



Factors Impacting the Autonomous Learning of Students with Disabilities at CAED Tulancingo

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ARTICLE INFO	ABSTRACT
Published Online: 25 September 2026	Currently, inclusive education represents one of the main challenges at all educational levels. The increasing diversity of students and the complexity of their needs do not fit the traditional model that still exists in some educational institutions. In this regard, educational centers are called upon to develop interventions that provide equitable access, retention, and educational conditions appropriate to the needs of each student. The purpose of this research was to identify the factors that impact the autonomous learning of students with disabilities at CAED Tulancingo. The study employed a quantitative, non-experimental, correlational approach with a cross-sectional design. A total census of 45 students was considered. The findings will make it possible to formulate strategies to support improved organizational performance in the institution under study.
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I. INTRODUCTION

Inclusive education is one of the main commitments of educational systems to guarantee access, retention, and meaningful learning for all students, in this case, those with disabilities. However, educational inclusion is not limited to students' formal entry into the school system; it also involves generating structural, pedagogical, and administrative conditions that ensure full and equitable participation [1]. These conditions include accessible infrastructure, the availability of adapted technological resources, continuous teacher training, and institutional policies consistent with a rights-based approach.

When these conditions are not present, barriers arise that limit participation, autonomous learning, and educational equity. Within this framework, the present research is justified by the need to analyze how infrastructure, technological resources, and administrative management affect the quality of education received by students with disabilities at the Centers for Attention to Students with Disabilities (CAED).

The purpose of this article is to identify the factors that impact the autonomous learning of students with disabilities at the Center for Attention to Students with Disabilities (CAED) Tulancingo.

II. LITERATURE REVIEW

II. Institutional conditions

Institutional conditions refer to the set of rules, processes, actions, and resources derived from educational policy and from schools themselves that promote or limit educational practices and the development of teaching and learning processes [2]. These conditions include infrastructure, technological resources, and administrative management, which shape the environment in which students develop their learning.

II.1 Educational Infrastructure

School infrastructure is a fundamental factor in guaranteeing appropriate teaching and learning conditions. Inclusive educational infrastructure should encompass accessible physical spaces, adapted furniture, appropriate signage, sufficient lighting, technological connectivity, and accessible teaching resources [3]. The incorporation of educational technologies is essential because it makes it possible to diversify teaching strategies and facilitate learning personalization in response to the specific needs of the student community.

Educational infrastructure includes not only physical spaces but also environmental conditions such as lighting, ventilation, and acoustics. These factors influence students'

concentration, comprehension, and well-being, particularly among those with sensory or cognitive disabilities. There is also a need to integrate technological resources, since digital tools have been shown to promote accessibility and participation, although their implementation continues to face challenges arising from unequal access to such resources [4].

II.2 Educational Infrastructure

In this context, technological resources play an important role in current educational processes, especially in inclusive education, because they facilitate access to content, support autonomous learning, and encourage student participation. Assistive technology, in turn, makes it possible to adapt materials and teaching strategies to the specific needs of students with disabilities, promoting more equitable conditions for access to knowledge [5].

However, access to and use of these tools does not occur under equal conditions for everyone. The digital divide is a problem that reflects inequalities in access to, use of, and benefit from ICTs. The concept of the digital divide emerged from the analysis of the impact of technologies on the social structure of a place, reinforcing differences between those who manage to integrate into technological development and those who remain on the margins [6]. This situation generates social and educational exclusion, especially among vulnerable populations.

II.3 Administrative management

From a broader perspective, administrative management can be defined as the set of strategies and mechanisms aimed at achieving institutional objectives, which implies clarity regarding the goals to be achieved [7]. In the educational context, this management encompasses internal regulations, organizational structures, and decision-making processes that guide the functioning of institutions. In this regard, inclusion-oriented management should focus on equity, efficient allocation of resources, and the generation of specific support for students with disabilities.

II.4 Autonomous learning

In this sense, autonomous learning is closely linked to the development of metacognitive competencies, since it requires students to be able to plan, monitor, and evaluate their own performance. From this perspective, students can strengthen skills such as self-management, self-regulation, and informed decision-making, which are fundamental for functioning in dynamic educational environments [8]. Thus, learning ceases to be a passive process and becomes an intentional, strategic, and self-regulated activity.

II.5 Educational equity

Educational equity is a fundamental principle in educational systems, as it seeks to ensure that all students have real learning opportunities, taking into account their characteristics, needs, and contexts. Unlike equality, which proposes offering the same to everyone, equity recognizes

differences and identifies the need to provide differentiated support to compensate for inequalities of origin. In this sense, equity is linked to the right to quality education, understood not only as access, but also as retention, participation, and the achievement of meaningful learning [9].

III. METHODOLOGY

For this research, a quantitative approach was used. This approach facilitates the collection of numerical data through surveys and structured questionnaires, making it possible to identify relationships between variables and conduct reliable statistical analyses. As a quantitative methodology technique, a census was conducted using a Likert scale. The research had a descriptive scope because it made it possible to detail the institutional factors that impact the autonomous learning of students enrolled at the Center for Attention to Students with Disabilities (CAED) Tulancingo de Bravo, Hidalgo, while analyzing the relationship between variables. It also had a correlational scope because it was necessary to evaluate the relationship between the selected variables. The hypothesis was correlational in nature, proposing a relationship between variables, as described below.

HA1: Educational infrastructure, technological resources, and administrative management are factors related to the autonomous learning of students with disabilities at CAED Tulancingo de Bravo.

