

An Assessment of the Feasibility and Effectiveness of Distance Learning for Students with Severe Developmental Disabilities and High Behavioral Needs

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Abstract

School across the country closed their doors during the COVID-19 pandemic. These measures impacted all students, as schools, educators, and families grappled with the realities of transitioning to distance learning platforms. The research on distance learning is still in its early phases. However, almost no research exists on educating students with severe disabilities and high behavioral needs using this technology. Study 1 collected survey data from students' families and their teachers on the feasibility and effectiveness of distance learning programs when working with students with severe developmental disabilities and high behavioral needs. Results indicated that parents and educators alike reported that distance learning was beneficial for most students but that in person education is more effective with this population. Study 2 further examined the effects of a transition to distance learning on students' IEP goal progress. Analyses revealed that, overall, students maintained skills addressed in their IEP (i.e., no significant regression or progress). Findings contribute to a much needed literature base suggesting that while distance learning is better than no education, in person instruction is more effective and preferred for most students with severe developmental disabilities and high behavioral needs.

Introduction

In the early spring of 2020, COVID-19 hit the United States. California detected its first case of COVID-19 on January 26, 2020 and a state of emergency was in place starting March 4, 2020. On March 16, 2020 the governor of California issued a shelter in place order, leading to the closure of the majority of businesses and educational institutions. COVID-19 is an illness caused by a virus that spreads from person to person and can live in the air for over 3 hours and on some surfaces for up to 3 days (van Doremalen et al., 2020). Further, the Centers for Disease Control and Prevention (CDC) explains that, as of the date of this publication, there is no immunization for the virus and therefore the order to stay home and shelter in place was necessary to prevent wide-spread infection (CDC, 2020). These orders have changed all aspects of our lives, including education. By April of 2020, the pandemic had led to 100% of California schools closing their doors and 96% of schools across the United States closing in an effort to keep our students safe and healthy (www.mchdata.com/covid19/schoolclosings). This represents 97.91% of the entire K12 population of 57.9 million students (www.mchdata.com/covid19/schoolclosings).

These school closure measures have impacted all students in unprecedented ways as schools, educators, and families grappled with the realities of transitioning to distance learning platforms. Distance learning or education is defined as a method of teaching where the student and teacher are physically separated (Kentnor, 2015). It can utilize a variety of technologies, including correspondence, audio, video, computer, and the Internet (Roffe, 2004). Distance education is also called online education and most recently utilizes computers and the Internet as the delivery mechanism with at least 80% of the course content delivered online (Allen & Seaman, 2011; Shelton & Saltsman, 2005).

Due to the COVID-19 pandemic, the majority of school across the nation were forced to transition from brick and mortar education to distance learning with almost no time to plan (www.mchdata.com/covid19/schoolclosings). Despite this widespread transition to distance learning, the research on distance learning is still in its early phases and little research has assessed the effects of online lessons for elementary and high school students. Of those studies, findings remain mixed. Several studies demonstrate equal effectiveness of online learning platforms and face-to-face instruction (Barbour & Mulcahy, 2009; Barker & Wendel, 2001). Further, others have even documented the superiority of online platforms over traditional face-to-face learning (Hart, 2019; Cavanaugh, 2001). Despite such promising data, other studies document negative effects of moving to distance learning (Fitzpatrick, 2020). Even less is known about the mediating and moderating variables that impact the effectiveness of distance learning and whether there are differences in outcomes across age, race, and socioeconomic factors (Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004). These mixed results and limited research base make it difficult to truly understand the impact on students' education of moving from traditional face-to-face instruction to distance learning platforms.

Most of the research on distance learning has focused on the general education population. Fewer studies have looked at the impact of distance learning on students with special needs, let alone those with severe developmental disabilities and high behavioral needs. These students and their families are now in uncharted waters. While some studies indicate that distance learning programs are uniquely positioned to meet the needs of students with disabilities (Rose & Blomeyer, 2007; Hashey & Stahl, 2014), research on this area is scarce and findings are mixed (Means et al., 2010). Heiman (2006) found that university students with learning disabilities can be successful in distance learning program with additional supports. However, this was not representative of the entire special education population as participants ranged in age from 18-50 years old and had IQ scores of 95-120. Findings therefore cannot be generalized to younger students or those with intellectual disabilities. Additional studies investigated teachers' experiences with distance learning. For example, Marteney and Bernadowski (2016) surveyed teachers who taught an online education program for students with special education needs. In this study, the majority of the teachers reported that online education opened up access to learning activities for students with limitations and reported improvements in student academic performance. These findings are extremely promising and encouraging, however, as with distance learning studies performed with the general education population, research including the special education population also remains mixed. For example, Carnahan & Fulton (2013) found that special needs students enrolled in a cyber school performed worse than the state average for special needs students on math and reading standardized education assessments.

The research on distance learning and students with special needs is further restrained by the limited variability of students represented in these studies. In 2012, Vasquez and Straub conducted a review of the literature on online learning for special education students. Their review identified 43 studies on this topic. Of those studies, only six were identified as empirical. A deeper dive into the six empirical studies revealed that, although most students had an IEP, students in three of the six empirical studies participated in mainstream classrooms, suggesting that their developmental or

behavioral limitations did not require more restrictive placements. When looking at the percentage of students with special needs enrolled in distance schools, diagnoses which often represent students with severe challenging behaviors and significant developmental delays represented a very small portion of those enrolled. For example, Carnahan and Fulton (2013) investigated distance schools in Pennsylvania. Of the 2,600 students with special needs enrolled in distance learning schools the majority were classified as having a learning disability. Less than 10% were diagnosed with Autism Spectrum Disorder (ASD) or intellectual disability (ID). Based on these findings, more work is needed specifically looking at individuals with severe developmental disabilities including ASD and ID.

Developmental disabilities encompass a broad range of conditions that result from cognitive and/or physical impairments and range in degree of severity (May Institute, 2020). Seventeen percent of individuals ages 3-17 are diagnosed with a developmental disorder, the most common of which are ID, Cerebral Palsy (CP) and ASD (CDC, 2020). Further, Petek (2019) outlines requirements set forth by the Individuals with Disabilities Act and reports both ASD and ID are considered a relatively severe disability. In addition to exhibiting delays in development, many of these individuals also demonstrate challenging behavior. Research suggests that approximately 64% – 93% of individuals with ASD exhibit one or more challenging behaviors (McTiemman, Leader, Healy, & Mannion, 2011; Murphy, Healy, & Leader, 2009) and 10% - 20% of individuals with ID demonstrate challenging behaviors (Jacobson, 1982; Kiernan & Kiernan, 1994; Oliver, Murphy, & Corbett, 1987). These students are often educated with supports and services beyond what is offered in general education classrooms and at times in different classrooms all together. In California, twelve percent of students in K-12 schools are in special education (Jones, 2020), however, only 20 percent of these students are in special education classrooms on a comprehensive campus and 3 percent of these students are in separate schools away from their school or district of residence (LAO, 2019). For this three percent of students who are most impacted and unable to be educated at their school of residence, research on distance learning outcomes is extremely scarce.

The COVID-19 pandemic and corresponding public health crisis initiated an unprecedented and rapid move to distance learning platforms. Almost overnight, educators, students, and their families have found themselves in uncharted waters. The need for more research on distance learning and students with special needs, especially students with severe developmental disabilities and high behavioral needs is quite apparent.

Study 1

The purpose of Study 1 was to explore the social validity of distance learning programs for students with severe developmental disabilities and high behavioral needs. Information was gathered from students' families and their educators (teachers and paraeducators) on the feasibility and effectiveness of distance learning programs. A survey with Likert scale ratings, multiple choice questions, and open-ended questions was utilized to measure parent and educator perceptions of the distance learning program.

Study 1: Method

Educational Setting

The Brick and Mortar Setting. Prior to school closures, the students in this study attended a two-campus, nonpublic school (NPS) program in Southern California certified by the California Department of Education (CDE). The NPS primarily serves students with ASD, ID, and other developmental, behavioral, and cognitive disabilities. One hundred and twenty-six students ages 5 through 22 years old are educated at the NPS. Each classroom consists of up to 12 students, a credentialed teacher, and paraeducators. Given the significant needs of the students due to their developmental disability and challenging behaviors, 82.5% of the students have 1:1 paraeducator support throughout the school day. In addition, the NPS utilizes a behavior analytic framework for all educational services and employs 10 Board Certified Behavior Analysts (BCBAs) to ensure that behavior analysis informs both school and classroom wide systems as well as students' individual behavior plans.

