Article

Research and Reality: A Survey of Educators’ Perceptions about Evidence-Based Practices in Inclusive Settings for Students with Intellectual Disabilities

Diane Casale-Giannola *, Lauren Delisio *, Lisa Sardo and Kara Kline

Department of Teacher Education, Rider University, Lawrenceville, NJ 08648, USA; lsardo@srivernj.org (L.S.)
* Correspondence: dgiannola@rider.edu (D.C.-G.); ldelisio@rider.edu (L.D.)

Abstract: As the world focuses on the acceptance and inclusion of diverse individuals often referring to race, ethnicity, gender, and sexual orientation, this study focuses on the culture and identity of individuals with intellectual disabilities who are educated in an inclusive setting. Although there are currently more students with disabilities who are included in the general education classroom as compared to 20 years ago, the number of students with more severe disabilities, including intellectual disabilities (ID), lag behind those with mild to moderate disabilities. This survey study examined both why and how to best educate students with ID in the American inclusive classroom. This study, including Likert-style and open-ended questions, was administered amongst practicing educators in order to determine their perceptions of the most prominent evidence-based practices (EBPs) related to supporting students with ID. Participants were asked to rate these EBPs in terms of their usefulness and effectiveness in the classroom for students with ID. The results of this study indicate that educators are regularly implementing EBPs, such as visual supports and behavior modifications. Overall, educators feel more confident in their ability to include students with intellectual disabilities in the general education classroom, and share their perspectives about this experience.

Keywords: evidence-based practices; inclusion; intellectual disabilities; professional development; co-teaching

1. Introduction

1.1. Inclusion and Intellectual Disabilities

The 21st century has seen increased attention to the diversity, equity, and inclusion movement, identifying and addressing acceptance of marginalized groups of gender, religion, race, ethnicity, sexuality, and disability. Worldwide organizations including the World Health Organization and the United Nations Convention on the Rights of People with Disabilities (CRPD) have focused on the importance of inclusive practices in education which led to positive outcomes for individuals including economic opportunities, quality of life, and the safeguarding of basic human rights [1]. In the United States, according to federal law, the American Individuals with Disability Act 2004 and Public Law 114-95, and the Every Student Succeeds Act 2015, congress states, “Disability is a natural part of the human experience and in no way diminishes the right of individuals to participate in or contribute to society. Improving educational results for children with disabilities is an essential element of our national policy of ensuring equality of opportunity, full participation, independent living, and economic self-sufficiency for individuals with disabilities” [2].

The concept of inclusion in education refers to the integration of individuals with disabilities into the general education or mainstream curriculum. Individuals with mild disabilities such as learning disabilities are most often included in the general education setting with supports and services provided for success. In this study, we examine those with severe intellectual disabilities and recognize their intersection of culture and identity
as marginalized among those with more mild disabilities who are more widely supported, included, and accepted among their typical peers. Social justice movements often include and value the inclusion and culture of those with disabilities, but educators who value inclusion, even with the best intentions, still struggle to provide individuals with intellectual disabilities with the quality education needed for success. Improving policy, practice, and training to best educate and include all students with disabilities remains an international concern among educators [3–6]. This study identifies strategies teachers have used to effectively support students with intellectual disabilities in inclusive settings so that others may benefit from their experience and perspective.

In 1989, only 27% of students with disabilities were in the regular education classroom. In 2019, 65% of students with disabilities were in regular education, an increase of 35%, but the numbers of those with intellectual disabilities continue to lag far behind those with milder needs [3,7].

Currently, the majority of the American students participating in the inclusive setting have mild to moderate cognitive disabilities such as specific learning disabilities. However, with the increase in all SWD who are included in the general education classroom, there has also been an increase in inclusive placements for individuals with more severe cognitive disabilities, specifically, those with intellectual disabilities (ID). Intellectual disabilities are defined as “... significant limitations both in intellectual functioning and adaptive behavior as expressed in conceptual, social, and practical adaptive skills” [8]. Severe cognitive disabilities typically include students with ID. These students are described as having an IQ of 70 or lower, with at least two deficits in adaptive behavior. An individual with deficits in adaptive behavior may struggle with daily living skills, such as dressing and bathing. This population of students with ID was also previously not included at all in the general education classroom; however, currently, 45% of students with ID are included in general education settings for 40% of the day or more [9] as compared to only 10% included in the regular classroom in 1996 [10].

As families and advocates for individuals with ID continue to be more successful in providing inclusive opportunities both in school as well as in the community, school administrators and teachers can find it challenging to meet the multiple and varied needs of students with more severe ID. In an era of increased accountability for teachers and national standards, trying to meet the needs of students with greater cognitive and behavioral needs in a classroom, where typically functioning students may also struggle to meet new standards, can seem unrealistic and unfair.