The research design used was cross-sectional, in which data were collected at a single point in time; this made it possible to describe the institutional factors and analyze them. At the same time, a cross-sectional study was used to present the status of the variable and the correlations at a given point in time.

IV. PARTICIPANTS

This research was conducted using the Center for Attention to Students with Disabilities (CAED) as the object of study. The research was carried out through a population census because the center's population consisted of forty-five students, allowing the use of a census. A five-point Likert-type questionnaire was also used, where higher values represented a more favorable perception, with the purpose of obtaining information for the research.

V. RESULTS

Regarding infrastructure, the results show an unfavorable assessment, with a mean of 2.27 (SD = 0.40). Indicators related to classroom conditions, furniture comfort, safe movement, and infrastructure supporting the learning process had means below the midpoint of the scale. This result shows that the physical conditions of the educational environment are one of the institution's main areas for improvement.

The correlational analysis shows that some aspects of infrastructure are significantly related to other elements of

the educational experience. In particular, the perception that CAED facilities support the learning process showed positive and statistically significant relationships with internet access ($r = .422$, $p = .004$), attention from administrative staff ($r = .316$, $p = .007$), clarity of information about academic processes ($r = .426$, $p = .004$), institutional support ($r = .294$, $p = .050$), and the perception that administrative management promotes educational retention ($r = .302$, $p = .044$). These results indicate that perceptions of infrastructure conditions do not occur in isolation, but are related to other components of the educational experience.

Regarding technological resources, the mean obtained was 3.31 (SD = 0.41), representing a moderately favorable assessment. However, the analysis by indicator showed an important difference between the availability of resources and their usefulness. While the sufficiency of technological resources and access to computer equipment received ratings below the midpoint of the scale, digital resources, internet access, and technological tools as support for autonomous learning received a rating of $M = 4.24$.

The correlational analysis also showed significant associations between some technological resources and other educational aspects. The use of digital resources showed a positive relationship with administrative management related to educational retention ($r = .468$, $p = .001$) and time organization for completing academic activities ($r = .331$, $p = .027$). Likewise, access to computer equipment showed a positive relationship with the perception that educational spaces allow safe movement ($r = .334$, $p = .025$). These associations indicate that certain technological components are linked to other aspects of students' academic experience.

On the other hand, administrative management obtained the highest mean of the four variables, at 3.70 (SD = 0.84), representing a favorable assessment. All five indicators exceeded the midpoint of the scale, with attention provided by administrative staff ($M = 3.91$) and the contribution of administrative management ($M = 3.76$) standing out. Therefore, it is one of the main strengths identified in the study.

The correlations observed within this dimension included positive and statistically significant relationships between administrative attention and the efficiency of procedures ($r = .516$, $p = .001$), as well as between the efficiency of procedures and the clarity of information about academic processes ($r = .522$, $p = .001$). Likewise, institutional support showed a positive relationship with educational retention ($r = .555$, $p = .001$). These results show that the different aspects of administrative management are interrelated and that institutional support constitutes a relevant element.

Finally, regarding autonomous learning, a mean of 2.47 was obtained, below the midpoint of the scale. The results show unfavorable ratings for aspects related to time organization,

searching for additional information, using personal strategies to understand content, and independently completing academic activities. Responsibility for submitting activities received the highest rating in this dimension ($M = 2.80$), although it also remained below the midpoint. These results suggest the need to strengthen skills and strategies that enable students to progressively assume a greater degree of autonomy in their learning process.

The results show a more favorable perception of administrative management and technological resources, particularly the use of digital tools and access to the internet. In contrast, the main areas receiving unfavorable assessments correspond to educational infrastructure and autonomous learning, indicating aspects that could be strengthened within the educational context analyzed.

VI. CONCLUSION

The results obtained allow us to conclude that there are important differences in students' perceptions regarding the educational conditions analyzed at CAED. Of the four variables studied, Administrative Management received the most favorable assessment ($M = 3.6978$), followed by Technological Resources ($M = 3.3067$). In contrast, Educational Infrastructure ($M = 2.2667$) and Autonomous Learning ($M = 2.4667$) showed assessments below the midpoint of the scale (Appendix VI).

Regarding infrastructure, the results reveal areas for improvement mainly related to classroom conditions, furniture, and safe movement within educational spaces. These aspects may represent factors that limit the perception of adequate conditions for the development of academic activities.

Regarding technological resources, a favorable assessment was identified for the use of digital tools, internet access, and digital resources as support for learning. However, the availability of computer equipment and the sufficiency of technological resources received lower ratings, evidencing a difference between the perceived usefulness of technology and the conditions of access to resources.

Administrative Management was the dimension most favorably assessed by participants. The results show favorable perceptions regarding staff attention, the efficiency of procedures, the information provided, and the contribution of management to educational retention. This suggests that administrative processes represent a strength within the context studied.

On the other hand, the results corresponding to Autonomous Learning show the need to strengthen skills related to information seeking, time organization, the use of personal strategies, and the independent completion of academic activities. Although responsibility for submitting activities received the highest rating within this variable, its mean remained below the midpoint of the scale.

Overall, the findings identify Administrative Management and the use of certain Technological Resources as the main

strengths, while Educational Infrastructure and some components of Autonomous Learning constitute priority areas for attention. Therefore, it is considered appropriate to strengthen the physical and accessibility conditions of the campus, improve the availability of technological equipment, and promote strategies aimed at developing autonomous learning skills.

Finally, due to the descriptive nature of the study, the results make it possible to characterize the participants' perceptions but do not establish causal relationships between the variables. Future research should incorporate larger samples and inferential analyses to deepen understanding of the relationship between institutional conditions, technological resources, and the development of autonomous learning.

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