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Analysis of ASD Classrooms: Specialised Open Classrooms in the Community of Madrid

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Abstract: Autism spectrum disorder (ASD) classrooms are specialised spaces within mainstream schools that respond to the educational needs of students with autism spectrum disorder. This research aims to analyse ASD classrooms in the Community of Madrid, their features and internal functioning. The research follows a non-experimental, descriptive and comparative methodology, making a comparison between different classrooms and analysing their impact on the teaching-learning process of students with ASD. The variables refer to the physical environment, the characteristics of the children, training of professionals and collaboration with other organisations. The data was gathered using a questionnaire in digital format, collecting responses from 35 schools, using quantitative techniques to relate variables. The results show that most classrooms have a structured organisation that meet the needs of the students, who are generally diagnosed with moderate severity. Furthermore, the relationship between the teachers of ASD classrooms and the mainstream classrooms promotes inclusive educational practice. Finally, it was found that ASD classrooms offer many benefits, due to the personalised attention they provide and the specialised training of teachers.

Keywords: autism; ASD classrooms; specialist schools; inclusion; special educational needs

1. Introduction

Throughout the history of education, schools have faced many challenges in adapting teaching methods to the needs of society. One of the current challenges is in the inclusion of students with specific educational support needs into the mainstream education system, providing the necessary support for an inclusive education for everyone [1]. Spanish legislation uses the term specific needs for educational support to group pupils requiring a type of education different from the mainstream due to their learning difficulties. Within this term, we can highlight a subcategory called special educational needs, which encompasses pupils with some type of disability (motor, sensorial, intellectual) or behavioural disorder. This is the case with students with autism spectrum disorder (ASD), who have specific, diagnosed characteristics, which require schools to have special support units [2,3]. The ASD term refers to a series of heterogeneous alterations [4–6] of neurodevelopment, which has its origins in the early years, and is usually manifested in social, communicative and behavioural alterations. Despite the progress made in this genetic and medical field, its etiology has not yet been established with complete certainty. However, the latest scientific studies show it to be caused by some neurological [7], genetic [8] and environmental [9] alterations, as well as the volume of the brain and in the temporal, parietal, occipital lobes and thalamus [10]. These characteristics are attributed to a theory of mind alteration [11], which allows us to understand the minds of others, that is, their emotions, feelings, beliefs or thoughts [12]. The nomenclature and definition of ASD and its diagnostic characteristics has undergone a great evolution over time [13], mostly around two fundamental pillars, defined by DSM V [2,3]: persistent difficulties in communication and in social interactions, as well as repetitive and

restricted behavioural patterns. Much current research agrees on this classification and continues to provide valuable data on the disorder [14].

To attend to the needs of ASD students, a conventional classroom learning environment is insufficient for these students, who require a more specialised, adapted curriculum given their specific needs and characteristics [15]. For this reason, the Community of Madrid drafted a new proposal in 2003 to create preferential educational centres for ASD, which met the requirements to attend to these pupils.

As set out in the document "The preferential educational centres for pupils with pervasive developmental disorder in the Community of Madrid" [16], specialist schools represent the perfect union of the advantages of mainstream education (normalised environment, social interactions, etc.) and the support provided by special needs education. That is, these are mainstream schools with the characteristics and support necessary to attend the needs of student with ASD in the classroom. To do this, schools are equipped with specialised classrooms giving support to these children, supervising their learning and making inclusion in their mainstream classroom possible.

The United Nations [17] has stated that an inclusive education within mainstream schools with added support is the best option for students with and without special educational needs [18]. However, due to the nature and characteristics of ASD, this type of support is often insufficient, principally in the case of children who "need a more structured, unvarying and routine environment" [19]. Thus, the Autism Federation of Castilla la Mancha (FACLM), supports a program of specialised schools as the best solution for the education of students with ASD [20,21].

To achieve this objective, guidelines must be set to unify the characteristics of ASD classrooms. These characteristics deemed important on the basis of scientific research will serve as the foundation of the present research, using the variables indicated below. The guidelines establish that all ASD classrooms must meet a series of requirements related to personnel resources, the space and coordination between support teams [22]. Firstly, schools with ASD classrooms are staffed by two special education professionals. The first must have training as a teacher specialised in learning therapy or speech-language pathology, acting in the role of teacher in the ASD classroom. There is also an education specialist III-E or social integration specialist. The specialised training of these professionals will be the key to student development [23–25], reducing the "burnout" in confronting difficulties and lack of awareness [26]. Both of these professionals collaborate with the mainstream classroom teacher and with other specialists of the school in order to ensure a global approach to student learning. If we analyse the student ratio, ASD classrooms may group as many as five students of different ages. With regards to space and educational environment, the ASD classroom must have a fixed, predicable and recognisable organisation [27,28] to reduce stress, behavioural problems [29] and to increase the autonomy of the pupil [30]. Methodologies such as TEACCH or Peana can be used [31]. Classrooms should use visual aids [32] or organise daily routines, agendas or plans. In terms of scheduling, the guidelines recommend that students spend one-third to two-thirds of the school day in their mainstream classroom, according to student development, spending the rest of the time in the support classroom. This helps in the development of social skills [33–35], communication abilities and decreases the risk of exclusion [36]. Currently, there are over 30 methodological models for students with ASD [37,38]. In addition, collaboration with entities such as autism associations or family support groups will be the key to conducting a much more globalised intervention [39–41]. With all of these characteristics, ASD classrooms are the most highly recommended education strategy for students with ASD, offering numerous benefits for the pupil's training [42].

Although these scientific studies identify certain aspects as essential for working with children with ASD, there are numerous differences in the way ASD classrooms operate within the Community of Madrid. This is due to the lack of specification in the law, as well as the absence of previous studies of those classrooms and their operation. Therefore, this research aims to create a unified criterion, establishing the general basis of this type of schooling, always taking into account previous scientific articles as a starting point. We will attempt to answer the following question: are ASD classrooms in

the Community of Madrid acting according to the previous scientific evidence about working with children with ASD?