Individuals with ID have the same right to participate in the general education curriculum as their typically developing peers. According to the Down Syndrome Association of West Michigan, “Inclusion is a philosophy of education based on the belief in every person’s inherent right to fully participate in society. It implies acceptance of differences and access to the educational experiences that are fundamental to every student’s development” [11]. Inclusion benefits everyone. For individuals with ID in general education classrooms, inclusion in the general education setting is critical to their long-term participation in the community, and has been associated with positive health and well-being for all individuals, including those with ID [4,12]. Further, the benefits of inclusion for students with ID include increased independence and acceptance, as well as the development of academic and social skills, self-advocacy, and the ability to make choices [4,13,14]. Ultimately, exposing individuals with ID to typically developing peers, grade-level curriculum, and appropriate social interactions may result in more authentic friendships and life experiences they can take with them beyond school [15,16]. The benefits of inclusion for students without disabilities are numerous and include improved social/emotional skills in addition to improved academic achievement [17]. Some of these benefits include increased opportunities to build meaningful friendships, an increased appreciation and acceptance of individual differences and diversity, more opportunities to master activities by practicing and teaching others, and an overall increase in academic performance through an increase in resources and more individualized instruction [4,12,17–20]. Furthermore, there are improved long-term
outcomes, because participation in an inclusive classroom setting prepares all students for adult life in an inclusive society.

1.2. Challenges of Including Individuals with Intellectual Disabilities

Even with the sound belief and strong argument for the inclusion of individuals with disabilities, including federal laws, many teachers are still anxious about including students with ID in the general education setting as they must navigate two major and seemingly contradictory pushes from education systems: equity versus excellence [21,22]. Inclusion is more than just an educational setting; it is an opportunity to succeed with appropriate supports and services. Equity and access do not automatically translate to growth and success. One of the greatest challenges that educators and administrators face includes the meaningful integration into an increasingly advanced general education curriculum, while simultaneously meeting the physical, emotional, behavioral, and social needs of students with ID. The disparities between the typical student and the student with ID become greater as they progress into adolescence, making meaningful inclusion even more challenging at the secondary level [1,23,24]. Social engagement in inclusive settings can also be more difficult at the secondary level, as adolescents are sensitive about self-image and identity and may not want to interact with those whom they feel are different [25].

This is not the only challenge facing teachers and administrators. Teacher preparation programs often do not focus on preparing all future teachers to work with students who struggle academically. The emphasis in teacher preparation programs is on content, not students. High-stakes testing and accountability may increase the stress and anxiety of teachers working in an inclusive classroom with individuals with ID [21,26,27]. Limited planning time and lack of collaboration with professionals remain some of the greatest challenges to effective inclusion [28]. The success of an inclusive program also hinges on the knowledge and attitude of the teacher, and negative perspectives about inclusive education have a direct impact on the lack of success [29]. Although numerous studies conducted over many decades have determined that teachers value students with disabilities in the inclusive setting, they remain apprehensive to teach them in the general education classroom because of concerns related to preparation and support [22,30]. Given these challenges, the next logical question is, what do we know from the literature regarding the strategies, philosophies, and best practices that are effective and useful, as well as what has already been done in order to support students with ID in inclusive classrooms? Finally, how can teachers and staff who work with this population be supported so that they feel adequately prepared to meet the diverse and varied needs of their students with ID?

One critical factor in the success of students with disabilities who are included in the general education classroom is the philosophy of the teachers and administration. Teacher attitudes and beliefs have a direct impact on students’ performances [31]. Educators must first believe that all children have the potential to learn and be willing to create supportive inclusive opportunities. Identifying student strengths and developing strategies to support instructional goals is imperative. Evidence-based practices (EBPs) can be shared to help teachers and their students with ID succeed in the inclusive setting. Professional development is important in ensuring that teachers feel prepared to meet diverse student needs. Unfortunately, even with a positive attitude towards the inclusion of students with disabilities in the classroom, teachers may still have concerns about their ability to support students with disabilities, and this often impacts their confidence and willingness to serve these students in the general education classroom [28].

However, with effective knowledge and understanding of EBPs for students with ID, we can better prepare and equip teachers to meet the diverse needs of students with ID in their classrooms, as well as to improve their perceptions of inclusion and their confidence in their own abilities. According to Pearce and Forlin [21], the four main components of effective inclusive practice include the following: (1) Knowledge of the child; (2) Understanding the implications of the disability; (3) Knowledge of evidence-based strategies and appropriate accommodations; and (4) Knowledge of adaptations and interventions. To
alleviate teacher concerns about effectively addressing the needs of students with ID in the inclusive classroom as well as to improve teacher perceptions, Buntinx and Schalock [32] stressed the importance of shifting the focus from assessing individual deficits to identifying helpful supports instead. Research-based recommendations shared by Räty et al. [33] support individuals with ID in the inclusive setting by identifying strategies to support academic and behavioral goals, as well as life skills and communication. These research-based strategies enable teachers to provide meaningful inclusive instruction, and are summarized in the Section 2. Evidence-based practices for severe intellectual disabilities include systematic instruction and the use of picture prompts during reading. For mathematics, systematic instruction has a research-based level of high effectiveness, along with increased wait time for students to recall answers and participate. Community-based instruction has also been proven successful, along with picture schedules, social skills, task analysis, and video/visual supports as accommodations [34]. Systematic instruction has also been noted as very effective, especially in promoting social inclusion and developing self-determination [35].

