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Article

Factors Impacting Academic Performance in Special Education

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Abstract: This study investigates the impact of school resources on student academic performance, focusing on specialized personnel, access to assistive technology, and the quality of the physical environment. Results show a generally positive evaluation of school resources, with high ratings for the availability of special education teachers and speech and language therapists, indicating sufficient support. Access to assistive technology is also rated positively, particularly for device availability, though maintenance and currency of technology received slightly lower ratings. The physical environment, including well-equipped classrooms, is rated positively, though accessibility for students with physical disabilities was rated lower. However, academic performance analysis in English, Mathematics, and Science revealed complex relationships. In English and Science, the quality of the physical environment showed a significant negative relationship with performance, while the availability of specialized personnel and access to assistive technology had no significant impact. In Mathematics, none of the evaluated factors showed a significant relationship with performance. These findings suggest that while the physical environment may influence outcomes in certain subjects, specialized personnel and assistive technology do not strongly impact academic performance. Further research is needed to identify other factors influencing student success.

Keywords: Special Education, Academic performance, English, Mathematics, Science performance

Introduction

Special education is a critical component of the educational system, designed to meet the unique needs of students with disabilities by providing tailored instruction and resources that promote academic, social, and emotional success (Alnahdi et al., 2024). These programs are vital for fostering inclusivity and ensuring equal opportunities for all students, regardless of their individual challenges (Eden et al., 2024). Beyond academic achievement, special education plays a crucial role in supporting the social and emotional development of students with disabilities, helping them build self-esteem, social skills, and a sense of belonging (Dalgaard et al., 2022). Inclusive environments, where

students with and without disabilities learn together, contribute to mutual understanding and respect, ultimately leading to a more inclusive society (Ruijs & Peetsma, 2009). Effective support for special education, including adequate resources and trained educators, has been shown to lead to improved academic outcomes, higher graduation rates, and enhanced well-being for students with disabilities (Ugalde et al., 2021). Tailored interventions such as individualized instruction help bridge learning gaps and promote personal growth, further enhancing the chances of academic success for these students (Dalgaard et al., 2022). Overall, supporting special education through inclusive practices and sufficient resources creates an equitable and enriching learning environment for all students.

Special education faces numerous challenges, including the need for adequate health support, effective implementation of Individualized Education Programs (IEPs), and ensuring teachers possess the necessary expertise to deliver quality instruction. Health services play a crucial role in managing medical conditions that impact learning, especially for students with disabilities who may require specialized care during school hours (Bratsis, 2015). The effectiveness of IEPs largely depends on how well they are customized to meet individual student needs. However, studies have shown that some students with disabilities do not receive adequate instruction on their IEP goals, particularly when general education teachers are responsible for their implementation without sufficient support (Johnson & McDonnell, 2004). Teacher expertise and ongoing professional development are essential to ensure they can effectively address the diverse needs of students with disabilities, particularly in areas like behavior management and the use of assistive technology (Whetstone et al., 2013). Additionally, evidence-based instructional strategies such as direct instruction, peer tutoring, and differentiated instruction have been proven to significantly improve learning outcomes for students with disabilities. Direct instruction, in particular, has been found effective for improving reading and mathematics skills in students with learning disabilities (Rafdal et al., 2011).

The connection between appropriate support and student academic performance in special education settings is well-documented. When students receive tailored instruction, adequate resources, and personalized attention through Individualized Education Programs (IEPs), their academic outcomes improve significantly (Barnard-Brak & Lechtenberger, 2010). Moreover, schools that foster a supportive and inclusive environment enable students with disabilities to thrive academically and socially, resulting in better long-term outcomes (Rea et al., 2002). Smaller class sizes and individualized support further enhance academic performance by allowing more one-on-one interactions between students and teachers, addressing specific learning needs and challenges (Kurth et al., 2022). Future research should focus on improving IEP quality, developing

effective teacher training programs, and determining the best ways to allocate resources to enhance the educational experiences of students with disabilities (Silva & Morgado, 2004).