The Virtual Learning Setting. In mid-March, the rapidly evolving COVID-19 pandemic led the NPS' administrative and teaching teams to quickly redesign their approach to teaching, services, and the way in which services and supports were delivered to the students. It was determined that a synchronous distance learning model would be the best approach to serve the NPS' student population. Within a 1-week time span, the distance learning program was developed, finalized, disseminated through a training program, and launched to all staff.

Zoom was selected as the online virtual platform. All Zoom sessions were kept private through meeting identification numbers and passwords, which were only provided to parents of currently enrolled students. The virtual school day was scheduled for all students from 9 a.m. to 3 p.m. Schedules varied by classroom and student, but typically consisted of teacher led group instruction in the morning and one-to-one instruction for all services related to their Individualized Education Plan (IEP) in the afternoon. All one-to-one service meetings were held apart from the virtual group setting in virtual breakout rooms.

During the one-to-one service meetings, the students worked with the service provider or paraeducator, and on occasion, a behavior team member. The speech and Occupational Therapy teams also led group instructional times throughout the virtual school day to ensure that all students received collaborative service opportunities and all services as outlined in their IEPs.

Participants

The survey was sent to all parents and educators of students enrolled at the Southern California NPS offering the distance learning program.

Parents. Inclusion criteria included three aspects, such that participants (a) had to have a child who was enrolled in the NPS for 3 months or longer, (b) had to have a child who was currently participating in the NPS' distance learning program, and (c) had to have completed 90% of the survey items. Of the 182 parents that the survey was sent to, 40 were included in the final analyses (21.9%).

Educators. To be included in the analyses, the educators must have (a) been employed at the NPS for a minimum of 3 months, (b) been providing instruction in the distance learning program, and (c) completed 90% of the survey items. Of the 15 teachers that the survey was sent to, 11 teachers were included in the final analyses (73.3%). Finally, of the 104 paraeducators that the survey was sent to, 59 were included in the final analyses (56.7%).

Instrumentation

The parent and educator (teacher and paraeducator) surveys were developed and hosted through SurveyMonkey (SurveyMonkey, Inc., 2018). Prior to completing the survey, participants were presented with an informed consent form. The parent survey consisted of four sections. The first section pertained to student demographics. The second section consisted of 11 statements related to the feasibility and effectiveness of the distance learning program. Items 1-5 measured perceptions of distance learning feasibility and items 6-11 measured perceptions of effectiveness. Participants rated their level of agreement with these statements using a 5-point Likert-type scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neutral*, 4 = *Agree*, 5 = *Strongly Agree*). The third section of the survey consisted of two multiple choice questions gauging level of parent and educator support their child required to participate in the distance learning program. Lastly, the fourth section consisted of three open-ended questions where parents could share their experiences with the distance learning program. The questions included what respondents liked and disliked about the distance learning program as well as the impact that it had on their child.

The educator survey mirrored the parent survey, consisting of the same four sections. However, instead of asking respondents to think about their child when completing the survey, respondents were asked to think about their students when completing the survey. Participants could choose not to answer any question, but they could not revisit questions after advancing in the survey.

Response Measurement and Data Analysis

The percentage of respondents who selected each response option was calculated per question for all multiple choice and Likert-type survey items. Additionally, to analyze Likert-type survey items in the second section, items that were negatively valenced were reverse coded so that all items could be analyzed using the same scale. Ratings of "agree" and "strongly agree" and then ratings of "disagree" and "strongly disagree" were aggregated to determine overall level of agreement with the statements measuring feasibility and effectiveness of the distance learning program. A mean feasibility score and a mean effectiveness score were also calculated across all three respondent types (parent, teacher, paraeducator).

Finally, open-ended questions were grouped based on common content and statements to determine anecdotal response themes. In order to be counted as a theme, at least two respondents had to have written content pertaining to that theme. Once the themes were developed, the first author coded each statement to determine which themes applied to each statement. The top three themes for each question were then determined for all three respondent types based on the number of statements that fell under each theme. Interobserver agreement checks were conducted for 100% of the comments. The second author independently coded all of the comments for each theme. If both coders coded the same statement under a theme, an agreement was counted. If one coder coded a statement under a theme, but the other coder did not code that statement under a theme, a disagreement was counted. Interobserver agreement was then calculated for each theme by dividing the number of agreements by the number of disagreements plus agreements, multiplied by 100%. For parent responses to the question, "What do like about your child's distance learning program?", interobserver agreement was 100%. For parent responses to the question, "What do you dislike about your child's distance learning program?", interobserver agreement averaged 78.0% (range 63.6% to 100%). For parent responses to the question, "How has the switch to distance learning affected your child?", interobserver agreement averaged 92.1% (range 75.0% to 100%). For teacher responses to the question, "What do like about your students' distance learning program?", interobserver agreement averaged 73.3% (range 66.7% to 80%). For teacher responses to the question, "What do you dislike about your students' distance learning program?", interobserver agreement averaged 87.5% (range 75.0% to 100%). For teacher responses to the question, "How has the switch to distance learning affected your students?", interobserver agreement averaged 94.4% (range 83.3% to 100%). For paraeducator responses to the question, "What do like about your students' distance learning program?", interobserver agreement averaged 92.0% (range 80.0% to 100%). For paraeducator responses to the question, "What do you dislike about your students' distance learning program?", interobserver agreement averaged 88.2% (range 77.8% to 100%). For paraeducator responses to the question, "How has the switch to distance learning affected your students?", interobserver agreement averaged 88.8% (range 80.0% to 88.9%).

Procedure

Parents were sent a letter informing them of the current study via Remind, an electronic based communication system for schools. The parent letter included the survey link. Educators were emailed information about the survey and the survey link via their work emails. Upon opening the link, the online consent form was presented.

Study 1: Results

Tables 1, 2, 3, and 4 depict the results from the parent survey. Table 1 displays the demographic characteristics of the parents' children. Parents reported that 25.0% ($n = 10$) of their children were in elementary level, 35.0% ($n = 14$) of their children were in the middle school level, 25.0% ($n = 10$) of their children were in high school level, and 15.0% ($n = 6$) of their children were in the adult transition level. The majority of the parents reported that their child was enrolled in the NPS for more than a year. 42.5% ($n = 17$) were enrolled for more than 1 year but less than 3 years, and 47.5% ($n = 19$) were enrolled for 3 years or more. The majority of the parents (82.5%, $n = 33$) also reported that their child required 1:1 support per their IEP.

Table 2 indicates the level of support that their child needed during the distance learning program. The majority of parents reported that their child required that they sit right next to them in order to attend the distance learning program (90.0%, $n = 36$). Fewer reported that their child needed the parent to check in regularly (2.5%, $n = 1$) or simply get them started (7.5%, $n = 3$). Additionally, the majority of parents reported that their child required a staff member to be in a break-out room with their child in order for their child to attend the distance learning program (60.0%, $n = 24$). Fewer reported that their child simply needed staff to regularly check in (27.5%, $n = 11$) or staff to check in now and then (12.5%, $n = 5$).

Table 3 depicts the summary of results from the parent survey regarding the feasibility and effectiveness of their child's distance learning program. Overall, parents agreed or strongly agreed with statements suggesting that the distance learning program was feasible (i.e., more parents reported that they agreed or strongly agreed with the statements than the parents who disagreed or strongly disagreed with the statements). Parents generally reported that they had enough time to implement their child's distance learning program (40.0%, $n = 16$), had all of the tools necessary to support their child (57.5%, $n = 18$), and that the distance learning platform was easy to operate (80.0%, $n = 31$).

Parents also reported on the effectiveness of the distance learning program. Again, parents agreed or strongly agreed with statements suggesting that the distance learning program was effective for their child (i.e., more parents reported that they agreed or strongly agreed with the statements than the parents who disagreed or strongly disagreed with the statements). Specifically, parents agreed that their child was learning (50.0%, $n = 20$), obtaining educational benefits (50.0%, $n = 20$), and continuing to make progress on their IEP goals (45.0%, $n = 18$) during their distance learning program.

