Retention Rate of the Bachelor of Science in Information Technology Students and Their Academic Performance

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Abstract

State universities and colleges, as well as their stakeholders, place a high priority on academic achievement and retention rates. This study sought to ascertain the retention rate and academic performance of the "Bachelor of Science in Information Technology (BSIT)" students at the "Iloilo Science and Technology University Miagao Campus". The Office of Campus Registrar and Admission provided the information needed to calculate the retention rate. A total of four (4) batches were examined in this study: batch 2018 (AY 2014-2015 to AY 2017-2018), batch 2019 (AY 2015-2016 to AY 2018-2019), batch 2020 (AY 2016-2017 to AY 2019-2020), and batch 2021. (AY 2017–2018 to AY 2020–2021). The average grades of individuals who graduated in the indicated batch served as the basis for academic performance, for which the pertinent statistics were gathered from the same office. "Percentage, mean, standard deviation, Chi-Square, and one-way ANOVA were the statistical techniques used".

Keywords: Retention Rate, Graduation Rate, Academic Performance, Bachelor of Science in Information Technology

Introduction

Educational institutions could be described in many ways. One of which is through its program offerings, particularly on students' academic performance and the number of graduates. With the existence of the "Bachelor of Science in Information Technology (BSIT)" degree at "Iloilo

Science and Technology University (ISAT U) Miagao Campus" for two (2) decades, a study on the said aspects would provide a formal document aside from a contribution on what is the University at this time.

Academic performance has to be given importance because it leads to one's job performance in the future (Kuncel, Credé, & Thomas, 2005). It should be noted that numerous factors influence students' academic performance, which consequently ensures on-time completion of the degree: teaching and learning process, the infrastructure of the university, family, and peers, and financial capacity (Razak et al., n.d.).

For students to graduate, they must comply with the set academic requirements and maintain at least a passing grade, although continuous improvement in academic performance is expected. Students' completion of educational goals speaks of the success not only of students but also of their school. "It indicates satisfactory performance since academic success is composed of scholarly achievements and skills, impressive test scores, extracurricular accomplishments, and student leadership" (Williams, 2018).

The number of graduates is relevant to the retention rate. Because it ensures a steady stream of income from tuition payments, the retention rate is crucial for private educational institutions. Because institutional assistance is based on the size of the student body, it is also beneficial to public institutions and colleges. Policy and programme continuity is provided by enrollment management, which helps students stay enrolled. The activities involved in managing enrollment include finding the right students, offering financial aid, easing the transition to college through orientation programmes, using institutional research to collect and analyse data about students, using appropriate interventions for students in need of training or guidance, conducting research to identify the factors associated with student retention, assisting with job placement, and enlisting the help of allies (College Student Retention, 2021).

To ensure the continued viability of certain program offerings, it is deemed necessary for the administrator to take a look at the retention rates of its students. It may indicate good or poor educational aspects. Hence, this study was conducted.

Literature Review

2.1. Retention Rate

In academe, retention rate refers to the fraction of students who remains in the current semester or year from the previous semester or year. As an example, Burrell (2020) referred to it specifically to freshmen students that continue at the same school for their sophomore year of college. In a different educational set up, it measures the percentage of first-time

undergraduate students who return to the same institution the following fall ("Undergraduate Retention and Graduation Rates", 2020).

A special case of retention rate is referred to as the graduation rate. The graduation rate measures the fraction of those who graduated. Specifically, it refers to the percentage of first-time undergraduate students who complete their program at the same institution within a specified period ("Undergraduate Retention and Graduation Rates", 2020).

It can be detrimental to their initial university retention rate when a student leaves or transfers to another institution after their rookie year. The likelihood that a student will stick with their studies and graduate from college in a timely manner depends on a number of variables. Since they are undertaking a life experience that no one in their family has done before, first-generation college students frequently have poorer retention rates. First-generation college students are less likely to persevere through their struggles as college students without the help of individuals who are close to them. (Burrell, 2020).