Thus, the principal aim of this research project is to analyse the general characteristics of these ASD classrooms within the Community of Madrid, verifying their adequacy with the educational needs of students with ASD within the framework of the mainstream education system. In addition, these classroom characteristics will be related to current scientific evidence.

We believe the present research adheres to the principles of the United Nations 2030 global agenda, which includes sustainable development goals and care for the environment, falling within several areas addressing is issue of disability; specifically, Health and Wellbeing (Goal 3), related to the quality of life of those with disabilities; Quality Education (Goal 4), guaranteeing the adequacy of the education system for students with ASD and their families through specialised classrooms; and Reduction of Inequalities (Goal 10), seeking the inclusion of ASD classrooms within ordinary centres.

2. Materials and Methods

The present study has followed a non-experimental methodology, since the independent variables cannot be manipulated. A descriptive and comparative design has also been used, analysing the reality of this classrooms and establishing relation between variables, taking previously collected descriptive data as the point of departure [43].

To collect the data, a self-created questionnaire (Appendix A) was used as a consequence of the lack of previous questionnaires for ASD classrooms. This format was used for its versatility and efficiency, permitting researchers to collect a great deal of information on a number of variables, selecting a specific sample of the population. The questionnaire was created in paper and digital formats (Google Forms), using the latter format exclusively given the current limitations in visiting schools. The questionnaire consists of 54 questions, divided into seven sections, according to the main points outlined above:

- General data about ASD classrooms;
- Physical characteristics of the classroom;
- General characteristics of the students;
- Relation ASD classroom/mainstream classroom;
- Relation ASD classroom/school/state;
- Teacher training for ASD classrooms;
- Conclusions and general overview.

The variables analysed in this research are the layout of the ASD classroom, general profile of ASD students, collaboration and assistance for ASD classrooms, ASD classroom teacher training, relation between ASD classroom and mainstream classroom (channels for communication and collaboration between ASD classroom and mainstream classroom professionals to promote student inclusion), benefits of ASD classrooms (positive aspects of this type of educational methodology) and shortcomings of ASD classrooms (negative aspects of this type of educational methodology) as dependent variables. In addition, the study analyses the relation between the number of students referred to special education according to the type of centre and the antiquity of the ASD classroom, with the number of meetings and the collaboration and communication among professionals, acting as independent variables.

To carry out this research project, all the pre-primary and primary schools in the Community of Madrid with ASD classrooms were selected as part of the sample. Secondary schools were eliminated from the sample since their ASD classrooms are organised differently and student profiles are more diverse. To establish contact the sample, the database of the Community of Madrid indicating the preferential education centres was consulted. The questionnaire was sent via email to a total of 323 educational centres, divided into the following territorial areas: 113 educational centres in the City of Madrid, 38 centres in the North of Madrid, 53 centres in the East of Madrid, 37 centres in the West of Madrid and 114 centres in the South of Madrid.

After a month of data collection, and as a consequence of the state of emergency caused by the ongoing health crisis, 35 completed questionnaires were collected from schools from across the Community of Madrid, elaborated by tutors of the ASD classrooms. A total of 77.1% of these schools were public, while 22.9% of respondents were charter schools. No information was received from private schools. Some 91.4% of the classrooms were for pre-primary students, 80% were for primary students and only 11.4% were for secondary students. This is due to the fact that the majority of ASD classrooms have children of different levels of maturity (22 pre-primary and primary classes; 3 pre-primary, primary and secondary classes and 1 primary and secondary), while a minority only having students from one level (7 classrooms of pre-primary and 2 of primary).

For a more objective sample, different classrooms were categorised by date of creation, grouping the results of older classrooms and newer classrooms, that is, those created since 2002 until the 2019–2020 academic years. As for the number of students in these classrooms, 60% have 5 students (the maximum number permitted by the Community of Madrid). The rest have 4 students (28.6%), 2 students (5.7%), 3 students (2.09%) or 6 students (2.9%).

The aim of this research project is to determine the benefits and shortcomings of ASD classrooms in the learning-teaching of students with ASD. We began with a bibliographical search for research papers on this type of education method ology. Legal, regulatory and scientific documentation was collected in order to draft a study of the ASD classrooms throughout Spain and then focussing on those located within the Community of Madrid. A database was created of schools equipped with ASD classrooms according to the official records of the Community. To collect information about the specific characteristics of ASD classrooms, a questionnaire was produced in both paper and digital formats. The questionnaire was sent by e-mail to the selected schools, attaching a verification letter from the University.

The results were analysed using IBM SPSS STATISTICS version 22.

3. Results

The collected data has been grouped according to a series of variables and different items in order to have a global overview of each variable.

3.1. Layout and Organisation of ASD Classroom

The data related to the physical organisation of the ASD classroom is presented below, taking into account aspects such as distribution and organisation of the ASD classroom, with designated zones for each task or using resources and methodologies to facilitate the teaching-learning process. As shown in Figure 1, the percentage of centres which meet the required criteria is also shown. Thus, we see that 94.3% of ASD classrooms are organised into work zones, each for a different specific task. This corresponds to the TEACCH methodology, used by 85.70% of ASD classrooms. All teachers claimed that this distribution is effective in fomenting learning although only 80% reported that their classroom is adapted to the real needs of their students. A similar percentage (82.9%) reported changing the distribution of the classroom every year according to the profile of the students.

