

Research Article

MODELLING ACADEMIC ENGAGEMENT AND ACHIEVEMENT OF STUDENTS AT CBSUA-PASACAO

* Marben Alvarado Orogo

Associate Professor I, College of Education, Central Bicol State University of Agriculture, Sta. Rosa Del Norte, Pasacao, Camarines Sur, Bicol Region, Philippines.

Received 01th March 2025; Accepted 02nd April 2025; Published online 20th May 2025

ABSTRACT

This undertaking analyzed the Level of Academic Engagement and Achievement of Bachelor of Secondary Education major in Mathematics (BSEd-Math) students at Central Bicol State University of Agriculture-Pasacao Campus AY 2021-2022. Specifically, it answers the following questions: 1. What is the profile of the respondents along gender? 2. What is the Level of Academic Engagement of the respondents along; a). Program Outcomeb). General Educationc). Course Challenged). Flexible Learning and, e). Internationalization? 3. What is the Level of Academic Achievement of the respondents? 4. Is there a significant relationship between the Level of Academic Engagement and Achievement of the respondents? 5. What mathematical expression can be crafted to represent the relationship between the Level of Academic Engagement and Achievement of the respondents? This study utilized quantitative method. Responses of the students was converted to numerical figures to facilitate computation. Descriptive-Correlational design was used in this study. Majority of the respondents are female. The respondents have high level of academic engagement in terms of program outcomes, general education, course challenge, flexible learning, and internationalization. Students have very satisfactory academic achievement. There is no significant relationship between the level of academic engagement and academic achievement of the respondents. A mathematical model can be crafted to represent the relationship between the level of academic engagement and achievement of the respondents.

Keywords: Modelling, Academic Engagement, Academic Achievement.

INTRODUCTION

The influence of modern technologies can be found almost on all scopes of human life comprising both teaching and learning. The value of technologies cannot be denied especially in enduring business processes and accomplishing occupation responsibilities. This technology value was articulated with the advent of the pandemic. To be able to hold out the modifications carried by the COVID-19 pandemic in 2020, organization had to go out with standard procedures and embrace new ones. Letting workforces to work distantly from home became the new normal on an extraordinary scale. Several pandemic-imposed conditions, such as social distancing and an unmoving economy needed to be addressed by the government and by the higher education sector as well. The teachers and students were required to reconsider the use of available technological assets to equally deliver quality education services and to gain profit from those services. However, the question as to whether this new setup can be effective or not needs to be examined. Adapting a new approach in teaching was not an easy task. It was coupled with several challenges that need to be settled. Despite these challenges, educational institutions in tertiary level have an inherent function to maintain and deliver high quality education. The outbreak of the pandemic and the issues on technology must not hinder the delivery of quality instruction.

OBJECTIVES OF THE STUDY

This undertaking analyzed the Level of Academic Engagement and Achievement of Bachelor of Secondary Education major in

Mathematics (BSEd-Math) students at Central Bicol State University of Agriculture-Pasacao Campus AY 2021-2022. Specifically, it was guided by the following objectives:

1. Determine the profile of the respondents along gender.
2. Determine the Level of Academic Engagement of the respondents along;
 - a). Program Outcome
 - b). General Education
 - c). Course Challenge
 - d). Flexible Learning and,
 - e). Internationalization
3. Identify is the Level of Academic Achievement of the respondents.
4. Verify if there a significant relationship between the Level of Academic Engagement and Achievement of the respondents.
5. Create a mathematical model that represents the relationship between the level of academic engagement and achievement of the respondents.

REVIEW OF RELATED LITERATURE

This section presented some of the related literature and studies relative to academic engagement and academic achievement of the respondents arranged thematically.

LEVEL OF ACADEMIC ENGAGEMENT

This part presents literature about Level of Academic Engagement of the respondents structured in themes as patterned in the research problem to be examined.

*Corresponding Author: Marben Alvarado Orogo,

Associate Professor I, College of Education, Central Bicol State University of Agriculture, Sta. Rosa Del Norte, Pasacao, Camarines Sur, Bicol Region, Philippines.

Markus P. *et al.*, (2021) conducted a systematic review of related literature on Academic Engagement. Their investigation resulted to antecedent and consequent of Academic Engagement. Antecedent

includes individual characteristics, organizational and relational context. The consequent is research productivity. On the other hand, Santally, M.I *et al.*, (2021) study of the relationships between student satisfaction and their engagement in an online course with their overall performances. Findings revealed that there is a significant relationship between satisfaction and engagement of the student. Additionally, there is no significant difference in the level of engagement of the students.