In terms of student retention, there are two extremes. When a student enrols every semester up until graduation, pursues full-time study, and completes their degree in around four years, this is considered normal progression and is typical of a stayer or retained student. A dropout, also known as a leaver, is a student who enrols in college but leaves before receiving their degree and never attends that institution again. Students who start their studies at one institution and subsequently transfer to another are considered to be between these two extremes. Transferring appears to the student to be typical advancement. From the perspective of the school where they initially registered, the student has left (College Student Retention, 2021).

A study by Al-Rahmi, Othman, and Musa (2015) explored the factors that impact the retention rate of IT students. The study found that student engagement, academic performance, and course quality were significant predictors of student retention. Another study by Shukor and Yusof (2018) investigated the relationship between students' satisfaction with their academic experience and their retention rate. The study found that student satisfaction was a significant predictor of retention.

2.2. Academic Performance

Students' performance in their academics is referred to as academic performance. Although it is a broad concept, it is usually presented with a numerical value referred to as their grade.

Several studies validate differences in academic performance according to certain factors, such as between gender (Ceballo, McLoyd, & Toyokawa, 2004; Sparks-Wallace, 2007; Farooq, Chaudhry, Shafiq, & Berhanu, 2011; Hofferth & Moon, 2012; Lepp, Barkley, & Karpinski, 2015; Musa, Dauda, & Umar, 2016; Reilly, Neumann, & Andrews, 2019).

Moreover, academic performance is influenced by several factors such as faculty attributes (Sikhwari et al., 2015) and related to certain aspects such as the use of technology (Chen & Peng, 2008; Lepp et al., 2015; Ng et al, 2017).

A study by Hapsari, Prihanto, and Marufi (2019) examined the factors that influenced the academic performance of IT students. The study found that students' self-efficacy, study habits, and motivation were significant predictors of academic performance. Another study by Abdelaziz, Al-Badi, and Al-Khanjari (2016) examined the relationship between academic performance and retention of IT students. The study found that academic performance was a significant predictor of student retention.

A study by Alhazbi and Iahad (2020) investigated the impact of blended learning on the academic performance of IT students. The study found that blended learning positively influenced student academic performance and retention.

Overall, these studies suggest that academic performance, student engagement, satisfaction with the academic experience, and course quality are critical factors in the retention rate of IT students.

2.3. Admission, retention and graduation

Admission, retention, and graduation are crucial factors in evaluating the effectiveness of higher education institutions. Many researchers have conducted comparative studies on these factors to identify the critical predictors of student success.

A study by Strayhorn (2018) compared the impact of financial aid, campus involvement, and academic support on graduation rates. The study found that these factors were critical predictors of graduation rates.

First, admission, a study by Chen and Soldner (2013) compared the admission rates of students from different socioeconomic backgrounds, races, and high school resources. The study found that socioeconomic status, race, and high school resources significantly impacted college admission rates.

Second, retention, several studies have compared retention rates among different groups of students. A study by Tinto (1993) compared the retention rates of students who received academic and social support to those who did not. The study found that students who received support were more likely to persist in their studies.

Lastly, graduation, graduation rates in higher education have been a subject of interest for many researchers. A study by Stinebrickner and Stinebrickner (2014) compared the graduation rates of students with different family incomes, parental education, and student abilities. The study found that these factors significantly impacted graduation rates.

These comparative studies have shown that admission, retention, and graduation are all critical factors in student success in higher education. The predictors of each of these factors may differ depending on the student's background and context, but they all have a significant impact on a student's academic journey.

Objectives of the Study

3.1. General Objective

This study aimed to describe the retention rate and academic performance of BSIT students who graduated from 2018 to 2021.

