Children With Disabilities Attending Montessori Programs in the United States

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Abstract: Early childhood education plays a critical role in establishing positive social-emotional behaviors and promoting the development of skills needed to succeed in elementary school. Although inclusion of children with disabilities (CWD) in early childhood classrooms is increasing throughout the world, numerous social, logistical, and political factors continue to present challenges to full inclusion. The Montessori educational approach, established at the beginning of the 20th century and now applied widely throughout Europe and the United States, may present a highly suitable learning context for CWD, particularly given its historical basis in efforts to meet the needs of underprivileged and cognitively delayed children. On a theoretical level, the inclusion of CWD should be an accepted practice for Montessori programs, yet reports of the number and characteristics of CWD attending Montessori programs are scarce. This paper reports upon the findings of a survey of the current enrollment of CWD in U.S. Montessori Early Childhood programs. The survey indicated that CWD represent 3.75% of the Infant and Toddler (0–3 years) population and 8.49% of the Early Childhood (3–6 years) population at responding institutions. Additionally, although school directors indicated that their teachers generally feel confident and competent including CWD in their classrooms, they expressed a need for ongoing professional development and additional support from special education experts to further strengthen the inclusion of CWD in all aspects of Montessori education.

More than 100 years have passed since Maria Montessori developed her namesake pedagogical Method, now implemented in thousands of schools across the world. According to the American Montessori Society as cited by Hiles (2018), there are approximately 20,000 Montessori schools globally. However, no reliable estimates exist of the number of children with disabilities (CWD) enrolled in these schools. This is surprising considering the origins of the Method in Montessori's work with children facing social, economic, and cognitive disadvantages (McKenzie & Zascavage, 2012).

Montessori used her own observations to develop a teaching Method incorporating five components that she considered essential to build a strong developmental foundation for all children while also providing individually tailored programs (American Montessori

Society, n.d.). Many aspects of these core components are aligned with what are considered best practices for teaching CWD (Table 1).

In 2014, the Division of Early Childhood of the Council for Exceptional Children developed a set of recommended practices for supporting the development of CWD. These best practices include the use of teaching strategies tailored to the needs and interests of each child, systematic and phased instruction, and embedding opportunities for learning within relevant and naturally occurring contexts; these practices are well served by the Montessori approach. Additional recommended practices—including freedom of movement for students, peer-mediated instruction, and opportunities for social-emotional development—are also reflected in core aspects of the Montessori Method. Further evidence of this alignment is provided in Table 1, which maps core components of Montessori pedagogy to specific recommended practices and expands upon the evidence-based benefits for CWD.

Table 1

Core Components of the Montessori Method Matched to Practices Recommended by Division for Early Childhood

Feature of core component	Benefit to children with disabilities (CWD)	Summary of practices for young children with disabilities recommended by Division for Early Childhood (DEC)
	Trained Montessori teachers	
Teachers observe each child and guide them toward activities tailored to support their individual needs, interests, and developmental stage.	Responsive teaching and differentiated instruction are core tenets of numerous prevailing models of early intervention for CWD (DEC, 2014; Long, 2019; McWilliam, 2016; Strogilos, 2018).	Instruction 1: Identify strengths, preferences, and interests of child Instruction 12: Use and adapt specific strategies that are effective for their needs. Interactions 3, 4, 5: Promote communication, cognition, and problem-solving by observing, interpreting, and responding intentionally and contingently.
Teachers as facilitators of self- and peer-based learning	Child-directed learning strategies are key components of numerous models of effective early intervention and feature in multiple DEC-recommended practices for early childhood special education (Division for Early Childhood, 2014; Sigafoos et al., 2006; Wehmeyer & Palmer, 2000).	Environment 1: Provide services within naturally occurring learning opportunities. Instructions 4, 7, 10, 13: Plan and provide level of support, feedback, consequences, adaptation, modifications needed for access to and participation in learning within and across activities. Implement frequency, intensity, and duration of instruction needed to address the phase and pace of learning of each child. Use coaching and consultation to facilitate learning.
	The multiage classroom	
Peer-to-peer instruction	The social and educational benefits of peer-based instruction for both CWD and their peers are considered an evidence-based practice (Garcia-Carrion et al., 2018; Carter et al., 2017; Chang & Locke, 2016; Watkins et al., 2015; Gunning et al., 2019; McLeskey et al., 2017; Steinbrenner et al., 2020).	Environment 1: Provide services within naturally occurring learning opportunities. Instruction 8: Use peer-mediated intervention to teach skills and to promote child engagement and learning.

Feature of core component	Benefit to children with disabilities (CWD)	Summary of practices for young children with disabilities recommended by Division for Early Childhood (DEC)
Integrated opportunities for social skills development	Consistent, natural opportunities for young children with disabilities to observe appropriate social behaviors and to practice them in a natural environment has been shown to improve the social skills of children with a variety of disabilities or developmental delays as well as children without disabilities (Gupta & Henninger, 2014; Law et al., 2017).	Instruction 13: Facilitate positive adult–child interactions and instruction. Interactions 1, 2: Promote social-emotional development by responding contingently to the range of emotional expressions and creating opportunities for child-initiated positive interactions during naturally occurring activities.
Using Montessori materials		
Hands-on learning with tangible materials ("concrete to abstract" approach)	Activity-based instruction that includes hands-on activities is considered a key practice for CWD, such as attention-deficit/hyperactivity disorder (ADHD; Gkeka et al., 2018), auditory processing disorders (McKenzie et al., 2011), language delays (Springle, 2020), and specific learning disabilities (Alenizi, 2019; Jamieson, 2005).	Instruction 1: Identify child's strengths, preferences, and interests. Instruction 5: Embed instruction within and across routines, activities, and environment, providing contextually relevant learning opportunities. Instruction 10: Implement frequency, intensity, and duration of instruction to address child's phase and pace of learning.
Each material is designed to teach one specific concept.	The Council for Exceptional Children consistently recommends the use of targeted instruction and materials to support the learning of children with intellectual disabilities (McLeskey et al., 2017).	Instruction 2: Identify skills to target for instruction. Instruction 5: Embed instruction within and across routines, activities, and environment, providing contextually relevant learning opportunities. Instruction 6: Use systematic instructional strategies to teach specific skills. Instruction 7: Use explicit feedback and consequences to increase engagement, play, skills.
Autocorrective materials	Teaching strategies that emphasize immediate correction have long been known to improve the learning outcomes of children with intellectual and learning disabilities, as well as facilitate independence, engagement, and success (Hughes & Agran, 1993; Ibrahim, 2018; Kosiewicz et al., 1982).	Instruction 5: Embed instruction within and across routines, activities, and environment, providing contextually relevant learning opportunities. Instruction 7: Use explicit feedback and consequences to increase engagement, play, skills. Instruction 13: Use coaching and consultation to facilitate positive interactions and instruction designed to promote learning.
Sensory materials	Materials that facilitate the use of a variety of senses have proven effective in teaching children with a variety of disabilities, most notably intellectual disabilities (Güldenpfennig et al., 2019; Jadan-Guerrero et al., 2015; Purpura et al., 2017).	Environment 3: Modify and adapt physical, social, and temporal environments to promote child's access to and participation in learning experiences.