Meanwhile, Mahdiun, R, *et al.*, (2020) investigated the "Effect of social media on academic engagement and performance: Perspective of graduate students". The result shown that there was a positive and significant relationship between educational use of Telegram and student engagement. Additionally, student engagement in the process of education and learning has been significantly related to their academic performance.

On the other hand, Lekwa, A. J, *et al.*, (2019) conducted a study on "Measuring Teacher Practices and Student's Academic Engagement: A Convergent Validity Study". Results indicated that there is a significant relationship between teacher practices and student engagement.

Additionally, Gesualdi D.J (2019) indicated on his dissertation about "A Phenomenological Study of Student Engagement in an Urban K-8 School" that student engagement is an indicator of student achievement. Student perceived to be engaged in the class in different way as teachers do.

Meanwhile, Ghasemi, M. R, *et al.*, (2018) conducted a study entitled "Student-related factors affecting academic engagement: A qualitative study exploring the experiences of Iranian undergraduate nursing students". The result indicated that student-related factors such as individual motivation and interest, mental concentration, participation in extracurricular activities, and self-directedness in learning, as well as students' sense of satisfaction with learning could play important roles in the creation of academic engagement in undergraduate nursing students that need to be of interest to nursing educators and planners.

On the other side of the coin, Bolliger, D.U. *et al.*, (2018) examined student perception on various student engagement strategies used in online course based on Moore's interaction framework. The result revealed that student engagement improves student performance in online courses. The findings also indicated effect of gender on students' perception on engagement strategies.

On the other hand, Alrashidi, O, *et al.*, (2016) examined the Definition, Dimensions and Reconceptualization of Academic Engagement. Their study pointed out two major approaches to student's engagement, the first one comprises three components including cognitive, behavioural and emotional and, the other one with three components namely vigor, dedication and absorption.

LEVEL OF ACADEMIC ACHIEVEMENT

This part presented literature about Level of Academic Achievement structured in themes as patterned in the research problem to be examined, and chronologically arranged.

Madigan, D.J. and Curran, T. (2021) conducted a meta-analysis on burnout attitude of students and its effect on academic achievement. They concluded that burnout is related to academic achievement.

Additionally, Madigan D.J and Kim L. E (2021) investigated the effect of teacher's burnout on student's academic achievement. They had concluded that teacher burnout has the potential to inhibit students' achievement and motivation

In addition, Takase M. and Yoshida I (2021) investigated the types of learning approaches used by undergraduate nursing students and their academic achievement. They found out that deep learning and academic achievement was positively related.

On the other hand, Wu Z *et al.*, (2021) conducted a meta-analysis about the effect of values affirmation on academic achievement. They found that values affirmation improved the academic achievement of students.

On the other side of the coin, Cartiff B. M, *et al.*, (2021) conducted a meta-analysis on the effect of epistemic cognition interventions on academic achievement. They found out that epistemic cognition interventions had a statistically significant effect on academic achievement.

Meanwhile, Polat H and Karabatak S (2021) investigated the effect of flipped classroom on academic achievement, satisfaction and general belongingness. They concluded that academic achievement, academic satisfaction, and general belongingness levels significantly increased in the flipped classroom.

On the other hand, Kim, S.H and Shin S. (2021) conducted a canonical correlation analysis about Social-Emotional Competence and Academic Achievement of Nursing Students. They found out a significant relationship between the core skill of Social-Emotional Competence and Academic Achievement of students.

On the contrary, Anne-Roos V. *et al.*, (2021) investigated the Personality and Academic Achievement in Higher Education. They found out that the predictive value of both personality traits for achievement did not differ by academic field.

LEVEL OF ACADEMIC ENGAGEMENT AND ACHIEVEMENT

This part presented literature about the relationship of Level of Academic Engagement and Achievement of the respondents arranged in chronological order.

Abid N. and Akhtar M (2020) study the "Relationship Between Academic Engagement and Achievement: An Empirical Evidence of Secondary School Students". The result of the study indicated that the students' academic engagement have indirect relationship on academic achievement.