While parents endorsed the majority of the statements reflecting feasibility and effectiveness of the program, they still reported that other aspects of the program were not conducive for their child's educational needs. They felt that their occupation or other responsibilities made it difficult to assist their child in participating (57.5%, $n = 23$) and that their child's behaviors impeded their ability to engage in the distance learning program (52.5%, $n = 21$). Further, 58.0% ($n = 22$) of parents agreed or strongly agreed that their child was negatively impacted by the switch from in person interactions to distance learning interactions.

Analyses were also conducted to determine the respondents' mean feasibility and effectiveness rating of the distance learning program. Overall, parents rated the feasibility ($M = 3.24$, $SD = 0.85$) and effectiveness ($M = 3.09$, $SD = 0.99$) of the distance learning program as slightly above *neutral*.

Parents also answered open-ended questions regarding their child's distance learning program (see Table 4). In response to the question, "What do you like about your child's virtual learning program?", the top three themes were continued socialization (21.1%, $n = 8$), the structure that the program provided (18.4%, $n = 7$), and the parents' increased visibility into their child's education (18.4%, $n = 7$). In response to the question, "What do you dislike about your child's virtual learning program?", the top three themes were the high level of parent support required (25.0%, $n = 10$), that the children were not engaged (22.5%, $n = 9$), and the limited social interactions (17.5%, $n = 7$). In response to the question, "How has the switch to virtual learning affected your child?", the top three themes were an increase in challenging behaviors (17.5%, $n = 7$), that the children missed their friends and staff (17.5%, $n = 7$), and the negative impact on the children's progress (10.04%, $n = 4$).

Table 5, 6, 7, and 8 depict the results from the teacher survey. Table 5 displays the demographic characteristics of the teachers. Of these 11 respondents, 27.3% ($n = 3$) taught at the elementary level, 36.4% ($n = 4$) taught at the middle school level, 27.3% ($n = 3$) taught at the high school level, and 9.1% ($n = 1$) taught at the adult transition level.

Table 6 depicts the level of support the teachers' students needed during their distance learning program. All of their students required either regular check ins from the parent (45.5%, $n = 5$) or a parent sitting right next to them (54.6%, $n = 6$). In addition, the teachers reported that their students required the staff to check in regularly (54.6%, $n = 6$) or the staff to be in a breakout room with their student (45.5%, $n = 5$).

Table 7 depicts the summary of results from the teacher surveys regarding the feasibility and effectiveness of students' distance learning program. The majority of teachers agreed or strongly agreed that the program was feasible and that they had enough time to teach their students' IEP goals (63.6%, $n = 7$), the platform was easy to operate (81.8%, $n = 9$), and they had all the tools necessary to support their students (72.7%, $n = 8$) during the distance learning program. Additionally, 54.5% ($n = 6$) reported that their home life and other responsibilities did not make it difficult for them to lead their distance learning classrooms.

In addition to being feasible, overall the teachers rated the distance learning program as effective. The majority of teachers agreed that their students were engaged (72.7%, $n = 8$), learning (81.8%, $n = 9$), obtaining educational benefits (90.9%, $n = 10$), and continuing to make progress towards their IEP goals (72.7%, $n = 8$) during the distance learning program.

Despite, agreeability with the above statements regarding feasibility and effectiveness, the majority of teachers (54.5%, $n = 6$) did report that the transition to the distance learning program had negatively impacted their students' education.

Analyses were also conducted to determine the teachers' mean feasibility and effectiveness ratings of the distance learning program. Overall, teachers rated the feasibility of the distance learning program as slightly above *neutral* ($M = 3.75$, $SD = 0.65$). Teachers also rated the effectiveness of the distance learning program as slightly above *neutral* ($M = 3.52$, $SD = 0.78$).

Teachers also answered open-ended questions regarding their child's distance learning program (see Table 8). In response to the question, "What do you like about your student's virtual learning program?", the top themes were increased staff collaborations (36.4%, $n = 4$), and continued social contact (27.3%, $n = 3$). In response to the question, "What do you dislike about your student's virtual learning program?", the top three themes were decreased social interactions (36.4%, $n = 4$), that a lot of students were not attending distance learning (36.4%, $n = 4$), and the difficulty training parents and home staff (18.2%, $n = 2$). In response to the question, "How has the switch to virtual learning affected your students?", the top three themes were that there were some benefits from distance learning (25.5%, $n = 5$), the negative impact on the students who were absent from distance learning (36.4%, $n = 4$), and that students had to learn new skills from participating in distance learning (18.2% $n = 2$).

Tables 9, 10, 11, and 12 depict the results from the paraeducator survey. Table 9 displays the demographic characteristics of the paraeducators. Of these 59 paraeducators, 20.3% ($n = 12$) were in elementary classrooms, 33.9% ($n = 20$) were in middle school classrooms, 20.3% ($n = 12$) were in high school classrooms, and 25.4% ($n = 15$) were in the adult transition program.

Table 10 depicts the level of support their students needed during their distance learning program. The majority of respondents reported that their students required a parent to sit right next to them (67.8%, $n = 40$). Fewer paraeducators reported that their student needed regular parent check ins (18.64%, $n = 11$). Even fewer paraeducators reported that their students simply needed parent assistance to get their student going (10.2%, $n = 6$), or no assistance at all (3.4%, $n = 2$) from a parent. In addition, the levels of staff assistance required was assessed. The majority of paraeducators reported that their student required to be in a breakout room with staff (55.9%, $n = 33$), while 18.6% ($n = 11$) reported that their student required regular check ins, 13.56% ($n = 8$) simply required a staff to get them going, and 6.78% ($n = 4$) did not require staff assistance.

Table 11 depicts the summary of results from the paraeducator surveys regarding the feasibility and effectiveness of their students' distance learning program. Overall, paraeducators were satisfied with the feasibility and effectiveness of the distance learning program. Paraeducators agreed or strongly agreed that they had enough time to teach their students' IEP goals (69.5%, $n = 41$), that the platform was easy to operate (67.8%, $n = 40$), and that they had all of the necessary tools to support their students (45.8%, $n = 27$) during the distance learning program. In addition, the greatest number of respondents (55.9%, $n = 33$) agreed that their home life or other responsibilities did not make it difficult for them to lead their students' distance learning program, and 45.8% ($n = 27$) agreed that their students' behaviors did not impede their ability to engage in their distance learning program.

When evaluating paraeducator perceptions of effectiveness of the distance learning program, the majority of respondents agreed with statements inferring effectiveness. The majority of paraeducators agreed or strongly agreed that their students were engaged (57.7%, $n = 34$), learning (69.5%, $n = 41$), obtaining educational benefits (79.6%, $n = 47$), and continuing to make progress towards their IEP goals (61.0%, $n = 36$) during their distance learning program. More paraeducators also agreed or strongly agreed that their students spent enough time in their distance learning program to meet their learning needs (44.1%, $n = 26$), than the number of paraeducators that did not endorse this item. Lastly, unlike the parents and teachers, fewer paraeducators reported that the switch from in person interactions to distance learning had negatively impacted their students' education (18.6%, $n = 11$) than the number of paraeducators that disagreed or strongly disagreed with that statement (37.3%, $n = 22$).

Analyses were also conducted to determine the paraeducators' mean feasibility and effectiveness ratings of the distance learning program. Overall, the paraeducators rated the feasibility of the distance learning program as slightly above *neutral* ($M = 3.62$, $SD = 0.79$). Paraeducators also rated the effectiveness of the distance learning program as slightly above *neutral* ($M = 3.52$, $SD = 0.80$).

