DAVAO MULTIDISCIPLINARY RESEARCH JOURNAL
The Official Research Journal of Davao del Sur State College

Original Article

A COMPARATIVE ANALYSIS ON DETERMINANTS OF SCHOOL DROPOUT AMONG MATHEMATICS EDUCATION UNDERGRADUATES

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How to cite: Lucernas, J. L. H, & Panlaan, J. M. R (2025). A comparative analysis on determinants of school dropout among mathematics education undergraduates. *Davao Multidisciplinary Research Journal, 1*(2), 108–119.

Abstract: This study investigated the determinants of school dropout among Bachelor of Secondary Education students majoring in Mathematics from public and private higher education institutions in Davao del Sur from 2019 to 2024. Anchored in Bronfenbrenner's Ecological System Theory, the research employed a quantitative-comparative design involving 43 identified former students who had withdrawn from the program. Data were gathered using an adapted questionnaire and analyzed through descriptive statistics and t-tests to compare dropout factors across demographic groups. Results revealed that financial and employment-related issues were the most influential determinants of dropout (M = 3.27), with students citing inability to afford tuition, lack of financial support, and work prioritization as primary reasons. Discontentment with the major and educational or institutional challenges also contributed to dropout decisions, while personal and emotional factors showed minimal influence (M = 2.74). A significant difference was found between male and female students regarding dissatisfaction with their major (p = .027), with males expressing greater discontent (M = 3.46) than females (M = 2.81). No significant differences were found based on institution type, though public school students showed slightly higher major discontent (M = 3.35) than private school students (M = 2.82), possibly due to limited mentoring resources. The findings emphasized the need for targeted financial support systems, enhanced academic and career counseling, and inclusive student-centered institutional practices to improve retention in Mathematics Education programs

Keywords: *determinants, school dropout, mathematics education undergraduates*

Introduction

An increasing number of students are leaving Mathematics education programs prior to completion, which has become a serious global concern. This affects not just the students themselves but also the entire education system, which desperately needs qualified Math teachers. The shortage of teachers is especially bad in Mathematics, science, and special education (Podolskyet al., 2019; Sutcheret al,, 2019). This happens because there are not enough teacher training programs, teachers are paid less compared to other jobs, and the working conditions can be very difficult. All these problems make it hard to attract people to become teachers and keep them in the profession.

The problem goes deeper than just not having enough teachers. Studies show that students drop out because of several reasons working together: the courses are too hard, they don't have enough money, and they face personal problems that make it difficult to continue (Nurmalitasari *et al.*,2023). Many students, especially those from poor families, have to work while studying just to survive. This situation significantly limits students' ability to focus on academic tasks and, over time, contributes to school dropout, which has consequences beyond the individual learner. School waste their resources, the country loses future teachers, and the gap between rich and poor students gets even bigger because students from disadvantaged backgrounds are more likely to drop out.

In the Philippines, the lack of teachers has become a crisis. The Department of Education (DepEd) says we need about 56,050 more teachers to have proper class sizes, but they only approved hiring 20,000 new teachers for 2025. This means one teacher has to handle around 40 students, which is way too many (Second Congressional Commission on Education [EDCOM II], 2024). The shortage is worst in subjects like Mathematics, where it's already hard to find qualified teachers. In Davao Region, the Dropout Reduction Program found major problems like students struggling with their lessons, schools not having enough resources, and not enough support for students who are having difficulties (Parreño, 2023). The Philippines has one of the highest dropout rates in Southeast Asia. About 41.9% of students who start Grade 1 don't even make it to Grade 10, which shows there are serious problems in our education system (Parreño & Anter, 2025).

Research about men and women in science and math education shows interesting patterns. Women are still a minority in STEM fields worldwide, but when we look at Mathematics specifically, the dropout patterns between men and women are complicated (Yu *et al*.,2024). Additionally, female students often feel more anxious about Math, and this fear can make them want to quit their Math education programs. But surprisingly, male students in STEM fields actually drop out more often. This happens because male students sometimes don't stay as engaged with their studies and are more likely to choose working immediately instead of finishing their degree (Alves *et al*., 2023).