Crosland and Dunlap [36] also support the notion that the use of effective evidence-based strategies is imperative when including students with disabilities in the general education classroom. Their research, which primarily focuses on students with autism spectrum disorders, explains that prompting and priming, visual schedules, positive reinforcement, and incorporating self-determination skills significantly increase positive behavior and help close the vast gap in behavior disparity between students with disabilities and their typical peers. These researchers also note the importance of involvement with typical peers to promote their behavioral and social progress. When teachers provide social modeling, it increases awareness, value, and positive attitudes for this population [33]. Universal design for learning is also recommended for access and understanding of all learners in the inclusive setting.

Multiple and varied academic needs are often the greatest challenge for teachers implementing inclusive practices who are concerned not only about student performance, but their own accountability and teaching evaluations as well [37,38]. Räty et al. [33] found that strategies such as the use of graphic organizers, visual supports, direct instruction, time delay (increased wait time with cues and prompts), and making real-life connections are EBPs that support instruction across all disciplines. More specifically, recommendations related to reading and literacy include the following: (1) A balanced literacy approach with phonics and sight word instruction; and (2) Reading programs with systematic instruction, models, and repetition [33]. Writing instruction should be less direct and more collaborative, integrating the use of process and social models. Recommendations for mathematics include task analytic instruction and a multi-modality approach to learning. Some examples are the use of TouchMath, a multi-sensory commercial program, recorded math problems that allow for visual representation and repetition, word problem read-alouds, and concrete problems with visual cues and concrete manipulatives [39]. These EBPs for students with ID are often no different from the curricular modifications and strategies that benefit typically functioning students—teachers often do not realize they are already implementing EBPs!

Behavioral and social skills—key factors in supporting the successful integration of students in the inclusive setting—can also be improved using a variety of EBPs [40]. Applied behavior analysis, including behavior modifications and discrete trial training, is helpful in teaching and reinforcing appropriate behaviors [41]. The use of positive behavior supports and non-contingent escape access (increased rewards for desired behavior) has been found to lead to an improvement in student behavior [33]. Furthermore, promoting self-determination skills, including self-advocacy and self-awareness, can increase autonomy and independence, which are fundamental outcomes of inclusion for individuals with more severe cognitive disabilities [42]. Other EBPs that promote social, emotional, behavioral, and/or communication skills include role-play and social stories, visual schedules, and the use of assistive technology [33].
Although there is no question that students with ID require more support in the inclusive educational setting than other individuals with more mild cognitive disabilities, educators have practiced and assessed the impact of instructional strategies and supports for this population and have a host of successful methods from which to choose. As with typical peers, it is not a “one size fits all approach”. Teachers are professionals who respond to changes and strategize. Continually improving the manner in which the job is done is the hallmark of professionalism [43], and the propositions for professional teachers include the commitment to students and learning and lifelong learning [44]. With the many challenges facing our teachers today, hopefully, these strategies will empower educators to make inclusion for individuals with ID a meaningful educational and life experience, with the lifelong goal of full participation in society [12].

The goals of the study described here will better equip teachers and administrators to support individuals with ID in the inclusive setting by identifying the EBPs and strategies that educational professionals perceive to be the most effective and useful. The researchers were guided by the following research question in this mixed-methods study: What are the strengths, challenges, and best practices related to inclusion strategies for students with ID, from a realistic teacher perspective?

2. Methods

In order to identify the EBPs that special educational professionals perceived to be the most useful and effective in K-12 classrooms, the researchers created and administered a survey related to strategies used to support students in the areas of academics, behavior, socialization, technology, and communication. This study can be defined as a cross-sectional study, with non-probability sampling, using convenience and snowball sampling, as this online survey was shared on social media, and shared with individuals whom researchers knew as being employed as school personnel.

2.1. Participants

Participants included educational professionals who worked with students with ID in inclusive settings across the United States. Participants were both special and general educators who had experience working with students in the inclusive classroom and were recruited through personal and professional contacts in schools and school districts and via social media. A non-probability sampling method was used (convenience sampling) to recruit participants, with the majority of the participants in the Northeast region, specifically 72 of the 107 participants from the state of New Jersey. The survey was open for participant responses for 10 months. Of these 107 participants, the average number of years individuals had experience working with students with ID in inclusive settings was 11.13 years. General education teachers made up 41% of the participants, and special education teachers made up 48% of the participants. The other 11% were teacher aides and related service providers such as speech or behavior therapists. These participants represented 63 school districts, from 20 states across the U.S. These school districts varied in socio-economic status, from suburban to urban, and included diverse ethnic populations.