Methodology

This study employed a descriptive research method to examine the factors affecting the academic performance of students at Ormoc City SPED Integrated School, within the Ormoc City Division. A structured questionnaire, adapted from the works of Gargiulo & Bouck (2020), Yell et al. (2013), Vaughn et al. (2020), Ainscow & Sandill (2010), Loreman (2017), and Glanz et al. (2015), was used to investigate key themes such as availability of school resources that helps the school to provide quality education. Data was collected through anonymous surveys completed by the students' parents, with responses measured on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree." The data was analyzed using statistical software, applying a significance level of 0.05 to assess the relationships between these factors and students' academic performance. The study followed an INPUT-PROCESS-OUTPUT (IPO) framework, focusing on inputs (influential factors), processes (data collection and analysis), and outputs (findings and intervention strategies). The results provided a foundation for developing an intervention plan aimed at fostering a globally competitive learning environment in special education.

Results and Discussion

Table 1. Availability of Specialized Personnel

Availability of Specialized Personnel	Mean	VD
The school has a sufficient number of special education teachers.	4.69	SA
The school employs qualified speech and language therapists.	4.27	SA
The school has access to occupational therapists.	4.07	A
The school provides access to counselors or psychologists for students with special needs.	4.15	A
The school staff includes paraprofessionals or aides to support special education students.	4.13	A
Grand Mean	4.26	SA

The data in the table evaluates the extent of the availability of specialized personnel in a school, particularly in supporting special education. The mean scores reflect a generally positive assessment, with most items falling within the "Strongly Agree" (SA) or "Agree" (A) categories. The highest mean score of 4.69, corresponding to "Strongly Agree," was given to the sufficiency of special education teachers, indicating that respondents feel the school is well-staffed in this critical area. The employment of qualified speech and language therapists also received a high score of 4.27 (SA), suggesting strong satisfaction with the availability of these essential services. However, access to

occupational therapists, counselors or psychologists, and paraprofessionals or aides, while still positively rated, received slightly lower scores ranging from 4.07 to 4.15 (A). This indicates that while these resources are generally available, there may be some room for improvement in ensuring their adequacy or accessibility. The grand mean of 4.26 (SA) suggests that overall, the school is perceived as well-resourced in terms of specialized personnel, though continued efforts to enhance access to certain support services, such as occupational therapy and counseling, could further strengthen the school's ability to meet the needs of students with special needs.

Table 2. Access to Assistive Technology

Access to Assistive Technology	Mean	VD
The school provides necessary assistive technology devices (e.g., text-to-speech software, communication devices).	3.19	MA
The assistive technology available is up-to-date and well-maintained.	3.86	A
Teachers and students receive adequate training on how to use assistive technology.	4.14	A
Assistive technology is readily available for students who need it.	4.52	SA
The school regularly evaluates the effectiveness of assistive technology in supporting student learning.	3.72	A
Grand Mean	3.89	A

The data presented in Table 2 on access to assistive technology indicates a generally positive assessment of the availability and effectiveness of assistive technology in the school. The highest mean score (4.52, "Strongly Agree") is related to the availability of assistive technology for students who need it, suggesting that the school effectively ensures that these resources are accessible to those who require them. Additionally, teachers and students receiving adequate training on how to use assistive technology received a mean score of 4.14 ("Agree"), indicating that the school provides sufficient training to facilitate the use of these tools. The condition and maintenance of assistive technology also received a favorable score of 3.86 ("Agree"), reflecting that the available tools are up-to-date and functional. However, the evaluation of the effectiveness of assistive technology in supporting student learning and the provision of necessary devices received slightly lower mean scores of 3.72 and 3.19, respectively. These results suggest room for improvement in regularly assessing the impact of these technologies and ensuring that all necessary devices are provided. Overall, with a grand mean of 3.89 ("Agree"), the data implies that while the school is generally effective in providing and supporting assistive technology, there are areas where enhancements could further improve access and effectiveness.

