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The response to disability in higher education: an analysis of programs and services for people with disabilities: the case of the University of La Laguna

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Introduction: This study analyses the perceptions of students with disabilities and their lecturers at the University of La Laguna (ULL), focusing on the inclusion strategies implemented and their effectiveness in promoting educational equity.

Methods: A mixed-methods design was employed, combining quantitative and qualitative approaches. Data were collected from 115 participants — 36 students with disabilities and 79 lecturers, between 2016 and 2018. Structured questionnaires and interviews were administered. Quantitative data were analysed using SPSS software, while qualitative data were examined through thematic content analysis.

Results: The findings highlight the importance of fostering close collaboration among students, teaching staff, and the Programme for Students with Specific Support Needs (PAED). Key challenges identified include physical and communicative accessibility barriers, as well as a lack of training in addressing student diversity. Moreover, the absence of an inclusive institutional culture, as embedded within ULL's policies and practices, was noted.

Discussion: The study highlights the urgent need to enhance inclusion strategies, particularly by improving accessibility and providing targeted training for academic and technical staff. Enhancing coordination between PAED, lecturers, and students is essential to creating a genuinely inclusive university environment. Despite limitations related to the sample size, the findings offer valuable insights for improving the institutional response to the diverse student population entering higher education.

KEYWORDS

inclusive education, disability, higher education, educational needs, inclusion strategies, university

1 Introduction

The evolution of higher education faces significant challenges due to the increase in students presenting with specific educational support needs (SEN). As highlighted by Fundación Universia (2023), this scenario necessitates adapted and specialized educational strategies that not only address the diverse needs of these students (Pérez-Jorge et al., 2020) but also ensure their access to and continuity in university studies (Márquez-González, 2023).

According to Barletta (2023), inclusive education, grounded in human rights, focuses on removing communicative and physical barriers to guarantee equitable access to education for all, including those with disabilities or diverse characteristics. This philosophy calls for universities to commit to providing necessary support and adaptations, promoting equity, and facilitating the successful completion of studies. Social justice shared responsibility, commitment, and cooperation for sustainable development are pivotal in fostering inclusive university environments.

Accessibility is crucial in achieving inclusive education in higher education. This approach advocates removing physical and communicative barriers within the educational environment (Tibau-Avello et al., 2023). It necessitates raising awareness and training teaching and administrative staff and the entire university community to foster inclusive practices and attitudes indicative of a shift toward a culture of inclusion in higher education institutions (Barletta, 2023).

However, the increase in student numbers does not necessarily correlate with the successful completion of studies, underscoring barriers that impede their inclusion in the university environment (Fiuza-Asorey et al., 2023; Márquez-González, 2023; Márquez, 2022). González-Orbea et al. (2023) note that challenges in the inclusion processes, especially for individuals with sensory disabilities, point to educational gaps stemming from inadequate teacher training in diversity and the use of specific technologies, aspects often neglected in university training plans. Furthermore, the limited availability of resources, such as technical aids for students with visual and hearing disabilities, and the scant visibility of disabilities in universities contribute to higher dropout rates.

Barletta (2023) identifies common barriers faced by students with disabilities, including a lack of accessibility, personal and material resources, and support for effective communication (Rodríguez-Jiménez et al., 2022; Rodríguez Jimenez et al., 2022). Prejudices and discrimination create social and cultural barriers based on the rejection of difference. The absence of inclusive strategies, the rigidity of teaching models, and the scarcity of support and guidance services hinder the inclusion of these students, especially those from disadvantaged socio-economic backgrounds. Furthermore, the lack of training programs for teaching and administrative staff in diversity and the absence of guidelines and resources dedicated to inclusive education reflect institutional policies and practices that fail to promote inclusive education, creating barriers at an institutional level (Rangel-Baca, 2021).

Despite universities' obligations to provide necessary support and adjustments for students with disabilities, the effective realization of these adjustments largely depends on the accessibility of the educational environment. This situation reveals a lack of institutional commitment to inclusive education, often leaving it to teachers to decide on implementing reasonable supports and adjustments (Sandoval et al., 2021).

It should be noted that most Spanish universities have been designed primarily for non-disabled students, as reflected in their facilities, curricula, teaching methods, and staff training (García-González et al., 2021).

Consequently, it is essential to highlight the importance and role of support programs and services for people with disabilities in universities, which are key elements in the inclusion strategy adopted by educational institutions (López-García and Aguilar-López, 2021). Programs and actions should be preventive rather than palliative (Royal Board on Disability, 2023).

Positive online contact in a social program was associated with a better attitude toward people with disabilities from other students, helping to alleviate prejudice through a more positive evaluation of the groups. It reduced social distance, thereby increasing the sense of community (Cocco et al., 2024). However, there is often a limited representation and participation of specialized inclusion services in the university context and a general lack of awareness about strategic plans by disability specialists. This reality creates discrepancies in the programs and services for disability in the university context, constituting a barrier to the inclusion of students with disabilities and hindering the fulfillment of Goal 4 of the 2030 Agenda, which seeks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Ministry of Social Rights and Agenda, 2023). Moreover, Pérez-Jorge et al. (2024) underlined the relevance of gamified fitness applications for motivation and enhancing the learning experience.

Similarly, Liska et al. (2024) considered that adapted physical activity programs provide a supportive environment for all university students, including those with physical disabilities or chronic conditions, enabling them to experience positive support for their psychological needs and higher levels of motivation and engagement in these programs. Using an intelligent tutoring system, an augmentative and alternative communication training program could improve learning in resource-limited areas and make augmentative and alternative communication services more accessible to everyone in any context (Dada et al., 2024). Furthermore, Luke et al. (2024) emphasized the significant potential of implementing immersive virtual reality programs focused on developing communication and workplace skills in future educators, as well as their receptivity among students with developmental disabilities. The significant potential of implementing immersive virtual reality programs focused on developing communication and workplace skills in future educators and their receptivity among students with developmental disabilities. However, certain risks were also noted, such as physical health issues, cybersickness, and accessibility challenges due to the high cost of the resources required for implementation. The conception of disability, based on the social model, suggested that the problem lay not within the individual but in the social context, particularly in the lack of adaptation of spaces, resources, and processes. This perspective influenced teachers' instructional styles, expectations regarding students' learning, and commitment to including students with disabilities in the classroom (Carballo and Cotán, 2024).