2.2. Data Collection

The survey administered in this study included several types of questions. The closed-ended questions in which participants were asked to rate the usefulness of EBPs employed a Likert-type rating scale (“not useful” to “very useful”), and responses were scored as follows: (1) not useful; (2) somewhat useful; (3) uncertain; (4) useful; (5) very useful; and (6) never used, but would consider using. Examples of survey questions can be found in Table 1. The complete list of survey topics can be found in Appendix A: Survey of Evidence-based Practices (EBPs) rated by participants. The survey categories included EBPs based on extensive research into the existing literature, in the areas of reading, mathematics, technology, life skills, and behavior. The means of the participants’ ratings of perceived
usefulness of EBPs were calculated, and compared in each instructional category (reading, mathematics, technology, life skills, behavior).

Table 1. Sample survey questions.

<table>
<thead>
<tr>
<th>Likert-Style Questions</th>
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<tbody>
<tr>
<td><strong>EBPs in Reading</strong></td>
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<tr>
<td>Not Useful</td>
</tr>
<tr>
<td>Direct Instruction</td>
</tr>
<tr>
<td>Graphic Organizers for Reading and Writing</td>
</tr>
<tr>
<td>Visual and Discussion Based Interventions (using pictures and discussion during reading)</td>
</tr>
<tr>
<td>Balanced Literacy</td>
</tr>
<tr>
<td>Increased Drill/Repetition</td>
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</tbody>
</table>

<table>
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<tr>
<th>Open Response Questions</th>
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<tbody>
<tr>
<td>Are there any reading programs you found useful to assist students with ID in the inclusive setting? (optional)</td>
</tr>
<tr>
<td>Additional Comments Relevant to Reading/Literacy (optional)</td>
</tr>
</tbody>
</table>

A second type of Likert-type rating scale was used in order to collect data regarding the participants’ perceived benefits and challenges of inclusion, and was scored as follows: (1) strongly disagree; (2) disagree; (3) uncertain; (4) agree; and (5) strongly agree. The means of the participants’ ratings of the benefits and challenges of inclusion were calculated and compared in the two categories (benefits and challenges). Questions regarding the perceived benefits and challenges of inclusion for students with ID included a Likert-type agreement rating scale (i.e., strongly disagree, disagree, uncertain, agree, strongly agree, and an option for not applicable).

2.3. Data Analysis

Likert-style questions created quantitative data and were analyzed with mean and frequency recordings, identifying the most and least useful EBPs. The quantitative data gleaned from participant responses to open-ended questions enhanced the data analysis as the researchers identified and coded common themes. Such themes created inferences, trends, and patterns to support results in each of the areas surveyed: reading/literacy, mathematics, content area instruction, technology, life skills/community-based instruction, and behavior.

Results from the survey were coded and analyzed by the researchers, who identified trends and/or common themes. Two different Likert scales were used. The Likert-type rating scale of the usefulness of EBPs (not useful to very useful) was scored as follows: (1) not useful, (2) somewhat useful, (3) uncertain, (4) useful, (5) very useful, and (6) never used, but would consider using. Participants’ ratings of the perceived usefulness of EBPs were averaged and compared in each instructional category (reading, mathematics, technology, life skills, behavior). Next, each Likert-type agreement rating scale of perceived benefits and challenges of inclusion was scored as follows: (1) strongly disagree; (2) disagree; (3) uncertain; (4) agree; and (5) strongly agree. Participants’ ratings of the benefits and challenges of inclusion were averaged and compared in the two categories (benefits
and challenges). Each of the open-ended response questions was recorded and used in qualitative data analysis. The participants’ demographic information (i.e., school district, grade level, role in K-12 education, years of experience) was tallied in a frequency chart.

3. Results

The results reported by participants of the study often mirrored the literature related to best practices for students with ID in inclusive classrooms in all areas of the study, including literacy, mathematics, technology, behavior, and community-based instruction. Both qualitative and quantitative results are included in the analysis and discussion of this study as participants not only rated EBPs but were allowed to contribute open-ended comments under each question. These comments supported common themes and perspectives from participants and are shared with each category such as the importance of co-teaching opportunities and relationship building among students and teachers.

3.1. Academic Outcomes: Reading/Literacy

In the area of literacy, the five EBPs identified in the literature and evaluated were: (1) direct instruction; (2) explicit and systematic instruction; (3) graphic organizers for reading and writing; (4) visual and discussion-based interventions (i.e., using pictures and discussion during reading); and (5) increased drill and repetition (Raty et al., 2016). All of these strategies were useful, whereas visual/discussion-based interventions and graphic organizers were reported most useful among the list. The lowest-rated strategy was increased skill and drill ($M = 3.90$), which was still recorded as higher than average. See Table 2 for an overview of the highest-rated and lowest-rated EBPs in all areas.

