



The Relationship Between Intelligence And Academic Performance Among Science Student-Teachers From Rural And Urban Colleges Of Education In Davangere District.

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Abstract:

This quantitative study investigated the relationship between intelligence and academic performance among 200 science student-teachers from rural and urban Colleges of Education in Davangere District, selected using random sampling. Intelligence was measured with the Test of General Intelligence scale by S. K. Pal and K. S., while academic performance was assessed using a researcher-created scale based on percentage scores. The study aimed to evaluate intelligence and academic performance levels and explore their interconnection. The results revealed that science student-teachers from rural Colleges of Education performed significantly better academically (19.68 ± 8.48) than their urban peers (17.27 ± 7.35). Rural student-teachers also scored higher in intelligence (24.30 ± 8.24) compared to urban students (22.56 ± 7.31). A strong and statistically significant positive correlation between intelligence and academic performance was found in both groups. To address the observed disparities, urban Colleges of Education should focus on providing customized academic support, enhancing critical thinking and problem-solving abilities, and improving access to quality resources and infrastructure. Furthermore, addressing socio-economic factors impacting urban student-teachers and implementing successful strategies from rural colleges could help close the performance gap.

Key words: Intelligence, Academic performance, science student teachers, rural and urban colleges of education.

Introduction:

Academic performance refers to the extent to which a student or learner succeeds in their educational pursuits. It is commonly assessed by evaluating students' progress and outcomes in different subjects or courses through exams, tests, assignments, and projects. This performance can also indicate a student's comprehension of the course content, their ability to apply knowledge, and their overall proficiency in achieving learning goals. Academic performance is typically represented by grades, scores, or other forms of assessment.

The academic success of student-teachers is influenced by various factors, including intelligence, socio-economic background, and the educational environment. In the context of science education, understanding the relationship between intelligence and academic performance is crucial for developing effective teaching strategies. This study aims to explore this relationship among science student-teachers in rural and urban Colleges of Education in Davangere District. By focusing on a sample of 200 student-teachers, selected through random sampling, the study seeks to provide insights into how intelligence correlates with academic achievement in both rural and urban settings. The importance of intelligence as a predictor of academic performance has been widely recognized, but the impact of geographical location (rural vs. urban) on these variables remains an area of concern. Rural student-teachers often face different challenges and opportunities compared to their urban counterparts, which can influence their educational outcomes. Therefore, this study investigates whether these differences affect their academic performance and intelligence levels, and examines the strength of the relationship between intelligence and academic achievement.

Through this exploration, the study aims to provide valuable educational implications for improving academic outcomes, particularly in urban Colleges of Education, by identifying the factors contributing to the disparities observed between rural and urban student-teachers. The findings will also contribute to the broader understanding of how intelligence interacts with academic performance in different educational contexts.

Objectives:

- To study and assess the relationship between intelligence and academic performance of science student teachers of college of education in Davanagre district.
- To study and assess the relationship between intelligence and academic performance of science student teachers of rural and urban colleges of education in Davanagre district.
- To study and assess the difference between rural and urban Colleges of education of science student teacher in Davanagere District with academic performance.
- To study and assess the difference between rural and urban Colleges of education of science student teacher in Davanagere District with intelligence.

Hypothesis:

- There is no significant relationship between academic performance with intelligence scores of science student-teachers of college of education in Davangere District.
- There is no significant difference between science student-teachers of rural and urban Colleges of Education in Davangere District with respect to academic performance
- There is no significant difference between science student-teachers of rural and urban Colleges of Education in Davangere District with respect to intelligence scores.
- There is no significant relationship between academic performance with intelligence scores of science student-teachers of rural College of education in Davangere District.
- There is no significant relationship between academic performance with intelligence scores of science student-teachers of urban College of education in Davangere District.

Samples:

The study has been conducted on a representative sample of 400 student-teachers of Davangere district. The sample has been selected by using simple random sampling.

Tools used:

The researcher used the Intelligence scale developed by S K Pal and K S Mishra (2012). To assess the academic performance of science student-teachers, the researcher developed and validated based on an academic performance test result.

Analysis and Interpretation:

Correlations between intelligence with academic performance scores of science student-teachers of college of education in Davangere District.