Lastly, paraeducators also answered open-ended questions regarding their child's distance learning program (see Table 12). In response to the question, "What do you like about your student's virtual learning program?", the top three themes were parent involvement (16.1%, $n = 9$), access to virtual tools (16.1%, $n = 9$), and that there were fewer distractions with distance learning (10.7%, $n = 6$). In response to the question, "What do you dislike about your student's virtual learning program?", the top three themes were parents interfering (14.5%, $n = 8$), that it was difficult to address the students' challenging behaviors (12.7%, $n = 7$), and the need to be face-to-face for some of the goals (10.9%, $n = 6$). In response to the question, "How has the switch to virtual learning affected your students?", the top three themes were conflicting. The most widely endorsed theme was that distance learning had made things worse (19.6%, $n = 11$). However, the next two highest themes were that they had seen improvements (16.1%, $n = 9$), and that distance learning had no impact on the students (14.3%, $n = 8$).

Study 1: Discussion

Study one examined the social validity of distance learning programs for students with severe developmental disabilities and high behavioral needs. Parent, teacher, and paraeducator surveys were analyzed to determine perceptions of feasibility and effectiveness for students ages 5-22 years old who attended an NPS in Southern California.

Analysis of feasibility ratings revealed that overall parents agreed that while the distance learning program was somewhat feasible, it did impact typical routines and demanded adjustments. More specifically, while many parents felt that the program was easy to use and that they had the tools necessary to access it, their occupation and other responsibilities interfered with their ability to provide the support necessary for their student to consistently access their education. Open-ended survey responses further support these findings as parents stated they loved the program visibility and parent involvement that resulted from the transition to the distance learning program but that it required a high level of parent support. Teachers and paraeducators agreed that the program was easy to use and that they had the necessary tools, however, they did not feel that their occupation or other responsibilities interfered. This may be in part due to the fact that their primary occupation remained the same but moved from the brick and mortar setting to the distance learning platform. Teacher open-ended responses further supported that they had the time and tools necessary and even concluded that increased collaboration amongst school staff resulted from the transition to distance learning. Despite the positive responses regarding time, resources, and collaboration, all respondents acknowledged the high level of support required for the students' success. For example, the majority of parents, teachers and paraeducators reported that not only did they need to assist their student, but that their student required a parent to sit right next to them to access distance learning most (if not all) of the time. Additionally, the open-ended responses highlighted barriers to feasibility including that it was difficult to get students to engage, students were often times absent or not logged in consistently, and that the face-to-face interactions were needed to implement some IEP goals. The fact that all respondents documented that continuous parent involvement was needed significantly impacts the feasibility of distance learning with this population as a majority of parents with individuals with severe developmental disabilities and high behavioral needs have a job and other children to support (US Census, 2005, p. 8). While parents, teachers, and paraeducators reported that the program was high quality, engaging, and provided structure, many parents and teachers reported that they disagree or are uncertain of whether their child/students spent enough time in the distance learning program to meet their learning needs. Given that individuals with disabilities are entitled to a free and appropriate education and to all services outlined in their IEP through the age of 21 (Lipkin & Okamoto, 2015), this is concerning and worth consideration. In addition to time limitations, the majority of parents and a large number of teachers reported that their students' challenging behaviors made it difficult for them to feasibly participate. This is informative to the fields of both Applied Behavior Analysis (ABA) and special education. In a climate where therapeutic services and education are moving to virtual and distance learning models (www.mchdata.com/COVID-19/schoolclosings), it is concerning that those with high behavioral needs may not be successful or have their behavioral needs met. This may lead to increases in maladaptive behavior and regression in skill acquisition necessary for successful re-entry into school or clinical programs to ensure safety of students and educators/clinicians (e.g., Briggs et al., 2018; Kimball et al., 2018; Lambert et al., 2017). Therefore, despite ease of use and a distance learning program which mirrored many aspects of in person instruction, feasibility of running the program at home remained challenging and should be considered in examining service delivery models for more impacted populations.

In addition to feasibility, effectiveness of the distance learning program was examined. While about half of the parent participants and a majority of teachers and paraeducators felt that their student was learning during the distance learning program, obtaining educational benefits by participating, and continued to make progress on their IEP goals, many of these respondents also felt that the switch from in person instruction to distance learning had a negative impact on the student. Open-ended responses provided examples of this impact as respondents noted limited social interactions, decreased engagement, increases in challenging behaviors and negative impacts on progress. Further teachers and paraeducators reported that it was difficult to manage challenging behaviors, utilize prompt hierarchies to assist their students, and prevent parents from over prompting their child when behind a computer monitor. While students were still able to access some form of education, these limitations impact effectiveness and student progress.

Again, given the COVID-19 pandemic and school closures that caused almost all students across California and most of the US to transition to distance learning programs, the reported impact on this population is concerning. While there is research to support that for students in mainstream settings distance learning may be equally beneficial (Barbour & Mulcahy, 2009) or perhaps superior to in person instruction (Hart, 2019), less is known about students with severe developmental disabilities and high behavioral needs. The present study begins to provide information on the impacts of distance learning for this population, suggesting that while distance learning may be feasible and effective for many students, it also has significant disadvantages. An overall theme is that some type of instruction is better than no instruction. While distance learning may be less effective than an in-person delivery model, it may be more effective than no instruction at all. Overall, findings suggest that the distance learning program was helpful for the students that were participating, but that in person instruction is more effective and essential to meet all of the students' needs.

Despite the informative findings from the survey data, limitations of the present study exist. One limitation of this study is that parents whose children were unable to participate in the distance learning program did not complete a survey and were not included in the study. It may be that participating at any level was not feasible for these families, therefore indicating that in person instruction is needed. The exclusion of those who did not participate skews the survey results as those who were unable to participate would most likely have provided lower ratings on all effectiveness and feasibility items.

Similarly, the exclusion of parents whose child did not participate makes it difficult to make more detailed conclusions about the feasibility and effectiveness of the distance learning program. Given that we do not have perceptions of those who did not participate, it is difficult to definitively conclude that the distance learning program was better than no program at all. Perhaps parents whose child did not participate had lower levels of stress, observed decreased rates of challenging behaviors given the lack of educational demands, and had more flexible schedules to tend to other responsibilities.

An additional limitation of Study 1 is that parents, teachers, and paraeducators from only one NPS were included in the present study. While the NPS had two campuses in two different counties in California, the study is not representative of this population as a whole.

Despite the limitations of the study, the data add to a small body of literature investigating the feasibility and effectiveness of distance learning platforms for students with severe developmental delays and high behavioral needs. Such studies are imperative as there is not a lot of information regarding distance learning and this population. Further, during a pandemic such as COVID-19 where distance learning becomes the only option, it is essential to understand the impacts that distance learning may have on families, educators, and students representing this unique population.

Study 2

The purpose of Study 2 was to investigate the impact that transitioning to a distance learning program had on students with severe developmental disabilities and high behavioral needs' academic progress. In particular, the data from students' IEP goals pre and post the transition to the distance learning program were analyzed.

Study 2: Method

Participants

To determine the impact that the transition to a distance learning program had on students with severe developmental delays and high behavioral needs, data on students' IEP goals were examined. All academic and behavior replacement goals for 42 students enrolled in the distance learning program for the NPS were included in the analysis. Students' data were included in the analysis if the students were participating in the distance learning program a minimum of 75% of the time it was offered. Eighty-four students were excluded from Study 2 because they did not meet this attendance requirement.

Additionally, the goals must have been implemented for a minimum of three weeks prior to the transition to distance learning and three weeks after the transition to distance learning. If goals were modified, changed or discontinued as a result of an annual or triennial IEP meeting, the student's data were excluded. A total of 419 goals were analyzed based on these inclusion criteria.

Procedure

Students' performance on their IEP goals was collected via an electronic data collection software called Catalyst. This program is secure and HIPAA compliant and was already part of the students' traditional educational program. Data was collected as part of standard clinical practices in the brick and mortar program as well as during the distance learning program. Data collection procedures did not change with the exception of the interactions being virtual rather than in person.

Data Analysis

To examine the impact on student performance on IEP goals, mean levels of performance on 419 IEP goals from a total of 42 students was derived from data collected prior to school closures and again during distance learning. Means were compared using a paired samples *t*-test to determine if there was a significant difference in mean performance from in person instruction to distance learning instruction.