"In this context, it is essential to analyze the strategies and resources that promote creating more inclusive university environments. According to Barletta (2023), these strategies include the design and adaptation of the physical environment to ensure accessibility; the implementation of accessible technologies and educational resources; the adoption of inclusive policies and practices among students through support and academic counseling programs; the training and awareness of teaching and administrative staff; and the promotion of student participation and collaboration, allowing students to express their needs, develop proposals, and collaborate in the implementation of inclusive measures. Furthermore, the importance of periodic evaluations of university policies, practices, and services to identify areas for improvement and make necessary adjustments is emphasized.

Managing the PAED at the University of La Laguna was outsourced from 2016 to 2018. This phase of outsourcing provides a valuable context to evaluate inclusion practices before the management was returned to the university in 2019. Therefore, our study focuses on

these years to better understand the implications of such management on educational inclusion and the student experience.

2 Materials and methods

This study adhered to the ethical guidelines, and consent was obtained from all participants. The materials, instruments, and methodological approach were explicitly designed to achieve the following objectives.

2.1 Objectives

This study focused on the general objective:

This study focused on evaluating the educational response of the ULL to students with disabilities between 2016 and 2018, a period prior to the outsourcing of the service. Complete user satisfaction records from PAED were available.

General objective: To evaluate the educational response of the University of La Laguna (ULL) to students with disabilities between 2016 and 2018, utilizing the complete user satisfaction records from PAED before outsourcing the service.

Specific objectives:

1 Analyze the perception of educational and social inclusion:
- o Investigate how students and faculty perceive their relationship with each other and PAED and its impact on communication and educational inclusion.
- o Explore the willingness and training needs of faculty and PAED technical staff regarding disability.
- o Evaluate the influence of accessibility conditions and information strategies on improving educational inclusion.

2 Examine the opinion of the faculty:
- o Analyze the faculty's perceptions regarding their interactions with students with disabilities and PAED and its effect on educational inclusion.
- o Assess the faculty's opinion on the quality of the PAED service, including the usefulness of the report and the difficulties encountered in its implementation.

3 Identify challenges in the inclusion process:
- o Explore the challenges perceived by the faculty in the inclusion process, considering aspects such as the student's field of knowledge, gender, previous experience, and relationship with the type of disability.

4 Determine the needs of students and faculty:
- o Identify the primary needs expressed by students and faculty, users of PAED, to improve the educational response to diversity.

2.2 Research questions

- How do students with disabilities and faculty perceive their interaction with each other and the PAED?
- What are the training needs and willingness of faculty and PAED technical staff regarding disability inclusion?
- How do the accessibility conditions and information strategies influence educational inclusion at the university?
- What do the faculty perceive as the main challenges in the inclusion process of students with disabilities?

2.3 Hypotheses

There is a significant correlation between the faculty's training in disability issues and their effectiveness in facilitating an inclusive educational environment for students with disabilities.

Improved accessibility and effective communication strategies are positively associated with higher levels of educational inclusion for students with disabilities.

PAED's proactive approach to training faculty and technical staff enhances the overall quality of interaction and inclusion within the university.

The faculty's perceptions of inclusion challenges differ significantly based on their field of knowledge, previous experience, and direct interaction with the type of disability.

2.4 Sample

The sample for this study period included students with disabilities enrolled in undergraduate and postgraduate programs, all registered in the PAED, and faculty teaching these students. In total, 115 individuals participated, consisting of 79 teachers (68.69%) and 36 students with disabilities (31.94%).

Within the student group, the gender distribution was 55.50% ($N = 20$) male and 44.40% ($N = 16$) female. Regarding their academic level, the majority, 91.66% ($N = 33$), were enrolled in undergraduate programs, while a minority, 8.33% ($N = 3$), were pursuing postgraduate studies. As for their needs, 64% ($N = 46$) of the students had an officially recognized disability, while 36% ($N = 26$) presented a need for educational support in Figure 1.

2.5 Profiles of students with disabilities

The sample of the study was selected in two academic courses 2016/2017 and 2017/2018.

2.5.1 Year 2016/2017

Figure 1 shows the profiles of students with disabilities whom the PAED attended in the 2016/2017 academic year. These profiles were taken into account for the analysis of the types of disabilities or educational needs presented by the students enrolled in the program. The majority had mental/psychological (20.83%, $N = 15$) and motor (18.06%, $N = 13$) disabilities, followed by visual (8.33%, $N = 6$) and multiple (1.39%, $N = 1$) disabilities. Organic disabilities, including cases of multiple sclerosis and epilepsy, represented 9.72% ($N = 7$). Hearing disabilities were observed in a smaller percentage (5.56%, $N = 4$).

In the group of students with SEN, ADHD (6.94%, $N = 5$) and Asperger's (5.56%, $N = 4$) were the most prevalent, followed by dysorthography (1.39%, $N = 1$). Dual diagnoses, such as dyslexia with ADHD or Asperger's with ADHD, were also significant. Students with multiple disabilities accounted for 1.39% ($N = 1$), and other disabilities amounted to 11.11% ($N = 8$). The students ranged in age from 20 to 30 years.

