Received: 22 AUG 2025 | Accepted: 22 NOV 2025 | Published Online: 08 DEC 2025
UCLM Journal of Research and Innovation Vol. 1 Issue 1 (December 2025)
DOI: https://doi.org/10.5281/zenodo.21151292

IQ and Academic Performance Among First-Year Students in the College of Computer Studies at UCLM: A Basis for Sectioning

Alexander Y. Bucol[1]*, Glende P. Brazil[2]

[1]aybuc.ab@gmail.com
University of Cebu Lapu-Lapu and Mandaue

[2]gbrazil@uc.edu.ph
University of Cebu Lapu-Lapu and Mandaue

*Correspondence

ABSTRACT

This study examined the relationship between intelligence quotient (IQ) percentile scores and academic performance among first-year students in the College of Computer Studies at the University of Cebu Lapu-Lapu and Mandaue (UCLM), with the objective of determining whether IQ could serve as a scientific basis for student sectioning. A correlational research design was employed involving 150 first-year students enrolled in Comprog11. IQ percentile data were obtained from the Guidance Office, while final course grades were sourced from the Registrar's Office. Pearson's correlation coefficient (r) was used to analyze the relationship between the variables. The results revealed a weak negative correlation ($r = -0.12$) between IQ percentile and academic performance, which was not statistically significant ($p = 0.14$). The coefficient of determination ($r^2 = 1.44\%$) indicated that IQ accounted for only a minimal proportion of the variance in students' grades. Further analysis showed substantial overlap in academic performance across different IQ classifications, with students from lower IQ percentiles occasionally performing comparably to those in higher categories. These findings suggest that IQ alone is a poor predictor of academic success in introductory programming courses and is insufficient as a standalone criterion for student sectioning. The study concludes that more holistic sectioning approaches incorporating academic history, behavioral factors, and learning-related variables are necessary to promote fairness and optimize learning outcomes in higher education.

Keywords: *Academic Performance, Correlational Study, First-Year Students, Higher Education, Intelligence Quotient (IQ), Pearson's Correlation, Programming Education, Student Sectioning*

INTRODUCTION

IQ, or Intelligence Quotient, is a standard measure of human intelligence based on performance on standardized tests. Contemporary research on IQ focuses on its genetic basis, environmental influences, correlations with educational and occupational outcomes, and its limitations in measuring overall cognitive abilities. One of the most researched aspects of IQ is the role of genetics. Studies have shown that a significant portion of intelligence is heritable. However, the interaction between genes and the environment is complex, and both play a role in determining an individual's IQ (Plomin, R., & Deary, I. J., 2015). Environmental influences on IQ include factors such as education, early childhood interventions, and even prenatal conditions. Studies show that socioeconomic status, access to quality education, and early stimulation significantly impact IQ development (Nisbett, R. E. et al., 2012).

Copyright: ©2026 The Authors. UCLM Journal of Research and Innovation is published by University of Cebu Lapu-Lapu & Mandaue
This is an open-access journal licensed under the Creative Commons Attribution-NonCommercial 4.0 International (**CC BY-NC 4.0**) License.

Academic performance refers to how well a student meets the standards set out by their educational institution, typically measured through various methods such as exams, assignments, projects, and class participation. It is commonly assessed through grades, GPA (Grade Point Average), and other evaluative metrics designed to gauge a student's understanding and mastery of subjects over time. Academic performance is influenced by several factors, including cognitive abilities, motivation, learning environment, socioeconomic status, and even psychological well-being. It is often used to determine eligibility for scholarships, promotions to higher educational levels, and overall student success. One of the most common indicators of academic performance is the student's grade point average (GPA), which consolidates their performance across different courses. High GPAs are generally associated with better academic achievement and future academic or professional opportunities (York, T. T., Gibson, C., & Rankin, S., 2015).

Correlation is a statistical measure that describes the strength and direction of a relationship between two or more variables. It helps to determine how one variable may predict or affect another. Correlation can be positive, negative, or zero: 1. Positive Correlation: When both variables move in the same direction (as one increases, the other also increases). For example, height and weight often have a positive correlation; taller people tend to weigh more. 2. Negative Correlation: When one variable increases, the ot
For instance, exercise and body fat tend to have a negative correlation, as more exercise often
body fat. 3. Zero Correlation: When there is no relationship between the variables. For example, shoe size and intelligence would likely show zero correlation, as they are unrelated.