Feature of core component	Benefit to children with disabilities (CWD)	Summary of practices for young children with disabilities recommended by Division for Early Childhood (DEC)
	Child-directed work	
Children self-select activities according to their individual needs and interests.	Young children learn best when they are actively interested in and engaged with the target material (Murawski & Scott, 2019). Interest-based learning is a key aspect of both differentiated instruction and responsive teaching (DEC, 2014; Long, 2019; McWilliam, 2016; Strogilos, 2018).	Environment 2: Identify skills to target for instruction. Environment 3: Modify and adapt physical, social, and temporal environments to promote child's access to and participation in learning experiences. Instruction 1: Identify child's strengths, preferences, and interests. Instruction 2: Identify skills to target for instruction based on interests.
Freedom of movement around the classroom	Including opportunities for movement in the classroom is a DEC-recommended practice for special education (DEC, 2014) and has shown particular benefit for young children with ADHD (Akkerman, 2014; Gkeka et al., 2018).	Environment 6: Create environments that provide opportunities for movement and regular physical activity.
Work cycles: Children are taught to direct themselves through a complete process of selecting activity → engaging in activity for as long as desired → completing activity → cleaning up and returning materials.	Past research has cited the importance of developing executive function to promote adaptive behaviors and academic achievement in children with a diverse variety of disabilities including ADHD, autism, and intellectual disabilities (Bertollo & Yerys, 2019; Di Lieto et al., 2020; Gkeka et al., 2018; Kirk et al., 2015; Will et al., 2016).	Environment 1: Identify child's strengths, preferences, and interests across activities, routines, and domains. Environment 6: Create environments that provide opportunities for movement and regular physical activity. Instruction 2: Identify skills to target for instruction based on interests. Instruction 4: Plan and provide level of support, feedback, consequences, adaptation, and modifications needed for access to and participation in learning within and across activities. Instruction 5: Embed instruction within and across routines, activities, and environment, providing contextually relevant learning opportunities.
	Uninterrupted work periods	
Self-paced learning	The understanding that each child progresses through developmental milestones at his or her own pace is a key component of early-intervention best practices for CWD and is a DEC-recommended practice for teaching children with disabilities (DEC, 2014; Spittle & Morgan, 2018).	Instruction 5: Embed instruction within and across routines, activities, and environment, providing contextually relevant learning opportunities. Instruction 7: Use explicit feedback and consequences to increase engagement, play, skills. Instruction 10: Implement frequency, intensity, and duration of instruction to address child's phase and pace of learning.

Feature of core component	Benefit to children with disabilities (CWD)	Summary of practices for young children with disabilities recommended by Division for Early Childhood (DEC)
Unlimited opportunities for repetition	Sufficient opportunities for repetition and practice is critical for development and generalization of skills (Spittle & Morgan, 2018).	Instruction 2: Identify skills to target for instruction based on interests. Instruction 5: Embed instruction within and across routines, activities, and environment, providing contextually relevant learning opportunities. Instruction 7: Use explicit feedback and consequences to increase engagement, play, skill.

Research indicates that children educated in Montessori schools outperform peers from traditional schools in terms of academic outcomes, creativity, social skills, and self-reported well-being by kindergarten age (Denervaud et al., 2019; Lillard et al., 2017; Marshall, 2017). Studies also have reported higher executive function in children who received a Montessori education (Culclasure et al., 2018; Kayılı, 2018; Lillard, 2012; Lillard et al., 2017; Phillips-Silver & Daza, 2018). Similar benefits were reported in children who attended traditional schools but who used Montessori materials outside of the classroom (Dogru, 2015). The intersection of best practices in serving CWD with the key components of the Montessori Method (Table 1), coupled with the benefits of Montessori education for all children, strongly suggests that CWD can and should be included in Montessori programs.

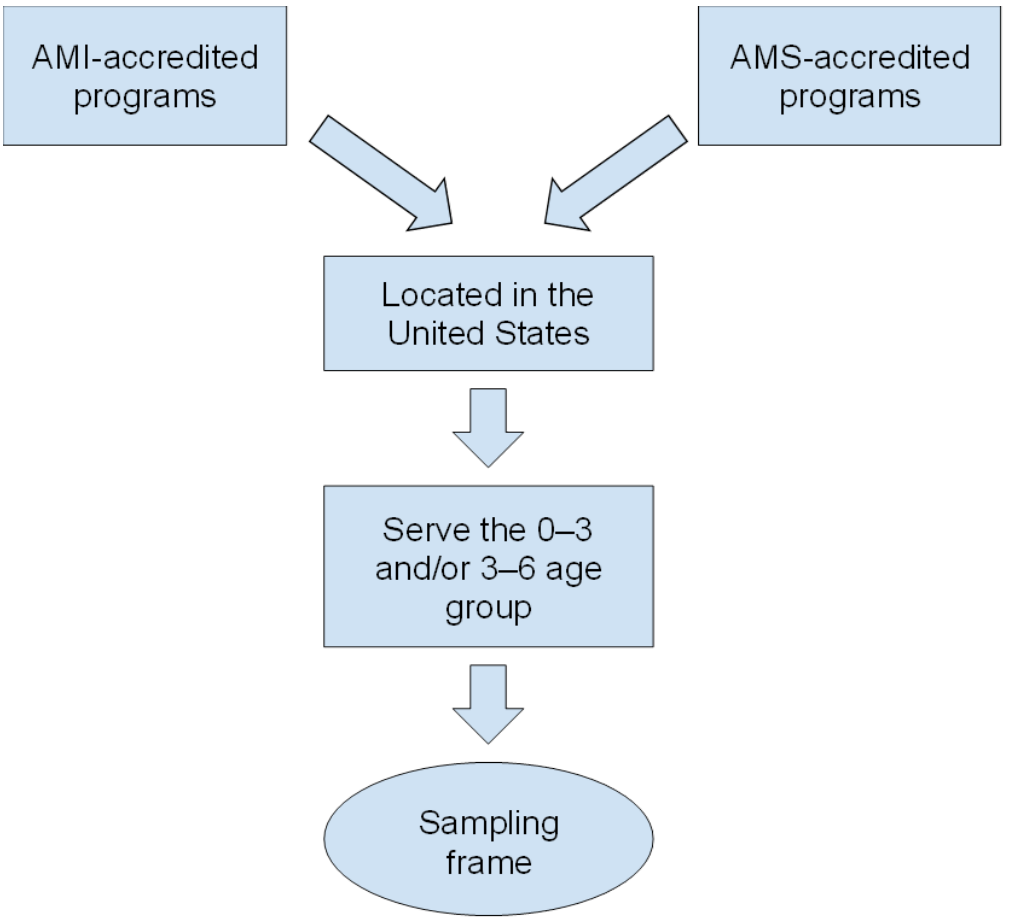
Montessori Method and Inclusion

Inclusion is built upon the philosophy that all children can and should learn in communal classrooms, where they are provided with differentiated instruction according to individual needs, learning styles, and abilities. The central goal is to ensure children of all abilities participate in school activities together by offering meaningful and varied opportunities to access the general curriculum (Kolbe, 2019; Long, 2019; O'Connor et al., 2016). Although inclusion is the current educational paradigm, implementing it in all classrooms continues to be challenging (Jones & Peterson-Ahmad, 2017; O'Connor et al., 2016). However, given their emphasis on individualized instruction, child-directed learning with self-corrective materials, and teachers acting as motivators and facilitators of learning rather than didactic instructors of specific skills, Montessori classrooms may provide the ideal environment in which to implement inclusion (Danner & Fowler, 2015; Leigh-Doyle et al., 2008).