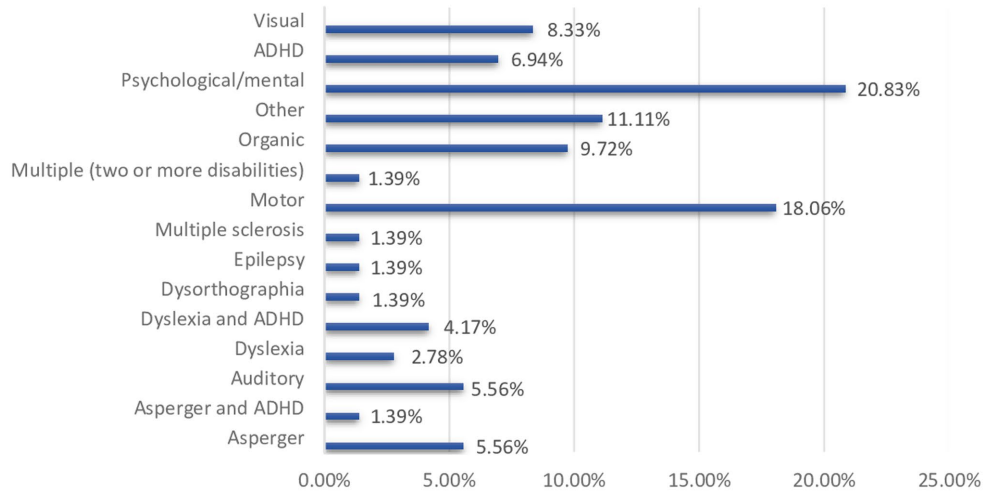

FIGURE 1
Percentage of students by type of disability and specific educational support need in the 2016/2017 academic year.

Regarding the degree of disability, 66% had a degree higher than 44, 16% between 33 and 36, 9% between 37 and 40, and 9% more than 41%. 60.90% ($N = 14$) had a recognized disability, while 39.10% ($N = 9$) required specific educational support.

The sample of faculty people who attended this student group included 79 teachers from various areas: social and legal sciences (30.80%, $N = 24$), sciences (28.20%, $N = 22$), health sciences (17.90%, $N = 14$), arts and humanities (15.40%, $N = 12$), and engineering and architecture (7.70%, $N = 6$). Of the total, 64.10% ($N = 50$) were men, and 35.90% ($N = 28$) were women. 69.20% ($N = 55$) had previous experience with students with disabilities, while 30.80% ($N = 24$) did not.

2.5.2 Year 2017/2018

In the 2017/2018 academic year, there were 25 participating students, of which 44% ($N = 11$) were women and 56% ($N = 14$) were men. The age range was between 20 and 30 years. Concerning the degree of disability, 53% ($N = 8$) of these students had a disability percentage higher than 44%; 26% ($N = 4$) had it between 33–36%; 13.30% ($N = 2$) had a disability percentage between 37 and 40%, and only 6.70% ($N = 1$) had more than 41.0%.

According to Figure 2, the distribution of students with disabilities in the 2017/2018 academic year showed a predominance of students with motor/physical and psychological disabilities, each representing 40% ($N = 10$) of the total. Additionally, there was a significant representation of students with visual and intellectual disabilities, constituting 20% ($N = 5$) of the group. In a smaller percentage, students with hearing, organic or multiple disabilities, and mental disorders were recorded, each accounting for 5% ($N = 1$).

The sample of faculty people who attended this student group included 79 teachers from various areas: social and legal sciences (30.80%, $N = 24$), sciences (28.20%, $N = 22$), health sciences (17.90%, $N = 14$), arts and humanities (15.40%, $N = 12$), and engineering and architecture (7.70%, $N = 6$). Of the total, 64.10% ($N = 50$) were men, and 35.90% ($N = 28$) were women. 69.20% ($N = 55$) had previous experience with students with disabilities, while 30.80% ($N = 24$) did not.

2.6 Instruments

A detailed description of the tools and technologies implemented during the research process was shown.

2.7 Evaluation of the PAED program

To assess the quality of the PAED program and the attitudes, opinions, and competencies of the faculty toward disability, two main instruments were employed:

1. PAED evaluation *Ad Hoc* questionnaire: This instrument was designed for this study to gather data on faculty perceptions regarding their qualifications, opinions, and attitudes toward students with disabilities.
2. Structured interviews with faculty: these interviews explored in depth the faculty's qualifications, opinions, and attitudes toward students with disabilities and evaluations of their teaching experience with these students.

2.7.1 Evaluation of student satisfaction with disabilities

For students with disabilities enrolled in the PAED, the following instruments were utilized:

1. PAED satisfaction *Ad Hoc* questionnaire: This questionnaire was deployed to evaluate student satisfaction with the services provided by the PAED. It assessed aspects such as the quality of the information, advice, the program's effectiveness in removing barriers, and mediation with the faculty.
2. Structured interviews with students: These interviews were designed to delve into the quality of the PAED service and gather student suggestions for enhancing support for students with disabilities. Discussion topics included the need for improvement in the PAED, quality of service,

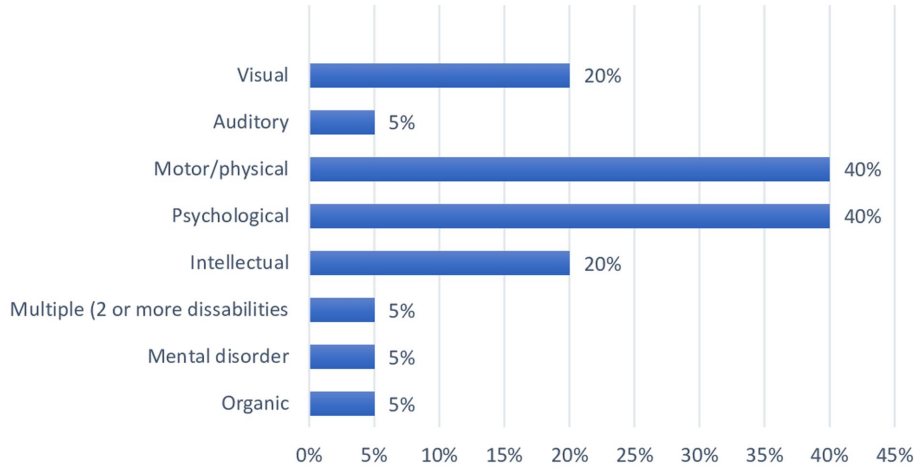

FIGURE 2
Percentage of students by type of disability in 2017/2018 academic year.

accessibility within the teaching-learning process, and the visibility of the program.