Similarly, Mahdiun, R, *et al.*, (2020) investigated the "Effect of social media on academic engagement and performance: Perspective of graduate students". The result shown that there was a positive and significant relationship between educational use of Telegram and student engagement. Additionally, student engagement in the process of education and learning has been significantly related to their academic performance.

In addition, Rajabalee, B. Y, *et al.*, (2020) investigated the relationship between student's engagement and academic performance in an eLearning environment. The result indicated that students have high level of engagement. The findings also show a strong positive correlation between engagement and relative performance.

On the same vein, Delfino, D. A, (2019) investigated the correlation between student engagement and academic performance of the students. Study revealed that students have high level of engagement along behavioral, emotional and cognitive engagement. It was also found out that students have very good academic performance. Furthermore, it was revealed on the study that behavioural, emotional

and cognitive engagements were positively correlated to the academic performance of the students.

Additionally, Song H.D *et al.*, (2019) analysed university students' perceptions of e-learning, based on their experiences, and the mediating roles of academic engagement and digital readiness within the university context of an e-learning environment for academic achievement. The result showed that academic engagement of the students was significantly related with their academic achievement.

On the other hand, Abubakr, Al-Munnir. (2018) examined "Student Engagement In Relationship to Academic Performance". Findings revealed that students showed less achievement and engagement as they grow older. Also, the result indicated that there is a difference in feelings between boys and girls in terms of thinking and behaving in school activities.

Meanwhile, Vizoso C. *et al.*, (2018) conducted a study to evaluate the relationships between coping, academic engagement dimensions and academic performance of students. Results showed that adaptive coping, academic engagement dimensions and academic performance were positively related.

In addition, Gremmen, M., *et al.*, (2018) conducted the study on "The importance of near-seated peers for elementary students' academic engagement and achievement". Their investigation showed that student's academic engagement and achievement was high when they are with their friends.

METHODOLOGY

This study utilized quantitative method. Responses of the students was converted to numerical figures to facilitate computation. Descriptive-Correlational design was used in this study. Descriptive components deal with the profile of the respondents. Correlation aspect entails determining the extent of correlation of the Level of Academic Engagement and Achievement.

Respondents of the Study

The respondents of this study were all BSEd-Mathematics students of CBSUA-Pasacao Campus during the Academic Year 2021-2022. Sample size was calculated using G*Power 3.1.9.7. At 95% test power and 5% level of significance, the sample size was at least 70. In the entire duration of the study, 73 students had participated. Stratified random sampling method was applied in the study. The existing strata was determined by the year level of the respondents.

Research Instrument

This study utilized a validated instruments to facilitate the gathering of data. Profile of the respondents along gender, the Level of Academic Engagement and the Level of Academic Achievement was gathered using the validated questionnaire developed by Dr. Paterno Baguinat of Jose Rizal memorial State University. And, lastly the Academic Achievement of the students was determined through the final grade submitted by the instructor/teacher.

Method Of Data Analysis

The gathered data for profile along Gender, Level of Academic Engagement and Academic Achievement were statistically treated using mean. The gathered data on significant relationship between the Level of Academic Engagement and Achievement were

determined using Pearson Product Moment Correlation Coefficient with t-test for testing the significance of the correlation.

RESULTS AND DISCUSSIONS

PROFILE OF THE RESPONDENTS ALONG GENDER

These undertakings examined the demographic profile of the respondents along gender.

In the profile of the respondents along gender, around 58% of the respondents are female and only 42% are male.

LEVEL OF ACADEMIC ENGAGEMENT OF THE RESPONDENTS

The findings revealed that the combined mean for Program Outcomes was 4.11 with verbal interpretation of High. The result revealed that the combined mean for General Education was 4.15 with verbal interpretation of High. The outcome shown that the combined mean for Course Challenge was 4.22 with verbal interpretation of Very High. The results shown that the combined mean for Flexible Learning was 4.05 with verbal interpretation of High. The results shown that the combined mean for Internationalization was 2.75 with verbal interpretation of Moderate.

LEVEL OF ACADEMIC ACHIEVEMENT OF THE RESPONDENTS

Results indicated that the combined mean for the academic achievement of the respondents was 91.58 with verbal interpretation of Very Satisfactory.