Teachers' attitudes toward disability can affect their capacity to successfully include CWD in the classroom. Twenty-five years ago, Epstein (1997, 1998) reported that even when Montessori teachers expressed commitment to including CWD in their classrooms, limitations in their knowledge of strategies to support children exhibiting challenging behaviors led them to question their capacity to include CWD in Montessori classrooms. Epstein recommended providing teachers with additional training in behavior management, partnering with families, and collaborating with special education personnel to promote teachers' skill development, competence, and confidence. Almost 20 years after Epstein first discussed the need for continuing professional development, Danner and Fowler (2015) found that Montessori teachers continued to be less knowledgeable about CWD and had fewer special education professional-development opportunities than their non-Montessori counterparts did, even though both groups reported the presence of similar and positive system-wide supports for inclusion within their schools. More recently, AuCoin and Berger (2021) again emphasized the need for systemic enablers and practical training to support Montessori teachers and non-Montessori special educators in collaborating to support students with disabilities.

Moreover, although both theory and research indicate the Montessori Method may be a valuable option for CWD (AuCoin & Berger, 2021), little information is available at this time regarding the number of students with disabilities in the United States who currently benefit from this methodology. Here, we seek to fill this gap by reporting the findings of a cross-sectional survey

Figure 1
Sample Development Process



with three main objectives: (a) to determine the extent to which CWD are included in accredited U.S. Montessori programs, (b) to describe the types of disabilities represented, and (c) to elucidate the characteristics and needs of the institutions and teachers serving these children.

Methods

Study Population

The target population for the survey consisted of nationally or internationally accredited Montessori programs in the United States. To promote validity of the results and to ensure each school was represented only once within the sample, the survey was sent to school directors, who served as representatives for their respective institutions. Only accredited institutions were included within the target population to ensure the responding programs offered a true representation of Montessori principles, methods, and values.

We used the membership lists of the American Montessori Society (AMS) and Association Montessori Internationale (AMI) to develop a list of accredited Montessori programs in the United States serving the infant and toddler (aged 0–3) and/or early childhood (aged 3–6) populations. Both these internationally respected organizations have taken a leading role in registration and quality control of Montessori programs. In all, the survey was sent to 355 school directors, 80 of whom completed it in full, yielding a response rate of 22.54%. Figure 1 summarizes the inclusion criteria and sample-selection process.

Survey Instrument

The full survey consisted of one open-ended question and five sections composed of 31 close-ended questions.

1. Respondent demographics
2. Student characteristics (all students and students with disabilities)
3. Teacher and faculty characteristics
4. School facilities and services
5. School departure (if applicable)

We estimated the survey would require 10 to 15 minutes to complete.

In this analysis, we report responses from the first four sections. Although we collected general demographic data, we requested no personal identifiers, and all questions were optional.

We collected data on both the number of students with a documented, diagnosed disability and the number of students with an Individualized Family Service Plan (IFSP) or Individualized Education Plan (IEP). The survey included a list of common types of disability (physical disability, intellectual disability, sensory disability, etc.), and respondents were asked to report the number of students with each type. For broader categories, such as physical disability, we provided specific examples of conditions but told respondents that the list was not exhaustive. The survey included an option for multiple disabilities, and participants could add conditions that they thought were omitted from the provided options. Sample questions from each analyzed section are in the Appendix.

Dissemination Procedures

The survey was designed and distributed using Qualtrics, an online software for web-based data collection. Eligible participants received an email with the link to complete the survey. To maximize response rates, two email reminders were sent at the end of the first and second weeks. As the COVID-19 pandemic exploded and schools were shut down, an additional reminder was sent, and the time for completion was extended. We sent a total of three reminders, and the survey remained open from April 30, 2020, to June 10, 2020.

Ethical Approval

The study was approved by the Georgetown University Institutional Review Board (STUDY00002262). A consent form was sent to participants at the outset of the survey that stated that participation was voluntary and the confidentiality of individual responses would be maintained.

Results

Respondents and Schools Represented

Eighty school directors responded to the survey, yielding a response rate of 22.5%. Demographic characteristics are in Table 2. Most respondents were White (83.33%), female (93.75%), and over the age of 39 (86.25%).

Approximately 60% of the respondents had more than 10 years of experience teaching in Montessori schools, 21% had six to 10 years of experience, and roughly 19% had taught in Montessori settings for five or fewer years.

The responding directors represented 80 U.S. Montessori schools serving children from birth through 6 years of age. Most schools (67.09%) served 76–100 students, 15.19% served 51–75 students, and 12.66% enrolled 26–50 students. Four other schools (5.06%) reported enrollments of fewer than 25 students.

In aggregate, 1,893 infants and toddlers (aged 0–3) and 4,655 early childhood or primary-aged students (aged 3–6) were enrolled at the responding schools[1]; there were 157 teachers and administrators. Most schools (51.25%) employed more than 13 teachers, 40% employed 3–12 teachers, and 8.75% employed only two teachers. The survey did not ask whether the schools were public or private programs.

Number and Characteristics of Students With Disabilities

Some respondents did not include the number of CWD in their schools, so we used a subgroup of respondents who did provide exact counts of CWD (n = 77) to determine the prevalence of CWD in each age group. The data from these 77 respondents identified 71 CWD aged 0–3, or 3.75% of the total infant–toddler population of the schools surveyed. Three hundred ninety-five CWD aged 3–6 (i.e., 8.49% of the total population of surveyed schools) were enrolled in the programs from which we received survey responses.

Results indicate representation of children with a wide range of disabilities. In the infant and toddler programs (aged 0–3), the most common type of disability was speech and language delay and the least common