2.7.2 Monitoring and evaluation

During the 2017/2018 academic year, a second questionnaire and structured interviews, titled 'PAED program Follow-up Questionnaire' and 'Second Structured Interview' were conducted with students enrolled in the PAED. These instruments were designed to provide a deeper insight into the students' satisfaction and the quality of the educational response provided by the PAED. They included questions about the educational experience, necessary adaptations, and interactions with faculty and peers.

The questionnaires utilized a 5-level Likert scale to gage the degree of agreement or disagreement on key aspects, ranging from the accessibility of the PAED website to the effectiveness of program interventions and satisfaction relative to expectations.

2.7.3 Specific considerations

In designing the questionnaire for faculty, factors such as the field of knowledge, gender, and previous experience with students with disabilities were considered. Additionally, the profiles of the individuals with disabilities with whom they had previously worked were also considered. The structured interviews complemented the questionnaire results, providing a deeper understanding of the faculty's teaching experiences and their perceptions of the usefulness of the PAED report.

2.8 Procedure

The procedure for administering questionnaires and structured interviews to both students and faculty was as follows:

2.8.1 Administration of questionnaires

Initially, we emailed students with disabilities and their teachers, explaining the study's objectives and requesting their participation through an attached questionnaire. This approach ensured a clear understanding of the study's objectives and facilitated the data collection.

2.8.2 Structured interviews

The interviews were conducted with students and faculty. Telephone appointments were scheduled according to each participant's availability, providing a more personalized and detailed approach to collecting information.

2.8.3 Analysis of interviews

During the interviews with students, the content was analyzed, focusing on two main aspects:

a The grouping of educational needs based on the type of disability.
b The analysis of opinions related to their social and educational inclusion.

2.8.4 Coding and data analysis

The open-ended responses were coded using an identification system to ensure confidentiality: (AN) for students and (PN) for faculty. This method allowed for a systematic and confidential analysis of the responses.

2.8.5 Classification and categorization of responses

The responses were classified and categorized according to their frequency of appearance to identify the most relevant categories. Three university experts in the field of disability participated in an interjudge validation procedure to ensure the responses' adequacy, validity, and relevance.

2.8.6 Response categorization system

We used the same categorization system for both students and faculty, focusing on key areas such as:

a The visibility of the PAED in the university community.
b There is a close relationship between the PAED, students with disabilities, and faculty.
c The provision of detailed and advanced information to faculty about the presence of students with disabilities.

d The training of faculty and PAED technical staff in disability.
e Attention to diversity and educational intervention in the classroom.
f The accessibility of the teaching-learning process and the university environment.

2.8.7 Evaluation of the quality of the PAED service

Finally, the faculty's perception of the quality of the PAED service was evaluated using a scale from 0 to 10. Each category within the survey was assigned a numerical score ranging from 0 to 2, where 2 represented the maximum possible value and 0 the minimum. Scores approaching 0 indicated low quality, whereas scores close to 10, reflecting the aggregate of maximum values across each category, denoted high quality.

2.9 Data analysis

This study adopted an integrated approach to analyze quantitative and qualitative data, ensuring a comprehensive and detailed understanding of the dynamics involved in inclusive education and the perception of the PAED program.

2.10 Quantitative analysis using SPSS

It used the SPSS software (version 29 for Windows) for statistical analysis, which allowed us to apply rigorous and recognized techniques in quantitative research. Among these, the following stand out:

a Chi-square test: This test was fundamental for evaluating the relationship between the study variables, with the Phi Coefficient and Cramer's V as measures to determine the intensity of these relationships.
b Analysis of variance (ANOVA): Used to compare the PAED quality means among the different faculty knowledge branches. This technique enabled us to identify significant differences in program quality perceptions according to the academic specialization of the teachers.

2.10.1 Qualitative analysis through content analysis

The interviews conducted with both students and faculty were analyzed using content analysis. This approach allowed us to delve deeper into participants' attitudes, opinions, and experiences regarding the PAED and its impact on educational inclusion.

2.10.2 Triangulation of information

A key aspect of our analysis was data triangulation, involving the contrasting perspectives of students, faculty, and PAED technical staff. This method enriched the study by providing a more holistic and validated view of the researched topics. Triangulation reinforced the reliability of our findings and ensured that multiple facets of the phenomenon under study were thoroughly explored and understood.

The integrated approach to data analysis adopted in this study reflects a commitment to methodological rigor and accuracy in interpreting results. It offers valuable insights for continuously improving the PAED program and inclusive practices in higher education.

3 Results

Below are the results of the questionnaires and structured interviews conducted with students and their faculty from 2016 to 2018.

3.1 Analysis of questionnaires and structured interviews directed at students

The questionnaire analysis directed at students with disabilities who applied for the PAED during the 2016/2017 academic year revealed high satisfaction across various program aspects. These included the information and advice received (91.70%, $N = 33$), responsiveness to their needs (89%, $N = 32$), elimination of physical and communicative barriers (66.7%, $N = 24$), and PAED mediation with faculty (61.10%, $N = 22$). However, 19.40% ($N = 7$) expressed dissatisfaction with the latter.

Additionally, the program's intervention was evaluated as valid, yet students identified the need for operational improvements.

Most students felt integrated with their peers for the 2017–2018 academic year (78.30%, $N = 20$), although 21.70% ($N = 5$) did not feel as included. Furthermore, 62.50% reported receiving peer support, whereas 37.50% ($N = 9$) did not. In terms of diversity attention, 72.70% advocated for more initiatives, with suggestions including consistent program leadership (70%, $N = 17$), prompt resolution of students' needs (68%, $N = 17$), employment of disability specialist staff (79%, $N = 20$), monitoring of faculty adherence to PAED report measures (90%, $N = 23$), mental health training for PAED staff (56%, $N = 14$), provision of psychological counseling (40%, $N = 10$), support for students with ADHD (63%, $N = 16$), enhanced teacher-student interaction (71%, $N = 18$), and increased information about the PAED (36%, $N = 9$).