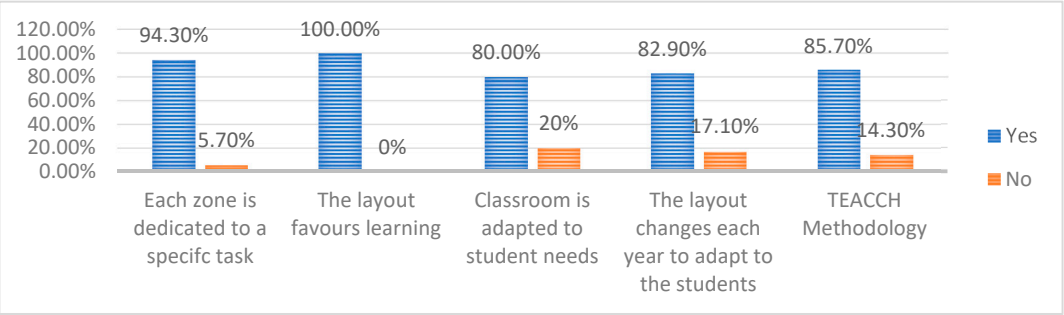

Figure 1. Layout and organisation of autism spectrum disorder (ASD) classrooms: general aspects.

In Figure 2, we can see how ASD classrooms are divided into a series of specific zones: to inform (100% of classrooms), individual work (94.3%), group work (91.4%) and a quiet zone (94.3%). Some 60% admit they lack exclusive washroom area for personal hygiene. Additionally, all classrooms use visual aids, such as pictograms, to indicate the distribution of the spaces.

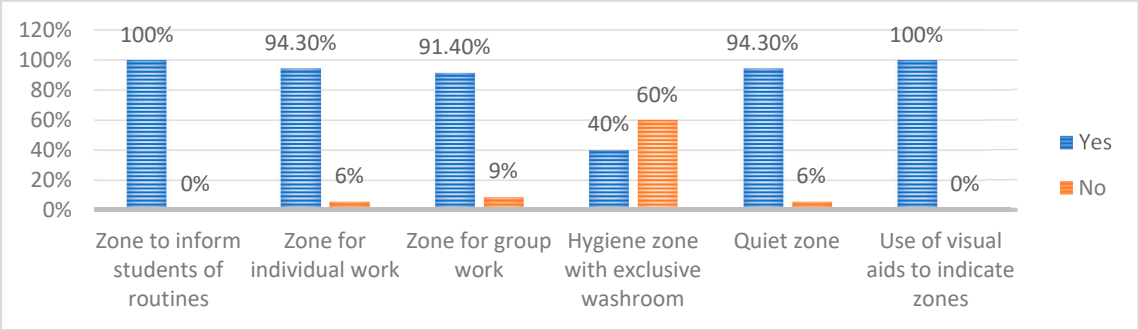

Figure 2. Layout and organisation of ASD classrooms: specific zones.

3.2. *General Profile of ASD Students*

In this section, the student characteristics are analysed, taking into account general data related to student profiles in the ASD classroom. This includes aspects such as social and communicative problems, stereotypy, behavioural problems, intellectual disabilities, symbolic play deficits or absence of eye contact.

As we can see in Figure 3, the students of ASD classrooms generally have social impairments, communication difficulties or behavioural disorders. Some 57.1% require a constant daily routine or agenda, while support for communication, either through augmentative and alternative communication (AAC) systems or visual aids, is generalised for 40% of students. Some 82.9% of students always or almost always have social impairments. Additionally, some (31.4%) display stereotypic behaviour, such as hand washing, flapping, object alignment, rocking or unintentional vocalisations. Regarding behavioural problems, 34.4% of students have behavioural problems in two or more environments; however, 40% are never self-injurious (self-harm) and 20% never display aggression or harm others. Symbolic play deficits are very frequent or constant (65.7%), and the absence of eye contact is occasional (34.3%). A total of 48.6% of the ASD professionals report their students have a low intelligence quotient (IQ) for their age.

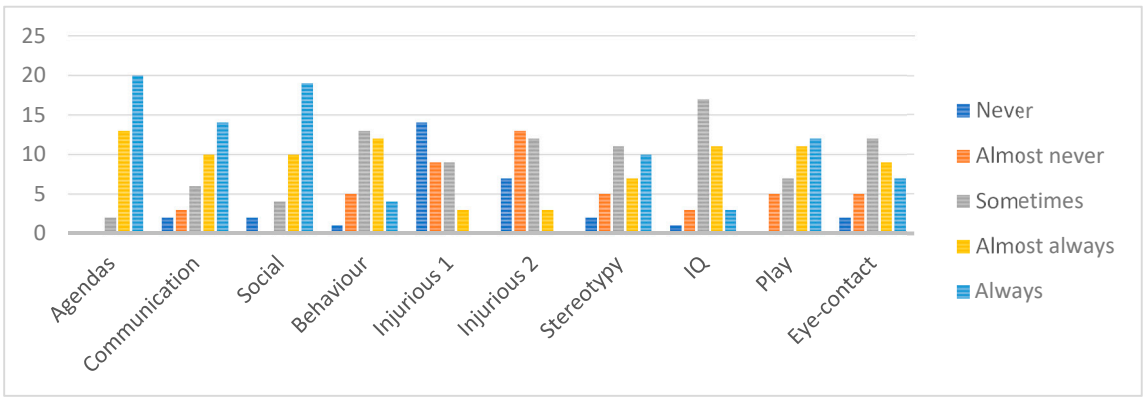

Figure 3. General profile of ASD classroom students.

Regarding the number of students evaluated for special education, 63% have not evaluated any students, while 26% have evaluated one student and 11% have evaluated two students. A significant relation was found using a Chi-square test between the type of school and the number of students

evaluated for special education (χ^2 (2) = 7, 14, $p < 0.05$). Charter schools assign more students to special education than public schools. Furthermore, the Chi-square test indicates that a significant relation can be established between the academic year the ASD classroom was created and the students assigned to special education (χ^2 (20) = 34, 1, $p < 0.05$), newer ASD classrooms assign more students than those of older creation.