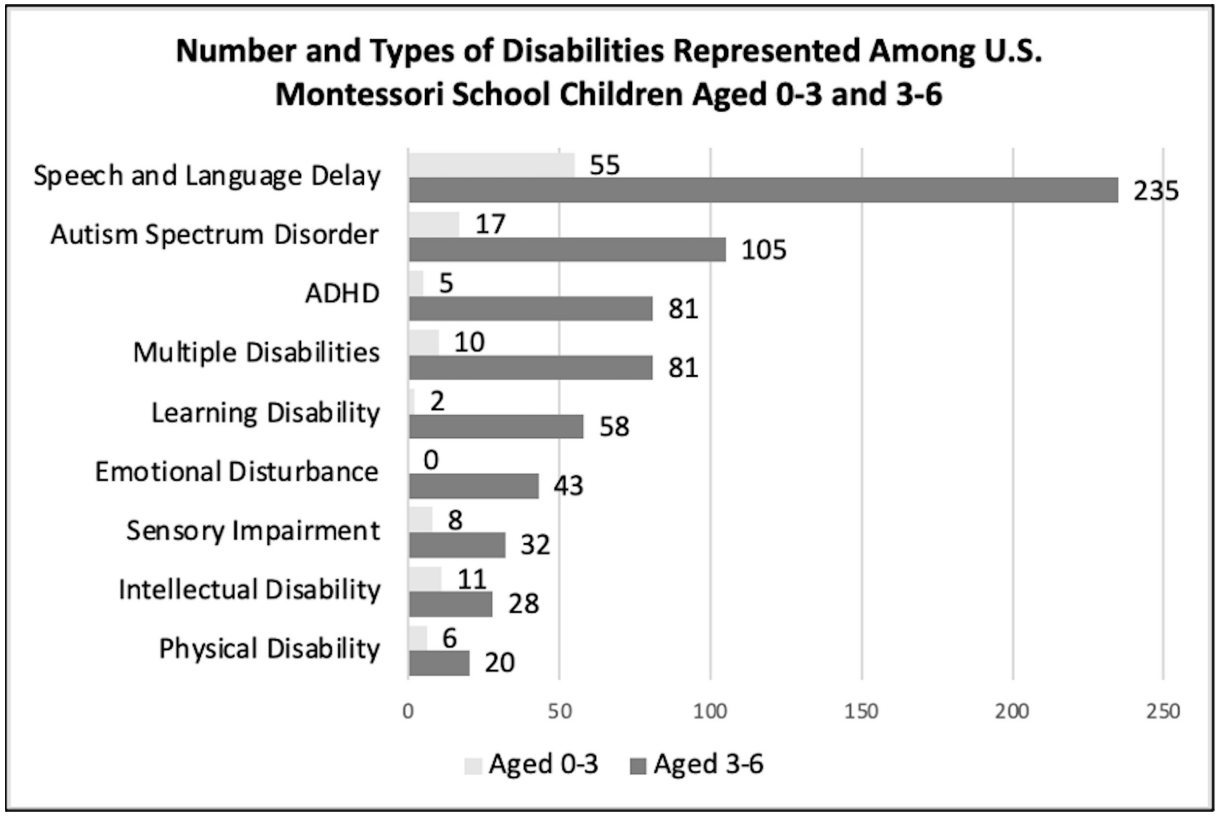
[1] Three of the 80 schools provided estimates, not exact counts, of the number of children and/or number of children with disabilities enrolled. Seventy-seven schools reported exact counts.

Table 2
Demographic Characteristics of Respondents(N= *80)*

Characteristic	Number (%)
Gender	
Female	75 (93.75)
Male	5 (6.25)
Race [a]	
White	70 (83.30)
Hispanic/Latinx	5 (5.95)
Black	4 (4.76)
Asian	4 (4.76)
Other	1 (1.19)
Age	
30–39	11 (13.75)
40–49	24 (30.00)
≥ 50	45 (56.25)
Education [b]	
Bachelor's degree	24 (23.50)
Master's degree	52 (51.49)
Doctoral degree	6 (5.94)
Job category	
School director	47 (58.75)
Montessori guide	9 (11.25)
Montessori Early Childhood educator	2 (2.50)
Manager or supervisor	7 (8.75)
Other (consultant, coach, director of learning support program)	15 (18.75)
Certification of respondent	
None	8 (10.13)
American Montessori Society (AMS)	32 (40.51)
Association Montessori Internationale (AMI)	28 (35.44)
Other	11 (13.92)
Experience teaching in Montessori schools	
< 5 years	15 (19.00)
6–10 years	17 (21.52)
11–15 years	10 (12.66)
> 16 years	37 (46.84)

Note. Totals may not sum to 80 because of selective nonresponse. [a] Respondents could select multiple options. [b] Some respondents indicated all degrees received.

Figure 2
Disabilities in Children Enrolled in U.S. Montessori Programs



type was emotional disturbance. In the preschool age group (aged 3–6), speech and language delay remained the most common category, while physical disability was the least common (Figure 2). In the Other category, one school reported a student with Tourette syndrome, and another school reported a student with albinism.

In addition to asking which disability the children were diagnosed with, we asked how many children had an IFSP or IEP. The respondents indicated that 70 infants and toddlers had an IFSP, and 257 students aged 3–6 had an IEP. These findings suggest that 98.60% of students with diagnosed disabilities aged 0–3 have an IFSP, while 65.00% of the students with diagnosed disabilities aged 3–6 have an IEP.

Institutional Supports for Students With Disabilities

Among the 80 schools that participated in the survey, 75% reported complying with the Americans with Disabilities Act (ADA), while 6.25% did not. The remaining 18.75% of respondents indicated that the ADA-compliance status of their school was unknown. Over 83% of the respondents reported that all indoor and outdoor areas were accessible and easy to reach by all children. Almost 13% of the schools reported that some areas were not accessible for children with physical disabilities, as certain areas could not accommodate wheelchairs or students with vision or hearing impairments.

Most respondents also indicated that their schools had specialists available to provide in-school services to children who needed them (Table 3). The vast majority of the surveyed schools (94%) collaborated with local communities to ensure that all students received the services for which they were eligible or that they needed

Table 3
Services Available at Montessori Schools in the United States (N = 80)

Service	Number of schools (%)
Special education	43 (20.67)
Psychology	29 (13.94)
Speech-language pathology	56 (29.92)
Physical therapy	19 (16.83)
Occupational therapy	35 (16.83)
Behavior support	26 (12.50)

to be successful. Twenty-two percent of the schools also offered specialized home-based services such as speech therapy, occupational therapy, emotional support, and counseling .

To better understand the extent to which the teachers in the surveyed Montessori programs were prepared to work with CWD, we asked participants to indicate the number of teachers at their institution who had received specific training to work with students with disabilities (Table 4). Of the 80 programs, 56 programs reported having teachers with specific training in teaching CWD; however, 24 schools reported no teachers had received specialized training.

The survey also asked respondents (i.e., school directors) to estimate the confidence their faculty felt when trying to successfully include CWD in their classrooms. Most respondents (86.07%) perceived that most teachers and staff at their institutions felt at least somewhat confident working with CWD (44.30% = *confident*, 41.77% = *somewhat confident*). However, 13.92% reported they did not perceive their teachers to feel confident working with CWD.