Interviews from 2016/2017 highlighted students' proposals to improve diversity attention, including the advanced notification to faculty about disabilities and necessary accommodations (27.70%, $N = 10$), a call for more faculty dedication in tutorials, moderated pacing of explanations, use of examples, and simplified vocabulary for optimal subject comprehension. For evaluations, students requested additional exam time and authorization for calculator use when necessary (39%, $N = 14$). They also called for more disability awareness activities, such as workshops and talks (42%, $N = 15$), and demanded qualified staff to cater to various disabilities; improved diversity training for PAED staff; continuous availability of a Spanish Sign Language Interpreter throughout degrees; and agreement on specific signs for degree-specific vocabulary (28%, $N = 10$).

Students expressed a sense of vulnerability due to the program's voluntary nature, relying on teacher goodwill for adaptations, and urged for more excellent PAED mediation with faculty and specific regulations to ensure compliance (11.10%, $N = 4$). They also recommended more flexible academic progression and permanence regulations for students with disabilities due to medical reasons (3%, $N = 1$). They called for improved accessibility in university facilities, such as more elevators and ramps (28%, $N = 10$).

In 2017–2018 interviews, the educational needs of students with disabilities—encompassing visual, hearing, physical, and psychological impairments, specific learning difficulties like dyslexia, ADHD, chronic illnesses, ASD, and intellectual development disorders—were analyzed.

Specifically, students with visual impairments (20%) highlighted the need for better accessibility in teaching aids and facilities, suggesting Braille labeling in elevators, fewer obstacles on campus, and Braille numbering on classroom doors. Those with hearing impairments (5%) faced significant educational challenges due to a scarcity of Spanish Sign Language interpreters, impacting their ability to follow lectures and participate in class discussions. They also pointed out the need for adapted teaching methodologies and increased awareness of deaf community needs within the university (A2, A3, A4, A10, A18).

Students with motor disabilities (40%) listed essential resources such as computers for note-taking and exam completion, digital recorders, and improved physical accessibility of university facilities. The importance of educational assistants to aid mobility was emphasized (A1, A3, A7, A13, A15, A18, A20, A25).

Those with psychological disabilities (40%) expressed the need for support in adapting to university life, managing enrollment procedures, and studying aids, citing difficulties in maintaining attention, memory, and interpersonal relations. They also highlighted the necessity for psychological counseling to address challenging situations (A6, A9, A12, A16, A22).

Students with dyslexia and ADHD (14%) requested faculty assistance organizing and planning their studies. In comparison, those with chronic illnesses (5%) suggested more flexible teaching regulations to accommodate fluctuating attendance and submission deadlines during health episodes.

Lastly, individuals with intellectual disabilities advocated using simple language, avoiding technical jargon to enhance understanding, and adapting texts into easy-to-read formats to ensure comprehension.

3.2 Analysis of questionnaires and structured interviews directed at faculty

Regarding the results of the questionnaire directed at faculty teaching students with disabilities during the 2016/2017 academic year, an inquiry was conducted into the faculty's assessment of the quality of service provided by the PAED.

Generally, faculty were more inclined to implement PAED recommendations when they received advance information about the presence of students with disabilities (78%, $N = 62$) and when the report's recommendations were detailed and precise regarding the required adaptations (41%, $N = 32$). They suggested that the PAED should improve the management of information communicated to faculty about these students and conduct more thorough follow-ups to evaluate the practical implementation of the report's recommendations (74%, $N = 59$). Additionally, the faculty underscored the importance of aligning the content and methodology of their subjects with the recommendations (44%, $N = 35$). Furthermore, a significant majority highlighted the need for faculty training in diversity to better support and advise students with disabilities in the classroom (92%, $N = 73$).

Interviews with faculty revealed a prominent demand for training tailored to meet the needs of students with disabilities. Specifically, they advocated for training in adapting teaching methodologies and techniques to enhance the motivation of these students. The challenge of modifying teaching methods to accommodate students with psychological and intellectual disabilities was noted, mainly when the disability was significant, complicating these students' ability to follow along in class.

In summary, the faculty proposed several improvements to enhance the quality of the PAED program, focusing on aspects related to accessibility (both the teaching-learning processes and the environment) and training in disability matters. They called for more disability specialists to support teaching efforts and provide specific resources to assist students with disabilities. Additionally, the faculty desired a closer relationship with the PAED and the students with disabilities, requesting that information about these students' presence be provided earlier and in greater detail concerning their educational needs.

Teachers' challenges in facilitating students' inclusion were primarily attributed to a lack of knowledge about adapting teaching resources and limited experience teaching students with disabilities. High student-teacher ratios occasionally impeded the provision of personalized attention and adequately responding to students' diverse needs based on their type of disability. The confidentiality of the Individualized Education Program (IEP) reports also hindered the normalization and sharing of information about these students with their peers, which could have facilitated their inclusion.

3.3 Results of the statistical analysis of surveys conducted with students and their teachers

This section explores the relationship between the variable "Improvement of teacher-student-IEP relationship," which addresses measures to enhance attention to the diversity of students enrolled in the IEP from both the students and their teachers' perspectives. It correlates with other qualitative variables such as "greater visibility of the IEP," "intervention in the classroom," "detailed and early information," "closer teacher-student-IEP relationship," "teacher-IEP training," and "accessibility."

The statistical analysis with students regarding their evaluation of the IEP's service quality showed that improvements in service quality facilitated a closer relationship among the parties involved in the educational process (teachers, students with disabilities, and IEP), as evidenced by Fisher's exact test ($p = 0.001$). Additionally, a significant relationship was found between improving the teacher-student-IEP relationship and providing detailed and early information (Phi Coefficient and Cramer's V, $p = 0.047$). Students also highlighted the need for enhanced accessibility in teaching-learning (Phi Coefficient and Cramer's V, $p = 0.047$).