3.3. Relation between ASD Classroom and Mainstream Classroom

In this case, the relation between ASD classroom and mainstream classroom is analysed according to the number of hours students spend in their mainstream classroom. According to guidelines of the Community of Madrid, ASD students should spend more than half of their school day in their mainstream classroom. Figure 4 shows that some 76% comply with this recommendation; 34% of ASD students spend between 10 and 15 h in their mainstream classroom, while 32% spend between 15 to 20 h and 10% spend less than 5 h per week in the ASD classroom. However, 24% of ASD students do not comply with these guidelines; 19% spend between 5 and 10 h in their mainstream classroom and 5% spend 20 h a week in the ASD classroom.

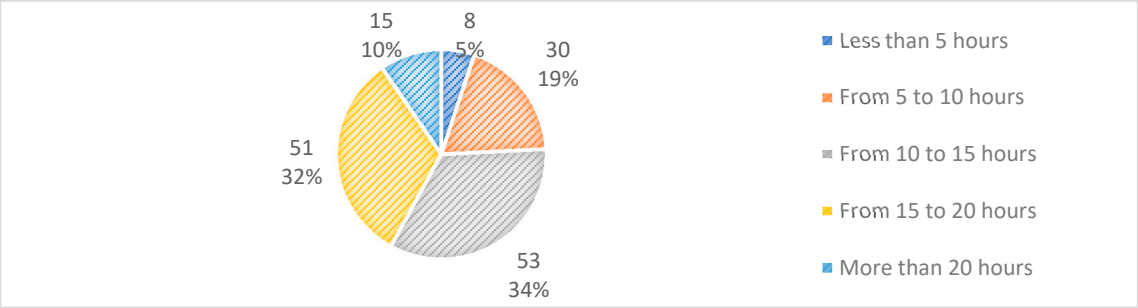

Figure 4. Number of hours ASD students spend in their mainstream classroom.

As shown in Figure 5, the relationship between the mainstream classroom and the ASD classroom is established, analysing the channels for communication and collaboration between ASD classroom and mainstream classroom professionals to promote student inclusion.

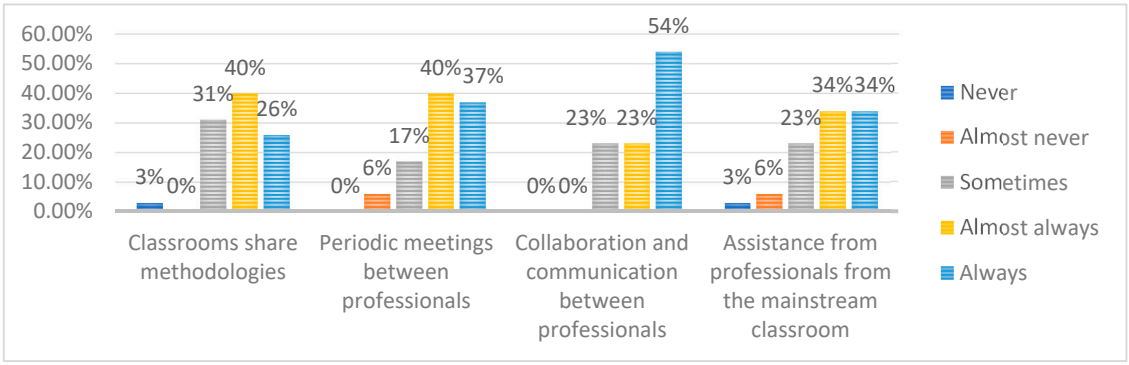

Figure 5. Relation between ASD classroom and mainstream classroom.

Thus, we see that 54.3% of ASD classroom professionals report having constant communication and collaboration with the mainstream classroom teacher, almost always through periodic meetings (40%). Additionally, 40% almost always share classroom methodologies, with only 2.9% not doing so. Of the respondents, 68.6% regarded this collaboration between professionals as positive.

As shown in Figure 5, some 54% of ASD classroom professionals report having constant communication and collaboration with the mainstream classroom teacher, almost always through

periodic meetings (40%). Additionally, 40% almost always share classroom methodologies, with only 2.9% not doing so. Of respondents, 68.6% regarded this collaboration between professionals as positive. According to the Chi-square test, we can establish a significant relation between collaboration and assistance between professionals and the regularly held meetings (χ^2 (6) = 19, 1, $p < 0.05$), the collaboration increases when periodic meetings are held. Furthermore, there is also a significant relation between this collaboration among professionals and the continuity of methodologies (χ^2 (6) = 12, 7, $p < 0.05$), the methodologies are shared when there is fluid and constant collaboration.

3.4. Collaboration and Assistance Received by ASD Classrooms

In this variable, the collaboration and assistance in the classrooms are analysed taking into account the institutional support from the school, autism associations, families or the Community of Madrid. Thus, as it is shown in Figure 6, ASD classrooms positively rate the collaboration of the educational community, 37.1% receiving continuous assistance. However, 5.7% report receiving no assistance from the school. Regarding the autism associations, 28.6% receive sporadic assistance, while 31.4% report they almost never receive assistance. The evaluation of these associations is generally negative. On the other hand, families of ASD students always or almost always collaborate with classroom professionals (80%), closely involving themselves in their children's education. Finally, the Community of Madrid received the most negative evaluations; some 35.7% of teachers report they never or almost never receive assistance from the Community.