The strength of the correlation between two variables is expressed numerically by a correlation coefficient, denoted as r. The coefficient ranges from -1 to +1: 1. r = +1 indicates a perfect positive correlation. 2. r = -1 indicates a perfect negative correlation. 3. r = 0 indicates no correlation.

The most commonly used correlation coefficient is Pearson's correlation coefficient (r), which measures the linear relationship between two continuous variables.

Pearson Correlation Coefficient: It measures the linear relationship between two continuous variables and assumes that both variables are normally distributed (Cohen, J., Cohen, P., West, S. G., & Aiken, L. S., 2013). Spearman's Rank Correlation: Used when data are not normally distributed or when the relationship between variables is monotonic but not necessarily linear. It is based on the ranked values of the data rather than the raw data (Spearman, C., 1904).

Correlational studies are a valuable research method, but they come with several inherent problems. Correlational studies can identify relationships between variables but cannot definitively establish cause-and-effect relationships. This limitation can lead to misleading conclusions if researchers or readers misinterpret the results (Cohen, J., 1992). A confounding variable is an external factor that may influence both the independent and dependent variables, creating a false correlation. Without controlling for these variables, the findings can be skewed (Gottfredson, L. S., 1994).

Currently, within the College of Computer Studies at UCLM, no data or research exists that explores or establishes a correlation between the IQ levels of first-year students and their overall academic performance. This gap highlights the need for further investigation to determine whether a relationship between these two variables exists. Such research could offer valuable insights for academic support programs, curriculum development, and the sectioning or grouping of students to enhance their academic outcomes.

Copyright: ©2025 The Authors. UCLM Journal of Research and Innovation

The researchers are motivated by the desire to investigate and see the potential correlation between the IQ levels of students and their academic performance within the College of Computer Studies at UCLM. Understanding this relationship is of great importance as it may reveal important thoughts that could influence future academic strategies, student support systems, and instructional methodologies. Consequently, this motivation led to the making of this study titled "IQ and Academic Performance Among First-Year Students in the College of Computer Studies at UCLM: A Basis for Sectioning." The aim of this research is not only to examine the possible connection between these variables but also to provide a scientific basis for determining more effective sectioning methods that can foster an environment conducive to maximizing student potential and success. This study could serve as a foundation for future initiatives aimed at enhancing academic outcomes and personal development within the college.

The study could provide an evidence-based framework for more effective sectioning of students, allowing the dean to group students in a manner that enhances academic support and learning outcomes based on their cognitive abilities. By identifying a correlation between IQ and academic performance, the study can help educators tailor their teaching strategies and interventions to meet the specific needs of students at different cognitive levels, thus improving overall student success. The study could offer a mechanism for early identification of students who may struggle academically, allowing for targeted interventions such as tutoring, mentoring, or personalized learning plans to be implemented in a timely manner.

The aim of this study is to investigate and establish a correlation between the IQ levels and academic performance of first-year students enrolled in the College of Computer Studies at UCLM, with the intention of using the findings as a scientific basis for more effective student sectioning. The study seeks to determine the demographic profile of the respondents in terms of their IQ levels and their academic performance in Comprog11. It further examines how these IQ levels correlate with academic performance among first-year students in the College of Computer Studies. Finally, based on the results of the investigation, the study aims to propose criteria that can be used in determining the appropriate sectioning of students.

RESEARCH METHODOLOGY

This study aims to investigate and establish a correlation between the IQ levels and academic performance of first-year students enrolled in the College of Computer Studies at the University of Cebu Lapu-Lapu and Mandaue (UCLM), with the intention of using the findings as a scientific basis for more effective student sectioning. It seeks to determine the demographic profile of the respondents in terms of their IQ levels and their academic performance in Comprog11, to examine how these IQ levels relate to academic performance, and to propose criteria for student sectioning based on the study's results.

To achieve these objectives, the researchers will employ a correlational research design to analyze the relationship between IQ levels and academic performance. This approach will allow them to assess how variations in IQ scores correspond to differences in academic outcomes, providing insights into whether a significant association exists between the two variables. The study will be conducted at the College of Computer Studies, UCLM.