SIGNIFICANT RELATIONSHIP BETWEEN ACADEMIC ENGAGEMENT AND ACHIEVEMENT OF THE RESPONDENTS

The data revealed that level of academic engagement in general got a correlation value of 0.197 interpreted as Negligible Relationship, along Program Outcome got a correlation value of 0.196 interpreted as Negligible Relationship, 0.210 as correlation value for General Education interpreted as Moderate Relationship, 0.237 as correlation value for Course Challenge interpreted as Moderate Relationship, 0.269 as correlation value for Flexible Learning interpreted as Moderate/Relationship, and 0.002 as correlation value for Internationalization interpreted as Negligible Relationship.

CONCLUSIONS AND RECOMMENDATIONS

Based from the results and discussions, the following conclusions and recommendations were drawn.

Conclusions

Majority of the respondents are female. The respondents have high level of academic engagement in terms of program outcomes, general education, course challenge, flexible learning, and internationalization. Students have very satisfactory academic achievement. There is no significant relationship between the level of academic engagement and academic achievement of the respondents. A model representing the relationship between the level of academic engagement and achievement can be crafted.

Recommendations

Encouraging more male enrollees in BSEd-Mathematics program was highly advised to lessen the dominance of female students. Maximizing potentials of young students for the benefits of the

University and the students could be undertaken. The respondents have high level of academic engagement in terms of program outcomes, general education, course challenge, flexible learning, and internationalization. Encouraging students to be engaged in internationalization was highly advised. Programs and activities that were related to home- or campus-based internationalization, and cross-border internationalization were highly advised. A selection mechanism for students that will be sent internationally as exchange students might be created to properly gauge the representative for the university. Encouraging faculty members to continuously enhance their teaching pedagogy was highly advised to sustain the good academic achievement of the students. Policy in the blended learning might be re-evaluated to include necessary inputs relevant to the new normal context. Students were highly advised to continuously practice good study habits to sustain the satisfactory academic achievement. Attendance to seminars on proper time management and study tips could be attended by the students as well as the teachers. Further study related to academic engagement of the students might be undertaken. Replicating the present study to different respondents and context could be conducted to further validate the results of the study.