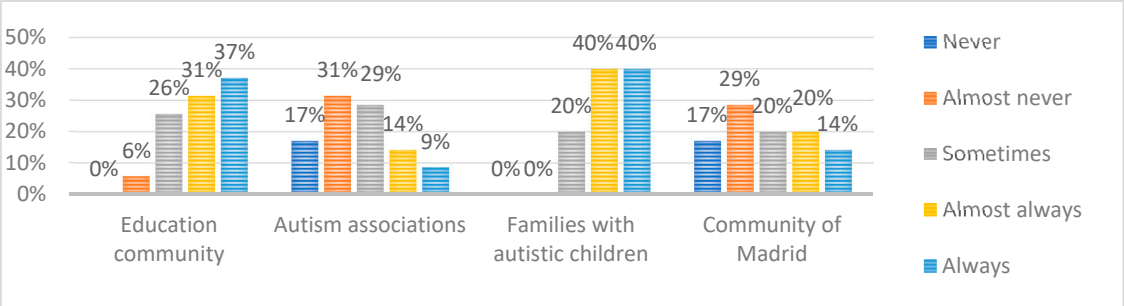

Figure 6. External collaboration and assistance received by ASD classrooms.

3.5. Teacher Training for ASD Classrooms

Figure 7 analyses the professionals assigned to each ASD classroom taking into account their professional profile and the level of satisfaction with the training received in university for teaching in an ASD classroom environment in a professional capacity. According to Figure 7, ASD classrooms are generally staffed by two education professionals. The first is generally specialised in learning therapy (LT) (60%) or speech-language pathology (SLP) (31.4%). The second member of the team is generally a trained education specialist (68.6%), although some have training in LT (2.9%), SLP (5.7%) and others in psycho-pedagogy or counselling (22.9%).

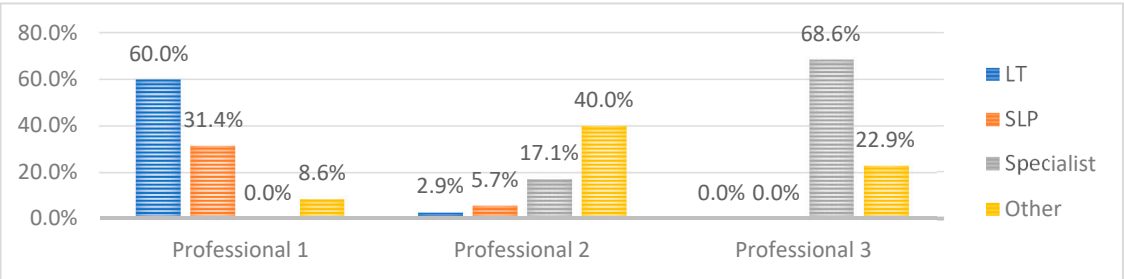

Figure 7. Teacher training for ASD classrooms.

With regards to university training, as we can see in Figure 8, some 49% positively evaluate the skills acquired at university; while 46% believe these are not sufficient. A total of 34% reported they received training in educational diversity, but insufficient for their role in the ASD classroom. Some 17% received no training in educational diversity. All of the ASD classroom professionals report seeking additional training to update their knowledge about autism, although 29% recognise they do not receive enough training.

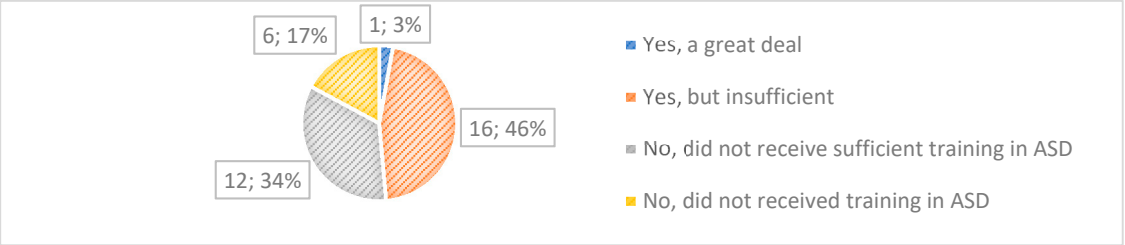

Figure 8. Positive evaluation of skills training received at university.

Figure 9 analyses the awareness of professionals about the applicable ASD classroom guidelines. It can be observed that 71% of ASD classroom professionals have autonomously read or researched the Community of Madrid guidelines. Only 23% report having received training on these guidelines and 6% are unaware of these guidelines. If we establish a relation between the academic year in which the ASD classroom was created and the knowledge of ASD professionals about applicable guidelines, the Chi-square test indicates that there is indeed a relation between these two variables (χ^2 (20) = 32, 4, $p < 0.05$), and we see that the earlier the classroom was established the less knowledge teachers have of applicable guidelines.

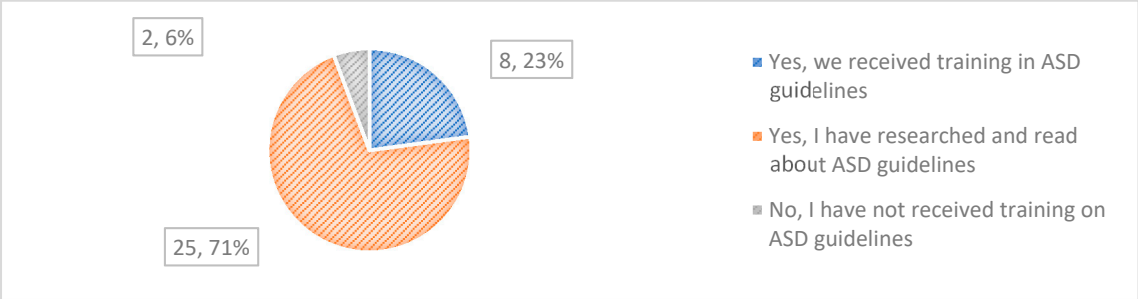

Figure 9. Knowledge of ASD classroom guidelines among professionals.