Study 2: Results

A paired samples *t*-test was conducted to determine if the students' mean performance on their IEP goals during distance learning differed from the mean performance on their IEP goals during in-person instruction. Data for 42 students were included in the analysis. The number of IEP goals included per student ranged from 1 to 19 ($M = 9.98$, $SD = 4.88$). The average score on the students' IEP goals during virtual learning ($M = 73.94$, $SD = 1.38$) was almost the same as the average score on the students' IEP goals during in-person instruction ($M = 74.98$, $SD = 1.28$). This difference was not statistically significant, ($t(419) = -.97$, $p > .05$).

Study 2: Discussion

Study two investigated the impact that transitioning to a distance learning program had on students with severe developmental disabilities and high behavioral needs' progress on their IEP goals. To expand upon the effectiveness ratings from Study 1, effectiveness of the distance learning program was further analyzed by utilizing a paired samples *t*-test to compare students' mean performance on their IEP goals with in-person instruction to their performance during the distance learning program. While there was a slight decrease in the overall mean, the difference was not statistically significant. While the students did not continue to improve on their IEP goal performance during the distance learning program, it is important to note that regression on IEP goals did not occur for the students participating, despite a huge disruption to the students' education. This is of important consideration given the high level of supports, services and curricular modifications per IDEA that this population requires in order to access their education (Lipkin & Okamoto, 2015). It is promising that a population that typically thrives on structure and routine, did not regress on IEP goal

performance during a major disruption to their educational program. While more research is needed to fully understand the effects that distance learning has on a severely impacted population, these findings are an informative first step.

Despite the lack of regression demonstrated through performance on IEP goals, limitations of Study 2 are important to consider. One major limitation of Study 2 is that we do not have IEP goal performance data for students who did not participate in the distance learning program. While students who did participate did not demonstrate regression on their IEP goals during distance learning, we can not say that this is due to the distance learning program given we don't know performance levels for those who did not participate. We were unable to collect IEP goal data from those students that did not regularly participate as their families were either unwilling or unable to assist their child in participation at any level in the distance learning program. It is possible that those students would demonstrate similar performance on their goals in the absence of any program delivery. Therefore, we are unable to compare IEP goal data from those that participated to those who did not. This shortcoming therefore limits the conclusions we are able to draw from Study 2.

A further limitation of Study 2 is that there is no interobserver agreement data (IOA) for the students' data during distance learning. While it is standard practice at the NPS to take IOA data regularly, the limitations of the distance learning program and timeline with which it was developed and executed prevented consistent IOA data collection. Without IOA data, it is difficult to conclude that all goals included represent accurate data.

General Discussion

Findings from Studies 1 and 2 contribute to a much needed literature base, suggesting that while distance learning is better than no education, in person instruction is more effective and preferred for most students with severe developmental disabilities and high behavioral needs.

Caution should be taken before generalizing the findings of this study to other distance learning programs. The distance learning program under investigation in the current study strived to emulate the amount of instructional minutes that students received at the brick and mortar setting. Just like when school was in-person, students had access to their teacher for 6 hours per day. If a student received 1:1 support in-person they also received 1:1 support in their distance learning program. Although information on other distance learning programs after COVID-19 is sparse, reports suggest that many programs have certainly come short of this practice (Barnum & Bryan, 2020). Some students saw their teacher for 1 hour a week, others not at all. Even less is known about special education programs in the era of distance learning during COVID-19. While students who attended the distance learning program in the current study maintained the skills that they had learned, it is not clear what would have happened to them had their educational minutes been significantly cut. Research on school breaks and students with special needs shows that regression does occur and duration to recoup skills lost varies by duration of break and severity of disability (Tilley, Cox, & Staybrook, 1996; Allinder & Eicher, 1994). This implies that the impact of significantly cutting students with severe developmental disabilities and high behavioral needs' access to education for extended periods of time, as we have seen with the COVID-19 pandemic, will have dire consequences for these students and their families.

The present study found that distance learning forced the school and home settings to collide, and while this came with important benefits, it also resulted in some difficulties. Parents, teachers and paraprofessionals all spoke to the fact that the distance learning program resulted in increased parent visibility into their child's educational program. Parents were able to see what their child was able to do academically and how to manage challenging behaviors more effectively. This created consistency of care and increased collaboration across home and school environments. An additional benefit was that teachers and paraeducators had an accessible means to provide parent training. During traditional brick and mortar school sessions, parents often reported difficulties coming in for parent training opportunities. Distance learning allowed for an alternative means to access parent training and efforts should be made to continue access to parent training even when schools re-open their school sites. While these benefits were extremely helpful, paraeducators and teachers also reported that parents' involvement became problematic at times. For example, to not fault of their own, parents tended to over prompt and not follow prompt hierarchies outlined in the students' BIP and learning plans. They often provided answers to their student prior to allowing them to answer independently. This is understandable given the intensity of training that the educators have received in the strategies necessary to educate these students as compared to the minimal training that parents have received. Additionally, while parents reported that they enjoyed the participation, they also reported that it was challenging to find a work-home life balance and that the current set up was not maintainable. This again supports the findings that it appears some form of program is better than no program or services, but that in person models are more feasible and effective for the population included.

Future research examining the feasibility and effectiveness of distance learning delivery models for individuals with severe developmental disabilities and high behavioral needs is needed to fully understand the impact on this population. One area that warrants investigation is the specific impact that distance learning has on the rates and topographies of challenging behaviors. The present study only reviewed skill acquisition data, as observation of challenging behavior on the zoom platform was difficult and unreliable. It is important to understand if challenging behaviors increase, decrease or remain stable during disruptions to typical educational practices and distance learning mediums. Similarly, future research should include an experimental analysis that allows for direct comparison of in-person instruction with distance learning for students with severe disabilities and high behavioral needs. Without a direct comparison we won't fully understand the effects that transitioning to distance learning has on this population.

Finally, as with the research on distance learning with the general education population, research is needed on any potential mediators and moderators that impact student outcomes. For example, is there a certain type of student who may perform better with a distance learning platform.

Many students with developmental disabilities and high behavioral needs have comorbid anxiety disorders. Perhaps these students would perform better in a more predictable and familiar environment with less distractions and social and academic demands. It is also possible that there may be differences in performance across ethnicity, socioeconomic, or developmental level. More work is needed to determine if and which variables exist that may predict success with certain learning modalities over others.

In conclusion, Studies 1 and 2 lend support to the fact that this population requires continued service and that educators and clinicians must make data-based decisions that honor the ethical obligation to not abandon our clients and students even during global emergencies (Colombo, Wallace, & Taylor, 2020). While the NPS examined in the present study was forced to transition their service delivery model to a distance learning program, the students continued to be offered an education and service levels consistent with their IEP. From the data collected, this appears to have been more effective than eliminating services and education altogether. However, feasibility remains a consideration as it was extremely difficult for students and their families to consistently access the program and their services and many students were unable to logon. If in-home ABA services are medically necessary and their personnel essential (Colombo et al., 2020; LeBlanc, Lazo-Pearson, Pillard, Unumb, 2020), what about ABA services delivered in a school setting? Are special educators also essential workers? What are the detrimental impacts of closing school on students with special needs and their families? And how should these variables be taken into account when deciding how and when to open schools for in-person instruction? Unfortunately, there are more questions than there are answers. However, as we all grapple with the decisions that lay ahead, it is imperative that we also consider the needs of those most severely impacted during these emergencies. These students are a unique population with extreme challenging behaviors that compromise their safety. During times of crisis, such as the COVID-19 pandemic, these behaviors are likely to increase (LeBlanc et al., 2020) therefore necessitating the need for continued service levels and instruction. The present study attempted to begin to analyze if these services and instruction would be feasibly and effectively delivered through distance learning. While more research is needed, it does appear that while distance learning may be feasible and effective (at least in minimizing regression) for a portion of students with severe disabilities and high behavioral needs, an in-person delivery model is perceived as more feasible and effective by both parents and educators to ensure all educational, developmental and behavioral needs are met.

Declarations

Conflict of Interest: All authors report no conflicts of interest.

Ethical Approval: All procedures performed involving human participants were in accordance with the ethical standards of the Fielding University Institutional Review Board (IRB) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. IRB approval was obtained by Fielding University (#20-0503, May 2020).

Informed Consent: Informed consent was obtained from all individual participants included in the study and their parents.