Table 4

Number of Teachers Trained for Teaching Children With Disabilities at Surveyed Schools (N = *80)*

Number of teachers with specific training in teaching children with disabilities	Number of schools (%)
0	24 (30)
1	12 (15)
2–4	23 (28.75)
5–8	14 (17.50)
More than 8	7 (8.75)

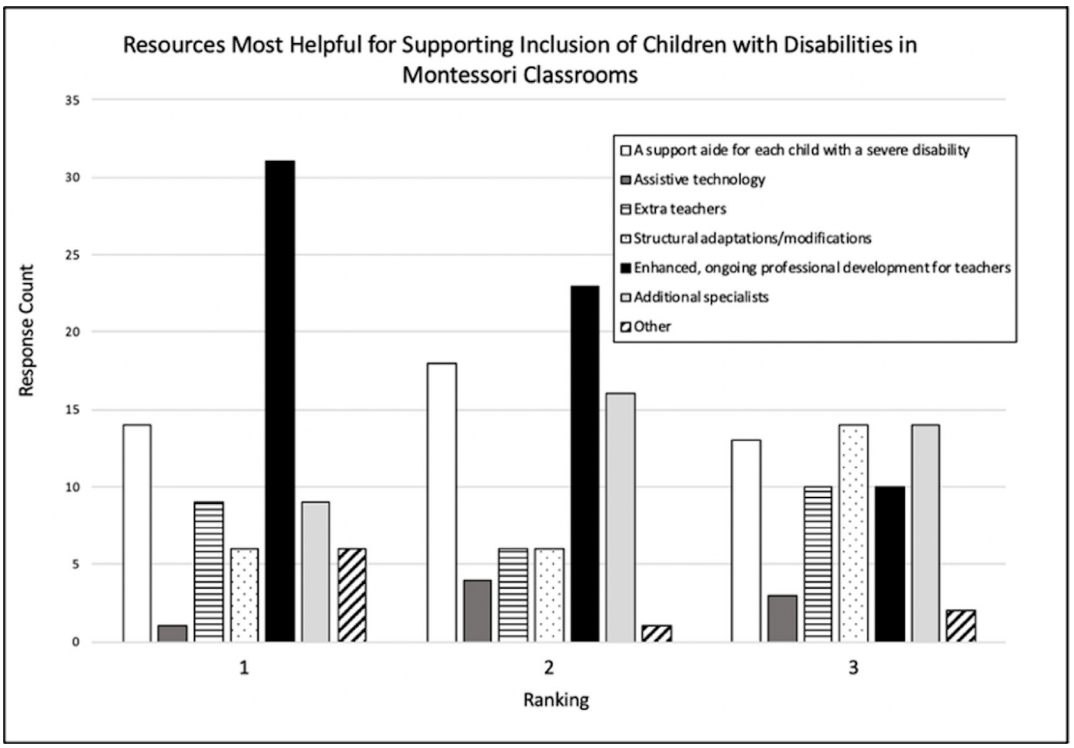
Additional Resources

The survey provided participants a list of potential resources to help support CWD in Montessori classrooms and asked participants to rank the options in order of their perceived utility. Respondents also could add other resources they believed would help promote inclusion in their programs. Figure 3 shows the resources most commonly receiving a first-, second-, or third-place ranking.

Overall, respondents most preferred "enhanced, ongoing professional development" as a resource; this resource ranked first in 40.8% of cases and ranked in the top three for 84.2% of respondents. Other popular

Figure 3

Most Helpful Resources for Supporting Inclusion of Children With Disabilities in Montessori Classrooms



selections included "a support aide for each child with a severe disability"—which 59.2% of respondents ranked in the top three resources—and "additional specialists," ranked in the top three by 51.3% of respondents. Excluding the Other category, "assistive technology" was deemed the lowest priority of the services listed, ranking within the top three in just 10.5% of cases and ranking sixth or seventh by half of the 62 respondents who ranked all options.

As stated, respondents were invited to identify other resources they believed helpful for supporting the inclusion of CWD. "Additional funding" was the most frequently cited request; "social workers," "informational resources for families," "time for individualized programming / planning," and "special education providers specifically trained in the Montessori Method" were also mentioned. Other suggestions included "special education consulting / coaching," "more classroom or break space," and "an elevator."

Discussion

Contemporary philosophies of early childhood education advocate for the development of universally designed programs that provide support to a diverse student body, including young children with disabilities. Although there is limited research on inclusion in the Montessori context specifically (Danner & Fowler, 2015), the historical context of the approach and the key principles of a Montessori education make a compelling case for the participation of CWD in these programs.

Indeed, a Montessori setting may provide an educational environment that is especially conducive to including CWD. The philosophy of Montessori education is to follow the child and individualize the curriculum to meet the needs of each child. Moreover, the multiage classroom format—designed to facilitate self-paced learning for and by each child—empowers children to move at their own pace from introductory activities through advanced materials and concepts. These tenets of Montessori education provide a good fit for students with disabilities (AuCoin & Berger, 2021; McKenzie & Zascavage, 2012; Pickering, 2008). However, despite the rich background connecting this approach to special education, the Montessori Method has not yet been emphasized as a program for serving CWD in the United States.

Montessori education is considered appropriate for all children—including CWD when supports are provided—by virtue of its design, pedagogy, materials, and instructional methods (Nehring, 2014). The objective of a Montessori education is to support the optimal development of children by encouraging the natural developmental processes (Nehring, 2014). The objective of early childhood special education is also to support the development of young children, across domains, in a manner that builds upon the strengths of each child (Division of Early Childhood, 2014).

The results of this study indicate that the Early Childhood Montessori programs that responded to the survey enroll children with a wide variety of disabilities and offer individualized services and support. According to the study, 3.49% of infants and toddlers and 8.49% of preschoolers enrolled in the responding Montessori programs were identified as having a disability. These percentages are similar to the percentage of children aged 0–3 served by Part C of the Individuals with Disabilities Education Act (IDEA, 2004), but they are higher for the children served under the preschool component of IDEA. According to the most recent annual report to Congress on the Implementation of IDEA, 3.7% of infants and toddlers and 6.7% of preschoolers were served under IDEA during 2019 (U.S. Department of Education, 2022).

The survey respondents identified the number of children with specific disabilities and the number of children currently receiving services through an IFSP or IEP at their schools, although these counts did not align for every school. This discrepancy may be attributable to one or more of several causes. First, some children, such as those with attention-deficit/hyperactivity disorder, may not be eligible for an IFSP or IEP, despite being diagnosed with a disability. To be eligible for services delineated on an IFSP or IEP, students must meet specific, state-defined criteria that do not apply to all children with diagnosed disabilities. Alternatively, it is possible that some children diagnosed with a disability are not referred to the local education agency to determine eligibility for IDEA services and support. Further research may clarify whether this inaction occurs at families' request or because staff in the Montessori program do not know the eligibility process for early-intervention or preschool services.

Aligning with previous research (AuCoin & Berger, 2021), the teachers in the current study expressed positive attitudes about inclusion. Moreover, results suggest that school directors perceived their teachers to be competent and confident when teaching CWD. This latter finding contrasts with previous studies, which indicated that Montessori teachers felt less prepared to

teach CWD than did non-Montessori teachers (Danner & Fowler, 2015). Given the increasing awareness of learning differences, sensory sensitivities, and other special education needs, Montessori programs now offer disability-related information to teachers, thus potentially helping increase teachers' competencies in this area (Chaffin, 2019; Montessori Institute of San Diego, n.d.).

Despite these improvements, the respondents to this survey acknowledged a need for additional training. Most school directors desired an enhanced, ongoing professional-development program to better prepare their faculty to work with CWD. Particularly given that nearly half of the responding institutions employed one or no teachers trained in special education or in working with CWD, more education on how to incorporate CWD into the Montessori curriculum could be of great benefit in ongoing inclusion efforts. School directors' desire reflects a broader gap extending beyond Montessori programs, as early childhood teachers across the nation report a need for ongoing professional development to include CWD in their classrooms, differentiate instruction, and meet individual needs (Yu & Park, 2020). The importance of collaboration among special educators and Montessori educators has been emphasized recently both by researchers (AuCoin & Berger, 2021) and by the Division of Early Childhood (2014), which has developed specific recommended practices to aid teachers in teaming and collaboration.