<table>
<thead>
<tr>
<th>Area of Instruction</th>
<th>EBPs Rated Most Useful</th>
<th>Mean</th>
<th>EBPs Rated Least Useful</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy</td>
<td>Use of visuals and discussion while reading</td>
<td>4.63</td>
<td>Balanced literacy</td>
<td>4.04</td>
</tr>
<tr>
<td></td>
<td>Graphic organizers</td>
<td>4.34</td>
<td>Increased drill/repetition</td>
<td>3.90</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Visual cues</td>
<td>4.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manipulatives</td>
<td>4.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relating to real-life situations/scenarios</td>
<td>4.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased wait time</td>
<td>4.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>High-tech assistive technology</td>
<td>4.56</td>
<td>Low-tech assistive tech</td>
<td>3.68</td>
</tr>
<tr>
<td></td>
<td>Audio text (text to speech)</td>
<td>4.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Augmentative and alternative communication devices</td>
<td>4.1</td>
<td>Dictation (voice to text)</td>
<td>3.52</td>
</tr>
<tr>
<td>Life Skills</td>
<td>Photo journals/schedules</td>
<td>4.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community-based instruction/Natural settings</td>
<td>4.27</td>
<td>Video-based instruction</td>
<td>4.14</td>
</tr>
<tr>
<td>Behavior</td>
<td>Family/School support</td>
<td>4.68</td>
<td>Secret words</td>
<td>3.67</td>
</tr>
<tr>
<td></td>
<td>Communication/Social skills</td>
<td>4.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adaptations</td>
<td>4.45</td>
<td>Inquiry-based learning</td>
<td>3.57</td>
</tr>
<tr>
<td></td>
<td>Positive behavioral support</td>
<td>4.33</td>
<td>Self-monitoring</td>
<td>3.49</td>
</tr>
</tbody>
</table>

These EBPs provide effective strategies to support individuals with ID with meaningful instruction. Since reading programs are often synonymous with literacy instruction for students with disabilities, participants shared programs they found useful with the population. Orton Gillingham (OG) or similar programs such as Wilson or Fundations were cited as the programs used most frequently. These programs are explicit and systematic phonics and multisensory approaches to acquiring reading skills. Other resources added by participants were reader’s/writer’s workshop and audio-online leveled texts. Trends in education often lead educators to teach ‘programs’ not ‘students,’ but have been recommended as EBPs [33]. Some of the open-ended comments from participants reflected the importance of teacher knowledge, pedagogy, and best practice to adapt and develop
relevant literacy instruction and resources for students with intellectual disabilities. One participant commented, “I use the general education curriculum and modify and accommodate for students. Culturally relevant, age appropriate, and high-interest literature produces more gains for students than any specially designed “replacement curriculum” for special education . . . which did not produce real reading fluency or comprehension skills”. Other similar comments that echoed this belief included, “No programs, just research-based practices!” and “From my work on my K-12 reading certificate, I know there isn’t one magic program for teaching reading. Schools need to custom build a program of their own using best practices in reading instruction and meeting the kids at their level”. This sound advice reminds teachers who instruct students with ID in inclusive settings not to rely on a list of EBPs but to know their specific students well, and select and modify wisely from the toolbox.

Challenges teachers reported when it comes to supporting students with ID in inclusive literacy instruction were a lack of supplemental materials and a lack of teacher training. Small group instruction was also a concern. During reading instruction, we often group students homogeneously, with similar abilities, and one participant reminded us that it is necessary to have at least one other student in the class with a similar reading level for this purpose. After the reading mini-lesson, students typically work in small groups with peers at similar levels in texts. Such small group work would not be meaningful if only one student did not have another student with which to share a guided reading experience.

Finally, educators can also adapt strategies for literacy to support students with ID in content area instruction. Such EBPs that can be useful in social studies, science, or other elective classes are the use of direct instruction, graphic organizers, visual representations, and group discussion. The use of audio texts and dictation devices can support writing and comprehension in other subject areas. Other EBPs reinforced in both the literature and the reality of what educators find to be useful and effective include relationship-building with students, making connections to real-life situations, and the use of positive behavioral supports that would support students with ID in any inclusive learning environment at any level (See Figure 1).

Figure 1. Reading EBP results.

3.2. Academic Outcomes: Mathematics

The EBPs recommended in the area of mathematics and evaluated by participants included the following: (1) the TouchMath® Program; (2) task analysis, described as defining in detail the tasks and subtasks the student will perform; (3) use of manipulatives, concrete problems, visual cues, and increased wait-time; and (4) relating math to real-life situations or scenarios (Dean et al., 2016). Among these, participants rated the use of visual cues and manipulatives and relating mathematics to real life as the most useful in teaching mathematics to students with ID. The use of task analysis and increased wait time had ratings of “very useful”. TouchMath®, a multisensory, commercial program,
was recommended as an EBP, but 43% of participants identified the program as “Not applicable”, or “Never used”. Out of the 57% of the participants who did use the program, more than half—35%—rated the program as “Useful” or “Very Useful”, whereas 22% rated the program between “Not useful” and “Uncertain”.

One of the recognized strategies to support students with ID in the inclusive mathematics classroom that was not identified in the literature, but was mentioned by several of the study participants, was the use of Math Workshop. “Math Workshop has been amazing for students in my inclusion classroom. We do a warm up connection to what will be taught that day, then teach a math mini lesson, then send students off into stations. During this time, my co-teacher and I pull small groups or push into specific groups that need enrichment or reinforcement. All of my students, low and high level, responded great to Math Workshop this year”. The use of anchor charts and the implementation of functional mathematics were also recommended to support students with ID. Again, knowing the students individually and developing relationships were also cited as important to student performance.