References

1. Allen, I. E., & Seaman, J. (2011). Going the distance: Online education in the United States, 2011. Sloan Consortium. <https://eric.ed.gov/?id=ED529948>
2. Allinder, R. M., & Eicher, D. D. (1994). Bouncing Back. *Special Services in the Schools*, 8(2), 129-142. https://doi.org/10.1300/j008v08n02_07
3. Barbour, M., & Mulcahy, D. (2009). Student performance in virtual schooling: Looking beyond the numbers. *Education Faculty Publications*. Paper 121. http://digitalcommons.sacredheart.edu/ced_fac/121
4. Barker, K., & Wendel, T. (2001). E-learning: studying Canada's virtual secondary schools. Kelowna, BC: Society for the Advancement of Excellence in Education. <http://www.excellenceineducation.ca/pdfs/006.pdf>
5. Barnum, M. & Bryan, C. (2020). America's great remote-learning experiment: What surveys of teachers and parents tell us about how it went. <https://www.chalkbeat.org/2020/6/26/21304405/surveys-remote-learning-coronavirus-success-failure-teachers-parents>
6. Briggs, AM, Fisher, WW, Greer, BD, & Kimball, RT (2018). Prevalence of resurgence of destructive behavior when thinning reinforcement schedules during functional communication training. *Journal of Applied Behavior Analysis*, 51, 620-633. <https://doi.org/10.1002/jaba.472>
7. Carnahan, C., & Fulton, L. (2013). Virtually forgotten: Special education students in cyber schools. *TechTrends*, 57(4), 46-52. <http://dx.doi.org/10.1007/s11528-013-0677-6>
8. Cavanaugh, C.S. (2001). The Effectiveness of Interactive Distance Education Technologies in K-12 Learning: A Meta-Analysis. *International Journal of Educational Telecommunications*, 7(1), 73-88. <https://www.learntechlib.org/primary/p/8461/>
9. Cavanaugh, C., Gillan, K.J., Kromrey, J., Hess, M., & Blomeyer, R. (2004). The Effects of Distance Education on K-12 Student Outcomes: A Meta Analysis. Learning Point Associates. <https://files.eric.ed.gov/full text/ED489533.pdf>
10. Centers for Disease Control and Prevention (2020). Facts About Developmental Disabilities. <https://www.cdc.gov/ncbddd/developmentaldisabilities/facts.html>
11. Centers for Disease Control and Prevention (2020). What you should know about COVID-19 to protect yourself and others. <https://www.cdc.gov/coronavirus/2019-ncov/downloads/2019-ncov-factsheet.pdf>

12. Colombo, R.A., Wallace, M., & Taylor, R. (2020). An essential service decisions model for applied behavior analytic providers during crisis. *Behavior Analysis in Practice*. Advance online publication. <https://doi.org/10.31234/off.io/te8ha>
13. van Doremalen, N., Bushmaker, T., Morris, D. H., Holbrook, M. G., Gamble, A. Williamson, B. N., ... & Munster, V. J. (2020). Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *The New England Journal of Medicine*. <https://doi.org/10.1101/2020.03.09.20033217>
14. Fitzpatrick, B.R., Berends, M., Ferrare, J.J., & Waddington, J. (2020). Virtual Illusion: Comparing Student Achievement and Teacher and Classroom Characteristics in Online and Brick-and-Mortar Charter Schools. *Educational Researcher*, 49 (3): 161-175. <https://doi.org/10.3102/0013189X20909814>
15. Hashey, A., & Stahl, S. (2014). Making online learning accessible for students with disabilities. *TEACHING Exceptional Children*, 46(5), 70-78. <https://doi.org/10.1177/0040059914528329>
16. Hart, C., Berger, D., Jacob, B., Lomb, S., & Hill, M. (2019). Online Learning, Offline Outcomes: Online Course Taking and High School Student Performance. *AERA Open*, 5(1): 1-17. <https://doi.org/10.1177/2332858419832852>
17. Heiman, T. (2006). Assessing Learning Styles among Students with and without Learning Disabilities at a Distance-Learning University. *Learning Disability Quarterly*, 29(1), 55-63. <https://doi.org/10.2307/30035532>
18. Jacobson, J. W. (1982). Problem behavior and psychiatric impairment within a developmentally disabled population I: behavior frequency. *Applied Research in Mental Retardation*, 3(2), 121-139. [https://doi.org/10.1016/0270-3092\(82\)90002-9](https://doi.org/10.1016/0270-3092(82)90002-9)
19. Jones, C. (2020). Special education in California in need of overhaul, researchers say: Better training for teachers and improved screening are among the recommendations. <https://edsources.org/2020/special-education-in-california-in-need-of-overhaul-researchers-say/623855>
20. Kentnor, H. E. (2015). Distance education and the evolution of online learning in the United States. *Curriculum and teaching dialogue*, 17(1), 21-34. https://digitalcommons.du.edu/law_facpub/24
21. Kiernan, C., & Kiernan, D. (1994). Challenging behavior in schools for pupils with severe learning difficulties. *Mental Handicap Research*, 7, 117-201. <https://doi.org/10.1111/j.1468-3148.1994.tb00126.x>
22. Kimball, RT, Kelley, ME, Podlesnik, CA, Forton, A, & Hinkle, B (2018). Resurgence with and without an alternative response. *Journal of Applied Behavior Analysis*, 51, 854-865. <https://doi.org/10.1002/jaba.466>
23. Lambert, JM, Bloom, SE, Samaha, AL, & Dayton, E (2017). Serial functional communication training: Extending serial DRA to mands and problem behavior. *Behavioral Interventions*, 32, 311-325. <https://doi.org/10.1002/bin.1493>
24. LeBlanc, L.A., Lazo-Pearson, J.F., Pollard, J.S., & Unumb, L.S. (2020). The Role of Compassion and Ethics in Decision Making Regarding Access to Applied Behavior Analysis Services During the COVID-19 Crisis: A Response to Cox, Plavnick, and Brodhead. *Behavior Analysis in Practice*. <https://doi.org/10.1007/s40617-020-00446-7>
25. Lipkin, P.H. & Okamoto, J. (2015). The Individuals With Disabilities Education Act (IDEA) for Children With Special Needs Educational Needs. *Pediatrics*, 136, e1650-e1662. <https://doi.org/10.1542/peds.2015-3409>
26. Marteney, T., & Bernadowski, C. (2016). Teachers' perceptions of the benefits of online instruction for students with special educational needs. *British Journal of Special Education*, 43(2), 178-194. <https://doi.org/10.1111/1467-8578.12129>
27. May Institute. Developmental Disabilities. <https://www.mayinstitute.org/autism-aba/developmental-disabilities.html>
28. MCH Strategic Data. School Closings. <https://www.mchdata.com/covid19/schoolclosings>
29. McTiernan, A., Leader, G., Healy, O., & Mannion, A. (2011). Analysis of risk factors and early predictors of challenging behavior for children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 5, 1215-1222. <https://doi.org/10.1016/j.rasd.2011.01.009>
30. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. US Department of Education. <https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>
31. Petek, G. (2019). Overview of Special Education in California. <https://lao.ca.gov/reports/2019/4110/overview-spec-ed-110619.pdf>
32. Roffe, I. (2004). *Innovation and e-learning: E-business for an educational enterprise*. Cardiff: University of Wales Press. Retrieved from <https://doi.org/10.1108/dlo.2007.08121fae.001>
33. Rose, R., & Blomeyer, R. (2007). Access and equity in online classes and virtual schools. International Association for K-12 Online Learning. https://aurora-institute.org/we-content/uploads/iNACOL_AccessEquity_2007.pdf
34. Shelton, K., & Saltsman, G. (Eds.). (2005). *An administrator's guide to online education*. IAP. <https://www.infoagepub.com/products/Administrators-Guide-to-Online-Education>
35. Tilley, B.K., Cox, L.S., & Staybrook, N. (1986). An extended school year validation study. Report No. 86-2. Seattle Public Schools. <https://www.ericdgets.org/pre-9216/year.htm>
36. United States Census Bureau. (2005, July). *Disability and American Families: 2000* (Report No. CENSR- 23). <http://www.census.gov/prod/2005pubs/censr-23.pdf>
37. Vasquez, E., & Straub, C. (2012). Online Instruction for K-12 Special Education: A Review of the Empirical Literature. *Journal of Special Education Technology*, 27(3), 31-40. <https://doi.org/10.1177/016264341202700303>