3.6. Benefits and Shortcomings of ASD Classrooms

Figures 10 and 11 show the results of the data collected about the benefits and shortcomings found in the ASD classrooms. As shown, all ASD classroom professionals evaluate positively the personalised attention to students provided by this type of schooling (100%), as well as the inclusion of ASD students in their mainstream classrooms (68.6%). According to Figure 10, other notable positive aspects are the adaptation of the classroom environment to the needs of students (48.6%), the use of visual aids (48.6%) or specialised training for teachers (40%).

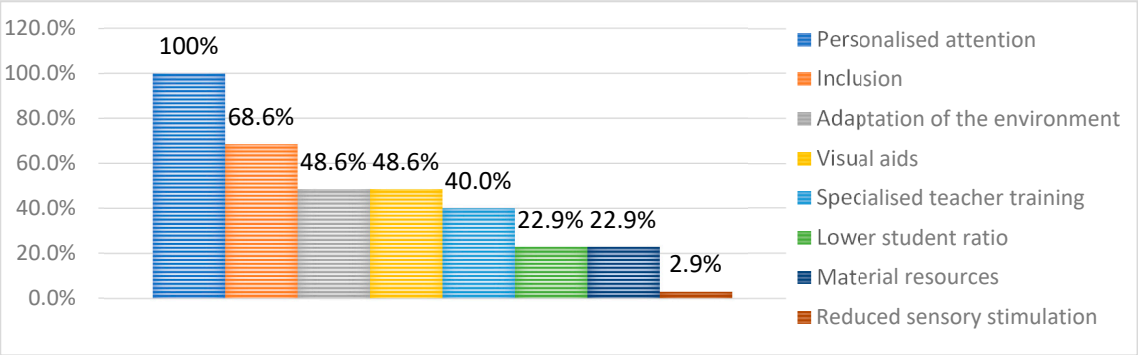

Figure 10. Benefits of ASD classrooms in the Community of Madrid.

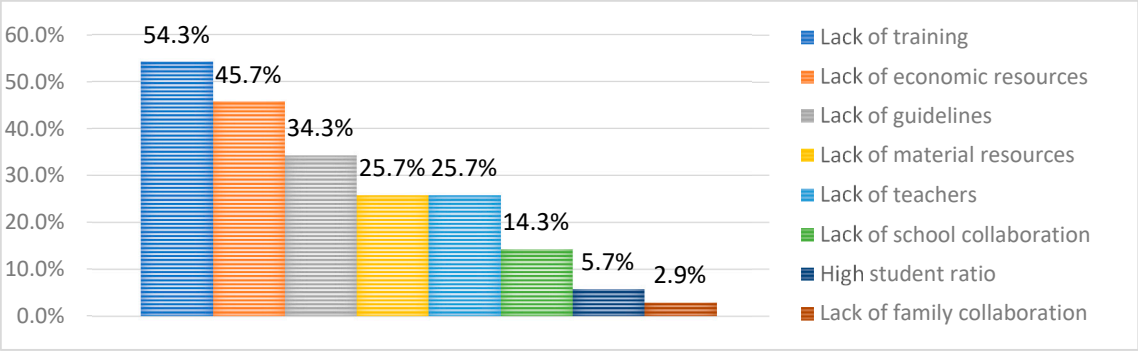

Figure 11. Shortcomings of ASD classrooms in the Community of Madrid.

Regarding the shortcomings, Figure 11 shows that ASD classroom professionals highlighted the lack of specialised training (54.3%) both for ASD classroom teachers and for the rest of the educational community. Furthermore, 45.7% point to a lack of financial resources and 25.7% to the lack of material resources. Notably, 34.3% of these professionals request clear and precise guidelines and more teachers in ASD classrooms (25.7%).

4. Discussion

After conducting an objective analysis of the results, a series of conclusions or conjectures were drawn from the data. Firstly, we can affirm that a large majority of ASD classrooms are organised into different zones, a practice recommended by many authors and methodologies [44–46]. Additionally, it was observed that teachers work to ensure these zones enhance ASD student learning, favouring personal, emotional and cognitive development. Findings show some differences in the ASD classroom with regard to zones for group work and hygiene. It may be supposed that classroom without group work zones are those with children in pre-primary education, presenting greater social and communication difficulties. Regarding hygiene zones, many ASD classroom professionals point to the need for an exclusive washroom area, in order to build student autonomy, for example bladder control. Additionally, of the 14 ASD classrooms with an exclusive washroom area, 13 have pre-primary students. It may be supposed, therefore, that this type of zone is more necessary for younger children, and less essential in classrooms for primary and secondary students.

Secondly, the ASD students subject to the present study display qualities and characteristics which make this type of schooling essential. Student profiles generally show moderate severity of ASD, perhaps slightly greater among pre-primary students. This is in accordance with applicable guidelines. Difficulties are especially prevalent in communication and social interaction and rigidity in terms of time planning (routines). Less common among the students was self-injurious or aggressive or harmful behaviour towards others; this is an important factor in favouring inclusion in mainstream

classrooms. We were unable to establish a statistically significant relation between social impairment and communication difficulties or behavioural disorders. However, some studies have found a link between behavioural problems and communication difficulties [14], since the lack of tools to communicate desires or requests can lead to disruptive behaviour in the classroom.

The significant heterogeneity of the results may be explained by two factors, the broad variability of the autism spectrum [47] and the presence of students at different levels in the same classroom. Furthermore, it is evident that the number of children diagnosed with ASD is increasing, resulting in a broad range of different characteristics. This factor is evident when analysing the cases of assignment to special education. The significant relation between the year in which the ASD classroom was created and the number of students evaluated may account for the increase in cases This may be the result of better training of classroom professionals, the increasing collaboration between external agents, such as educational and psycho-pedagogical guidance teams (EOEPs) or simply of the entry of new students (who were evaluated while within the mainstream school system). As for any significant relation between student evaluations and the type of school, it was impossible to reach any conclusion on this question. An in-depth study into this possible relation is an interesting area for future research.