Survey respondents also requested more aides and specialists to work directly with CWD in their classrooms. Contemporary practices for supporting CWD, however, instead advocate including children in classrooms in which the primary classroom personnel (i.e., teachers) are provided with the materials, resources, and training to differentiate instruction for all children, regardless of their abilities (Gauvreau et al., 2021). Although specialists are needed to consult with teachers in designing differentiated lesson plans, the use of one-to-one aides should be limited to a very few students under exceptional circumstances (Giangreco, 2021).

A key principle in the Montessori Method is creating an enriched, child-oriented environment that promotes both student independence and cooperation. Space constraints are minimized to allow freedom of movement, a practice that encourages including children who have mobility concerns. At minimum, successful application of this principle requires an ADA-compliant environment. Although the present study found that most of the respondents reported ADA compliance, nearly 13% of responding institutions acknowledged that some areas of their schools were not accessible to children with physical or sensory disabilities. Moreover, mere compliance with the ADA may not be adequate to fully include CWD in all aspects of the program. For example, Brown and colleagues (2021) found that a variety of playground features must be incorporated to ensure truly inclusive playgrounds. A few of the elements important for early childhood spaces include designing spaces that consider a variety of disabilities, including children who use mobility devices and accommodating for the presence of adults.

In summary, our survey results suggest that young children with disabilities are enrolled in the responding Montessori schools and that school directors perceive teachers to feel competent and confident in supporting these students. We identified opportunities to enhance teachers' ability to include all children equitably, most notably in the area of professional development.

Study Limitations

A variety of limitations are related to this study. First, we surveyed only programs registered with AMS or AMI, limiting our sampling pool. We employed this strategy to provide a minimal level of confidence that the sample schools were recognized Montessori programs. Thus, while we believe our sample provides an adequate representation of the U.S. programs registered with these organizations, further research will be required to determine whether the trends hold true among all Montessori programs.

The disability categories in our survey may have been confusing for respondents; we did not provide operational definitions, and "developmental delay" was not listed as an option when we requested counts of children with specific diagnoses. Infants, toddlers, and preschoolers—especially those receiving early-intervention services—are often determined to have a developmental delay. Thus, the lack of this explicit option may have led school directors to not include in their counts some children with a diagnosis of developmental delay but no other specific disability. For future research, using the disability categories and definitions established under IDEA may promote additional clarity and consistency in the responses.

This research was designed and developed before the COVID-19 pandemic, but the survey was distributed during the lockdown period. Many schools received the survey but did not complete it, likely because of the pandemic and the other changing management and teaching activities resulting from the pandemic. Therefore, the study is limited not only by sample size but

also by the smaller-than-expected number of respondents. Thus, we cannot confidently project these findings nationally. Future studies should aim to replicate results on a larger scale.

Last, data analysis was performed on all surveys that were submitted, and all data were tabulated. However, because respondents were offered the option to skip questions that they preferred not to answer, data such as the number of children with various disabilities as well as the types of disabilities or services provided were missing in some cases.

Conclusion

The results we analyzed indicate that, at least among responding programs, young children with disabilities are represented in the Montessori setting. The percentage of CWD reported here is similar to the number served by IDEA as reported by the annual report to Congress. Although many school directors perceived their staff as competent and confident when supporting children with varying developmental needs within their classrooms, they also reported that ongoing professional-development opportunities and additional classroom support would aid their teachers and programs in equitably including all children using contemporary practices. Joint professional-development opportunities featuring Montessori teachers, early childhood teachers, and special educators would be helpful to promote collaboration, share practices, and support integrated, inclusive classrooms. As AuCoin and Berger (2021) noted, collaboration between special educators and Montessori teachers is essential for successful inclusion of young children with disabilities in Montessori programs. Additional research on the specific services received and the specialized practices incorporated into Montessori classrooms would provide a comprehensive description of how Montessori programs effectively include CWD and how the Division for Early Childhood–recommended practices are implemented within the Montessori approach.

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References

Akkerman, A. (2014). *Benefits of movement in a Montessori classroom on children's behavior and focus* [Master's thesis, University of Wisconsin-River Falls]. https://minds.wisconsin.edu/bitstream/handle/1793/69424/AbbyAkkerman.pdf

Alenizi, M. A. (2019). Effectiveness of a program based on a multi-sensory strategy in developing visual perception of primary school learners with learning disabilities: A contextual study of Arabic learners. *International Journal of Educational Psychology*, *8*(1), 72–104. https://doi.org/10.17583/ijep.2019.3346

American Montessori Society. (n.d.). 5 core components of Montessori education. *American Montessori Society*. https://amshq.org/About-Montessori/What-Is-Montessori/Core-Components-of-Montessori

AuCoin, D., & Berger, B. (2021). An expansion of practice: Special education and Montessori public school. *International Journal of Inclusive Education*, 1–20. https://doi.org/10.1080/13603116.2021.1931717

Bertollo, J. R., & Yerys, B. E. (2019). More than IQ: Executive function explains adaptive behavior above and beyond nonverbal IQ in youth with autism and lower IQ. *American Journal on Intellectual and Developmental Disabilities*, *124*(3), 191–205. https://doi.org/10.1352/1944-7558-124.3.191

Brown, D. M., Ross, T., Leo, J., Buliung, R. N., Shirazipour, C. H., Latimer-Cheung, A. E., & Arbour-Nicitopoulos, K. P. (2021). A scoping review of evidence-informed recommendations for designing inclusive playgrounds. *Frontiers in Rehabilitation Sciences*, *2*, 1–13. https://doi.org/10.3389/fresc.2021.664595

Carter, E. W., Gustafson, J. R., Sreckovic, M. A., Dykstra Steinbrenner, J. R., Pierce, N. P., Bord, A., Stabel,

A., Rogers, S., Czerw, A., & Mullins, T. (2017). Efficacy of peer support interventions in general education classrooms for high school students with autism spectrum disorder. *Remedial and Special Education*, *38*(4), 207–221. https://doi.org/10.1177/0741932516672067

Chaffin, M. E. (2019, October 30). What about students with special needs? *The Montessori Post*. https://www.montessoripost.com/2019/10/30/what-about-students-with-special-needs/

Chang, Y.-C., & Locke, J. (2016). A systematic review of peer-mediated interventions for children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, *27*, 1–10. PubMed. https://doi.org/10.1016/j.rasd.2016.03.010

Culclasure, B., Fleming, D. J., Riga, G., & Sprogis, A. (2018). *An evaluation of Montessori education in South Carolina's public schools*. The Riley Institute at Furman University. https://www.furman.edu/wp-content/uploads/sites/195/rileypdfFiles/MontessoriOverallResultsFINAL.pdf

Danner, N., & Fowler, S. (2015). Montessori and non-Montessori early childhood teachers' attitudes towards inclusion and access. *Journal of Montessori Research*, *1*(1), 28. https://doi.org/10.17161/jomr.v1i1.4944

Denervaud, S., Knebel, J.-F., Hagmann, P., & Gentaz, E. (2019). Beyond executive functions, creativity skills benefit academic outcomes: Insights from Montessori education. *PLOS ONE*, *14*(11), e0225319. https://doi.org/10.1371/journal.pone.0225319

Di Lieto, M. C., Castro, E., Pecini, C., Inguaggiato, E., Cecchi, F., Dario, P., Cioni, G., & Sgandurra, G. (2020). Improving executive functions at school in children with special needs by educational robotics. *Frontiers in Psychology*, *10*, 2813. https://doi.org/10.3389/fpsyg.2019.02813

Division for Early Childhood. (2014). *DEC recommended practices*. Council for Exceptional Children, Division for Early Childhood. https://www.dec-sped.org/recommendedpractices

Dogru, S. S. Y. (2015). Efficacy of Montessori education in attention gathering skill of children. *Educational Research and Reviews*, *10*(6), 733–738. https://doi.org/10.5897/ERR2015.2080

Epstein, A. (1997). How teachers accommodate for young children with special needs. *Montessori Life*, *9*(3), 32–34.