3.2. Specific Objectives

Specifically, it aimed to answer the following questions:

1. What is the retention rate of the BSIT students who graduated from 2018 to 2021?

2. What is the academic performance of the BSIT students who graduated from 2018 to 2021?

3. Is there a significant relationship between the batch and the number of graduates?

4. Is there a significant difference in the academic performance of the BSIT students when grouped according to batch?
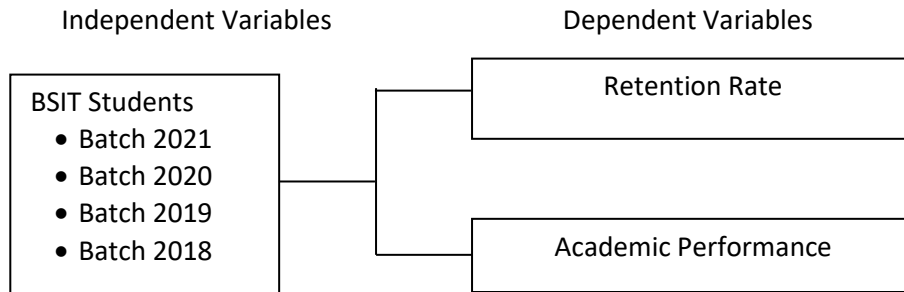
3.3. Hypotheses

In line with the aforementioned problems, the following null hypotheses were tested at the 0.05 level of significance.

1. There is no significant relationship between the batch and the number of graduates.

2. There is no significant difference in the academic performance of the BSIT students when grouped according to batch.

3.4. Conceptual Paradigm of the Study

Figure 1. Schematic diagram of the study showing the relationship among the variables.

Independent Variables   Dependent Variables

| BSIT Students |
| • Batch 2021 |
| • Batch 2020 |
| • Batch 2019 |
| • Batch 2018 |

| Retention Rate |

| Academic Performance |

Methodology

4.1. Research Design

As a popular research strategy in educational studies that tries to describe and analyse the features of a particular population or phenomenon, this study used a descriptive research design. There are a number of reasons why researchers decided to employ a descriptive research methodology in this study on the retention rate of Bachelor of Science in Information Technology (BSIT) students and their academic performance.

First off, when the research issue is exploratory and there is little existing knowledge on the subject, a descriptive research approach is appropriate. Descriptive research design is advantageous when a study tries to discover the features of a population or phenomenon without the researcher having any predetermined preconceptions, according to Creswell & Creswell (2017). A descriptive research design enables the researcher to gather data and give a thorough explanation of the patterns and trends in the data. In the case of this study, the objective is to characterise the retention rate and academic performance of BSIT students.

The second benefit of a descriptive research approach is that it works well in real-world situations like educational institutions. According to Johnson and Christensen (2014), studies carried out in natural settings, where the researcher gathers data from existing records or conducts surveys or questionnaires, are ideally suited for descriptive study design. In the case of this study, the researcher may gather information from BSIT students' records that are already on file at the educational facility. This type of research is excellent for descriptive research design because it enables the researcher to gather information from a natural environment and characterise the features of the population being studied.

Thirdly, a descriptive research design can help with developing study hypotheses. Descriptive research design, according to Merriam and Tisdell (2015), is a helpful tool for developing hypotheses for future

research because it enables the researcher to spot patterns or links in the data that point to potential topics for additional exploration. In the case of this study, the researcher may find links or patterns in the data that point to areas requiring more research, or they may develop hypotheses for more research that can more thoroughly evaluate these relationships or patterns.

4.2. Respondents and Sampling Plan

The respondents of this study were the BSIT graduates of (4) batches from batch 2018 (AY 2014-2015 to AY 2017-2018), batch 2019 (AY 2015-2016 to AY 2018-2019), batch 2020 (AY 2016-2017 to AY 2019-2020), and batch 2021 (AY 2017-2018 to AY 2020-2021) of Iloilo Science and Technology University Miagao Campus.

4.3. Instrument and Data Gathering Procedure

The data needed for this study were obtained from the Office of the Campus Registrar and Admission. Enrollment statistics of the BSIT covering four (4) batches were retrieved: batch 2018 (AY 2014-2015 to AY 2017-2018), batch 2019 (AY 2015-2016 to AY 2018-2019), batch 2020 (AY 2016-2017 to AY 2019-2020), and batch 2021 (AY 2017-2018 to AY 2020-2021). In addition, the average grades of the graduates for the identified batches were requested.

4.4. Data Analysis

To determine the retention rate, the percentage was used and described based on the following scale arbitrarily assigned by the researchers: "very low" for a percentage range of 1-20, "low" for a percentage range of 21-40, "moderate" for a percentage range of 41-60, "high" for a percentage range of 61-80, and "very high" for a percentage range of 81-100.