In this section, the study examined the relationship between the intelligence and academic performance. To assess the relationship between these independent variables and the dependent variable, the correlation coefficients were calculated using Karl Pearson's correlation coefficient method (r). A correlation coefficient (r) of zero indicates no correlation between the two variables. A positive r -v.

value suggests that as one variable increases, the other also increases, while a negative r -value indicates that as one variable increases, the other decreases.

Null Hypothesis: No significant relationship between academic performance with intelligence scores of science student-teachers of college of education in Davangere District.

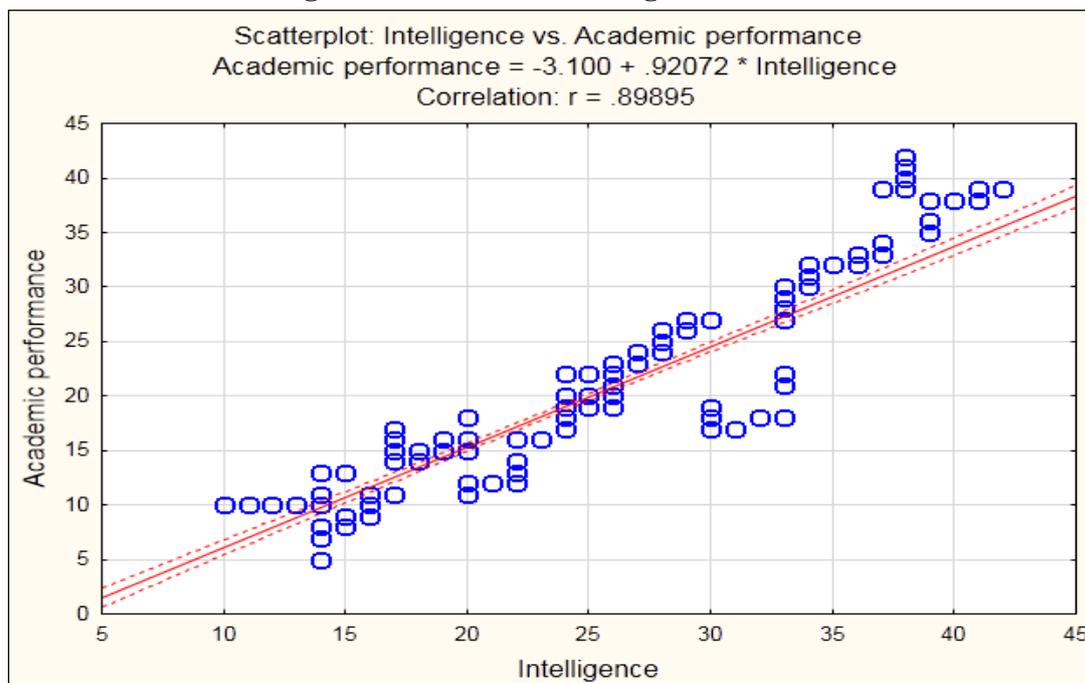
To test the above null hypothesis, Karl Pearson's product-moment correlation coefficient technique was performed, and the results are presented in the following table.

Table 1: Outcome of Karl Pearson's product-moment correlation coefficient between academic performance with intelligence scores of science student-teachers of college of education in Davangere District.

Variables	Mean	Std.Dv.	r-value	t-value	p-value
Intelligence	23.43	7.83	0.8990	40.9411	0.0001, S
Academic performance	18.47	8.02			

The table 1 presents the results of a correlation analysis between intelligence and academic performance among science student-teachers in College of Education. The r -value of 0.8990 indicates a very strong positive correlation between intelligence and academic performance, meaning that higher intelligence scores are strongly correlated with higher academic performance. This correlation is statistically significant, as reflected by the t -value of 40.9411 and a p -value of 0.0001. These findings confirm a very strong and statistically significant positive relationship between intelligence and academic performance in this group of student-teachers.

Figure 1: Scatter diagram of correlation between academic performance with intelligence scores of science student-teachers of college of education in Davangere District.



Null Hypothesis: No significant relationship between academic performance with intelligence scores of science student-teachers of rural College of education in Davangere District.

To test the above null hypothesis, Karl Pearson's product-moment correlation coefficient technique was performed, and the results are presented in the following table.

Table 2: Outcome of Karl Pearson's product-moment correlation coefficient between academic performance with intelligence scores of science student-teachers of rural College of education in Davangere District.

