Utilizing Technology for Professional Learning in the Dissemination of Evidence–Based Practices to Paraprofessionals Working in Public Education

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Abstract

Although paraprofessionals are pivotal for the educational success of learners with autism, limited professional learning opportunities are provided resulting in inadequate application of evidence-based practices in their work. In this participatory action research study, thirty-six paraprofessionals participated in professional learning utilizing workshops and a commercially available professional learning platform, Rethink. The study included didactic training, video-based modeling and applied practice activities in the classroom. Paraprofessionals improved their knowledge and self-efficacy in the application of evidence-based practices. Supporting classroom teacher's social validity also reported improved paraprofessional performance. These findings suggest a possible avenue for supporting paraprofessional professional learning via integrating web-based technology to access video models paired with traditional professional learning methods to improve the application of evidence-based practices in the classroom environment.

Keywords: Autism spectrum disorder, video modeling, paraprofessionals, special education, professional learning, professional development, technology in education.

Introduction

There are dozens of established, effective interventions for individuals with Autism Spectrum Disorder (Wong, Odom, Hume, Cox, Fettig, A... & Schultz, 2014). These interventions have shown efficacy in university-based research, few have been effectively implemented and sustained in schools, the primary setting in which children with autism receive services (Locke et al, 2016). One of the long-established interventions for students with autism is Applied Behavior Analysis (ABA) (Furman & Tuminello, 2015; Bond, et al., 2016). Utilizing instructional principles of ABA has developed meaningful outcomes for students with disabilities including the reduction of problem behavior (Horner, Carr, Strain, Todd & Reid, 2009), literacy acquisition (Browder, Trela & Jimenez, 2007), food preparation (Griffen, Wolery & Schuster, 1992) and speech development (Koegel, O'Dell & Dunlap, 1988).

Research- and evidence-based teaching practices have had minimal, if any, carryover into classrooms (Burns & Ysseldyke, 2009). Evidence-based practices including ABA are difficult to implement in community based settings such as schools (Stahmer et al, 2015; Suhreinrich, et al, 2013). To translate research interventions for learners with autism from the research lab into the classroom requires a systematic process for identifying and describing the evidence based practices (Odom, Klingenberger, Rogers & Hatton, 2010). In addition, social validity for many of the established evidence-based practices has not been well assessed, which may limit the application of these practices in an applied setting including schools (Callahan et al, 2017).

Paraprofessionals play a critical role in providing special education and other related services for students with autism (Rispoli, Neely, Lang & Ganz, 2011). Today, there are more than 1.2 million people working as teaching assistants with about 46% being paraprofessionals and about 71% of those paraprofessionals working with students with disabilities (National Education Association, 2015). About 70% of paraprofessionals work with students with severe disabilities (Fisher & Pleasants, 2012). Ninety-seven percent of special education paraprofessionals report providing one-to-one instruction to students with disabilities (Carter, O'Rourke, Sisco, & Pelsue, 2009). Paraprofessionals with adequate training are more likely to provide quality learning opportunities for students (Hamad et al., 2010; Feldman & Matos, 2013). Unfortunately, many paraprofessionals do not receive

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adequate training to meet the high demands of their profession (Ghere and York-Barr 2007; Walker & Snell, 2017).

Single training workshops produce limited sustainable change in practices (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Public educators require significant training and time to learn to deliver evidence-based practices (Stahmer et al, 2015). Professional development in schools is a difficult topic to research, however, there is agreement that much of the professional development delivered in academic settings is not effective in supporting educator's delivery of effective instruction in the schools (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, S., 2009). Paraprofessionals can contribute to improved outcomes for students with severe disabilities when provided professional development that is sustained beyond an initial training session (Brock & Carter, 2016). An effective model in training paraprofessionals is Behavior Skills Training (BST) (Wood, Luiselli & Harchik, 2007). BST requires that professional development include four steps: 1) instruction 2) modeling 3) rehearsal 4) feedback (Miltenberger, 2004).