The mean grade of BSIT students who graduated in the identified academic years was used to describe their academic performance. The descriptions were based on the grading system from Memorandum No. 3/9/2007-14, but an adjustment to the range was made to cover two (2) decimal places: "excellent" for a grade of 1.00-1.04, "outstanding" for a grade range of 1.05-1.54, "very good" for a grade range of 1.55-2.04, "good" for a grade range of 2.05-2.54, "fair/passing" for a grade range of 2.55-3.04, "conditional failure" for a grade range of 3.05-3.54, and "failed" for a grade range of 3.55-5.00.

To determine the relationship between the batch and the number of graduates, the Chi-Square test of independence was used. While one-way ANOVA was employed to determine the difference in the academic performance of BSIT students when grouped according to batch.

Results and Discussion
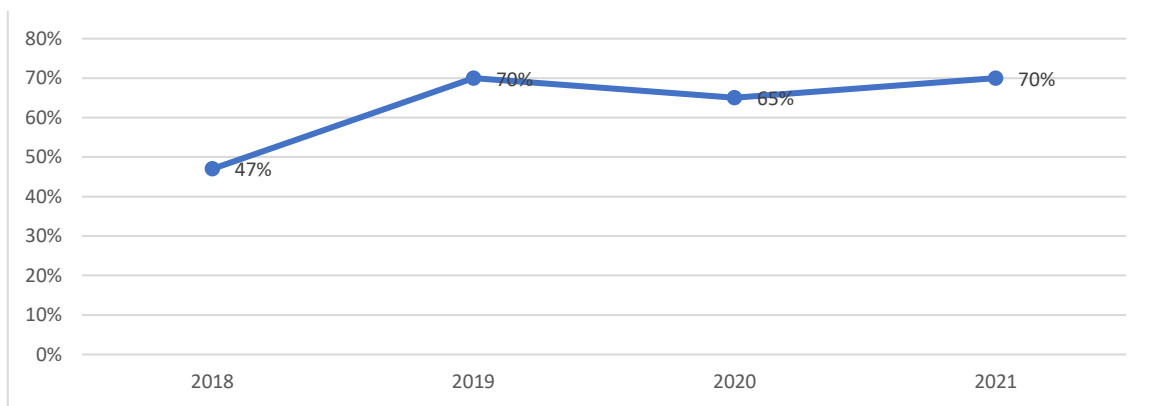
5.1. BSIT Batch 2018 to 2021 Retention Rates

Figure 2 presents the enrollment data of the BSIT covering the four (4) batches for the eight (8) semesters, from 1st semester of their 1st year to the 2nd semester of their 4th year.

Figure 2. ISAT U Miagao Campus BSIT Enrollment for AY 2014-2015 to 2020-2021
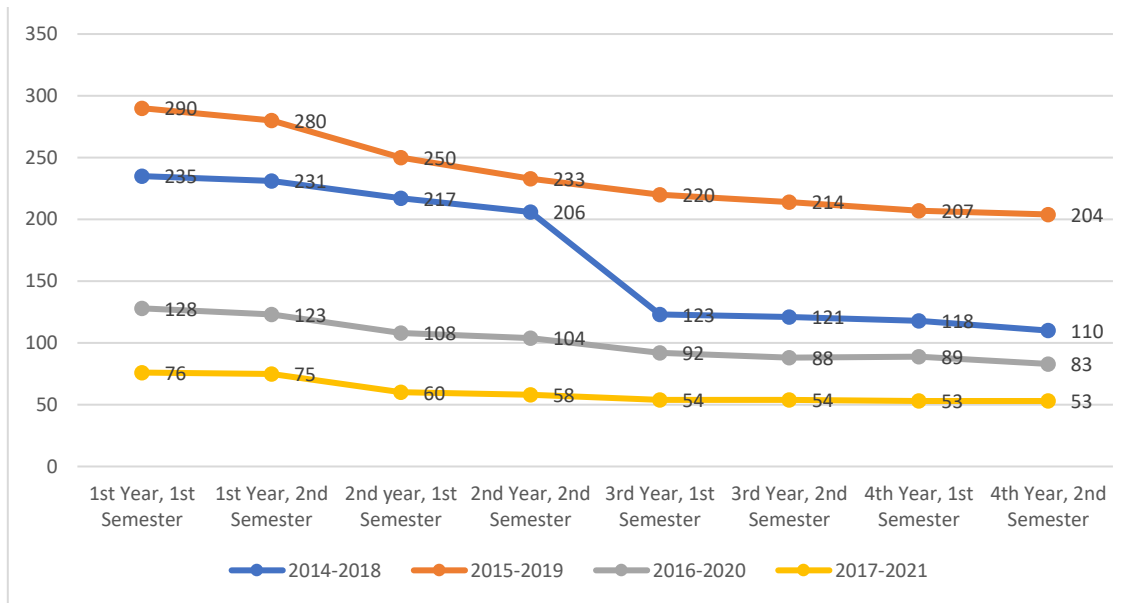
Regardless of the batch, the figure depicts a decreasing trend in enrollment. To describe the retention rate in terms of the number of graduates, Figure 2 shows the results.