Epstein, A. (1998). "The behavior part is the hardest": Montessori teachers and young children with challenging behaviors. *Montessori Life*, *10*(4), 24–25.

García-Carrión, R., Molina Roldán, S., & Roca Campos, E. (2018). Interactive learning environments for the educational improvement of students with disabilities in special schools. *Frontiers in Psychology*, *9*, 1744. https://doi.org/10.3389/fpsyg.2018.01744

Gauvreau, A. N., Lohmann, M. J., & Hovey, K. A. (2021). Circle is for everyone: Using UDL to promote inclusion during circle times. *Young Exceptional Children*, *0*(0) https://doi.org/10.1177/10962506211028576

Giangreco, M. F. (2021). Maslow's hammer: Teacher assistant research and inclusive practices at a crossroads. *European Journal of Special Needs Education*, *36*(2), 278–293. https://doi.org/10.1080/08856257.2021.1901377

Gkeka, E. G., Gougoudi, A., Mertsioti, L., & Drigas, A. S. (2018). Intervention for ADHD child using the Montessori method and ICTs. *International Journal of Recent Contributions from Engineering, Science & IT (IJES)*, *6*(2), 4. https://doi.org/10.3991/ijes.v6i2.8729

Güldenpfennig, F., Fikar, P., & Ganhör, R. (2018). Interactive and open-ended sensory toys: Designing with therapists and children for tangible and visual interaction. *Proceedings of the Twelfth International Conference on Tangible, Embedded, and Embodied Interaction*, 451–459. https://doi.org/10.1145/3173225.3173247

Gunning, C., Breathnach, Ó., Holloway, J., McTiernan, A., & Malone, B. (2019). A systematic review of peer-mediated interventions for preschool children with autism spectrum disorder in inclusive settings. *Review Journal of Autism and Developmental Disorders*, *6*(1), 40–62. https://doi.org/10.1007/s40489-018-0153-5

Gupta, S. S., & Henninger, W. R., IV. (2014). How do children benefit from inclusion? In M. E. Vinh (Ed.), *First steps to preschool inclusion: How to jumpstart your program-wide plan* (pp. 33–57). Paul H. Brookes Publishing. http://archive.brookespublishing.com/documents/gupta-how-children-benefit-from-inclusion.pdf

Hiles, E. (2018). Parents' reasons for sending their child to Montessori schools. *Journal of Montessori Research*, *4*(1), 1–13. https://doi.org/10.17161/jomr.v4i1.6714

Hughes, C., & Agran, M. (1993). Teaching persons with severe disabilities to use self-instruction in community settings: An analysis of applications. *Journal of the Association for Persons with Severe Handicaps, 18*(4), 261–274. https://doi.org/10.1177/154079699301800409

Ibrahim, I. R. A. (2018). Effectiveness of self-instruction strategy in improving word recognition skills for students with learning disabilities. *IOSR Journal of Research & Method in Education, 8*(2 Ver. II), 62–67. https://www.iosrjournals.org/iosr-jrme/papers/Vol-8%20Issue-2/Version-2/H0802026267.pdf

Individuals with Disabilities Education Act, 20 U.S.C. § 1400 (2004)

Jadan-Guerrero, J., Jaen, J., Carpio, M. A., & Guerrero, L. A. (2015). Kiteracy: A kit of tangible objects to strengthen literacy skills in children with Down syndrome. *Proceedings of the 14th International Conference on Interaction Design and Children*, 315–318. https://doi.org/10.1145/2771839.2771905

Jamieson, N. Y. (2005). *The contribution of the Montessori approach to multisensory approaches to early learning disabilities* [Master's dissertation, University of the Witwatersrand, South Africa]. https://wiredspace.wits.ac.za/bitstream/handle/10539/1468/N%20Y%20Jamieson%209805090W.%20MEd%20Dissertation.pdf

Jones, B. A., & Peterson-Ahmad, M. B. (2017). Preparing new special education teachers to facilitate collaboration in the individualized education program process through mini conferencing (EJ1184062). ERIC. *International Journal of Special Education, 32*(4), 697–707. https://files.eric.ed.gov/fulltext/EJ1184062.pdf.

Kayılı, G. (2018). The effect of Montessori method on cognitive tempo of Kindergarten children. *Early Child Development and Care, 188*, 327–335. https://doi.org/10.1080/03004430.2016.1217849

Kirk, H. E., Gray, K., Riby, D. M., & Cornish, K. M. (2015). Cognitive training as a resolution for early executive function difficulties in children with intellectual disabilities. *Research in Developmental Disabilities, 38*, 145–160. https://doi.org/10.1016/j.ridd.2014.12.026

Kolbe, T. (2019). *Funding special education: Charting a path that confronts complexity and crafts coherence.* National Education Policy Center. http://nepc.colorado.edu/publication/special-ed.

Kosiewicz, M. M., Hallahan, D. P., Lloyd, J., & Graves, A. W. (1982). Effects of self-instruction and self-correction procedures on handwriting performance. *Learning Disability Quarterly, 5*(1), 71–78. https://doi.org/10.2307/1510619

Law, J., Dennis, J. A., & Charlton, J. J. (2017). Speech and language therapy interventions for children with primary speech and/or language disorders. *Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.CD012490

Leigh-Doyle, P., Maughan, J., & Joyce, M. (2008). Whole-school approaches to Montessori special education. *North American Montessori Teachers Association Journal, 33*(2), 147.

Lillard, A. S. (2012). Preschool children's development in classic Montessori, supplemented Montessori, and conventional programs. *Journal of School Psychology, 50*(3), 379–401. https://doi.org/10.1016/j.jsp.2012.01.001

Lillard, A. S., Heise, M. J., Richey, E. M., Tong, X., Hart, A., & Bray, P. M. (2017). Montessori preschool elevates and equalizes child outcomes: A longitudinal study. *Frontiers in Psychology, 8*, 1783. https://doi.org/10.3389/fpsyg.2017.01783

Long, T. M. (2019). Moving beyond inclusion to participation: Essential elements. *Education Sciences & Society – Open Access, 10*(1). https://journals.francoangeli.it/index.php/ess/article/view/7604

Marshall, C. (2017). Montessori education: A review of the evidence base. *npj Science of Learning, 2*(1), 1–9. https://doi.org/10.1038/s41539-017-0012-7

McKenzie, G. K., & Zascavage, V. S. (2012). Montessori instruction: A model for inclusion in early childhood classrooms and beyond. *Montessori Life, 24*(1), 32–38.