Variables	Science student-teachers of rural College of education				
	Mean	Std.Dv.	r-value	t-value	p-value
Intelligence	24.30	8.24	0.9117	31.2328	0.0001, S
Academic performance	19.68	8.48			

The table 2 presents the results of a correlation analysis between intelligence and academic performance among science student-teachers of rural College of education in College of Education. The r-value of 0.9117 indicates a very strong positive correlation between intelligence and academic performance, meaning that higher intelligence scores are strongly correlated with higher academic performance. This correlation is statistically significant, as reflected by the t-value of 31.2328 and a p-value of 0.0001. These findings confirm a very strong and statistically significant positive relationship between intelligence and academic performance in this group of student-teachers of rural College of education.

Null Hypothesis: No significant relationship between academic performance with intelligence scores of science student-teachers of urban College of education in Davangere District.

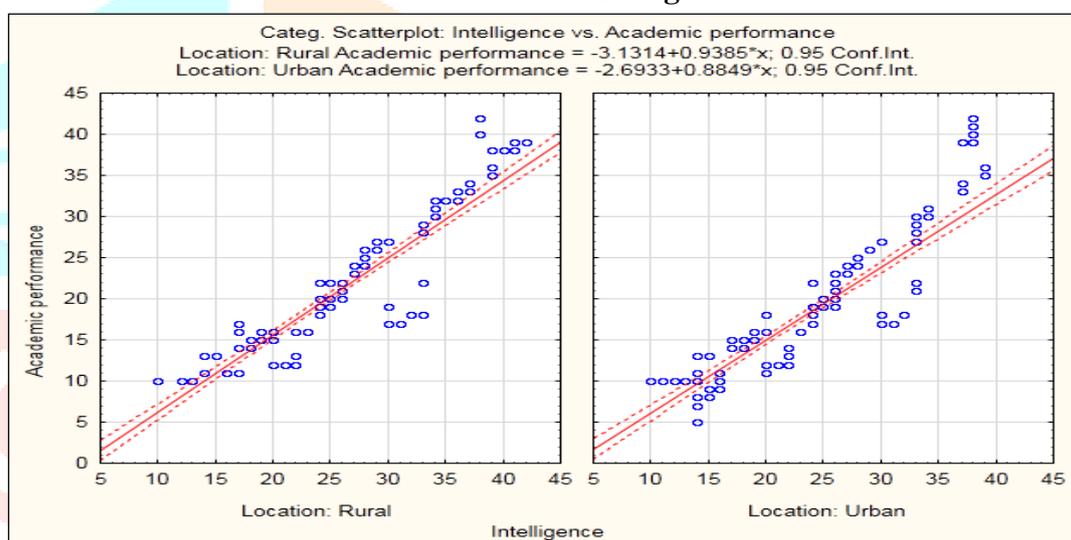
To test the above null hypothesis, Karl Pearson's product moment correlation coefficient technique was performed and the results are presented in the following table.

Table 3: Outcome of Karl Pearson's product-moment correlation coefficient between academic performance with intelligence scores of science student-teachers of urban College of education in Davangere District.

Variables	Science student-teachers of urban College of education				
	Mean	Std.Dv.	r-value	t-value	p-value
Intelligence	22.56	7.31	0.8801	26.0835	0.0001,S
Academic performance	17.27	7.35			

The table 3 presents the results of a correlation analysis between intelligence and academic performance among science student-teachers of urban College of education in College of Education. The r-value of 0.8801 indicates a very strong positive correlation between intelligence and academic performance, meaning that higher intelligence scores are strongly correlated with higher academic performance. This correlation is statistically significant, as reflected by the t-value of 26.0835 and a p-value of 0.0001. These findings confirm a very strong and statistically significant positive relationship between intelligence and academic performance in this group of student-teachers of urban College of education.