The data will consist of the students' IQ levels and their final grades in Comprog11. Information on IQ levels will be obtained from the Guidance Office, while the academic performance data will be sourced from the Registrar's Office. Formal request letters will be submitted to both offices to secure these records. Once the necessary information is gathered, the researchers will analyze and interpret the data using

Copyright: ©2025 The Authors. UCLM Journal of Research and Innovation

Pearson's r to determine the strength and direction of the correlation between IQ levels and academic performance. The formula is provided below.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where:

- r = Pearson correlation coefficient
- x = values of the first variable (e.g., IQ levels)
- y = values of the second variable (e.g., academic performance)
- n = number of pairs of scores
- $\sum xy$ = sum of the products of paired scores
- $\sum x$ = sum of the x-values
- $\sum y$ = sum of the y-values
- $\sum x^2$ = sum of the squares of the x-values
- $\sum y^2$ = sum of the squares of the y-valu

RELATED LITERATURE

Correlational studies explore the strength and direction of relationships between two or more variables without manipulating them. These studies are particularly valuable in fields such as education and psychology, where variables such as intelligence and academic performance are difficult to manipulate directly (Cohen et al., 2018).

IQ and Academic Performance

Research has long indicated a positive correlation between intelligence quotient (IQ) and academic performance. According to Deary et al. (2007), IQ serves as a significant predictor of academic success, particularly in technical subjects. Students with higher IQ scores tend to achieve better grades, reflecting a direct relationship between cognitive abilities and academic outcomes. A meta-analysis conducted by Roth et al. (2015) corroborated this, showing a moderate to strong positive correlation (r = 0.50) between IQ and school performance.

In computer programming and other technical fields, IQ plays an essential role in problem-solving abilities and logical reasoning, both critical to success in courses like introductory programming (Comprog11). Research by Lu et al. (2014) found that students with higher cognitive abilities demonstrated a better understanding of complex programming concepts, leading to higher performance in programming-related tasks.

Application of Pearson's R in Correlational Studies

Pearson's correlation coefficient (Pearson's R) is commonly used to quantify the linear relationship between two continuous variables. Pearson's R has been extensively used in educational research to measure correlations between variables like study habits, IQ levels, and academic achievement (Field, 2013). In a study by Kuncel et al. (2004), Pearson's R was applied to determine the correlation between standardized test scores and academic performance across different subjects. The study found a strong correlation, reinforcing the reliability of Pearson's R in educational research.

Copyright: ©2025 The Authors. UCLM Journal of Research and Innovation

Recent studies in educational contexts continue to employ Pearson's R to investigate relationships between cognitive factors and academic outcomes. For example, a study by Evans et al. (2020) examined the relationship between student engagement and academic performance, finding a moderate correlation, with Pearson's R = 0.43. This statistical approach has been shown to be effective in identifying patterns of association between cognitive variables and performance outcomes, such as IQ and specific subject performance (Wang & Eccles, 2015).

RESULTS AND DISCUSSION

This study investigates the relationship between intelligence quotient (IQ) percentile scores and academic performance among first-year students of the College of Computer Studies at UCLM. The primary objective is to determine whether IQ scores can serve as a valid basis for student sectioning. Academic performance was measured using final grades, where 1.0 represents the highest achievement and 5.0 the lowest. The results aim to provide evidence-based insights to guide equitable and effective sectioning policies. The data consisted of IQ percentile scores as the independent variable and final grades as the dependent variable, covering a total of 150 students. Records with non-numeric grades such as "DR" were excluded to ensure statistical validity. Pearson's correlation coefficient (r) was computed to determine the strength and direction of the linear relationship between IQ and academic performance. All statistical computations were performed using Python and SPSS.

RESULTS

The Pearson correlation analysis revealed a coefficient of r = -0.12, indicating a weak negative relationship between IQ percentile and final grade. The p-value of 0.14 exceeded the 0.05 significance level, suggesting that the correlation is not statistically significant. The coefficient of determination (r^2) was 1.44%, meaning IQ percentile accounted for only a small fraction of the variance in academic performance.