The teachers' assessment of the IEP program's quality averaged close to a pass, with a mean score of $\bar{x}$=4.18 on a scale of 0 to 10, indicating a perceived need for service improvements. The challenges influenced the assessment of the IEP report's usefulness in implementing its recommendations (Soomers' V, $p = 0.015$). These challenges significantly impacted their practical application (Fisher's Test, $p = 0.000$), with teachers who found the recommendations useful being more likely to implement them. In contrast, those facing more significant difficulties exhibited less willingness.

A significant relationship was also noted between the field of knowledge and the need for teacher training (Fisher's Exact Test, $p = 0.047$), particularly in the social and legal sciences (86.40%, $N = 19$), demonstrating the highest demand for diversity training. Furthermore, a significant correlation was found between an improvement in the relationship between teachers with disabilities and the IEP and a closer relationship among the involved parties (Fisher's Exact Test, $p = 0.016$) and detailed and early information (Fisher's Exact Test, $p = 0.003$).

As illustrated in Figure 3, the teachers highlighted the need for a closer relationship (33%, $N = 26$), detailed and early information (44%, $N = 35$), and improved accessibility (21%, $N = 16$). Meanwhile, the students identified key areas for improvement: a closer relationship (47%, $N = 17$), better accessibility (26%, $N = 9$), and more detailed and early information (26%, $N = 9$).

4 Discussion

In the current educational landscape, universities must embrace diversity and inclusion, especially within the context of higher education. This imperative responds to the urgent need to adjust and adapt educational processes to meet the diverse needs of students with disabilities, as highlighted by the Royal Board on Disability (2023).

However, there is a prevalent tendency within universities to adopt a uniform and "univocal" educational model that, unfortunately, overlooks the diversity of student profiles. Padilla-Carmona et al. (2022) have deeply analyzed this perspective, which is deeply rooted in university culture. Pérez-Jorge et al. (2021) criticize this model for relying on generic actions, underscoring the urgency to implement more specific measures and student-centered pedagogical models.

The inclusion of students with disabilities in higher education presents significant challenges and dilemmas. On the one hand, low expectations toward these students often steer them toward less demanding disciplines, underestimating their capabilities. On the other hand, the misinterpretation of educational support as "privileges" hinders their inclusion. Pérez-Jorge et al. (2016) and Pérez-Castro (2022) emphasize that preserving equality requires recognizing and addressing differences to achieve effective inclusion.

Other scholars, such as Díaz-Vega et al. (2021), Palomero and Díez (2022), Rodríguez-Jiménez et al. (2022), and Stentiford and Koutsouris (2022) have highlighted the importance of adapting curriculum and teaching methodologies. They propose a flexible learning design that accommodates the diversity of students with disabilities, minimizing the dependence on reasonable adjustments and reducing content that acts as a barrier in academic programs.

The main findings of this research confirm the relevance of establishing close relationships between students, teachers, and the IEP. Accessibility of the university environment and the elimination of communicative barriers are crucial, as well as providing teachers with detailed and prior information to ensure necessary adaptations. Similar research by Sánchez and Morgado (2021) and Vergunst and Swartz (2021) confirms the importance of these relationships and teachers' flexibility. (Orozco and Moriña, 2023; Moriña-Díez and Almario, 2023) stress that teacher information and training on the needs of this group are essential for their inclusion.

The lack of accessibility, both communicative and physical, remains a significant obstacle. Studies by Rrofiah et al. (2023) and Vásquez-Salguero and Veloz-Tapia (2023) reflect similar issues in other universities. According to Fundación Universia (2023), it is concerning that only 45.61% of universities have implemented plans for accessibility and universal design.

The training and qualification of teachers in matters of diversity urgently require attention, as emphasized by González-Castellano et al. (2021) and Martínez-Murciano and Pérez-Jorge (2023). They highlight the need for specific training in attention to diversity, up-to-date knowledge of disability regulations during the degree, and continuous training in teaching practice (Rondín, 2023).

This study reveals the lack of a comprehensive institutional strategy for diversity care at the ULL, resonating with the findings of Padilla-Carmona et al. (2022). Critical aspects include the scarcity of

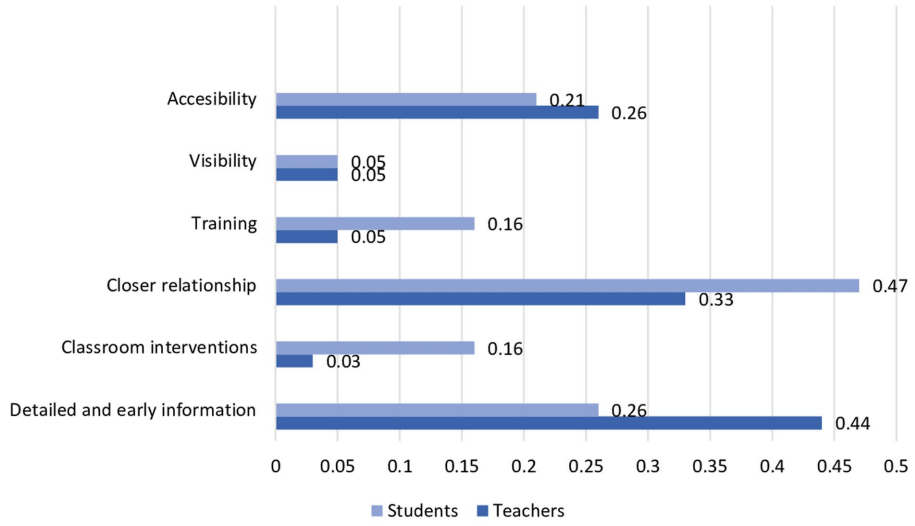

FIGURE 3
Comparison of the percentages of teachers and students about the suggested improvements for the IEP (individualized education program).

resources, the absence of specific regulations, communication and coordination difficulties, and the lack of teacher preparation.