Figure 3. BSIT Batch 2018 to 2021 Retention Rates

Legend: 1-20 – Very Low; 21-40 – Low; 41-60 – Moderate; 61-80 – High; 81-100 – Very High.

The figure shows the retention rates of the BSIT students who graduated from 2018 to 2021: "moderate" for batch 2018 (47%), while "high" for batch 2019 (70%), batch 2020 (65%), and batch 2021 (70%). Based on the obtained percentages, the retention rates were not equal among the batches. In addition, batch 2018 seemed to have the least number of graduates.

5.2. BSIT Batch 2020 to 2021 Academic Performance

Table 1 shows the average grades of BSIT students who graduated from 2018 to 2021.

Table 1. Average Grades of BSIT Batch 2018 to 2021

Category	N	*M*	Description	*SD*
Entire Group	450	2.02	Very Good	0.19
Batch 2021	53	1.95	Very Good	0.18
Batch 2020	83	2.08	Good	0.17
Batch 2019	204	2.02	Very Good	0.20
Batch 2018	110	2.00	Very Good	0.18

Legend: 1.00-1.04—Excellent; 1.05-1.54—Outstanding; 1.55-2.04—Very Good; 2.05-2.54—Good; 2.55-3.04—Fair/Passing; 3.05-3.54—Conditional Failure; 3.55-5.00—Failed.

When taken as a whole, the academic performance of BSIT graduates was "very good" (M=2.02, SD=0.19). When grouped according to batch, their academic performances were as follows: "very good" for batch 2018 (M=2.00, SD=0.18), batch 2019 (M=2.02, SD=0.20), and batch 2021 (M=1.95, SD=0.18), while "good" for batch 2020 (M=2.08, SD=0.17). Based on the computed means, their academic performances seemed to be different.

5.3. Relationship Between Batch and Number of Graduates

Table 2 shows the number of students who graduated and dropped in the different batches.

Table 2. Number of Dropouts and Graduates for Batch 2018 to 2021

Status	2018	2019	2020	2021
Dropped Out	125$_a$	86$_b$	45$_b$	23$_b$
Graduated	110$_a$	204$_b$	83$_b$	53$_b$

Using the Pearson Chi-Square test, a significant relationship was found between batch and number of graduates, $\chi^2(3)$=33.846, p=0.000. It implies that there were more graduates for batch 2019, 2020, and 2021; while there were more dropouts in batch 2018.

5.4. Difference in the Academic Performance of the BSIT Batch 2018 to 2021

Table 3 shows the difference in the academic performances of graduates when grouped according to batch.

Table 3. The One-Way ANOVA Results on the Difference in the Academic Performance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.614	3	.205	5.821	.001
Within Groups	15.680	446	.035		
Total	16.294	449			

There was a statistically significant difference in the academic performance of BSIT graduates when grouped according to batch as determined by one-way ANOVA ($F(3,446)=5.821$, $p=0.001$). A Scheffe post hoc test revealed that the difference was between batch 2020 and 2018 as well as between batch 2020 and 2021. It means that the academic performance of batch 2020 was lower than that of batch 2018 and batch 2021.