Tables

Table 1

Parent reported child demographics

| | n | Percentage |
|--|----|------------|
| Educational Level | | |
| Elementary | 10 | 25.0 |
| Middle School | 14 | 35.0 |
| High School | 10 | 25.0 |
| Adult Transition | 6 | 15.0 |
| Enrollment Duration | | |
| Less than 3 months | 0 | 0.0 |
| Since the start of the school year | 4 | 10.0 |
| For more than 1 year, but less than 3 years | 17 | 42.5 |
| For 3 years or more | 19 | 47.5 |
| Student requires 1:1 support per their IEP | | |
| Yes | 33 | 82.5 |
| No | 7 | 17.5 |
| Attending NPS's distance learning program at time of study | | |
| Yes | 40 | 100.0 |
| No | 0 | 0.0 |

Table 2

Frequency and percentage of parents indicating level of support student needs during distance learning program

| | n | Percentage |
|--|----|------------|
| Level of parent assistance needed | | |
| None. My child is independent. | 0 | 0.0 |
| Minimal. Once I get them going, my child is fine. | 3 | 7.5 |
| Occasional. They need me to check in regularly. | 1 | 2.5 |
| A lot. I have to sit right next to them. | 36 | 90.0 |
| Level of staff assistance needed | | |
| None. My child is independent. | 0 | 0.0 |
| Minimal. Staff needs to check in now and then. | 5 | 12.5 |
| Occasional. Staff needs to check in regularly. | 11 | 27.5 |
| A lot. My child is not successful unless they are _____ with staff in a virtual breakout room. | 24 | 60.0 |

Table 3

Percentage (frequency) of parents rating their level of agreement with statements regarding their child's distance learning program

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|----------|-----------|-----------|----------------|
| I have enough time to implement my child's distance learning program. | 10.0 (4) | 15.0 (6) | 35.0 (14) | 30.0 (12) | 10.0 (4) |
| The zoom platform is easy to operate when implementing my child's distance learning program. | 5.0 (2) | 10.0 (4) | 7.50 (3) | 52.5 (21) | 25.0 (10) |
| I have all the tools necessary to support my child during their distance learning program. | 2.5 (1) | 17.5 (7) | 30.0 (12) | 35.0 (14) | 15.0 (6) |
| My occupation or other responsibilities make it difficult for me to assist my child in participating in their distance learning program. | 10.0 (4) | 15.0 (6) | 17.5 (7) | 37.5 (15) | 20.0 (8) |
| My child's behaviors impede their ability to engage in their distance learning program. | 12.5 (5) | 17.5 (7) | 17.5 (7) | 25.0 (10) | 27.5 (11) |
| My child is engaged during their distance learning program. | 5.0 (2) | 20.0 (8) | 35.0 (14) | 25.0 (10) | 15.0 (6) |
| My child is learning during their distance learning program. | 2.5 (1) | 12.5 (5) | 35.0 (14) | 35.0 (14) | 15.0 (6) |
| My child is obtaining educational benefits by participating in their distance learning program. | 7.5 (3) | 15.0 (6) | 27.5 (11) | 27.5 (11) | 22.5 (9) |
| My child continues to make progress on their IEP goals through their distance learning program. | 7.5 (3) | 17.5 (7) | 30.0 (12) | 30.0 (12) | 15.0 (6) |
| My child spends enough time in their distance learning program to meet their learning needs. | 17.5 (7) | 17.5 (7) | 30.0 (12) | 17.5 (7) | 17.5 (7) |
| The switch from in person interactions to virtual interactions between my child and the classroom teacher has negatively impacted my child's education. | 10.0 (4) | 12.5 (5) | 22.5 (9) | 32.5 (13) | 22.5 (9) |

Table 4

Top three themes reported by parent respondents in open-ended survey questions

| What do you like about your child's virtual learning program? (n = 38) | | |
|---|---|------------------------|
| Theme | Example | Percentage (frequency) |
| Continued socialization | <i>"Having the other students visible and so many familiar staff involved (both trading off and just visible) has really made a big difference in keeping our child connected and enthusiastic."</i> | 21.1 (8) |
| Provides structure | <i>"Keep's him busy, instead of playing video games."</i> | 18.4 (7) |
| Program visibility | <i>"I am able to see how the class is conducted. Meeting and putting names to faces of the staff, witnessing how everyone interacts and what the strengths are, able to witness how great his teachers and aid are. I feel that I am more aware of my son's abilities and he is so motivated by my presence helping him but best of all I know more about his education and the staff now."</i> | 18.4 (7) |
| What do you dislike about your child's virtual learning program? (n = 40) | | |
| Theme | Example | Percentage (frequency) |
| Requires high level of parent support | <i>"That I have to be next to him to make sure he doesn't elope and makes sure he listens. Lots of prompting going on. I have work and have 2 other kids homeschooling that has to wait until our [distance learning] is done. It's hard."</i> | 25.0 (10) |
| Child not engaged | <i>"... it is really hard for my son to sit and attend to what is going on. He wants to see everyone and visit, but not sit and attend to the lesson."</i> | 22.5 (9) |
| Limited social interactions | <i>"He doesn't get to interact in person with his peers or staff. He looks forward to this and I feel it is a very important part of his day and his learning. He misses his school program and doesn't understand why he can't go. He asks daily to go to school. School is the only place he gets to be around his peers. I feel like this is having an impact on his mental and physical well being. I know I miss having my friends around and can't imagine how he feels."</i> | 17.5 (7) |
| How has the switch to virtual learning affected your child? (n = 40) | | |
| Theme | Example | Percentage (frequency) |
| Increase in challenging behaviors | <i>"He had a very difficult time for the first several weeks, he began to engage in maladaptive behaviors that he hadn't had in many months. It was very challenging, affecting the whole family."</i> | 17.5 (7) |
| Missed friends/staff | <i>"He misses going to school and be with his friends and staff."</i> | 17.5 (7) |
| Negative impact on progress | <i>"He has lost skills, despite everyone's best efforts."</i> | 10.0 (4) |

Table 5

Teachers reported grade level taught

| | n | Percentage |
|------------------|---|------------|
| Elementary | 3 | 27.3 |
| Middle School | 4 | 36.4 |
| High School | 3 | 27.3 |
| Adult Transition | 1 | 9.1 |

Table 6

Frequency and percentage of teachers indicating level of support student needs during distance learning program

| | <i>n</i> | Percentage |
|--|----------|------------|
| Level of parent assistance needed | | |
| None. My student is independent. | 0 | 0.0 |
| Minimal. Once their parents get them going, my student is fine. | 0 | 0.0 |
| Occasional. My student needs their parent to check in regularly. | 5 | 45.5 |
| A lot. My student needs their parent to sit right next to them. | 6 | 54.6 |
| Level of staff assistance needed | | |
| None. My student is independent. | 0 | 0.0 |
| Minimal. Staff needs to check in now and then. | 0 | 0.0 |
| Occasional. Staff needs to check in regularly. | 6 | 54.6 |
| A lot. My student is not successful unless they are with staff in a virtual breakout room. | 5 | 45.5 |

Table 7

Percentage (frequency) of teachers rating their level of agreement with statements regarding their student's distance learning program