LITERATURE CITED

- Abid, N., & Akhtar, M. (2020). Relationship between academic engagement and academic achievement: an empirical evidence of secondary school students. *Journal of Educational Research*, 23(1), 48. Retrieved from: https://www.researchgate.net/profile/Nisar-Abid/publication/342946758_Relationship_between_Academic_Engagement_and_Academic_Achievement_An_Empirical_Evidence_of_Secondary_School_Students/links/5f0ed88645851512999b1745/Relationship-between-Academic-Engagement-and-Academic-Achievement-An-Empirical-Evidence-of-Secondary-School-Students.pdf
- Abubakr, Al-Munnir. (2018). STUDENTS' ENGAGEMENT IN RELATIONSHIP TO ACADEMIC PERFORMANCE. https://www.researchgate.net/publication/323150462_STUDENTS%27_ENGAGEMENT_IN_RELATIONSHIP_TO_ACADEMIC_PERFORMANCE
- Alrashidi, Oqab; Phan, Huy P.; Ngu, Bing H (2016). Academic Engagement: An Overview of Its Definitions, Dimensions, and Major Conceptualisations. *International Education Studies*, v9 n12 p41-52 2016 retrieved from: <https://eric.ed.gov/?id=EJ1121524>
- Cartiff, B. M., Duke, R. F., & Greene, J. A. (2021). The effect of epistemic cognition interventions on academic achievement: A meta-analysis. *Journal of Educational Psychology*, 113(3), 477–498. <https://doi.org/10.1037/edu0000490>
- Daniel J. Madigan, Lisa E. Kim, Does teacher burnout affect students? A systematic review of its association with academic achievement and student-reported outcomes, *International Journal of Educational Research*, Volume 105, 2021, 101714, ISSN 0883-0355, <https://doi.org/10.1016/j.ijer.2020.101714>.
- Delfino, D. A. (2019, May 10). About Us: eric.gov. Retrieved January 13, 2022, from [eric.ed.gov website: https://files.eric.ed.gov/fulltext/EJ1222588.pdf](https://files.eric.ed.gov/fulltext/EJ1222588.pdf)
- Gesualdi, David Joseph, "A Phenomenological Study of Student Engagement in an Urban K-8 School" (2019). Dissertations, Theses, and Masters Projects. William & Mary. Paper 1563898811. <http://dx.doi.org/10.25774/w4-nde2-x936>
- Ghasemi, M. R., Moonaghi, H. K., & Heydari, A. (2018). Student-related factors affecting academic engagement: A qualitative study exploring the experiences of Iranian undergraduate nursing students. *Electronic physician*, 10(7), 7078–7085. <https://doi.org/10.19082/7078>
- Kim, H.J., Hong, A.J. & Song, HD. The roles of academic engagement and digital readiness in students' achievements in university e-learning environments. *Int J Educ Technol High Educ* 16, 21 (2019). <https://doi.org/10.1186/s41239-019-0152-3>
- Kim, S.-H., & Shin, S. (2021). Social–Emotional Competence and Academic Achievement of Nursing Students: A Canonical Correlation Analysis. *International Journal of Environmental Research and Public Health*, 18(4), 1752. <https://doi.org/10.3390/ijerph18041752>
- Lekwa, A. J., Reddy, L. A., & Shernoff, E. S. (2019). Measuring teacher practices and student academic engagement: A convergent validity study. *School Psychology*, 34(1), 109–118. <https://doi.org/10.1037/spq0000268>
- Madigan, D.J., Curran, T. Does Burnout Affect Academic Achievement? A Meta-Analysis of over 100,000 Students. *Educ Psychol Rev* 33, 387–405 (2021). <https://doi.org/10.1007/s10648-020-09533-1>
- Mahdiuon, R., Salimi, G. & Raeisy, L. Effect of social media on academic engagement and performance: Perspective of graduate students. *Educ Inf Technol* 25, 2427–2446 (2020). <https://doi.org/10.1007/s10639-019-10032-2>
- Mariola C. Gremmen, Yvonne H.M. van den Berg, Christian Steglich, René Veenstra, Jan Kornelis Dijkstra, The importance of near-seated peers for elementary students' academic engagement and achievement, *Journal of Applied Developmental Psychology*, Volume 57, 2018, Pages 42-52, ISSN 0193-3973, <https://doi.org/10.1016/j.appdev.2018.04.004>.
- Markus Perkmann, Rossella Salandra, Valentina Tartari, Maureen McKelvey, Alan Hughes, Academic engagement: A review of the literature 2011-2019, *Research Policy*, Volume 50, Issue 1, 2021, 104114, ISSN 0048-7333, <https://doi.org/10.1016/j.respol.2020.104114>.
- Martin, F. & Bolliger, D.U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning* 22(1), 205- 222. doi:10.24059/olj.v22i1.1092
- Miyuki Takase, Itsuko Yoshida, The relationships between the types of learning approaches used by undergraduate nursing students and their academic achievement: A systematic review and meta-analysis, *Journal of Professional Nursing*, Volume 37, Issue 5, 2021, Pages 836-845, ISSN 8755-7223, <https://doi.org/10.1016/j.profnurs.2021.06.005>.
- Polat, H., Karabatak, S. Effect of flipped classroom model on academic achievement, academic satisfaction and general belongingness. *Learning Environ Res* (2021). <https://doi.org/10.1007/s10984-021-09355-0>
- Rajabalee, Y.B., Santally, M.I. Learner satisfaction, engagement and performances in an online module: Implications for institutional e-learning policy. *Educ Inf Technol* 26, 2623–2656 (2021). <https://doi.org/10.1007/s10639-020-10375-1>
- Rajabalee, B. Y., Santally, M. I., & Rennie, F. (2020). A study of the relationship between students' engagement and their academic performances in an eLearning environment. *E-Learning and Digital Media*, 17(1), 1–20. <https://doi.org/10.1177/2042753019882567>

- Anne-RoosVerbree, Lientje Maas, Lisette Hornstra, LeoniekWijngaards-de Meij, Personality predicts academic achievement in higher education: Differences by academic field of study?, *Learning and Individual Differences*, Volume 92, 2021, 102081, ISSN 1041-6080, <https://doi.org/10.1016/j.lindif.2021.102081>.
- Vizoso, Carmen, Rodriguez, Celestino, Arias-Gundin, Olga; Coping, academic engagement and performance in university students, Published Online August 5, 2018, <https://doi.org/10.1080/07294360.2018.1504006>
- Wu, Z., Spreckelsen, T. F. and Cohen, G. L. (2021) A meta-analysis of the effect of values affirmation on academic achievement. *Journal of Social Issues*, 77(3), pp. 702-750. (doi: 10.1111/josi.12415)
