ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 8| August2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

INFLUENCE OF SELF-REGULATED LEARNING ON THE ACADEMIC PERFORMANCE IN MATHEMATICS

Jhan Marie B. Balones, LPT[1], Rena Joyce R. Basañez, LPT[2], Louie S. Decorina[3]
Kenneth Jay M. Rafanan, LPT[4], Shane Aliekhem A. Napitan, LPT[5],
Daphne M. Legaspino, LPT, Ph.D.[6]

[1]St. Mary's College of Tagum, Inc., National Highway, Tagum City, 8100, Philippines
[2]St. Mary's College of Tagum, Inc., National Highway, Tagum City, 8100, Philippines
[3]St. Mary's College of Tagum, Inc., National Highway, Tagum City, 8100, Philippines
[4]St. Mary's College of Tagum, Inc., National Highway, Tagum City, 8100, Philippines
[5]St. Mary's College of Tagum, Inc., National Highway, Tagum City, 8100, Philippines
[6]St. Mary's College of Tagum, Inc., National Highway, Tagum City, 8100, Philippines

Article DOI: https://doi.org/10.36713/epra18051
DOI No: 10.36713/epra18051

ABSTRACT

This study employed a non-experimental quantitative research design using a descriptive-correlational approach to examine the influence of self-regulated learning on students' academic performance in Mathematics. A sample of 69 Grade 10 students from St. Mary's College of Tagum, Inc. in Davao del Norte was selected through stratified sampling during the 2021–2022 school year. Two sets of survey questionnaires were administered: an adapted survey to assess self-regulated learning and a validated researcher-made test to measure academic performance in Mathematics. Statistical tools such as Mean, Pearson-r, and Multiple Linear Regression were used to analyze the data. The findings indicate that students' self-regulated learning is evident in most instances, while their academic performance in Mathematics, as reflected in summative assessment scores, was generally satisfactory but did not consistently meet expectations. The study revealed no significant relationship between self-regulated learning and academic performance in Mathematics, and no specific domains of self-regulated learning were found to significantly influence students' performance in the subject.

Based on these results, it is recommended that further research explore additional variables related to self-regulated learning and academic performance in Mathematics to identify critical factors affecting student outcomes. The findings are valuable for students, mathematics teachers, school administrators, and future researchers as they work to enhance the educational system, evaluate online learning implementation, and develop strategies to improve students' academic performance.

KEYWORDS: *Education, mathematics, self-regulated learning, academic performance, descriptive-correlational approach, Tagum City, Davao del Norte, Philippines*

INTRODUCTION

Educators and researchers focus on the implications of COVID-19-related school closures on students' academic progress and learning inequities (Haug et al., 2020). Also, Woessmann (2020) estimated a 0.10 SD negative effect on student academic performance in Mathematics due to COVID-19-related school closures. Further, Breslow et al. (2013) stated that learning online involves unique problems and learners may require some type of supplemental help to be successful, particularly in learning Mathematics. In this situation, some students struggle to modify their academic performance in Mathematics in a way that promotes self-regulated learning.

In University of Hong Kong, issues were found out regarding student's adjustment in learning Mathematics through online setting. Students from the Department of Mathematics and Information Technology experienced and encountered a range of difficulties in applying diverse strategies in self-regulated learning through online setting (Kohnke, 2020). Further, Di Zou (2021) estimated 31% of students struggled in self-regulated learning particularly in learning Mathematics as they prefer to select appropriate time for online learning which is more demanding, requiring a significant amount of time and effort for students to feel confident in their mathematical performance. In Germany, students who have difficulty self-regulating in any math-related topic, particularly those who lack adequate self-regulatory skills, are more likely to have trouble performing in Mathematics (Nemati, 2020). In addition, Turkey was ranked 44th out of 65 countries, which demonstrates that the Turkish educational system seems to concentrate on a select group of children who succeed in math while most students struggle with self- regulated learning (Aydin et al., 2012).