Thirdly, the great majority of ASD professionals report positive collaboration with mainstream classroom teachers, although it is worrying that 8% report they rarely or never communicate. Regarding the number of hours spent in the mainstream classrooms, we see that the lowest figures correspond to pre-primary students, perhaps due their greater difficulties and need for a more structured environment. Students at the secondary level generally spend more than 20 h per week in their mainstream classrooms, a positive level of inclusion. In general terms, we can establish that ASD classrooms require fluid collaboration with other education professionals [48], especially mainstream classroom teachers. Some authors [49] maintain that teacher training and collaboration between professionals are essential factors in successful educational inclusion.

Fourthly, an analysis of the collaboration and assistance received by ASD classrooms offers a mixed picture. Although professionals report as highly positive the assistance received by the school and families of children with ASD, autism associations and the Community of Madrid receive poor ratings. Of note is that 45% of ASD classrooms report they never or almost never receive assistance from the Community of Madrid, although no significant relation has been established between this factor and the type of school. Almost 49% rate negatively the work performed by autism associations. This may be due to the lack of communication between schools and associations, an essential factor in these circumstances. We may conclude that ASD classrooms require more assistance and support to ensure they operate effectively, something which is lacking at present.

Fifthly, with regards to the training of ASD classroom professionals, 51% do not have a positive rating for the training received in University for the performance of their classroom work. Many authors [50,51] report similar findings, indicating that "only a few teachers acquired the necessary skills during their university education, those with the most positive attitude". Establishing a significant relation, we can see that ASD professionals of classrooms created since 2015 received better training than those with longer years in the profession, possibly the consequence of improved university training in this field. Furthermore, many ASD classrooms demand more specific guidelines for the functions and training of ASD professionals, who generally do not have the necessary training and their working hours are not clearly established. The findings show that newly created ASD classrooms (2018) more closely comply with established guidelines, either due to the training received or because they informed themselves independently. However, ASD classrooms created in 2019 did not receive training in this area, perhaps due to the current difficult situation caused by the COVID-19 virus or lack of time.

Finally, it has been demonstrated that ASD classrooms offer a multitude of benefits for their students. The most positive of these being greater personal attention and inclusion. However, we must also note certain negative factors, such as inadequate professional training (as seen above) and the lack of economic or material resources. No significant relation could be established between

the latter and the type of school, although we should note that 87.5% of professionals demanding more resources are in public schools. Thus, it can be said that ASD classrooms represent a positive educational option for students with autism, adapted to their personal needs and characteristics and working to develop fully their capacities. These classrooms are staffed by dedicated professionals and enjoy supportive environments although there are some areas for improvement which must be addressed. Nonetheless, the Autism Federation of Castilla la Mancha regards these classrooms as the best option for the education of students with ASD [19].

With regards to the limitations of the research, it should be noted that the present study was conducted using a very small sample (35 classrooms), due to the low response rate received, and thus the results do not necessarily reflect the realities in all ASD classrooms within the Community of Madrid. Therefore, the results cannot be extrapolated to all cases but offer an approximate, general overview using the charts and graphs above. Furthermore, certain aspects of the study can be significantly improved, such as reducing the excessive length of the questionnaire or using different questionnaires for ASD classrooms with students at different stages of education.

As for future lines of research, a possible improvement is the validation and reliability testing of the questionnaire to verify its quality and ensure objective results; furthermore, it is necessary to increase the number of responses by again contacting all ASD classrooms in the Community of Madrid. It would also be advisable to visit these classrooms in person, in order to guarantee the reliability of the responses. Regarding the analysis of the results, more complex statistical procedures could be used to establish significant relations between different variables. Such an analysis would provide more accurate information about the classrooms and their operation. Finally, it would be advisable to expand the results with more bibliographical references that could provide additional veracity to the conclusions obtained in this article.

To sum up, this research has aimed to provide a common criterion for ASD classrooms, contrasting their most important aspects with current scientific evidence. The absence of specific regulations, as well as the paucity of scientific articles on this type of schooling, significantly hinder the performance of ASD classroom professionals. Therefore, this research addresses these real needs with the objective of correcting these deficiencies in order to improve the quality of education provided to these students and to unify modes of action.

This research has analysed various contexts of children with ASD in order to determine if the educational program offered is adequate to their needs and conform to ASD classroom guidelines, based on scientific studies of students with autism spectrum disorder. The aim is to ensure that methodologies and tools are effective in providing an inclusive education for all. A further goal is to establish a unified educational response across all the ASD units and classrooms, avoiding that these solely depend on the training the teacher or counsellor has received, which, on many occasions, may be insufficient.

Common regulations and guidelines for ASD classrooms will ensure the needs of these students are adequately addressed, making learning possible with and among their peers.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

The main objective of this questionnaire is to collect data about the ASD classrooms in the Community of Madrid, in order to analyse their general characteristics and the differences between them. The data collected will be confidential, so you can answer as honestly as possible. Thank you very much for your help.

Table A1. Ask with an X the answer considered that you consider most in line with your ASD classroom.

Are you an ASD teacher? Yes / No ...
Type of centre: Public / Private / Charter school...
Academic course in which this classroom was created: _____.
Existing educational stages: Pre-primary / Primary / Secondary.
Number of ASD students in your current classroom: _____.
Number of professionals and their title: _____.
- Professional 1: LT / SLP / Teacher / Psychologist / Psycho-pedagogy/ Nurse / Physiotherapist /Technical.
- Professional 2: LT / SLP / Teacher / Psychologist / Psycho-pedagogy/ Nurse / Physiotherapist /Technical.
- Professional 3: LT / SLP / Teacher / Psychologist / Psycho-pedagogy/ Nurse / Physiotherapist /Technical.
- Professional 4: LT / SLP / Teacher / Psychologist / Psycho-pedagogy/ Nurse / Physiotherapist /Technical.
In case you are a public professional, what specialty did you choose at the beginning? _____.
Is there exist the "teacher in the shadow" role in the classroom or school? _____.
Number of students evaluated in the ASD classroom to go a Special School? _____.
Why they were evaluated?

