will benefit them.

As information technology advances and social media become more prevalent in our daily lives, as well as the emergence of online classes, which worsens our situation and limits our options, it is critical to evaluate how students interact with their peers, teachers, friends, and others. As a result, improving social interest, interaction, and communication in students' interpersonal relationships is also important for facilitating

academic satisfaction. By rendering help and asking for help, students can achieve academic satisfaction.

In terms of the relationship of self-regulated learning to academic satisfaction, the findings showed that only social dimension and environmental structuring have a significant relationship. As a result, the second hypothesis is rejected. Consequently, the remaining dimensions of computer self-efficacy, metacognition strategies, and goal setting showed no significant relationship to academic performance. Therefore, the second hypothesis on these specific dimensions of self-regulated learning is accepted.

Conclusion and Future Works

This study examined how SRL influenced the sample of ISU-E students' academic performance and level of satisfaction. One of the main determinants of student's continued use of online learning is their academic achievement and level of satisfaction. If online learning makes learning easier and faster, students will capitalize on it. Students will continue to use internet resources if that is enabled. Therefore, it is crucial to examine the degree to which each element affects students' academic performance and level of satisfaction in this study. Finding out how students respond to online learning environments when they are exposed to this type of learning for the first time is crucial because they are only exposed to traditional types of learning in elementary and secondary school.

In the investigation of students' online sources for studying, mobile phones can be an excellent and unique learning tool if they are used properly. Students use mobile phones considerably more frequently than desktop PCs or laptops. This means that mobile devices could become an even more important learning tool. With this, curriculum designers and policymakers would be aware of the different applications of mobile phone technologies in education, which would aid in the implementation and design of activities to accommodate various learning styles, thereby improving the SRL of the students in HEIs. Additionally, the study results show that computer self-efficacy was found to be significant in the academic performance of the students—this further strengthened that using technology appropriately in online learning environments like mobile phones can increase academic performance.

On the relationship of SRL to academic performance and satisfaction, it was concluded that the participants were aware of their cognitive and learning processes during the online classes and they knew they were less likely to set goals and prepare their surroundings before online classes. This implies that students are self-conscious of their abilities and what things they need to improve on; however, this leads to setting unrealistic goals and promoting dissatisfaction. Since SRL is considered a function of the will and how self-agency affects learning, students who recognize that their capabilities and skills are insufficient to meet the required standards in online learning may consciously set unrealistic goals, compromising their performance. These implications further elucidate a more complex problem: the need for a more adaptive teaching approach or strategies that are tailored to improving students' ability to prepare and organize their spaces before synchronous, asynchronous, or hybrid classes, as well as monitoring their capacity to set goals during online learning. These factors contribute to why students are unable to meet their academic expectations.

Another, it is advantageous for the students to engage and seek help from their peers and classmates, and prepare or restructure their places before classes to avoid distractions and improve their academic performance. Students are also encouraged to

improve or strengthen their computer skills not only for the online learning environment but as a basic skill to improve academic satisfaction. Ideally, HEIs may conduct additional research on students' academic performance and satisfaction to improve the delivery of quality education and the use of a Learning Management System (LMS) or Virtual Learning Environment (VLE) in facilitating learning outcomes. Due to the constant demands of time, including the challenges and the rapid emergence of science and technology, as well as the shift to hybrid learning, SRL should also be an ongoing study of the various factors influencing learning. Learning systems may be tailored to meet societal and environmental demands as well.

This study surely has its limitations. Not all program courses in ISU-E were included in the study, that is, only those program courses eligible for licensure examination were chosen. Secondly, it is necessary to include more factors and questions in the analysis. Third, it is necessary to have a greater number of participants in the attempt to represent HEIs in the province. Lastly, the results of the study could not be compared yet for the reason that there are limited studies of self-regulation in an online learning environment in the area. Based on these limitations, the proportional allocation would be a better sampling method for selecting the participants to represent a better sample of the population. Apart from that, it is necessary to incorporate other and more dimensions of self-regulated learning in the study.

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Conflict of Interest

The author declares that there are no conflicts of interest regarding the publication of this paper.