3.3. Academic Outcomes: Content Area Instruction

Many of the EBPs that were identified to support students in literacy and mathematics can be implemented in content area instruction such as science, social studies, and different electives and specials. These EBPs include the use of visuals, task analyses, large and small group discussion, and graphic organizers. The use of technology such as audio texts and text-to-speech, or dictation support, can also be used throughout the content area to improve performance. Finally, cultivating relationships with students to build self-esteem and trust often was suggested by study participants but not frequently mentioned as an EBP in the research (See Figure 2).

Figure 2. Mathematics EBP results.

3.4. Academic Outcomes: Technology

The usefulness of technology as an EBP was rated by participants to support students with ID in all areas (e.g., academics, communication, social, and behavior). Assistive technology (AT) that participants rated as “Most useful” in supporting students with ID include high-tech AT, audio texts, and assistive and augmentative communication devices (AAC). High-tech AT refers to complex devices or equipment that may be computerized. Examples include power wheelchairs and iPads or other tablet-style devices. Audio texts, any type of recording of books or written material, were also rated as very useful supports for students and can be used in reading and all content area instruction. These audio supports are more readily available and often offered for free. The use of the iPhone® or
iPad® also easily allows educators to retrieve recordings and create them when necessary. Augmentative and alternative communication devices such as Proloquo2Go® are also quite prevalent and typically rated as “Useful” or “Very useful” for students. Such AAC devices are more readily available to schools and students, are more affordable than older devices, and are more useful than older, more expensive, and complex devices. What once cost a district over $5000 for one AAC device is now obtainable for less than $500, and many are even free. The accessibility and ease of use of AAC devices allows teachers to readily program and implement these supports for students in the classroom. The two areas of technology that were rated as “Not useful” when compared to the other forms of technology included low-tech AT and dictation technology. Low-tech AT is described as simple supports that are not typically digital such as pencil grips, slant boards, and raised line paper. Dictation technology is typically referred to as “voice to text” devices, such as the software, Dragon Naturally Speaking®. In these two areas of technology, participants reported fewer students with ID using such technology and some participants reported feeling “uncertain” of the usefulness for inclusive education. Educators reported that many of their students found dictation devices difficult to use. In addition to learning how to use such complex devices, the output of dictation devices can also be confusing if the device does not register the language of the speaker correctly—similar to the errors a person might find when “voice-texting” on their mobile devices. The extensive time needed to review and organize dictated text may also make such devices less useful for the student. Other concerns related to the use of technology for students are the cost and resources required of individual districts in order to acquire such equipment, as well as the continuity and consistency of the use of the technology in the student’s home. Furthermore, sometimes teachers are provided with support for students but do not have the training or expertise to implement this support. Finally, some participants cautioned that technology might provide too much support in literacy and hinder students from reading and writing independently.

Many of the positive comments about the use of technology include the wide use of technology by students with and without disabilities, leveling or “normalizing” the learning experience of diverse students in the classroom. Access to technology, when used appropriately, can allow students to engage in learning experiences and feel successful in the general education classroom. When speaking about using a keyboard to substitute illegible handwriting, one teacher stated: “They [students] love this resource, and if they did not have it, they would not be regularly writing in my class” (See Figure 3).

3.5. Life Skills and Community-Based Instruction

Life skills for individuals with ID refers to daily living skill activities. Areas of life skills typically include personal hygiene, dressing, meal preparation, travel, communication and socialization, housekeeping, and safety. Life skills are often not thought of as an inclusive educational experience, but EBPs include practice and generalization of skills in “natural settings” with typical peers, often referred to as community-based instruction (CBI). Such natural settings such as school stores and food services (e.g., coffee and bagel carts, cooking classes in the school cafeteria) are some of the inclusive educational settings that support life skills training for students with ID alongside their typically developing peers. Participants rated the use of photo journals and visuals as well as CBI as the “Most useful” and the use of technology-based instruction and video supports as “Least useful.” Although technology-based instruction had the least impact on students with ID with regards to learning daily living skills, most participants reported this EBP as “never used” and “would consider”.
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3.6. Behavioral Supports

Evidence-based practices in the area of behavioral supports included applied behavior analysis, positive behavior supports, and social skills training, as well as supports more typically used in academic areas, such as universal design for learning (UDL) and inquiry-based learning; these instructional designs help engage all learners and can impact diverse student behavior in a positive manner. Overall, participants reported that school and family connections and consistency had the greatest impact on student behavior. Other practices evaluated with the highest ratings of 'Useful and Most useful' were communication and social skills support, and curricular adaptations. Curricular adaptations, such as high-interest and low-level readers, kept students engaged and behaving appropriately. Positive behavior supports, self-determination, and advocacy and cooperative learning experiences were also reported to be "Useful" and "Very useful" in supporting positive student behavior.

Evidence-based practices reported as "Not useful" in the area of behavioral supports were inquiry-based learning, secret words (i.e., words used to signal to help stop stereotypical behaviors), self-monitoring, and non-contingent escape access. Non-contingent escape access was defined as increased rewards for desired behaviors. Although these EBPs had lower overall usefulness ratings among other practices evaluated, most participants rated them as "Never used and would consider".