Table A2. Mark with an X the answer considered that you consider most in line with your ASD classroom.

PHYSICAL CHARACTERISTICS OF THE ASD CLASSROOM.		
	Yes	No
Is there a specific area to report routines and activities? (Agendas, weekly and monthly calendars, etc.)		
Does the classroom have an area for individual work?		
Does the classroom have an exclusive area for group work?		
Is there a hygiene area with an exclusive toilet for the ASD classroom?		
Does it have a relaxing area?		
Is each zone dedicated to a specific activity?		
Do you use visual aids to inform on the distribution of the different areas?		
If so, please specify which ones:		
Do you consider that the distribution of your classroom encourages student learning?		
Justify your answer		
Do you consider that your classroom is adapted to your student's needs?		
Justify your answer:		
Does the distribution of the classroom change each year according to the children´s characteristics? Do you use any type of methodology within the ASD classroom?		
If so, please specify which ones:		
Briefly describe the materials you use to work with children with ASD		

Table A2. *Cont.*

PHYSICAL CHARACTERISTICS OF THE ASD CLASSROOM.					
GENERAL CHARACTERISTICS OF THE STUDENTS					
Answer the questions with a number from 1 to 5; where 1 is: No / never; 2: Hardly ever; 3: Sometimes; 4: Often; 5: Yes / always	1	2	3	4	5
Most of the children in the ASD classroom usually need routines and agendas to structure their time					
If so, indicate what type of agendas and / or routines:					
They usually need communication supports (for example: Boards, communication notebooks, visual aids, AAC, PECS, etc.)					
If so, indicate which ones:					
They usually present alterations in social interaction (for example: Inability to develop relationships with peers, lack of social or emotional reciprocity)					
Most have behavioural problems in two or more contexts					
They tend to present harmful behaviour towards themselves					
They tend to present harmful behaviour towards their classmates or other teachers					
Most of them present stereotyped behaviour such as hand washing, aligning objects, flapping ...					
If so, indicate some examples of stereotypical behaviour:					
The intellectual level is usually lower than the corresponding to their age					
They usually have difficulties in symbolic or imaginative play					
They tend not to have eye contact					
RELATIONSHIP ASD-CLASSROOM OF MAINSTREAM CLASSROOM					
Answer the questions with a number from 1 to 5; where 1 is: No / never; 2: Hardly ever; 3: Sometimes; 4: Often; 5: Yes / always	1	2	3	4	5
There is collaboration and fluid communication among the professionals in both classrooms					
The teachers in both classrooms hold regular meetings to monitor students with ASD					
The student usually spends more than half of his teaching day in the mainstream classroom					
Specify how many hours per week approximately each student spends in your mainstream classroom: - Student 1: _____ - Student 2: _____ - Student 3: _____ - Student 4: _____ - Student 5: _____					
Every methodology used in the ASD classroom usually has continuity in the mainstream classroom (*for example: Manipulative materials, study techniques, learning strategies, etc.)*					

Table A2. *Cont.*

PHYSICAL CHARACTERISTICS OF THE ASD CLASSROOM.					
RELATIONSHIP AMONG THE ASD CLASSROOM -EDUCATIONAL CENTER-STATE					
Rate your satisfaction level from 1 to 5 with the following factors, being 1 "not at all satisfied" and 5 "very satisfied"	1	2	3	4	5
Collaboration and help from the ordinary teachers to the ASD classroom.					
Collaboration and help from part of the educational community: Material resources, regulations, support for families, regular meetings with the management team, etc.					
Collaboration and help from Autism specific associations: Trainings on ASD, regular visits, fluid communication, etc.					
Collaboration and help from the families of the children in the ASD classroom					
Collaboration and help from the Community of Madrid: Regulations, *legislation, etc.*					
ASD CLASSROOM TEACHER TRAINING Do you consider the knowledge acquired at university is useful for your work in the ASD classroom? ○ Yes, definitely. ○ Yes, but it is not enough ○ No, I received training on Attention to Diversity, but it was not enough ○ No, I did not receive any training about this topic. ○ Others: _____					
Have you continued training in autism since you left college? ○ Yes, I usually attend educational courses and conferences ○ Yes, but less than I would like ○ No, but I would like ○ No, I don't think it's necessary Do you know the regulations proposed by your Autonomous Community on the operation of ASD classrooms? ○ Yes, we have received training on it ○ Yes, I have researched and read about it ○ Yes, but I don't think it's useful ○ No, you have not received this regulation ○ No, my Autonomous Community does not have a regulation ○ Others: _____					
CONCLUSIONS AND GENERAL VIEW What benefits of the ASD Classrooms do you consider most important for the education of the students? You can check up to three options: ○ Personalized attention ○ Specialized teacher training on ASD ○ Adaptation of the environment ○ Visual supports ○ Less sensory stimulation (smells, sounds, etc.) ○ Lower ratio ○ Inclusion of students in their mainstream classroom ○ Material resources ○ Others: _____ What disadvantages of the TEA Classrooms do you consider most important for the education of the students? You can check up to three options. ○ Little training of the TEA classroom teachers ○ Few economic resources ○ Few material resources ○ Little collaboration from other professionals at the centre ○ Little collaboration from families ○ A unified standard for TEA classrooms throughout the community ○ Few teachers ○ Others: _____ If you had to transmit to the Community of Madrid an improvement proposal to help all TEA classrooms, what would it be?					

Thank you very much for your help. If you have any questions, suggestions or information you want to contribute to this project, please contact us.

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