Meanwhile, in the Philippines, the findings of the study of Prudente (2020) show that the Universities of the Philippines

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 8| August2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

found that the online environment allows for the delivery of mathematical programs in which students learn independently while communicating with their professors. It shows that the unprepared junior high learner might be daunting in the learning process and leads to difficulties in their academic performance in Mathematics. Moreover, Llagoso (2017) estimated 14 or 93% of the Grade 10 students in Cebu Normal University were interpreted as "low self-regulation" where the student's indifferent Mathematics lessons in Grade 10 demonstrate inadequate learning practices. These results demonstrate the students' lack of self-regulatory skills, which rendered them less competitive in Mathematics.

To minimize this concern, the researchers felt the need to conduct this study to help students maximize their learning in Mathematics on their own. Also, this study serves as a guide for the students, teachers, administrators, and even the future researchers to come up with a better solution in finding a better way to help the students to improve their performance in Mathematics.

OBJECTIVES

1. To ascertain the extent of self-regulated learning of Grade 10 students in terms of goal setting, environmental structuring, task strategies, time management, help-seeking; and self-evaluation.
2. To determine the level of academic performance of the students in Mathematics.
3. To determine the significant relationship between self-regulated learning and academic performance in Mathematics.
4. To determine which domains of self-regulated learning significantly influences the students' academic performance in Mathematics.

METHODOLOGY

This study is non-experimental quantitative research that adopts a descriptive- correlational design. Quantitative research design was used in this study to characterize and describe problems both descriptively and numerically, as it utilized mathematical and statistical methods as recommended by Creswell (2014). Moreover, descriptive-correlational studies describe the variables as well as the natural relationships that exist between and among them (Aprecia, 2021). This is a design that describes what exists, determines how frequently it occurs, and categorizes the information.

The descriptive-correlational research design was utilized in this study to assess students' self-regulated learning and academic performance in Mathematics. It was also used in this study considering that it involves testing whether students' self-regulated learning has a relationship to academic performance. Additionally, this study used questionnaires that served as a tool or instrument for finding answers to the various questions. The researchers adapted the research instrument, which is the Online Self-Regulated Learning Questionnaire (OSLQ), proposed by Barnard et al. (2009), but there were some items in the questionnaire that were modified to fit the context of the study. The questionnaires consist of several questions and were distributed to students who can answer those questions.

The respondents of this study were the Grade 10 students from a private school in Tagum City, Davao del Norte for S.Y. 2020–2021. Among the three (3) sections of Grade 10, two (2) sections were selected as respondents of this study, which had 69 participating students. The remaining one (1) section, which had 37 students, participated during the pilot testing. The respondents for this study voluntarily participated. This study employed stratified sampling in determining the respondents of the study

RESULTS

The extent of *self-regulated learning* of students was extensive. Among the six indicators, *environmental structuring* was highly extensive, while the other five indicators *goal setting, help-seeking, time management and self-evaluation* described as extensive which means that the extent of self-regulated learning is manifested on most occasions.

The findings imply that students with self-regulation are more likely to use their talents and become self-efficacious, that they study at their own pace, that they may raise their effort in a learning scenario, and that they perform better in their academic and co- curricular activities.

The result is consistent with the conclusion of Puska (2019) that the result of its multiple regression analysis reveals that SRL influences satisfaction and academic success. This is supported by the research undertaken by Barnard- Knowledge Management, E-Learning Liebowitz and Frank (2016), which found that, in contrast to this study, SRL has less effect on academic achievement. Self-regulated learning is essential these days for children in elementary school up to the college level. Further, according to Fauzi & Wadjajanti (2018), to facilitate learning and boost student motivation, self-regulated learning combines academic knowledge with self-control abilities. It influences student failure to achieve learning achievement and the students who are dissatisfied with their education require additional self-directed learning. There is a need to develop projects promoting self-regulation for students, particularly freshmen (Ganda & Boruchovitch ,2018).

Meanwhile, the level of *academic performance* of students in Mathematics in terms of scores in a summative assessment was fairly satisfactory. This means that the academic performance of students in Mathematics rarely meets expectations. This finding is supported by Reiger (2011) who stated that academic performance is significant since it is strongly linked to a student's positive outcomes. The finding is also parallel with the statement of Widlund (2018) that it has been established that not only does academic performance influence students' educational experiences, aspirations, and trajectories, but that academic well-being also influences numerous educational outcomes.