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|----------|----------|----------------|
| I have enough time to teach each of my students' IEP goals during their distance learning programs. | 0.0 (0) | 0.0 (0) | 36.4 (4) | 36.4 (4) | 27.3 (3) |
| The zoom platform is easy to operate when implementing my student's distance learning program. | 0.0 (0) | 0.0 (0) | 18.2 (2) | 63.6 (7) | 18.2 (2) |
| I have all the tools necessary to support my student during their distance learning program. | 0.0 (0) | 18.2 (2) | 9.1 (1) | 45.5 (5) | 27.3 (3) |
| My home life or other responsibilities make it difficult for me to lead my students' distance learning program. | 27.3 (3) | 27.3 (3) | 9.1 (1) | 18.2 (2) | 18.2 (2) |
| My students' behaviors impede their ability to engage in their distance learning program. | 0.0 (0) | 27.3 (3) | 36.4 (4) | 18.2 (2) | 18.2 (2) |
| My students are engaged during their distance learning program. | 0.0 (0) | 9.1 (1) | 18.2 (2) | 54.6 (6) | 18.2 (2) |
| My students' are learning during their distance learning program. | 0.0 (0) | 9.1 (1) | 9.1 (1) | 54.6 (6) | 27.3 (3) |
| My students are obtaining educational benefits by participating in their distance learning program. | 0.0 (0) | 9.1 (1) | 0.0 (0) | 36.4 (4) | 54.6 (6) |
| My students continue to make progress on their IEP goals thought their distance learning program. | 0.0 (0) | 9.1 (1) | 18.2 (2) | 54.6 (6) | 18.2 (2) |
| My students spend enough time in their distance learning program to meet their learning needs. | 9.1 (1) | 9.1 (1) | 45.5 (5) | 27.3 (3) | 9.1 (1) |
| The switch from in person interactions to virtual interactions between my students has negatively impacted my students' education. | 9.1 (1) | 18.2 (2) | 18.2 (2) | 45.5 (5) | 9.1 (1) |

Table 8

Top three themes reported by teacher respondents in open-ended survey questions

| What do you like about your students' virtual learning program? (n = 11) | | |
|---|--|------------------------|
| Theme | Example | Percentage (frequency) |
| Increase staff collaborations | <i>"The collaboration between teachers allows for different teaching styles which allow the students to learn in different ways."</i> | 36.4 (4) |
| Continued social contact | <i>"I like that my students are still able to see their teachers and classmates."</i> | 27.3 (3) |
| What do you dislike about your students' virtual learning program? (n = 11) | | |
| Theme | Example | Percentage (frequency) |
| Decrease social interactions | <i>"Personal interaction and engagement with students is not as good as typical school environment."</i> | 36.4 (4) |
| Students not attending distance learning | <i>"The biggest disadvantage would be that a lot of the students haven't logged into participate. Parents are either working from home, don't have access to internet or are concerned with behaviors that may occur if their child participates."</i> | 36.4 (4) |
| Difficulty training parents/home staff | <i>"Sometimes it is hard to teach or train the students' home staff or caregivers about the expectations on each goal (prompting)."</i> | 18.2 (2) |
| How has the switch to virtual learning affected your students? (n = 11) | | |
| Theme | Example | Percentage (frequency) |
| Some benefits | <i>"Some students have really thrived. They are relaxed, present, and engaged throughout the lesson."</i> | 45.5 (5) |
| Students absent | <i>"I feel like there will be a big impact on the students who have not been able to access distance learning when we return to campus."</i> | 36.4 (4) |
| Had to learn new skills | <i>"My students have had to learn some new skills, and overall they are doing very well."</i> | 18.2 (2) |

Table 9

Paraeducators reported grade level taught

| | n | Percentage |
|------------------|----|------------|
| Elementary | 12 | 20.3 |
| Middle School | 20 | 33.9 |
| High School | 12 | 20.3 |
| Adult Transition | 15 | 25.4 |

Table 10

Frequency and percentage of paraeducators indicating level of support student needs during distance learning program

| | <i>n</i> | Percentage |
|---|----------|------------|
| Level of parent assistance needed | | |
| None. My student is independent. | 2 | 3.4 |
| Minimal. Once their parents get them going, my student is fine. | 6 | 10.2 |
| Occasional. My student needs their parent to check in regularly. | 11 | 18.6 |
| A lot. My student needs their parent to sit right next to them. | 40 | 67.8 |
| Level of staff assistance needed | | |
| None. My student is independent. | 4 | 6.8 |
| Minimal. Staff needs to check in now and then. | 8 | 13.6 |
| Occasional. Staff needs to check in regularly. | 14 | 23.7 |
| A lot. My student is not successful unless they _____ are with staff in a virtual breakout room. | 33 | 55.9 |

Table 11

Percentage (frequency) of paraeducators rating their level of agreement with statements regarding their student's distance learning program

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|-------------------|-----------|-----------|-----------|----------------|
| I have enough time to teach each of my students' IEP goals during their distance learning programs. | 1.0 (1) | 10.2 (6) | 18.6 (11) | 44.1 (26) | 25.4 (15) |
| The zoom platform is easy to operate when implementing my student's distance learning program. | 3.4 (2) | 3.4 (2) | 25.4 (15) | 45.8 (27) | 22.0 (13) |
| I have all the tools necessary to support my student during their distance learning program. | 3.4 (2) | 13.6 (8) | 37.3 (22) | 33.9 (20) | 11.9 (7) |
| My home life or other responsibilities make it difficult for me to lead my students' distance learning program. | 28.8 (17) | 27.1 (16) | 22.0 (13) | 10.2 (6) | 11.9 (7) |
| My students' behaviors impede their ability to engage in their distance learning program. | 11.9 (7) | 33.9 (20) | 18.6 (11) | 28.8 (17) | 6.8 (4) |
| My students are engaged during their distance learning program. | 3.4 (2) | 8.5 (5) | 30.5 (18) | 42.4 (25) | 15.3 (9) |
| My students' are learning during their distance learning program. | 1.7 (1) | 5.1 (3) | 23.7 (14) | 47.5 (28) | 22.0 (13) |
| My students are obtaining educational benefits by participating in their distance learning program. | 3.4 (2) | 0.0 (0) | 17.0 (10) | 52.5 (31) | 27.1 (16) |
| My students continue to make progress on their IEP goals thought their distance learning program. | 3.4 (2) | 8.5 (5) | 27.1 (16) | 42.4 (25) | 18.6 (11) |
| My students spend enough time in their distance learning program to meet their learning needs. | 8.5 (5) | 22.0 (13) | 25.4 (15) | 32.2 (19) | 11.9 (7) |
| The switch from in person interactions to virtual interactions between my students has negatively impacted my students' _____ education. | 15.3 (9) | 22.0 (13) | 44.1 (26) | 10.2 (6) | 8.5 (5) |

Table 12

Top three themes reported by paraeducators in open-ended survey questions

| What do you like about your students' virtual learning program? (n = 56) | | |
|---|---|------------------------|
| Theme | Example | Percentage (frequency) |
| Parent involvement | <i>"I also appreciate the parents' willingness to learn. This time has allowed parents to learn more about their child and how they can best support them at home. This has created a greater bond between student-parent relationships."</i> | 16.1 (9) |
| Access to virtual tools | <i>"Some materials are better presented on the computer and other learning programs"</i> | 16.1 (9) |
| Fewer distractions | <i>"I like how easy it is to have a private room with my student without the distraction of other students/staff."</i> | 10.7 (6) |
| What do you dislike about your students' virtual learning program? (n = 55) | | |
| Theme | Example | Percentage (frequency) |
| Parents interfering | <i>". . . sometimes parents over prompt and I worry about my student becoming prompt dependent."</i> | 14.5 (8) |
| Difficult to address challenging behaviors | <i>"I dislike my students' ability to elope or be off task without my presence there to keep them on task. I also dislike not being aware of their entire environment and not knowing if there was a trigger for a behavior off of the screen."</i> | 12.7 (7) |
| Need to be face-to-face for some goals | <i>"The distance learning does not allow the students the full 1:1 support that they require. It appears that distance learning is ineffective when teaching new skills or running IEP goals as the students with high behavioral needs and severe learning disabilities seem to not pay attention or engage with a computer screen regardless if the staff is on screen or not. It appears as though they do not fully understand the concept of online learning as most require hand-over-hand assistance or physical prompting when on campus, in-person."</i> | 10.9 (6) |
| How has the switch to virtual learning affected your students? (n = 56) | | |
| Theme | Example | Percentage (frequency) |
| Made things worse | <i>"My student has regressed behaviorally and academically."</i> | 19.6 (11) |
| Seen improvements | <i>"It's been better for my student. Seems to be more engaged and less challenging behaviors."</i> | 16.1 (9) |
| No impact | <i>"None. My students come to virtual school almost every day and we target most of the goals on a daily basis."</i> | 14.3 (8) |