The type of institution also matters. Private institutions often have better facilities and more resources, but they cost much more money. This creates financial stress for students, which can push them to drop out (George, 2025). Public institutions, on the other hand, are cheaper but often don't have enough support services, modern facilities, or counseling help. How well teachers and students get along, whether there is good academic advising, and

how much the school cares about student success all affect whether students stay or leave (Gündüz & Karaman, 2020).

Even though people are starting to recognize that student dropout is a big problem in Philippine higher education, not enough studies have looked specifically at what makes Mathematics education students quit. Most research talks about dropout in general, across all programs, but doesn't dig into the special challenges that Math education students face. These students need to be good at Math themselves and also learn how to teach it to others, which is a unique combination. Because we don't understand this well enough, we can't create specific programs to help them stay in school. Also, we don't have enough information comparing public and private schools or looking at differences between male and female students in the Philippine setting. Understanding these specific factors is important so we can create better ways to help Mathematics education students finish their programs. This study tries to fill that gap by looking at why BSED Mathematics students in Davao del Sur dropped out, comparing their experiences based on what type of school they attended and whether they were male or female.

Theoretical Framework

This study is anchored on Bronfenbrenner's Ecological Systems Theory (1979). This theory explains that a person's development and choices are influenced by different layers of their environment, all working together. This concept may be understood as a series of nested systems, beginning with the immediate contexts closest to the individual, such as family and school, and extending to broader influences, including culture and government policies. Furthermore, it implies that what happens to students doesn't come from just one cause. Instead, it's about how different parts of their life connect and affect each other.

This ecological perspective clarifies how the four determinant domains operate across different environmental levels: financial and employment factors within the microsystem (e.g., family income and work obligations), educational and institutional factors within the mesosystem and exosystem (e.g., academic support, mentoring, and institutional policies), dissatisfaction with one’s major within the microsystem through daily academic experiences, and other contextual reasons influenced by broader exosystem conditions. Together, these interconnected ecological influences help explain students’ decisions to discontinue their studies.

Objective of the study

This study investigated the determinants contributing to student dropout among BSED Mathematics students enrolled in both public and private higher education institutions in Davao del Sur, with particular attention to variations across sex and school type. Specifically, the research sought to answer the following:

- determine the demographic profile of the respondents in terms of sex and type of institution;

- assess the level of various dropout determinants, including financial or employment-related factors, educational or institutional concerns, discontent with the chosen major, and other reasons; and
- examine whether significant differences exist in these determinants across respondents' demographic groups.

Research design

This study employed a quantitative–comparative research design to examine differences in dropout-related factors among students in mathematics education. Descriptive–comparative research focuses on identifying and describing differences between groups without establishing causal relationships. This approach enables analysis of how groups vary with respect to selected characteristics. Accordingly, the present study compared identified dropout-related factors, including financial constraints, academic challenges, dissatisfaction with major choice, and other related circumstances.

Research Instrument

The research instrument for this study was adapted from Kocsis, Z., & Pusztai, G. (2020). The structured questionnaire consists of 4 sections based on the determinants of dropout: (1) Financial and Employment Reasons, (2) Educational and Institutional Reasons, (3) Disappointment in Major and Further Education, and (4) Other Reasons. The items included in the questionnaire were derived from a comprehensive review of the literature on educational persistence and dropout rates, ensuring relevance to the context of Mathematics education.

The questionnaire was administered to the identified former BSED Mathematics students who had discontinued their enrollment across various institutions. Respondents were asked to indicate their level of agreement with statements regarding financial reasons, educational factors, disappointment with their major, and multiple causes of dropout. A Likert scale ranging from 1 (very low) to 5 (very high) was employed for data collection. Furthermore, the data were collected to evaluate the significance of various determinants and to identify patterns that may inform future interventions to enhance student retention.

Research Respondents

The study involved 43 students who left the BSED major in Mathematics program between 2019 and 2024: 18 males and 25 females, with 22 from private institutions and 21 from public institutions. Only students who withdrew from this specific program were included to ensure that the data collected were relevant.