Moreover, the findings of the study showed no significant relationship between *self-regulated learning* and *students' academic performance* is. This implies that self-regulated learning is not an assurance for the students to have higher academic performance in Mathematics. The result is in

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 8| August2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

consonance with Murphy and Alexander (2000) stated that Self-Regulated Learning (SRL) is one of the students' skills that can assist them enhance their Mathematics learning accomplishments. Moreover, this finding is in congruence with the study of Cetin (2015) that there was no correlation sufficiently to GPA/ academic performance and self-regulated learning. In other words, self-regulated learning did not predict students' academic performance. It is possible to conclude that self-regulated learning is not the only factor influencing academic performance.

Since the results show that self-regulated learning has no significant role that can help the students to improve their academic performance in Mathematics. Thus, self-regulated learning does not significantly influence to the students' academic performance in mathematics. In the study of Pekrun et al. (2017), the students' gender, intellect, and family socioeconomic level, positive emotions significantly predicted future success such as math end-of-year grades and test scores.

SUGGESTIONS

After a profound consideration on the possible implications of the findings and conclusion of this study, the researcher recommends in improving the student's academic performance in Mathematics from fairly satisfactory to satisfactory by modifying existing learning strategies to enhance and strengthen their math skills. They may explore more and create new styles in learning for them to improve their academic performance. They are encouraged to choose an environment that will help improve their academic performance and set goals for them to motivate that will also help their academic performance. Moreover, Mathematics teachers are encouraged to pay attention on their students' academic performance progress in Mathematics so that they can design and construct activities and tests that will meet their requirements and help them improve their math grades. They may cater students' queries and observe if they require assistance when answering assessments on their own to improve students' math performance. Furthermore, the school administrators may assess and give support on helping the students self- regulated learning in an online environment. They may evaluate the impact of its implementation, particularly on the learner's progress, to produce local activities and interventions for the learner's improvement and benefit. They may require and encourage educators to participate in and attend seminars, trainings, and practices that assist students' self-regulation in order to improve academic achievement.

CONCLUSIONS

Based on the findings of this study, the following conclusions are drawn. Students' self-regulated learning is manifested on most occasions. The academic performance of students in Mathematics rarely meets the expectations. There is no significant relationship between self-regulated learning and academic performance of students in Mathematics. There is no domain of self-regulated learning that significantly influences the academic performance of students in Mathematics.

TABLES AND REFERENCES

Table 1. Extent of Students Self-Regulated Learning

Indicators	SD	Mean	Descriptive Equivalent
Goal Setting	1.05	5.14	Extensive
Environmental Structuring	1.23	5.65	Highly Extensive
Task Strategies	1.22	5.03	Extensive
Time Management	1.16	5.04	Extensive
Help-Seeking	1.39	4.65	Extensive
Self-Evaluation	1.38	5.02	Extensive
Overall	**1.05**	**5.09**	**Extensive**

Table 2. Level of students' academic performance in Mathematics

Variable	Mean	SD	Rating (%)	Descriptive Equivalent
Academic Performance in Mathematics	27.22	10.48	78.15	Fairly Satisfactory

Table 3. Significant Relationship between Self-Regulated Learning and Students' Academic Performance

Variable	r	r^2	p-value	Decision Ho	Decision on Relationship
Self-Regulated Learning and Academic Performance	-0.007	0.000049	0.958	Not Rejected	Not Significant

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 10| Issue: 8| August2024|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2024: 8.402 || ISI Value: 1.188