Participant comments in the area of behavior revealed two themes: Behavior supports need to be individualized. As one participant commented, "What works on one, may be a disaster for another." Secondly, participants highlighted the importance of relationships with support staff such as related service providers and counselors who support students with disabilities. Sometimes this support can be integrated into the classroom during instruction (See Figure 4).
were once associated with teaching students with ID in the inclusive classroom as reported by researchers. The researchers noticed that when participants rated some practices as less successful, they were more likely to rate those practices as less useful. This indicates that educators in inclusive settings are implementing these practices and possess the pedagogical knowledge necessary to support students with ID, as well as their typical peers. These data indicate that although our teachers may be more prepared to use EBPs effectively to support the inclusion of individuals with ID, professional development in this area can continue to develop the expertise of inclusive educators and impact diverse student outcomes in inclusive settings. Such outcomes led the researchers to believe that teachers are concentrating on positive outcomes rather than the fears and discomforts that were once associated with teaching students with ID in the inclusive classroom as reported throughout the research [3–28].

One very prominent theme that emerged in the analysis of the qualitative data which was reflected in the review of the literature [13,15,16] is the importance of knowing the individual students and building relationships with them; once teachers have a deep understanding of their students’ strengths, needs, preferences, and interests, they can differentiate meaningfully. The “one size fits all” approach does not appear to be effective in these cases.
for students with disabilities, including students with ID. One participant summed it up as “Inclusion strategies should be recommended based upon individual basis and readiness”. Participants reported positive outcomes from building relationships among peers and adults, such as building student confidence and improved academic and behavioral outcomes. Participants discussed the importance of a warm and welcoming inclusive environment: “Everyone must be supportive and patient in order to feel like they can necessarily take risks when challenged”. A clear outcome of this study is the significance of building positive relationships with and among students, as it has a direct impact on student performance and growth of students with ID in the inclusive classroom. Further, another positive outcome of this study is the realization that EBPs for students with ID often are the same for students without disabilities. Such practices included the use of visuals, graphic organizers, manipulatives, and group discussions. Technology such as the use of audio texts also regularly supports typical students. The use of appropriate wait time, positive behavior supports, and relationship building are meaningful practices that impact the performance of all students. Thus, many of these EBPs are not new or unique to students with ID. Educators do not need special training to implement such practices, but do need more opportunities to apply them to different student populations.

When asked about the benefits and challenges of including students with ID, participants reported the greatest benefits for students with ID were increased social skills, improved relationships, and more positive interactions with peers. In contrast, participants reported that they did not feel that students with ID demonstrated improvements in academic skills while included in the general education classroom. Not surprisingly, the challenges reflected in participant responses mirrored many identified throughout the research such as academic expectations such as high-stakes testing, pressure to follow a curricular map, greater disparity among student abilities, and limited planning time often discussed in the research [1,23,24]. Although there were some mixed reports, it is clear that the promising results of this study indicate a positive shift among educators; participants reported an increase in the area of administrative support, positive attitudes, more effective professional development, and growing expertise in the area of supporting students with ID in the inclusive classroom. The positive results of this study clearly document progress in educating students with ID with their typical peers successfully.

The greatest dilemma shared among participants was the availability of resources among different districts. Limited resources were not reflected in the literature as the greatest challenge but the multiple needs of students that needed to be met simultaneously and the fear of teaching performance evaluations [3,6–28]. Future research related to supporting the accessibility of resources will benefit schools with individuals with ID in the inclusive classroom. Research about the most useful professional development (related to both content and delivery) can better serve educators in areas such as the use and implementation of EBPs, co-teaching, and building positive relationships among educators and students [3,4].

5. Conclusions

As inclusive education placements for individuals with ID continue to grow across our globe, it is imperative that teachers are equipped with the best practices to support these individuals effectively, leading to successful educational and post-educational outcomes. This study analyzed the impact of evidence-based practices to support students’ intellectual disabilities in the inclusive classroom. Survey results indicated teachers found the evidence-based practices they were familiar with were useful or very useful in improving student performance, yet they [teachers] still had limited exposure and training with many EBP that could potentially help students.

Overall, although the participants demonstrated the greatest knowledge of EBPs for reading content areas, the ratings of the usefulness of each EBP based on other subjects or content areas provide implications for a need for additional resources and teacher training that should be provided by school districts who include students with ID in the
inclusive setting. Those EBPs which were rated less useful when compared to the others most often consisted of the greatest number of participants who had never used them, but would consider. This theme in data analysis suggests that additional professional development in more varied EBPs could lead to more positive outcomes for students with ID who are included. Qualitative themes and participant comments about the importance of collaboration and co-teaching, peer support, and relationship building are echoed in the most recent literature about the successful inclusion of individuals with intellectual disabilities [1,3–6,45].