Specifically, they were formally enrolled in the program at three higher-education institutions in Davao del Sur: one public college and two private colleges in Digos City. Moreover, because the total population of BSED Mathematics dropouts from 2019–2024 consisted of only 43 students, all of whom were identified through school records, the study used a census approach. All eligible students were included to ensure complete and accurate data without the need for sampling.

Data Gathering Procedure

The data-gathering process started by securing approval from the researcher's institution and obtaining permission from the three participating colleges in Digos City. These included one public college and two private colleges. Consent forms and a simple explanation of the study were prepared to ensure that students understood the purpose of the research, their rights as participants, and how their information would be kept confidential.

The registrars of the participating institutions provided the list of all 43 students who officially dropped out from the BSED Mathematics program from 2019 to 2024. This group consisted of 18 males and 25 females, with 22 from private colleges and 21 from public colleges. Since the entire population was known, the study used a census approach. This means all identified students were invited to participate. Only those who formally withdrew and did not return to the program were included; students who re-enrolled or transferred to another program were excluded.

A structured questionnaire was used as the primary data collection instrument. It asked about various reasons for dropping out, such as financial or work-related concerns, school issues, dissatisfaction with the major, and other personal circumstances. A document review checklist was also used to gather basic information from school records. This included details such as enrollment history, withdrawal dates, and academic standing. All instruments were reviewed by experts and tested with a small group of former students to make sure the questions were clear and easy to answer.

After the tools were prepared, the researcher contacted the 43 identified students through email, phone calls, or messaging applications. Each participant provided consent before completing the questionnaire. Students were allowed to choose the most convenient way to respond, such as online or by phone.

All collected data were handled with care and kept confidential. Each student was assigned a code instead of using their name, and all files were stored securely. By using a census and following simple, careful procedures, the study gathered comprehensive and reliable information on the reasons students left the BSED Mathematics program.

Data analysis

Frequency and percentage were used to describe the demographic characteristics of the respondents, showing the number of students in each group (male vs. female; public vs. private). The mean was calculated to determine the average level of each factor's influence on dropout decisions. Independent-samples t-tests were then conducted to compare dropout determinants between male and female students, as well as between students from private and public institutions. The t-test was selected as the appropriate statistical tool because it is specifically designed to determine whether there are significant differences between the means of two independent groups (Mishra *et al*., 2019). This test was suitable for the study since the data involved comparing two distinct categories: sex (male vs. female) and

institution type (public vs. private), with each student belonging to only one category in each comparison.

Prior to conducting the t-tests, key assumptions were verified to ensure the validity of results. First, the assumption of independence was met as each respondent belonged to only one group in each comparison. Second, the data were measured on an interval scale using a validated Likert-type questionnaire. Third, despite the relatively small sample size (n=43), the t-test is robust to moderate violations of normality when group sizes are comparable (Kim, 2013). Fourth, the homogeneity of variance assumption was evaluated using Levene's test for all comparisons. Results indicated that variances were approximately equal across groups for all determinants, with all p-values exceeding 0.05 (ranging from .147 to .570). These verified assumptions confirmed that the independent-samples t-test was appropriate for determining whether observed differences in dropout factors between groups were statistically significant rather than occurring by chance.

Ethical Considerations

The study followed key ethical principles to ensure the protection and rights of participants. Informed consent was obtained, with students giving voluntary agreement after being fully informed about the purpose, procedures, and use of the data. Confidentiality and privacy were maintained, with all participant information kept secure and accessible only to the research team. Measures were taken to avoid harm, ensuring that participation caused no distress or negative consequences for the students. The study also upheld integrity and honesty by reporting all procedures and results transparently. Finally, voluntary participation was emphasized, allowing students to withdraw from the study at any time without penalty. These ethical practices guided the research and ensured that the study was conducted responsibly.