McKenzie, G. K., Zascavage, V. S., & Murray, A. K. (2011). *How Montessori methods in mathematics education meet the needs of students with learning challenges* [White paper]. American Montessori Society. https://amshq.org/-/media/Files/AMSHQ/Research/Position-Papers/How-Montessori-Methods-in-Mathematics-Education-Meet-the-Needs-of-Students-with-Learning-Challenges.ashx

McLeskey, J., Barringer, M.-D., Billingsley, B., Brownell, M., Jackson, D., Kennedy, M., Lewis, T., Maheady, L., Rodriguez, J., Scheeler, M. C., Winn, J., & Ziegler, D. (2017). *High-leverage practices in special education*. Council for Exceptional Children & CEEDAR Center. https://ceedar.education.ufl.edu/wp-content/uploads/2017/07/CEC-HLP-Web.pdf

McWilliam, R. (2016). Birth to three: Early intervention. In B. Reichow, B. A. Boyd, E. E. Barton, & S. L. Odom (Eds.), *Handbook of early childhood special education* (1st ed., pp. 75–88). Springer International Publishing. https://doi.org/10.1007/978-3-319-28492-7_5

Montessori Institute of San Diego. (n.d.). *Inclusive education*. Montessori Institute of San Diego. https://misdami.org/montessori-teacher-training-california/ami-montessori-courses/montessori-teacher-training-inclusive-education-certification-program/

Murawski, W. W., & Scott, K. L. (2019). *What really works with universal design for learning*. SAGE Publications.

Nehring, C. (2014). Implementing inclusion theory into practice (EJ1183199). ERIC. *NAMTA Journal, 39*(3), 39–63. https://files.eric.ed.gov/fulltext/EJ1183199.pdf

O'Connor, E. A., Yasik, A. E., & Horner, S. L. (2016). Teachers' knowledge of special education laws: What do they know? (EJ1103671). ERIC. *Insights into Learning Disabilities, 13*(1), 7–18. http://files.eric.ed.gov/fulltext/EJ1103671.pdf

Phillips-Silver, J., & Daza, M. T. (2018). Cognitive control at age 3: Evaluating executive functions in an equitable Montessori preschool. *Frontiers in Education, 3*, 106. https://doi.org/10.3389/feduc.2018.00106

Pickering, J. S. (2008). Montessorians helping children who learn differently. *NAMTA Journal, 33*(2), 76–99.

Purpura, G., Cioni, G., & Tinelli, F. (2017). Multisensory-based rehabilitation approach: Translational insights from animal models to early intervention. *Frontiers in Neuroscience, 11*, 430. https://doi.org/10.3389/fnins.2017.00430

Sigafoos, J., Arthur-Kelly, M., & Butterfield, N. (2006). *Enhancing everyday communication for children with disabilities*. Paul H. Brookes.

Spittle, A. J., & Morgan, C. (2018). Early intervention for children with cerebral palsy. In C. P. Panteliadis (Ed.), *Cerebral palsy: A multidisciplinary approach* (pp. 193–200). Springer International Publishing.

Springle, A. P. (2020). Comparison of motor-enhanced and visual-enhanced interventions for grammar in young children with developmental language disorder (Publication No. 2422063754) [Doctoral dissertation, Old Dominion University]. ProQuest Dissertations and Theses Global.

Steinbrenner, J. R., Hume, K., Odom, S. L., Morin, K. L., Nowell, S. W., Tomaszewski, B., Szendrey, S., McIntyre, N. S., Yücesoy-Özkan, Ş., & Savage, M. N. (2020). *Evidence-based practices for children, youth, and young adults with autism spectrum disorder*. The University of North Carolina at Chapel Hill, Frank Porter Graham Child Development Institute, National Clearinghouse on Autism Evidence and Practice Review Team. https://ncaep.fpg.unc.edu/sites/ncaep.fpg.unc.edu/files/imce/documents/EBP%20Report%202020.pdf

Strogilos, V. (2018). The value of differentiated instruction in the inclusion of students with special needs/disabilities in mainstream schools. *SHS Web of Conferences, 42*(00003). https://doi.org/10.1051/shsconf/20184200003

U.S. Department of Education. (2022). *43rd annual report to Congress on the implementation of the Individuals with Disabilities Education Act, 2021*. Office of Special Education and Rehabilitative Services, Office of Special Education Programs. https://sites.ed.gov/idea/files/43rd-arc-for-idea.pdf

Watkins, L., O'Reilly, M., Kuhn, M., Gevarter, C., Lancioni, G. E., Sigafoos, J., & Lang, R. (2015). A review of peer-mediated social interaction interventions for students with autism in inclusive settings. *Journal of Autism and Developmental Disorders, 45*(4), 1070–1083. https://doi.org/10.1007/s10803-014-2264-x

Wehmeyer, M. L., & Palmer, S. B. (2000). Promoting the acquisition and development of self-determination in young children with disabilities. *Early Education and Development, 11*(4), 465–481. https://doi.org/10.1207/s15566935eed1104_6

Will, E., Fidler, D. J., Daunhauer, L., & Gerlach-McDonald, B. (2016). Executive function and academic achievement in primary-grade students with Down syndrome. *Journal of Intellectual Disability Research, 61*(2), 181–195. https://doi.org/10.1111/jir.12313

Yu, S., & Park, H. (2020). Early childhood preservice teachers' attitude development toward the inclusion of children with disabilities. *Early Childhood Education Journal, 48*(4), 497–506. https://doi.org/10.1007/s10643-020-01017-9

Appendix

Selected Survey Items Used in the Analysis

Survey section	Sample items
Respondent demographics	• Gender • Age • Years of experience working in schools
Child characteristics	• Total number of children enrolled in the 0–3 and 3–6 age groups • Number of children in each age group with a diagnosed disability • Number of children with an Individualized Family Service Plan or Individualized Education Plan • Number of children with o Physical disability (e.g., cerebral palsy, spinal muscular atrophy, muscular dystrophies, congenital myopathies, movement disorders, etc.) o Sensory impairment (e.g., Deafness or severe hearing impairment, blindness, severe visual impairment, etc.) o Autism spectrum disorder o Intellectual disability o Speech and language delay or disability (e.g., processing, articulation difficulties, delay in language development, etc.) o Learning disability o Attention-deficit/hyperactivity disorder, or other health impairment o Emotional disturbance o Multiple disabilities
Teacher and faculty characteristics	• Number of teachers who have received training in teaching children with disabilities • Number and types of specialists (e.g., special educators, psychologists, occupational therapists, etc.) • Proportion of teachers who feel confident working with children with disabilities
School facilities and services	• Americans with Disabilities Act (ADA) compliance status (if known) • Presence of specialized services (e.g., speech therapy, occupational therapy, counseling, etc.) • "What resources would your program find most helpful to include children with disabilities into your program?" [Ranked from 1 (*most important*) to 7 (*least important*)]