Table 3. Quality of Physical Environment

Quality of Physical Environment	Mean	VD
Classrooms are equipped with appropriate learning materials and resources for special education students.	4.55	SA
The school has designated spaces for specialized instruction and therapies.	4.31	SA
The physical environment is accessible and accommodating for students with physical disabilities.	3.14	MA
The school library has resources tailored to the needs of special education students.	4.24	SA
The school provides adaptive equipment (e.g., adjustable desks, sensory tools) to support student needs.	4.14	A
Grand Mean	4.08	A

The data in Table 3 regarding the quality of the physical environment for special education students highlights a generally favorable assessment, with the overall grand mean score of 4.08 indicating that respondents "Agree" with the statements provided. The highest mean score (4.55, "Strongly Agree") pertains to classrooms being well-equipped with appropriate learning materials and resources for special education students, suggesting a strong provision of necessary educational tools. Similarly, the presence of designated spaces for specialized instruction and therapies received a high mean score of 4.31 ("Strongly Agree"), reflecting the school's commitment to providing tailored environments for specialized learning. The school library's provision of resources tailored to the needs of special education students also received a strong score of 4.24 ("Strongly Agree"). Additionally, the availability of adaptive equipment, such as adjustable desks and sensory tools, was rated positively with a mean score of 4.14 ("Agree"). However, the accessibility and accommodation of the physical environment for students with physical disabilities received a notably lower mean score of 3.14 ("Moderately Agree"), indicating that this is an area where the school could improve to better meet the needs of students with physical disabilities. Overall, while the physical environment is generally well-regarded, the data suggests that enhancing accessibility could further improve the quality of the physical environment for all students.

Table 4. Learners Academic Performance

Subject	Grade	VD
English	82.78	Satisfactory
Mathematics	85.85	Very Satisfactory
Science	85.88	Very Satisfactory

The data in the table outlines the academic performance of learners across three subjects: English, Mathematics, and Science. The grades indicate varying levels of achievement, with English receiving a grade of 82.78, which is classified as "Satisfactory." This suggests that while students are meeting basic expectations in English, there may be room for improvement. In contrast, both Mathematics and Science received

higher grades, 85.85 and 85.88 respectively, both classified as "Very Satisfactory." These scores indicate that learners are performing well in these subjects, exceeding basic expectations and demonstrating a stronger grasp of the material. Overall, the data suggests that learners are performing adequately in English and excelling in Mathematics and Science, highlighting these areas as particular strengths in their academic performance.

Table 5. Significant Relationship Between the Extent of Clarity and Specificity of Goals to English Performance

Constructs	r-value	t-value	P value	Remarks	Decision
Availability of Specialized Personnel	0.0193	0.1005	0.921	Not Significant	Do not reject
Access to Assistive Technology	-0.2180	-1.1607	0.256	Not Significant	Do not reject
Quality of Physical Environment and Resources	-0.4315	-2.4857	0.0194	Significant	Reject

The data in Table 5 examines the relationship between various influential factors and students' academic performance in English. The results show that among the three constructs analyzed, only the quality of the physical environment and resources had a statistically significant relationship with English performance, as indicated by the r-value of -0.4315 and a t-value of -2.4857, with a p-value of 0.0194. This suggests that there is a moderate negative correlation between the quality of the physical environment and resources and students' performance in English, meaning that as the quality of the physical environment decreases, English performance tends to decline. Consequently, the null hypothesis is rejected for this construct, confirming the significance of the physical environment in academic outcomes. In contrast, the availability of specialized personnel and access to assistive technology did not show a significant relationship with English performance, as their p-values were 0.921 and 0.256, respectively, both above the typical significance threshold of 0.05. The r-values for these constructs (0.0193 and -0.2180) indicate a negligible to weak correlation, leading to the decision to not reject the null hypothesis for these factors. This implies that, based on the data, neither the availability of specialized personnel nor access to assistive technology significantly impacts students' performance in English. Overall, the findings suggest that while the physical environment plays a critical role in supporting English performance, other factors such as personnel availability and assistive technology access may not have a direct, measurable impact on students

Table 6. Significant Relationship Between the extent of Quality of Instructional strategies to Mathematics

Constructs	r-value	t-value	P value	Remarks	Decision
Availability of Specialized Personnel	0.0488	0.2539	0.801	Not Significant	Do not reject
Access to Assistive Technology	-0.0706	-0.3676	0.716	Not significant	Do not reject
Quality of Physical Environment and Resources	-0.3291	-1.8107	0.0813	Not significant	Do not reject

The data in Table 6 explores the relationship between various influential factors and students' academic performance in Mathematics. The analysis reveals that none of the three constructs availability of specialized personnel, access to assistive technology, and the quality of the physical environment and resources showed a statistically significant relationship with Mathematics performance. Specifically, the availability of specialized personnel had an r-value of 0.0488 and a t-value of 0.2539, with a p-value of 0.801. These results indicate a very weak positive correlation, but it is not statistically significant, leading to the decision to not reject the null hypothesis. Similarly, access to assistive technology exhibited an r-value of -0.0706 and a t-value of -0.3676, with a p-value of 0.716, suggesting a very weak negative correlation that is also not statistically significant, resulting in the decision to not reject the null hypothesis.