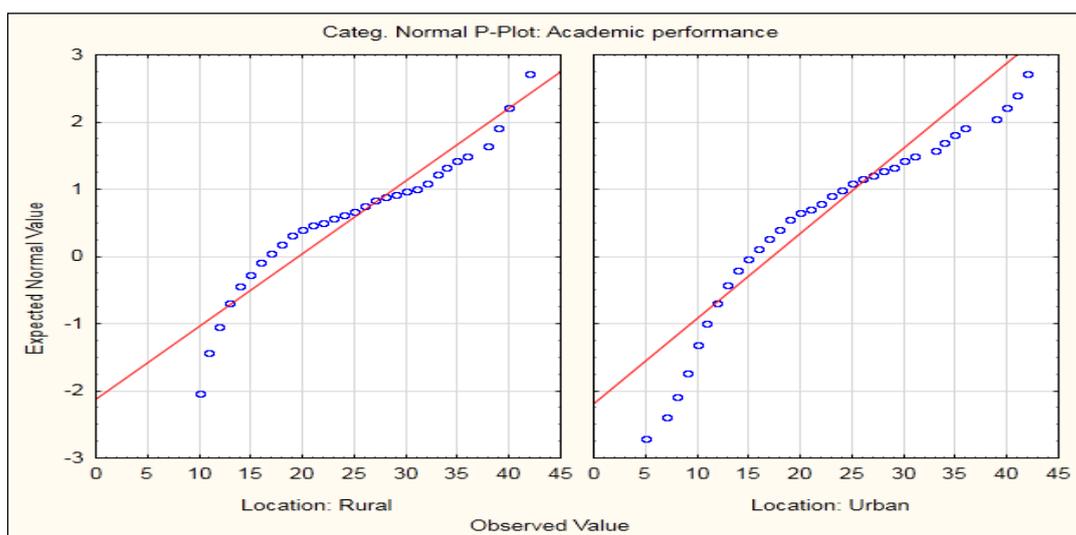
Figure 2: Scatter diagram of correlation coefficient between academic performance with intelligent scores of science student-teachers of rural and urban Colleges of education



Normality of academic performance scores of science student-teachers of rural and urban colleges of education in Davangere district.

To test the normality of academic performance scores of science student-teachers of rural and urban colleges of education in Davangere District, the normal P-P plot was drawn and presented in the following figure

Figure 3: Normal P-P plot for academic performance scores of science student-teachers of rural and urban colleges of education in Davangere District.



The study is clearly observed from the above figure. The academic performance of science student-teachers of rural and urban Colleges of Education in Davangere District approximately follow a normal distribution. Therefore, to test the difference between science student-teachers of rural and urban Colleges of Education in Davangere District, the parametric test, i.e. independent two-sample t-test applied to test the following null hypothesis.

Null hypothesis: No significant difference between science student-teachers of rural and urban Colleges of Education in Davangere District with respect to academic performance

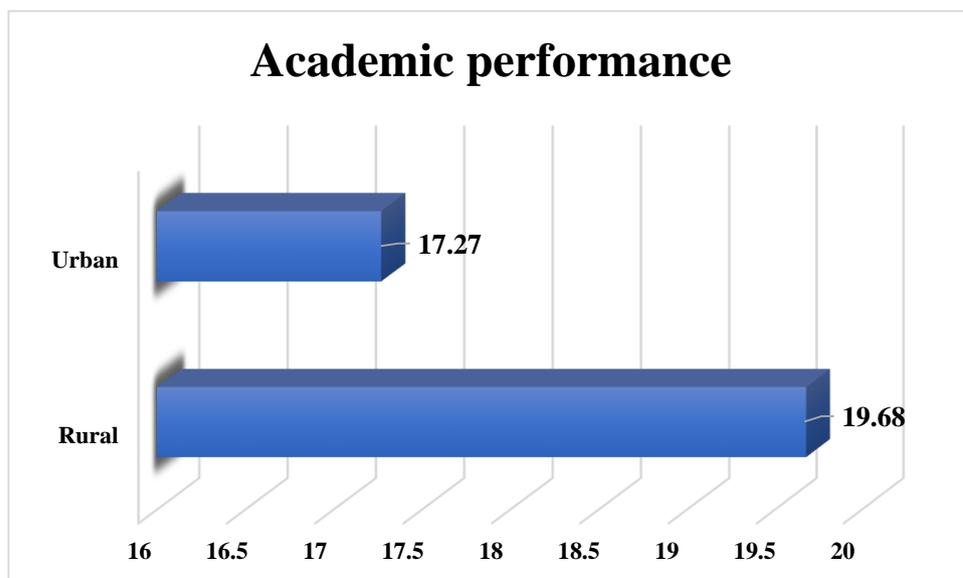
To test the above null hypothesis, the independent two-sample t-test was applied, and the outcome of the test was presented in the following table.