5 Conclusion

This study highlights the critical need for profound reforms to solidify an inclusive educational environment at the ULL. Increasing the visibility of the PAED through dissemination campaigns and events is crucial. These initiatives should promote active participation from the entire university community and highlight the specific educational needs of its students. Enhancing the synergy between the faculty and the PAED is essential, along with providing continuous training in inclusive teaching methodologies that cater to the diversity of the student body, effectively addressing their educational needs.

Involving professionals and disability experts in implementing the teacher training plan is vital. This ensures that necessary physical, material, and curricular adaptations are made to enhance the experience and academic success of students with disabilities. Additionally, expanding the capabilities of the PAED to include psychosocial support and specialized professional guidance is crucial to cater to a particularly vulnerable student body.

Effective management of the PAED by the university is key to avoiding delays in the educational response, which is characteristic of the service's outsourcing period between 2016 and 2018. The risk of dropout or failure among students served by the PAED necessitates the development of individualized support plans tailored to their specific needs. While significant strides have been made toward including students with disabilities, ULL must continue to adapt and expand its strategies to meet this group's needs effectively. This ongoing effort will enhance the quality of education at the university and establish a more accountable and effective model of educational inclusion.

5.1 Limitations and future research

A notable limitation of this study is the small sample size and the age of the IEP records (2016–2018), which restricts the generalization of the results. Further studies are recommended to delve deeper into the needs of these students and into the university culture to foster more inclusive and sensitive pedagogical models.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The requirement of ethical approval was waived by Comité de Ética de la Investigación y de Bienestar Animal de la Universidad de La Laguna (CEIBA) for the studies involving humans because Comité de Ética de la Investigación y de Bienestar Animal de la Universidad de La Laguna (CEIBA). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

LM-G: Writing – original draft, Writing – review & editing. MM-M: Writing – original draft, Writing – review & editing. EO-R: Writing – original draft, Writing – review & editing. DP-J: Writing – original draft, Writing – review & editing.

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References

Barletta, C. M. (2023). Inclusión y accesibilidad en la Educación Superior: estrategias para promover un entorno educativo inclusivo. *Trayectorias Univ.* 9, 1–10. doi: 10.24215/24690090e129

Carballo, R., and Cotán, A. (2024). Inclusive pedagogy at university: faculty members' motivations. *Sustain. For.* 16:4588. doi: 10.3390/su16114588

Cocco, V. M., Lucarini, A., White, F. A., and Vezzali, L. (2024). Virtually meeting "the Intouchables": online contact, sense of community, and prejudice toward people with a disability. *J. Appl. Soc. Psychol.* 54, 332–343. doi: 10.1111/jasp.13031

Dada, S., Flores, C., Bastable, K., Tönsing, K., Samuels, A., Mukhopadhyay, S., et al. (2024). Use of an intelligent tutoring system for a curriculum on augmentative and

alternative communication: feasibility for implementation. *Int. J. Lang. Commun. Disord.* 59, 2279–2293. doi: 10.1111/1460-6984.13084

Díaz-Vega, M., Rodriguez, R. M., and Pino, M. C. G. (2021). La universidad Española ante el ods 4: Los planes estratégicos Como principal barrera Para alcanzar la inclusión. *Rev. Educ. Inclusiva* 14, 69–91.

Fiuza-Asorey, M., Losada-Puente, L., Sierra Martínez, S., and Baña, M. (2023). Luces y sombras en la percepción del alumnado universitario acerca de la inclusión y la diversidad autores/as María Fiuza-Asorey. *Educación XX1* 26, 141–164. doi: 10.5944/educxx1.34475

Fundación Universia. (2023). VI Estudio sobre la Inclusión de Personas con Discapacidad en el Sistema Universitario Español. Available online at: https://www.fundacionuniversia.net [Accessed September 15, 2024]

García-González, J. M., Gutiérrez Gómez-Calcerrada, S., Solera Hernández, E., and Ríos-Aguilar, S. (2021). Barriers in higher education: perceptions and discourse analysis of students with disabilities in Spain. *Disabil. Soc.* 36, 579–595. doi: 10.1080/09687599.2020.1749565

González-Castellano, N., Cordon-Pozo, E., Pueyo-Villa, S., and Colmenero-Ruiz, M. J. (2021). Higher education teachers' training in attention to SEN students: testing a mediation model. *Sustain. For.* 13:4908. doi: 10.3390/su13094908

González-Orbea, G. L., Rodríguez-Estella, M. J., Campoverde-Méndez, M. R., and Bustamante-Morante, J. P. (2023). Brechas en la inclusión de estudiantes universitarios con discapacidad sensorial en la educación superior: Revisión sistemática de la literatura. *Rev. Cient. Arbit. Multidis. Pentac.* 5, 119–134.

Liska, T. M., Pastore, O. L., Bedard, G. D., Ceh, C., Freilich, L., Desjourdy, R., et al. (2024). Evaluating an adapted physical activity program for university students and staff living with a physical disability and/or chronic condition through a self-determination theory lens. *Disabilities* 4, 368–383. doi: 10.3390/disabilities4020024

López-García, M., and Aguilar-López, L. S. (2021). La educación inclusiva en la universidad pública. Entre las políticas educativas y actitudes del profesorado. *Rev. Educ. Inclusiva* 14, 45–68.

Luke, N., Keith, A., Bajcar, N., Sureshkumar, B., and Adebayo, O. (2024). The perceptions of university students as to the benefits and barriers to using immersive virtual reality in learning to work with individuals with developmental disabilities. *Educ. Sci.* 14:812. doi: 10.3390/educsci14080812

Márquez, C. (2022). Percepción del alumnado del Máster en Formación del Profesorado de la ULL sobre la formación recibida para la atención a la diversidad. San Cristobal de La Laguna: Repositorio institucional de la Universidad de La Laguna.

Márquez-González, L. M. (2023). El Programa de Atención a Estudiantes con Necesidades Específicas de Apoyo Educativo (PAED) de la Universidad de La Laguna en el periodo 2016-2018, análisis y propuestas de mejora. San Cristobal de La Laguna: Repositorio institucional de la Universidad de La Laguna.