Conclusions

1. As expected, the enrollment showed a decreasing trend which implies that in any batch the enrollment decreased every semester. However, the retention rate showed an increase from batch 2018 to the succeeding batches. A lot of factors may be attributed to this. Perhaps, one of which is the implementation of the K to 12 curricula. Originally, the last batch from the old curriculum would have been the batch 2019 tertiary level. Hence, students who started in the academic year 2015-2016 might be conscious to complete the degree on time to avoid any undesirable consequences of the new curriculum implementation. However, there was an extension of accommodating students in the old curriculum directly in college, which include the academic year 2016-2017 who graduated in 2020, and 2017-2018 who graduated in 2021. Unlike in batch 2018, they might have not worried about it since the details of the new curriculum implementation might have not been clear yet. Another factor may be attributed to the initiative of the University to contribute to a higher retention rate.

2. The "good" to "very good" academic performance of BSIT students who graduated in 2018 to 2021 showed an opportunity for improvement in terms of academic excellence as stated in the mission of the University. It calls for intervention on the part of the administration to improve their academic performance. Several factors may be taken into consideration since this study utilized the average grade only. There is a possibility that only selected courses may be given emphasis.

3. There was a significant relationship between batch and the number of graduates. This affirms the awareness of the students of batches 2019, 2020, and 2021 on the undesirable consequences of not completing the degree on time. From another perspective, it may be construed as effective actions of the University to help those students in the old curriculum to graduate in college so that they may not be troubled by the K to 12 implementations.

4. There was a significant difference in the academic performance of the BSIT graduates when grouped according to batch. The academic performance of batch 2020 was lower than that of batch 2018 and batch 2021. Several factors may be attributed to this. From the academic year 2016-2017 in which they were in their 1st year, up to the academic year 2019-2020 during their 4th year, many new things happened including (a) a change in BSIT curriculum, (b) several new faculty members were hired, and (c) initial outbreak of coronavirus.

Recommendations

1. The administration must conduct an intervention program that caters to the needs of students with enrolment issues to help them complete the course on time. If it is possible to reach out to those who dropped out from the program, a study may be done involving them to come up with a proactive measure to avoid a very low retention rate.

2. Faculty members may need to revisit their strategies to ensure the better academic performance of their students. They may consider doing research that explores alternative approaches for effective learning of students.

3. The BSIT students must take their studies more seriously and value an independent learning approach for the improvement of their academic performance.

4. A different study is recommended to involve students with low academic performance and identity the underlying reasons. Also, further is recommended to use more variables to substantiate the results of this study.

Bibliography

1. Abdelaziz, A., Al-Badi, A., & Al-Khanjari, Z. (2016). Investigating the relationship between academic performance and retention of IT students. International Journal of Information and Education Technology, 6(11), 846-850.
2. Al-Rahmi, W. M., Othman, M. S., & Musa, M. (2015). Predictors of IT students' retention: A case study. Journal of Education and Practice, 6(1), 1-6.

3. Alhazbi, S., & Iahad, N. A. (2020). Impact of blended learning on academic performance and retention of information technology students. Journal of Educational Technology and Society, 23(5), 79-90.

4. Burrell, J. (2020, August 26). *What Is a Retention Rate for Colleges and Universities?* Retrieved from ThoughtCo: https://www.thoughtco.com/what-is-a-retention-rate-3570270

5. Ceballo, R., McLoyd, V., & Toyokawa, T. (2004). The influence of neighborhood quality on adolescents' educational values and school efforts. *Journal of Adolescent Research, 19*(6), 716-739.

6. Chen, Y. F., & Peng, S. S. (2008). University students' internet use and its relationships with academic performance, interpersonal relationships, psychosocial adjustment, and self-evaluation. *CyberPsychology & Behavior, 11,* 467-469.