Table 4: Outcome of independent two-sample t-test between science student-teachers of rural and urban Colleges of Education in Davangere District with respect to academic performance

Locality	n	Mean	SD	SE	t-value	P-value
Rural	200	19.68	8.48	0.60	3.0311	0.0026, S
Urban	200	17.27	7.35	0.52		

The results of the above table 4 clearly show that the calculated value of t is 3.0311, which is greater than the critical value of t with 198 degrees of freedom is 1.9600 at a 5% level of significance. Hence, the null hypothesis is rejected, and the alternative hypothesis is accepted. It means that a significant difference was observed between science student-teachers of rural and urban Colleges of Education with academic performance scores. The study concluded that the science student-teachers of rural College of Education (19.68 ± 8.48) have significant and higher academic performance scores as compared to science student-teachers of urban College of Education (17.27 ± 7.35). The mean and SD academic performance scores of science student-teachers of rural and urban Colleges of Education in Davangere District are also presented in the following figure.

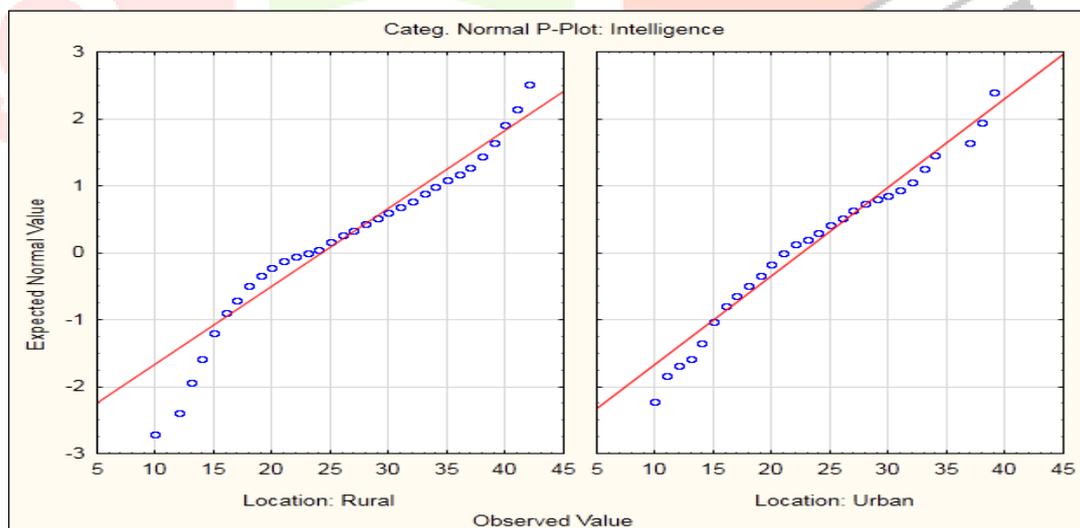
Figure 4: Comparison of academic performance between science student-teachers of rural and urban Colleges of Education of Davangere District.



Normality of intelligence scores of science student-teachers of rural and urban colleges of education in Davangere district.

To test the normality of intelligence scores of science student-teachers of rural and urban Colleges of Education in Davangere District, the normal P-P plot was drawn and presented in the following figure.

Figure 5: Normal P-P plot for intelligence scores of science student-teachers of rural and urban Colleges of Education in Davangere District.



Null hypothesis: No significant difference between science student-teachers of rural and urban Colleges of Education in Davangere District with respect to intelligence scores.

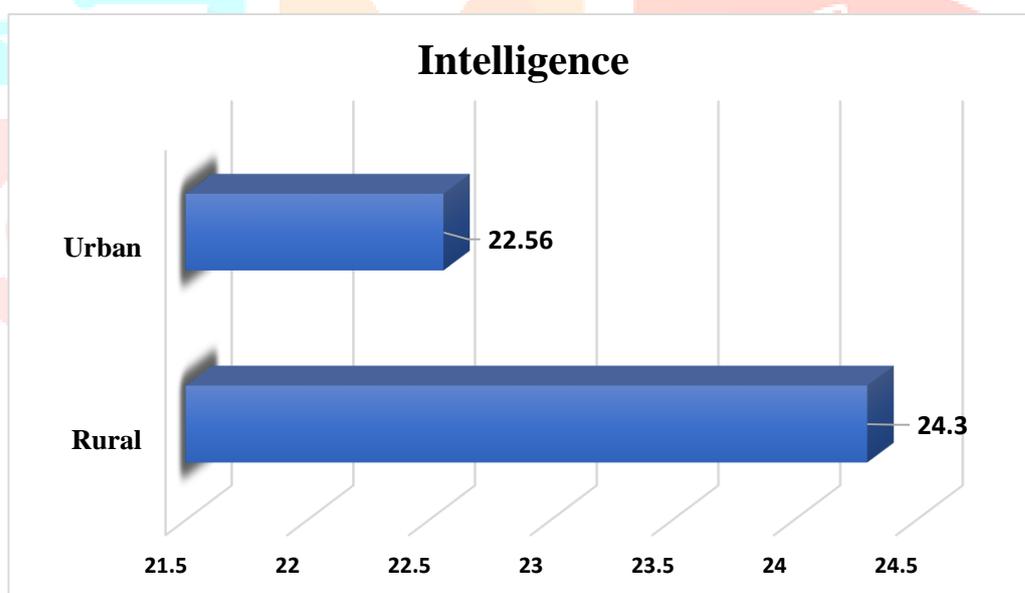
To test the above null hypothesis, the independent two-sample t-test was applied and the outcome of the test is presented in the following table.