Martínez-Murciano, M. C., and Pérez-Jorge, D. (2023). "Formación del profesorado universitario en diversidad funcional" in Soñar grande es soñar juntas: en busca de una educación crítica e inclusiva. eds. K. Gajardo and J. Cáceres-Iglesias (Barcelona: Octaedro), 1172–1187.

Ministry of Social Rights and Agenda (2023). Objetivos de Desarrollo Sostenible / ODS. Available online at: https://www.mdsocialesa2030.gob.es/agenda2030/index.htm. [Accessed December 4, 2023]

Moriña-Díez, A., and Almario, I. C. O. (2023). Facilitadores para la inclusión: claves para el éxito universitario. *Rev. Iberoam. Eval. Educ.* 16, 31–45. doi: 10.15366/riee2022.16.1.002

Orozco, I., and Moriña, A. (2023). How to become an inclusive teacher? Advice from Spanish educators involved in early childhood, primary, secondary and higher education. *Eur. J. Spec. Needs Educ.* 38, 629–644. doi: 10.1080/08856257.2022.2145688

Padilla-Carmona, T., González-Monteagudo, J., and Rodríguez, M. A. T. (2022). Lights and shadows: the inclusion of invisible students in Spanish universities. *Auton. Respons. J. Educ. Sci.* 7, 37–44. doi: 10.15170/AR.2022.7.1.3

Palomero, B., and Díez, E. (2022). Requisitos inherentes en la inclusión del alumnado universitario con discapacidad: una revisión de alcance. *Rev. Esp. Discapac.* 10, 53–68. doi: 10.5569/2340-5104.10.02.04

Pérez-Castro, J. (2022). Dilemas de la inclusión y discapacidad en la educación superior. *Perfiles Educ.* 44, 132–149. doi: 10.22201/iisue.24486167e.2022.175.60179

Pérez-Jorge, D., Ariño-Mateo, E., González-Contreras, A. I., and del Carmen Rodríguez-Jiménez, M. (2021). Evaluation of diversity programs in higher education training contexts in Spain. *Educ. Sci.* 11:226. doi: 10.3390/educsci11050226

Pérez-Jorge, D., de la Rosa, O. M. A., del Carmen Rodríguez-Jiménez, M., Márquez-Domínguez, Y., and de la Rosa Hormiga, M. (2016). La identificación del conocimiento y actitudes del profesorado hacia inclusión de los alumnos con necesidades educativas especiales. *Eur. Sci. J.* 12, 64–81. doi: 10.19044/esj.2016.v12n7p64

Pérez-Jorge, D., Martínez-Murciano, M. C., Contreras-Madrid, A. I., and Alonso-Rodríguez, I. (2024). The relationship between gamified physical exercise and mental health in adolescence: an example of open innovation in gamified learning. *Healthcare* 12:124. doi: 10.3390/healthcare12020124

Pérez-Jorge, D., Pérez-Martín, A., Rodríguez-Jiménez, M. C., Barragán-Medero, F., and Hernández-Torres, A. (2020). Self and hetero-perception and discrimination in attention deficit hyperactivity disorder. *Heliyon* 6:e04504. doi: 10.1016/j.heliyon.2020.e04504

Rangel-Baca, A. (2021). Percepción de los profesores universitarios sobre su competencia para la atención a la diversidad. *Rev. Educ. Inclusiva* 14, 25–44.

Rodríguez Jimenez, M. C., Pérez-Jorge, D., and Puerta-Araña, I. (2022). Sordoceguera: Evaluación e intervención en el ámbito socioeducativo y familiar. Barcelona: Octaedro.

Rodríguez-Jiménez, M. D. C., Pérez-Jorge, D., Puerta-Araña, I., and Ariño-Mateo, E. (2022). Quality of life in deafblind people and its effect on the processes of educational adaptation and social inclusion in Canary Islands, Spain. *Educ. Sci.* 12:490. doi: 10.3390/educsci12070490

Rondín, M. C. (2023). Preparación de docentes universitarios basada en la sensibilización para la atención a la diversidad en alumnos de nivel medio superior. *Didáct. Educ.* 14, 327–347.

Royal Board on Disability (2023). Declaración por la educación inclusiva y accesible en España. Spain: Servicio de Información sobre Discapacidad.

Rrofiah, K., Ngenge, R. T., Sujarwanto, S., and Ainin, I. K. (2023). Inclusive education at Universitas Negeri Surabaya: perceptions and realities of students with disabilities. *Int. J. Spec. Educ.* 38, 14–25. doi: 10.52291/ijse.2023.38.18

Sánchez, M. N., and Morgado, B. (2021). Docentes universitarios inclusivos: qué les caracteriza y cómo conciben la discapacidad. *Siglo Cero* 52, 27–43. doi: 10.14201/scero20215212743

Sandoval, M., Morgado, B., and Doménech, A. (2021). University students with disabilities in Spain: faculty beliefs, practices and support in providing reasonable adjustments. *Disabil. Soc.* 36, 730–749. doi: 10.1080/09687599.2020.1751078

Stentiford, L., and Koutsouris, G. (2022). Critically considering the 'inclusive curriculum'in higher education. *Br. J. Sociol. Educ.* 43, 1250–1272. doi: 10.1080/01425692.2022.2122937

Tibau-Avello, M., Rodríguez-Hurtado, D., and Cruz-Loyo, M. C. (2023). La inclusión educativa en la Educación superior: avances, dilemas y retrocesos. *Educ. Soc.* 21, 626–640.

Vásquez-Salguero, J. F., and Veloz-Tapia, C. S. (2023). Necesidades educativas de estudiantes con discapacidad en la formación superior. *Cien. Lat. Rev. Cient. Multidis.* 7, 771–792. doi: 10.37811/cl_rcm.v7i3.6230

Vergunst, R., and Swartz, L. (2021). 'He doesn't understand that he's struggling with the way I felt'–university students, psychosocial disability and disclosure in the Western cape, South Africa. *Disabil. Soc.* 36, 226–239. doi: 10.1080/09687599.2020.1730159