7. Chen, X., & Soldner, M. (2013). STEM attrition: College students' paths into and out of STEM fields (NCES 2014-001). US Department of Education, National Center for Education Statistics.

8. *College Student Retention*. (2021, April 23). Retrieved from education: https://education.stateuniversity.com/pages/1863/College-Student-Retention.html

9. Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

10. Farooq, M. S., Chaudhry, A. H., Shafiq, M., & Berhanu, G. (2011). Factors affecting students' quality of academic performance: A case of secondary school level. *Journal of Quality and Technology Management, 7*(2), 1-14.

11. Hapsari, R. M., Prihanto, A. A., & Marufi, A. (2019). Factors that influence the academic performance of information technology students. Journal of Education and Practice, 10(4), 64-71.

12. Hofferth, S. L., & Moon U. J. (2012). Cell phone use and child and adolescent reading proficiency. *Pyschol Pop Media Cult, 1*(2), 108-122. doi: 10.1037/a0027880.

13. Johnson, B., & Christensen, L. (2014). Educational research: Quantitative, qualitative, and mixed approaches. Sage publications.

14. Kuncel, N. R., Credé, M., & Thomas, L. L. (2005). The validity of self-reported grade point averages, class ranks, and test scores: A meta-analysis and review of the literature. *Review of educational research*, 75(1), 63-82.

15. Lepp, A., Barkley, J. E., & Karpinski, A. C. (2015). The relationship between cell phone use and academic performance in a sample of U.S. college students. *SAGE Open*, 1-9. doi: 10.1177/2158244015573169

16. Merriam, S. B., & Tisdell, E. J. (2015). Qualitative research: A guide to design and implementation. John Wiley & Sons.

17. Musa, A. K., Dauda, B., & Umar, M. A. (2016). Gender differences in achievement goals and performances in English language and Mathematics of senior secondary schools students in Borno State, Nigeria. *Journal of Education and Practice, 7*(27), 165-175.

18. Ng, S. F., Hassan, N. S. I. C., Nor, N. H. M., & Malek, N. A. A. (2107). The relationship between smartphone use and academic performance: A case of students in a Malaysian tertiary institution. *Malaysian Online Journal of Educational Technology, 5*(4), 58-70.

19. Razak, W. M., Baharom, S. A., Abdulah, Z., Hamdan, H., Aziz, N. U., & Anuar, A. I. (n.d.). *Academic Performance of University Students: A Case in a Higher Learning Institution*. Retrieved from Knowledge E:

https://knepublishing.com/index.php/KnE-Social/article/view/4285/8800#toc

20. Reilly, D., Neumann, D. L., & Andrews, G. (2019). Gender differences in reading and writing achievement: Evidence from the national assessment of educational progress (NAEP). *American Psychological Association, 74*(4), 445-458.

21. Sikhwari, T. D. (2015). Exploring Students' Views on Factors affecting Academic Performance in a South African University. *International Journal of Education Science, 10(3*, 442-450.

22. Shukor, S. A., & Yusof, S. A. (2018). Exploring students' satisfaction with their academic experience: A predictor of retention. Journal of Applied Research in Higher Education, 10(4), 319-332.

23. Sparks-Wallace, O. J. (2007). *A study of gender differences in academic performance in a rural county in Tennessee* (Master's Thesis). Retrieved from https://dc.etsu.edu/etd/2101

24. Stinebrickner, T., & Stinebrickner, R. (2014). A major in science? Initial beliefs and final outcomes for college major and dropout. The Review of Economic Studies, 81(1), 426-472.

25. Strayhorn, T. L. (2018). College students' sense of belonging: A key to educational success for all students. Routledge.

26. Tinto, V. (1993). Leaving college: Rethinking the causes and cures of student attrition (2nd ed.). University of Chicago Press.

27. *Undergraduate Retention and Graduation Rates*. (2020, April). Retrieved from National Center for Education Statistics: https://nces.ed.gov/programs/coe/indicator_ctr.asp

28. Williams, E. (2018, June 29). *What Is the Meaning of Academic Performance?* Retrieved from Chron: https://work.chron.com/meaning-academic-performance-17332.html