Results and Discussion

Demographic Profile of the Respondents

As shown in Table 1, female students represented 58.1% (25 students) while males comprised 41.9% (18 students) of dropouts. Higher female dropout rates are concerning given global efforts to boost female mathematics related course participation (UNESCO, 2017). Female students often struggle balancing academics with household duties and may experience math anxiety affecting their ability to continue in their programs (Zhang *et al*., 2019). However, some studies found male students have higher mathematics related course dropout rates due to less consistent academic engagement and prioritizing employment over completing their degree (Casanova *et al*., 2023).

Table 1**:** *Demographic Profile of Dropout Mathematics Undergraduate Students in terms of Sex*

Demographic Profile	Group	*f*	%
Sex	Male	18	41.9
	Female	25	58.1

Furthermore, Table 2 shows that private institution dropouts (51.2%) slightly outnumbered public institution dropouts (48.8%). Despite having more resources, private institutions often create greater financial burdens and have higher expectations that can cause stress for students. This financial strain is particularly pronounced in private settings where students largely depend on personal savings, family support, or loans (Moore *et al*., 2021). Public institutions may offer more accessible support like government subsidies that help students stay in school, as public university students frequently benefit from government subsidies and broader financial aid schemes compared to their private counterparts (Pew Research Center, 2019).

Table 2**:** *Demographic Profile of Dropout Mathematics Undergraduate Students in terms of Type of Institution*

Demographic Profile	Group	*f*	%
Type of Institution	Public	21	48.8%
	Private	22	51.2%

Overall Determinants of School Dropout

Table 3 presents the mean scores for various determinants of school dropout among college students. The results reveal that financial and employment factors emerged as the most significant determinant (M = 3.27, SD = 1.13), indicating a moderate level of influence on students' decisions to discontinue their education. This finding aligns with extensive research demonstrating that economic pressures constitute a primary barrier to educational persistence. Moore *et al*. (2021) found that students experiencing financial stress at a large private university struggled to purchase required textbooks, had to prioritize employment over coursework, and experienced constant worry that distracted from their studies. Their qualitative analysis revealed that financial burdens created both academic and social barriers, with students reporting feelings of isolation and inability to participate in peer activities due to economic constraints.

Table 3: *Determinants of School Dropout*

Indicators	M	SD	Description
Financial and Employment	3.27	1.13	Moderate
Educational and Institutional	2.98	1.03	Low
Discontent with Major	3.08	0.96	Moderate
Other Reasons	2.74	0.88	Low

Discontent with major also registered at a moderate level (M = 3.08, SD = 0.96), suggesting that academic fit and satisfaction with one's chosen field of study play important roles in retention. Recent research has confirmed that satisfaction with the academic program is a variable that significantly influences student dropout, as dissatisfaction can result from

inadequate vocational guidance, poor career choices, or a lack of interest in studies (Lingán-Huamán *et al*., 2025). A longitudinal study by Scheunemann *et al*. (2022) positively confirmed the reciprocal relationships between procrastination, satisfaction with studies, and dropout intentions, demonstrating that dissatisfaction with one's major is directly related to the propensity to withdraw from university studies. Furthermore, inadequate vocational guidance can lead to poor career choices, resulting in a disconnection from studies and, ultimately, dropout (Bernardo *et al*., 2025).

In contrast, educational and institutional factors (M = 2.98, SD = 1.03) and other reasons (M = 2.74, SD = 0.88) both showed lower mean scores, categorized as having low influence on dropout decisions. However, recent systematic reviews indicate that institutional aspects, such as satisfaction with study programs, integration into the academic environment, and institutional support, remain fundamental for reducing dropout rates (Núñez-Naranjo, 2024; Qvortrup & Lykkegaard, 2022). While these factors may register lower in student-reported determinants, institutional characteristics including quality of support services, social and academic integration, and appropriate educational policies can significantly improve student retention when implemented effectively (Gonçalves *et al*., 2024).

Differences by Sex

Furthermore, table 4 shows significant gender differences in the determinants influencing school dropout decisions. Male students consistently reported higher mean scores across most determinants compared to their female counterparts, with the most pronounced difference observed in discontent with major (p = .027), implying significant difference. This finding suggests that male students may experience greater dissatisfaction with their chosen fields of study or may be more willing to act on such dissatisfaction by leaving their programs. Furthermore, the result confirms the study of Pusztai *et al*. (2022) that gender plays a critical role in university dropout patterns, with males representing 46.5%.