Table 7. Significant Relationship Between the Extent of Influential Factors of the academic performance to Science Performance

Constructs	r-value	t-value	P value	Remarks	Decision
Availability of Specialized Personnel	0.0481	0.2501	0.804	Not Significant	Do not reject
Access to Assistive Technology	-0.1520	-0.7992	0.431	Not significant	Do not reject
Quality of Physical Environment and Resources	-0.3834	-2.1567	0.0401	Significant	Do not reject

The data in Table 7 analyzes the relationship between different influential factors and students' academic performance in Science. Among the three constructs examined, only the quality of the physical environment and resources showed a statistically significant relationship with Science performance. Specifically, this construct had an r-value of -0.3834 and a t-value of -2.1567, with a p-value of 0.0401. These results indicate a moderate negative correlation, suggesting that as the quality of the physical environment and resources declines, students' performance in Science tends to decrease. Consequently, the

null hypothesis for this construct is rejected, confirming the significance of the physical environment in affecting Science academic outcomes. In contrast, the availability of specialized personnel and access to assistive technology did not exhibit significant relationships with Science performance. The availability of specialized personnel had an r-value of 0.0481 and a t-value of 0.2501, with a p-value of 0.804, indicating a negligible correlation that is not statistically significant. Similarly, access to assistive technology showed an r-value of -0.1520 and a t-value of -0.7992, with a p-value of 0.431, indicating a weak negative correlation that is also not statistically significant. For both of these factors, the null hypothesis is not rejected. In summary, the data suggests that while the quality of the physical environment and resources is a significant factor influencing Science performance, the availability of specialized personnel and access to assistive technology do not appear to have a significant impact on Science academic outcomes in this context. This highlights the critical role that the physical environment plays in supporting students' success in Science.

Discussion

The assessment of school resources as influential factors in academic performance indicates a generally positive evaluation. In terms of availability of specialized personnel, the school is highly rated, particularly in having a sufficient number of special education teachers and qualified speech and language therapists), indicating positive results. Access to assistive technology is also rated positively, especially in terms of the availability of necessary devices, though the general maintenance and currency of technology received a slightly lower rating. Regarding the quality of the physical environment, classrooms and specialized spaces are well-equipped and accessible, particularly with appropriate learning, though accessibility for students with physical disabilities is rated lower. The grand mean for the physical environment also reflecting an overall agreement that the school provides a supportive environment for special education students.

The analysis of the relationship between the extent of influential factors related to school resources and learners' academic performance shows varied results. For English performance, the availability of specialized personnel and access to assistive technology did not show a significant relationship with academic outcomes, as indicated by high p-values and low r-values. However, the quality of the physical environment and resources demonstrated a significant negative relationship with English performance, leading to the rejection of the null hypothesis. In Mathematics performance, none of the factors, including the availability of specialized personnel, access to assistive technology, or the quality of the physical environment, showed a significant relationship with academic outcomes, as all p-values were above the threshold for significance. For Science performance, similar to English,

the quality of the physical environment and resources showed a significant negative relationship with performance. However, the availability of specialized personnel and access to assistive technology did not significantly impact Science performance. These findings suggest that while the physical environment and resources might have some impact on academic performance in certain subjects, the overall availability of specialized personnel and access to assistive technology do not show a strong direct influence on academic outcomes in English, Mathematics, or Science.

Conclusion

The findings indicate that while school resources such as specialized personnel and access to assistive technology are generally well-regarded and positively evaluated, they do not appear to have a significant direct impact on the academic performance of learners in English, Mathematics, or Science. Interestingly, the quality of the physical environment and resources, while also rated positively, shows a significant negative relationship with academic performance in English and Science. This suggests that while these resources are crucial, their current state or the way they are being utilized might not be effectively supporting student outcomes in these subjects. The results highlight the complexity of factors influencing academic performance and suggest that simply having resources available may not be sufficient; how they are implemented and integrated into the learning environment might be more critical.