Outcomes from this research also indicate that the importance of collaboration and co-teaching can be further developed and utilized to support inclusive practice with students with more severe disabilities. Participants reported that co-teachers provided support, confidence, and encouragement for each other and their students. Continued professional development and administrative support in EBPs will empower teachers in inclusive classrooms to continue to build their pedagogical skills and positively impact diverse student performance. Such continued research and practice will make students with ID more accepted among teachers and peers in inclusive educational experiences. Surprisingly, there were limited challenges and concerns shared in the open-ended comments. Some of the struggles of including students with ID in the inclusive setting include passive engagement, appropriate adaptations, the relevance of curriculum for students with special needs, and collaboration and planning time; however, teachers believe their efforts to support students with ID in the inclusive classroom are well worth it! Unfortunately, it is the special educators who are being pulled across grade levels, and content areas, with limited time and resources, and our most vulnerable populations suffer [3,6]. Policy, professional training, and awareness can continue to improve inclusion for all those with disabilities especially those with more significant intellectual needs.

Such outcomes lead the authors to believe that teachers are concentrating on positive outcomes rather than their fears and discomfort once associated with teaching students with ID in the inclusive classroom as schools in the United States begin to meet the challenges through increased awareness, administrative support, and professional development. Controversy often surrounds the inclusion of students with the most significant cognitive disabilities in the general education classroom and curriculum. Based on IDEA and LRE concepts, there are many appropriate academic and behavioral supports for students to succeed in the general education classroom and this placement should be accessible to all students with disabilities not just those who are higher functioning intellectually [4].

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Appendix A Survey of Evidence-Based Practices (EBPs) Rated by Participants

Reading:

(1) Direct instruction—explicit and systematic instruction;
(2) Graphic organizers for reading and writing;
(3) Visual and discussion-based interventions (using pictures and discussion during reading);
(4) Balanced literacy (uses whole language and phonics);
(5) Increased drill/repetition;
(6) Are there any reading programs you found useful to assist students with ID in the inclusive setting? (optional);
(7) Additional comments relevant to reading/literacy (optional).

Mathematics:
(8) TouchMath;
(9) Task analysis instruction (define and describe in detail the tasks and sub-tasks that the student will perform);
(10) Manipulatives (concrete problems);
(11) Visual cues;
(12) Increased wait time;
(13) Relates math to real life;
(14) Are there any math programs you found useful to assist students with ID in the inclusive setting? (optional);
(15) Additional comments relevant to mathematics (optional).

Technology:
(16) Dictation technology (e.g., Livescribe pen, Dragon Naturally Speaking, etc.);
(17) Audio text (books on tape);
(18) Low assistive technology (adapted pens, spoons, etc.);
(19) High assistive technology (computers, power wheelchairs, etc.);
(20) Assistive and augmentative communication devices;
(21) Additional comments relevant to technology (optional).

Life skills:
(22) Community-based instruction/use of natural settings;
(23) Technology and video instruction (when CBI is unavailable);
(24) Photo journals/schedules;
(25) Additional comments relevant to life skills (optional);

Behavior:
(26) Behavior methods (positive behavior intervention/support, focus on rewards for appropriate behavior);
(27) Behavior modification/intervention (applied behavior analysis–ABA);
(28) Noncontingent escape access (increased rewards for desired behaviors);
(29) Self-monitoring (student monitors behavior goals, ex: individual marks own behavior chart);
(30) Secret words (help stop stereotypical behavior);
(31) Self-advocacy and self-determination;
(32) Communication and social skills;
(33) Teaching social intentions/perceptions (role-play and social stories);
(34) Adaptations (e.g., curricular modifications such as high-interest low-level readers or pictorial representation of content);
(35) Accommodations (e.g., guided notes, larger print, reduced number of questions);
(36) Universal design for learning (multiple means of engagement, representation, and action/expression);
(37) Inquiry-based group learning approach;
(38) Family/school support (strong connections);
(39) Cooperative learning;
(40) Additional comments relevant to behavior and self-control (optional).

Benefits of inclusion for individuals with ID:
(41) Increased academic skills;
(42) Increased social skills;
(43) Establishing relationships for individuals with ID and typical peers;
(44) Increased interaction with typical peers;
(45) Increased and developed the use of communication skills;
(46) Increased self-determination and self-advocacy;
(47) Increased independence.

Challenges related to inclusion:
(48) Limited support from administration;
(49) Limited access to professional development;
(50) Great academic disparity between individuals with ID and typical peers;
(51) Great behavioral disparity between individuals with ID and typical peers;
(52) Pressure to adhere to common core and high stakes testing while addressing differentiated instruction;
(53) Pressure to move through curriculum rather than addressing students’ diverse needs;
(54) Limited planning time with collaborative partners;
(55) Lack of positive attitudes from colleagues and educators supporting inclusion;
(56) Lack of expertise/strategies to support students with ID.

In your own words . . .

(57) What do you believe to be the most important strategies to support individuals with intellectual disabilities in the inclusive setting?
(58) What are the greatest benefits of inclusive classrooms?
(59) What are the greatest challenges of inclusive classrooms?
(60) Additional comments relevant to inclusion for students with intellectual disabilities (optional).

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