Table 4**:** *Difference in terms of sex*

Determinants	Sex	M	*t*	*p*
Financial and Employment	Male	3.49	1.082	.286 ^{ns}
	Female	3.11		
Educational and Institutional	Male	3.19	1.128	.266 ^{ns}
	Female	2.83		
Discontent with Major	Male	3.46	2.297	.027*
	Female	2.81		
Other Reasons	Male	2.98	1.522	.136^{ns}
	Female	2.57		

*Note: *p<.05 ; ns = not significant*

Interestingly, while male students reported higher mean scores for financial and employment concerns (M = 3.49) compared to females (M = 3.11), this difference did not

reach statistical significance (p = .286). However, the direction of this finding merits attention, as it suggests that male students may experience financial pressures differently than female. As stated by Tuero *et al*. (2024), examining university dropout and transfer intentions found that resilience and social adaptation play differential roles by gender, with female students demonstrating greater capacity to persist through financial challenges despite reporting higher overall stress levels.

Differences by Type of Institution

Table 3 presents a comparison of dropout determinants between public and private institutions. Notably, none of the differences achieved statistical significance, suggesting that the fundamental factors influencing dropout decisions operate similarly across institutional types. However, the directional patterns in the data warrant careful interpretation, particularly in light of recent research showing more favorable terminal efficiency rates in private university institutions in some contexts (Núñez-Naranjo, 2024).

***Table 5**: Difference by Type of Institution*

Determinants	Type of Institution	M	*t*	*p*
Financial and Employment	Public	3.17	-.553	.286 ^{ns}
	Private	3.36		
Educational and Institutional	Public	2.93	-.297	.266 ^{ns}
	Private	3.03		
Discontent with Major	Public	3.35	1.884	.027*
	Private	2.82		
Other Reasons	Public	2.87	.919	.136^{ns}
	Private	2.62		

*Note: *p<.05 ; ns = not significant*

Interestingly, discontent with major showed the opposite pattern, with public school students reporting higher levels (M = 3.35) than private school students (M = 2.82; p = .067). While this difference approached but did not achieve statistical significance, it may reflect differences in academic advising, program flexibility, or the self-selection of students who choose private institutions based on specific program interests. Recent research suggests that providing appropriate career guidance before the start of studies enables informed decisions and reduces the risk of dropout (Quincho-Apumayta *et al*., 2024). Students in private institutions may have made more deliberate choices about their majors or may have access to more comprehensive vocational guidance and academic support resources.

Overall, the results support Bronfenbrenner's Ecological Systems Theory, which posits that students' experiences and choices are shaped by interacting environmental systems. The significant difference in major dissatisfaction between male and female students suggests that gender-related influences within the microsystem, such as classroom interactions, peer dynamics, and academic support, may affect students' perceptions of their chosen major. Meanwhile, the absence of a significant difference by institution type indicates that major dissatisfaction is not solely determined by the school environment,

although the slightly higher discontent among public school students may reflect exosystem influences, such as access to mentoring and institutional resources. Overall, the findings support the theory's view that academic dissatisfaction arises from the interplay of personal and contextual factors rather than from a single cause.

Conclusion

The findings show that dropping out is influenced by several common challenges faced by students, regardless of sex or type of institution. Female students had higher dropout numbers than males, which may reflect to heavier home responsibilities and math anxiety differences. Meanwhile, private school students showed a slightly higher dropout rate, likely due to financial pressure and higher expectations. Across all groups, the strongest reason for leaving school was financial and employment problems, as many students struggled to afford tuition and had to work, affecting their studies. Other personal reasons such as homesickness or loss of confidence were present but had a smaller impact.