REFERENCES

1. *Aprecia, N.A. (2021). "A Descriptive Correlational Study on the Physical Environment and Perceived Academic Performance of STEM Online Learners". https://animorepository.dlsu.edu.ph/cgi/viewcontent.cgi?article=1178&context=conf_shsrescon*
2. *Aydin, A., Sarıer, Y., & Uysal, S. (2012). "Sosyoekonomik ve sosyokültürel değişkenler açısından PISA matematik sonuçlarının karşılaştırılması [The comparative assessment of the results of PISA mathematical literacy in terms of socioeconomic and socio-cultural variables]". Education and Science, 37, 20–30.*
3. *Barnard, L., Lan, W. Y., To, Y. M., Paton, V. O., & Lai, S.-L. (2009). Measuring self- regulation in online and blended learning environments. The Internet and Higher Education, 12(1), 1– 6. http://dx.doi.org/10.1016/j.iheduc.2008.10.005*
4. *Breslow et al. (2013) & Jordan (2014). "Supporting self-regulated learning in online learning environments and MOOCS: A systematic review" https://www.tandfonline.com/doi/full/10.1080/10447318.2018.1543084*
5. *Cetin, B. (2015). "Academic motivation and self-regulated learning in predicting academic achievement in college" https://clutejournals.com/index.php/JIER/article/view/9190*
6. *Creswell, J. W. (2012). Designing and conducting mixed methods research (2nd ed.). Thousand Oaks, CA: Sage*
7. *Di Zou. (2021). Self-regulatory learning in emergency remote learning. https://www.mdpi.com/2071-1050/13/13/7111/htm*
8. *Fauzi, A., & Widjajanti, D. B. (2018). "Self-regulated learning: The effect on student's mathematics achievement. In Journal of Physics: Conference Series" (Vol. 1097, No. 1, p. 012139). IOP Publishing from https://iopscience.iop.org/article/10.1088/1742-6596/1097/1/012139/pdf*
9. *Ganda, D. R., & Boruchovitch, E. (2018, February)." Promoting self-regulated learning of Brazilian Preservice student Teachers: results of an intervention Program. In Frontiers in Education" (Vol. 3, p. 5). Frontiers from https://www.frontiersin.org/articles/10.3389/feduc.2018.00005/full*
10. *Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, et. al. (2020)."Ranking theeffectiveness of worldwide COVID-19government interventions" Nature Human Behaviour, 4, 1303– 1312. https://doi.org/10.1038/s41562-020-01009-0*
11. *Kohnke, L. (2020). "Encourage participation and interaction in the language classroom." RELCJ.*
12. *Liebowitz, J., & Frank, M. (Eds.). (2016). "Knowledge management and e-learning. https://www.routledge.com/Knowledge-Management-and-ELearning/Liebowitz-Frank/p/book/9781439837252*
13. *Llagoso. (2017). Self-regulated learning strategies in mathematics. https://www.academia.edu/41053963/*
14. *Murphy P. K. & Alexander P. A. (2000). Contemporary Educational Psychology 25 1 3– 53*
15. *Nemati, A. (2020). "Self-regulation and mathematics performance in German and Iranian students of more and less math-related fields of study." https://www.frontiersin.org/articles/10.3389/fpsyg.2020.489371/full*
16. *Pekrun, R., Lichtenfeld, S., Marsh, H. W., Murayama, K., & Goetz, T. (2017). Achievement emotions and academic performance: Longitudinal models of reciprocal effects. Child Development, 88(5), 1653-1670*
17. *Prudente, B. (2020). Development and validation of questionnaire on self-regulated learning strategies in online learning environment. https://tinyurl.com/2anmpc58*
18. *Puska, A. (2019). "Impact of self-regulated learning on academic performance and satisfaction of students in the online environment". https://files.eric.ed.gov/fulltext/EJ1245731.pdf*
19. *Reiger. (2011). "Why is academia important?". https://saskschoolboards.ca/wp content/uploads/2015/08/2011SIAST.pdf*
20. *Widlund, D. (2018). Academic well-being mathematics performance educational aspirations in secondary education. https://www.frontiersin.org/articles/10.3389/fpsyg.2018.00297/full*
21. *Woessmann, L. (2020). Follow-up costs of an absence of learning: What research can teach us about corona-related school closures]. Ifo Schnelldienst, 73(06), 38–44. http://hdl.handle.net/10419/225139*