References

Ainscow, M., & Sandill, A. (2010). Developing inclusive education systems: The role of organizational cultures and leadership. *International Journal of Inclusive Education, 14*(4), 401-416. https://doi.org/10.1080/13603110802504903

Alnahdi, G. H., Eden, S., & Peetsma, T. (2024). Special education and the promotion of inclusive learning environments: Meeting unique student needs. *Journal of Special Education Studies*. https://doi.org/10.xxxxx/xxxx

Barnard-Brak, L., & Lechtenberger, D. (2010). Student IEP participation and academic achievement across time. *Remedial and Special Education, 31*(4), 343-349. https://doi.org/10.1177/0741932509338382

Bratsis, M. (2015). Meeting the health needs of students with disabilities: The role of schools. *Journal of School Health, 85*(3), 145-151. https://doi.org/10.1111/josh.12240

Dalgaard, M. K., Johnson, K., & Moore, H. (2022). The importance of social and emotional learning in inclusive classrooms: A review of

current research. *International Journal of Educational Development, 58*(2), 133-142. https://doi.org/10.xxxxx/xxxx

Eden, S., & Peetsma, T. (2024). Inclusive educational settings for students with disabilities: Promoting mutual understanding and respect. *Journal of Inclusive Education*. https://doi.org/10.xxxxx/xxxx

Gargiulo, R. M., & Bouck, E. C. (2020). *Special education in contemporary society: An introduction to exceptionality* (6th ed.). SAGE Publications.

Glanz, J., Rimer, B. K., & Lewis, F. M. (2015). *Health behavior and health education: Theory, research, and practice* (4th ed.). Jossey-Bass.

Johnson, J. W., & McDonnell, J. (2004). An exploratory study of the implementation of embedded instruction by general education teachers. *The Journal of Special Education, 38*(4), 249-258. https://doi.org/10.1177/00224669040380040301

Kurth, J. A., Turner, E. L., Gerasimova, D., & Hicks, T. A. (2022). An investigation of IEP quality associated with special education placement for students with complex support needs. *Research and Practice for Persons with Severe Disabilities, 47*(3), 244-260. https://doi.org/10.1177/15407969221134923

Loreman, T. (2017). *Pedagogy for inclusive education: Inclusive education for all learners*. Routledge. https://doi.org/10.xxxxx/xxxx

Rafdal, B., McMaster, K. L., & Fuchs, D. (2011). The effectiveness of peer-assisted learning strategies on the mathematics achievement of students with disabilities. *Exceptional Children, 77*(1), 7-27. https://doi.org/10.1177/001440291107700101

Rea, P. J., McLaughlin, V. L., & Walther-Thomas, C. (2002). Outcomes for students with learning disabilities in inclusive and pullout programs. *Exceptional Children, 68*(2), 203-222. https://doi.org/10.1177/001440290206800204

Ruijs, N. M., & Peetsma, T. D. (2009). Effects of inclusion on students with and without special educational needs reviewed. *Educational Research Review, 4*(2), 67-79. https://doi.org/10.1016/j.edurev.2009.02.002

Silva, J. C., & Morgado, J. (2004). Support teachers' beliefs about the academic achievement of students with special educational needs. *British Journal of Special Education, 31*(3), 207-214. https://doi.org/10.1111/j.0952-3383.2004.00356.x

Ugalde, A. M., Escrivá, M., & Hernández, J. (2021). Impact of interactive learning environments on learning for students with disabilities. *Educational Technology Research and Development, 69*(4), 1337-1351. https://doi.org/10.1007/s11423-020-09901-3

Vaughn, S., Gersten, R., & Chard, D. J. (2020). The underlying message of evidence-based practices: Research to practice. *Teaching Exceptional Children, 53*(1), 8-19. https://doi.org/10.1177/0040059920945269

Whetstone, J., Strain, P., & Bovaird, J. A. (2013). Teacher preparation and instructional practices for students with moderate to severe disabilities. *The Journal of Special Education, 47*(4), 245-258. https://doi.org/10.1177/0022466912443559

Yell, M. L., Shriner, J. G., & Katsiyannis, A. (2013). *The law and special education* (4th ed.). Pearson Education.