Closer examination of the dataset showed no consistent trend between IQ percentile and final grades. For instance, a student with a 97th percentile IQ scored 1.99, while another in the 2nd percentile obtained a 3.02. In the "SUPERIOR" IQ category (96th–97th percentiles), grades ranged from 1.37 to 1.99, illustrating considerable variation within the group. Performance overlaps were also observed, with students classified as "LOW" occasionally matching the academic performance of those in "ABOVE AVERAGE" or "SUPERIOR" classifications. Outlier grades, such as 5.0, were found across all IQ levels.

DISCUSSION

The weak and non-significant correlation suggests that IQ percentile is a poor predictor of final grades in this sample. The small r^2 value indicates that factors other than IQ explain the vast majority of the variation in academic performance. While there was a slight trend indicating that higher IQ scores may be associated with marginally better grades, the pattern was too weak to be considered meaningful.

These findings are consistent with educational research highlighting that non-cognitive factors such as motivation, study habits, time management, and socio-emotional skills can play a more substantial role in determining academic success. Although some studies, have documented a stronger link between IQ and academic outcomes, the present study demonstrates that in certain contexts, environmental and behavioral variables may overshadow the influence of IQ.

The implications for sectioning are clear. Basing class placement solely on IQ scores would not produce academically homogeneous groups, as students across different IQ categories exhibited similar

Copyright: ©2025 The Authors. UCLM Journal of Research and Innovation

academic performance. A more balanced and effective approach would involve the use of composite metrics, including prior academic records, learning style assessments, and qualitative indicators such as participation and attendance.

This study is limited by its focus on a single academic year and a specific college population. Additionally, grading practices may vary across instructors, introducing potential bias. Other important variables, such as socio-economic background and student engagement, were not included in the analysis.

CONCLUSION

No significant relationship was found between IQ percentile and academic performance among first-year Computer Studies students at UCLM. IQ scores alone are insufficient as a basis for sectioning. Future policies should adopt a holistic assessment strategy incorporating multiple academic and non-academic measures to ensure fairness and to support optimal learning outcomes. Academic success is multifactorial, and IQ is a poor standalone predictor.

REFERENCES

Cohen, J., Manion, L., & Morrison, K. (2018). *Research Methods in Education* (8th ed.). Routledge.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge.

Deary, I. J., Strand, S., Smith, P., & Fernandes, C. (2007). Intelligence and educational achievement. *Intelligence*, 35(1), 13-21.

Evans, M., Kelley, J., Sikora, J., & Treiman, D. J. (2020). The correlation between student engagement and academic performance: A meta-analytic review. *Educational Psychology Review*, 32(2), 465-490.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics* (4th ed.). SAGE Publications.

Gottfredson, L. S. (1994). Mainstream science on intelligence: An editorial with 52 signatories, including the editor. *Intelligence*, 24(1), 13-23.

Kuncel, N. R., Hezlett, S. A., & Ones, D. S. (2004). Academic performance, career potential, creativity, and job performance: Can one construct predict them all? *Journal of Personality and Social Psychology*, 86(1), 148-161.

Lu, H., Cheng, W., & Chang, W. (2014). The influence of cognitive abilities on learning programming: A cross-disciplinary study. *Journal of Educational Technology & Society*, 17(4), 42-53.

Nisbett, R. E. et al. (2012). Intelligence: New findings and theoretical developments. *American Psychologist*, 67(2), 130-159.

Plomin, R., & Deary, I. J. (2015). Genetics and intelligence differences: Five special findings. *Molecular Psychiatry*, 20(1), 98-108.

Copyright: ©2025 The Authors. UCLM Journal of Research and Innovation

Roth, B., Becker, N., Romeyke, S., Schäfer, S., Domnick, F., & Spinath, F. M. (2015). Intelligence and school grades: A meta-analysis. *Intelligence*, 53, 118-137.

Spearman, C. (1904). The proof and measurement of association between two things. *The American Journal of Psychology*, 15(1), 72-101.

Wang, M., & Eccles, J. S. (2015). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development*, 83(3), 877-895.

York, T. T., Gibson, C., & Rankin, S. (2015). Defining and measuring academic success. *Practical Assessment, Research, and Evaluation*, 20(5), 1-20.

Copyright: ©2025 The Authors. UCLM Journal of Research and Innovation