Results also showed that most determinants, such as financial challenges and school-related issues, affected students similarly whether they were male or female, or from public or private schools. However, males scored higher in dissatisfaction with their chosen major, meaning they were more unsure or less satisfied with continuing their course. While no major differences were found between school types, public school students showed slightly higher dissatisfaction with their major, possibly due to fewer career guidance opportunities. Overall, the findings highlight the need for stronger financial support, academic guidance, and counseling services to help students stay in their programs and succeed.

Recommendation

Based on the results, several recommendations can be made to address the causes of student dropout. CHED may strengthen financial assistance programs, such as scholarships, grants, and work-study options, that do not conflict with class schedules, thereby reducing financial strain that forces students to leave school. Second, school administrators should also provide stronger early support systems, including academic advising, teacher mentoring, and regular monitoring to identify struggling students before problems become serious. Third, flexible class schedules and better academic support services can further help students manage both school and personal responsibilities. Additionally, mathematics teachers can improve engagement by making lessons more meaningful and relevant to real-world applications, fostering supportive classroom environments, and recognizing early signs of disengagement. Students, on the other hand, are encouraged to make informed enrollment decisions, understand course requirements, and actively seek help when challenges arise. Parents should guide their children in choosing programs aligned with their interests and financial situation while maintaining open communication and emotional support. Finally, future researchers may expand this study by examining gender-based experiences more deeply across different courses, schools, or regions, and by using larger sample sizes to strengthen the findings.

References

Alves, R. J., Amaro, C., & Nunes, L. C. (2023). The dropout of first-year STEM students: Is it worth looking beyond academic achievement? *Sustainability, 15*(2), Article 1253. https://doi.org/10.3390/su15021253

Bernardo, A. B., López-Aguilar, D., Dávila-Acedo, M. A., & Chacón-Cuberos, R. (2025). Exploring the relationship between satisfaction and university dropout: A systematic review. *Review of Education, 13*(1), Article e70112. https://doi.org/10.1002/rev3.70112

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Casanova, J. R., Castro-López, A., Bernardo, A. B., & Almeida, L. S. (2023). The dropout of first-year STEM students: Is it worth looking beyond academic achievement? *Sustainability*, *15*(2), Article 1253. https://doi.org/10.3390/su15021253

George, K. (2025). *A Comparative analysis of graduation rates between public and private universities in the United States* (Publication No. 32119884) [Doctoral dissertation, South College]. ProQuest Dissertations & Theses Global. https://www.proquest.com/openview/05d2ac4e5eaa540b9999e4591e2714a0/1?pq-origsite=gscholar&cbl=18750&diss=y

Gonçalves, G. S., Serra, F. A. R., Storopoli, J. E., Scafuto, I. C., & Rafael, D. N. (2024). Undergraduate student retention activities: Challenges and research agenda. *SAGE Open, 14*(2), Article 21582440241249334. https://doi.org/10.1177/21582440241249334

Gündüz, M., & Karaman, S. (2020). Open education faculty and distance education students' dropout reasons: The case of a Turkish State University. *Open Praxis, 12*(1), 123-137. https://doi.org/10.5944/openpraxis.12.1.970

Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, *38*(1), 52–54. https://doi.org/10.5395/rde.2013.38.1.52

Kocsis, Z., & Pusztai, G. (2020). Student employment as a possible factor of dropout. *Acta Polytechnica Hungarica, 17*(4), 183-199. https://doi.org/10.12700/aph.17.4.2020.4.10

Lingán-Huamán, S. K., Dominguez-Lara, S., Postillos, I. O., Medina, R. M., & Esteban, R. F. C. (2025). Academic major satisfaction scale: Psychometric properties and proposal for a measure of academic dropout intention. *Frontiers in Education, 10*, Article 1519475. https://doi.org/10.3389/feduc.2025.1519475

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia*, *22*(1), 67–72. https://doi.org/10.4103/aca.ACA_157_18

Moore, A., Nguyen, A., Rivas, S., Bany-Mohammed, A., Majeika, J., & Martinez, L. (2021). A qualitative examination of the impacts of financial stress on college students' well-being: Insights from a large, private institution. *SAGE Open Medicine, 9*, Article 20503121211018122. https://doi.org/10.1177/20503121211018122