Table 5: Outcome of independent two-sample t-test between science student-teachers of rural and urban Colleges of Education in Davangere District with respect to intelligence scores.

Variables	Locality	n	Mean	SD	SE	t-value	P-value
Intelligence	Rural	200	24.30	8.24	0.58	2.2345	0.0260, S
	Urban	200	22.56	7.31	0.52		

The results of the above table 5 clearly show that, The calculated value of t is 2.2345, which is greater than the critical value of t with 198 degrees of freedom is 1.9600 at a 5% level of significance. Hence, the null hypothesis is rejected, and the alternative hypothesis is accepted. It means that a significant difference was observed between science student-teachers of rural and urban Colleges of Education with intelligence scores. The study concluded that the science student-teachers of rural College of Education (24.30 ± 8.24) have significant and higher intelligence scores as compared to science student-teachers of urban College of Education (22.56 ± 7.31).

Figure 6: Comparison of intelligence scores between science student-teachers of rural and urban Colleges of Education of Davangere District



Educational Implications:

1. The significant performance gap between rural and urban science student-teachers suggests a need for focused academic support in urban Colleges of Education. Tailored tutoring, mentorship, and additional learning resources can help improve academic outcomes.
2. Given the strong correlation between intelligence and academic performance, educational programs in urban colleges should prioritize the development of critical thinking and problem-solving skills, fostering intellectual growth and boosting performance.

3. Urban Colleges of Education should invest in improving educational infrastructure and access to quality learning materials. Equalizing resources across urban and rural institutions can help bridge the academic performance gap.
4. Socio-economic factors impacting urban student-teachers should be carefully addressed. Programs that provide financial aid, career counseling, and community engagement can support urban students in overcoming challenges that hinder their academic and intellectual development.
5. Rural Colleges of Education may have unique practices contributing to better performance. Urban colleges could benefit from adopting these successful strategies, such as personalized teaching approaches, community-based learning, and a focus on holistic student development.
6. Teachers in urban Colleges of Education should be trained to recognize and address the diverse needs of students, particularly those from disadvantaged backgrounds. Professional development programs can equip educators with the tools to foster a supportive learning environment and improve student outcomes.
7. Educational institutions should adopt a comprehensive approach that nurtures both intelligence and academic performance. A balanced focus on cognitive, emotional, and social aspects of student development can enhance overall academic success.

Conclusion:

This study highlights a significant difference in academic performance and intelligence between rural and urban science student-teachers in Davangere District. Rural student-teachers exhibited higher academic performance and intelligence scores compared to their urban counterparts. A strong, positive correlation between intelligence and academic performance was observed across both groups, underscoring the importance of intelligence in academic achievement. The findings suggest that urban Colleges of Education face challenges that may hinder academic success, such as limited resources, socio-economic factors, and a lack of tailored academic support. To address these disparities, urban colleges should prioritize improving access to quality resources, fostering critical thinking skills, and providing targeted support to enhance both intelligence and academic performance. Furthermore, adopting successful strategies from rural colleges and addressing socio-economic barriers can help bridge the gap. Ultimately, this study emphasizes the need for a comprehensive approach to education that considers both cognitive and environmental factors. By implementing these recommendations, educational institutions can promote more equitable learning outcomes for all science student-teachers, regardless of their rural or urban background.

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