Núñez-Naranjo, A. F. (2024). Analysis of the determinant factors in university dropout: A case study of Ecuador. *Frontiers in Education, 9*, Article 1444534. https://doi.org/10.3389/feduc.2024.1444534

Nurmalitasari, N., Awang Long, Z., & Mohd Noor, M. F. (2023). Factors influencing dropout students in higher education. *Education Research International, 2023,* 1–13. https://doi.org/10.1155/2023/7704142

Parreño, S. J. (2023). School dropouts in the Philippines: Causes, changes and statistics. *Sapienza: International Journal of Interdisciplinary Studies, 4*(1), Article e23002. https://doi.org/10.51798/sijis.v4i1.552

Parreño, S. J., & Anter, M. C. J. V. (2025). Examining gender disparities in dropout rates in the Philippines: A comparative analysis. *Sapienza: International Journal of Interdisciplinary Studies, 6*(1), Article e25001. https://doi.org/10.51798/sijis.v6i2.954

Pew Research Center. (2019, October 15). *Two decades of change in federal and state higher education funding.* https://www.pew.org/en/research-and-analysis/issue-briefs/2019/10/two-decades-of-change-in-federal-and-state-higher-education-funding

Podolsky, A., Kini, T., Darling-Hammond, L., & Bishop, J. (2019). Strategies for attracting and retaining educators: What does the evidence say? *Education Policy Analysis Archives, 27*(38). https://doi.org/10.14507/epaa.27.3722

Pusztai, G., Fényes, H., & Kovács, K. (2022). Factors influencing the chance of dropout or being at risk of dropout in higher education. *Education Sciences, 12*(11), Article 804. https://doi.org/10.3390/educsci12110804

Quincho-Apumayta, R., Carrillo-Cayllahua, J., Ccencho-Pari, A., Layme-Pérez, S., Huamán-Romaní, Y. L., & Rojas-Sánchez, L. (2024). University dropout: A systematic review of the main determinant factors (2020-2024). *F1000Research, 13*, 942. https://doi.org/10.12688/f1000research.154263.2

Qvortrup, A., & Lykkegaard, E. (2022). Study environment factors associated with retention in higher education. *Journal of Applied Learning & Teaching, 5*(1), 37-64. https://doi.org/10.1080/23752696.2022.2072361

Scheunemann, A., Schnettler, T., Bobe, J., Fries, S., & Grunschel, C. (2022). A longitudinal analysis of the reciprocal relationship between academic procrastination, study satisfaction, and dropout intentions in higher education. *European Journal of Psychology of Education, 37*(4), 1141-1164. https://doi.org/10.1007/s10212-021-00571-z

Second Congressional Commission on Education [EDCOM II]. (2024). *Miseducation: The failed system of Philippine education. Year one report*. https://edcom2.gov.ph

Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding teacher shortages: An analysis of teacher supply and demand in the United States. *Education Policy Analysis Archives, 27*(35). https://doi.org/10.14507/epaa.27.3696

Tuero, E., Bernardo, A. B., Blanco, E., & Vázquez-Merino, D. (2024). University dropout and transfer intention, what is the influence of resilience and social adaptation on the two types of dropout? *Journal of College Student Retention: Research, Theory & Practice, 28*(2), 15210251241268812. https://doi.org/10.1177/15210251241268812

UNESCO. (2017). *Cracking the code: Girls' and women's education in science, technology, engineering and mathematics (STEM).* https://doi.org/10.54675/QYHK2407

Yu, X., Zhou, H., Sheng, P., Xu, K., Lao, H., Zhang, Y., & Jia, K. (2024). Math anxiety is more closely associated with math performance in female students than in male students. *Current Psychology, 43*, 1381–1394. https://doi.org/10.1007/s12144-023-04349-y

Zhang, J., Zhao, N., & Kong, Q. P. (2019). The relationship between math anxiety and math performance: A meta-analytic investigation. *Frontiers in Psychology, 10*, Article 1613. https://doi.org/10.3389/fpsyg.2019.01613