Video-modeling has a long history as an effective professional development practice in the fields of special education and disability support services. Video has been effectively utilized to train educators to deliver discrete trial training (Catania, Almeida, Liu-Constant & Reed, 2009) and to assist staff in the acquisition of functional analysis methodology (Moore & Fisher, 2007). Many research studies indicate that video is a useful tool for improving teacher's skills in the classroom because they can easily pause, rewind, and learn at their own pace. Video modeling has been determined to be an effective method to support educators in learning to implement evidence-based practices (Digennaro-Reed, Codding, Catania & Maguire, 2010; Moore & Fisher, 2007). Video works best when videos demonstrate realistic classroom situations (Sherin & Linsenmeier, 2011). Videos can help eliminate distracting information and help teachers to focus on what is relevant compared to other professional developmental approaches (Marsh & Mitchell, 2014). Video-based professional development is more cost-effective and makes learning more available to staff throughout the year. This can be especially beneficial when there are high turnover rates and in special education where teacher's schedules may be more demanding (Wehby, Maggin, Moore Partin, & Robertson, 2012).

This applied study aimed to assess the effect of a professional learning model of watching video models of principles of ABA paired with short professional learning community workshops, on paraprofessionals knowledge and self-efficacy of their ability to deliver evidence-based instructional practices to students and their delivery of evidence-based instruction to students with autism as measured by their classroom educator.

Participants and Settings

This study was conducted in collaboration with a large urban school district in the United States. Paraprofessionals in the district were invited by their school principals to engage in professional development activities. Thirty-six paraprofessionals participated in the study. Participants worked in self-contained special education classrooms supporting children with autism. Each classroom included one special education teacher and one or more assigned paraprofessional. Some classrooms had one participating paraprofessional and some had two. The paraprofessionals were working in classrooms classified as autism support classes and most students in the classrooms were enrolled in special education with the educational eligibility of autism. The credentialed teachers were also recruited to participate in the research, providing a social validity measure of the learning and application of the concepts being studied by the paraprofessional. The participation of the credentialed teachers was voluntary. All professional learning activities were conducted in a public-school setting.

Materials

This study utilized a commercially available product, Rethink, to access video models, knowledge tests and scripted applied practice activities. Rethink contains hundreds of video models of evidence-based teaching practices. Five of the video models were selected for this research. The participants accessed the video models via web-based technology through a personal log-in providing access to Rethink. The multiple-choice knowledge tests were embedded into Rethink's technology. Participants completed their knowledge assessments online though a multiple-choice assessment that was integrated into the platform. The applied practice activities were provided in a printable PDF format also embedded within Rethink and downloadable in print format from within the technology. The social validity assessments and pre-and posttest knowledge assessments were researcher designed and were delivered in a paper format to the participants.

Design

A participatory action research design was utilized to understand and improve the paraprofessionals ability to support learners with autism for whom they were providing support. Participatory action research was well suited for this research setting as it is a self-reflective inquiry that researchers and participants engage in together to improve their practice and increase the positive outcomes the situations in which they find themselves engaged (Baum, MacDougall, & Smith, 2006). This study involved the active engagement and reflection of participants throughout the study. A descriptive pre-post design using simple descriptive statistics was utilized within the participant action research design with full disclosure of the pre-posttest results provided to the participants. Descriptive statistics were chosen as they were easily understood by all participants, none of whom had training in statistical inquiry. This research was conducted in an applied public school setting which required the systematic inquiry be conducted with practical application.

Procedures

Two cohorts of paraprofessionals participated in this research. One cohort in each consecutive school year. In year one and two both cohorts completed a simple yes/no

self-efficacy assessment of their ability to support learners with autism. The self-efficacy assessment contained two questions: 1) I know how to support my teacher regarding class organization and instruction to effectively meet the needs of students with autism; 2) I have access to resources to help me understand how to best meet the needs of students with autism. The supporting special educators in the classroom also completed a simple pre/post-measure of their perception of the participating paraprofessionals behavior in the classroom for both cohorts across both years (Table 1). In year two the paraprofessionals and researchers agreed to engage in some additional formal measurement of their shared work with the addition of a pre-posttest of knowledge acquisition. All paraprofessionals in cohort two completed a short multiple-choice pretest exam to assess their content knowledge of learning characteristics of students with autism and their self-efficacy of their ability to support learners with autism (Appendix A). Participants were made aware of their results on the knowledge section of the pretest; results were not shared publicly with other participants.

The paraprofessionals engaged in 6, 2-hour professional learning sessions. Training sessions included viewing 10-minute training videos from the online learning platform Rethink that demonstrated video models of effective ABA teaching procedures and discussion of how that teaching procedure might be implemented in the classroom environment with their students. The videos provided a task-analytic breakdown of the teaching steps for the procedure and a discrete video model of a teacher and student with disability engaged in the learning procedure. Each video module also had corresponding guided notes to provide a schema for the video models (Clark, 2010). Each video demonstrated one of five ABA procedures demonstrated: 1) discrete trial instruction; 2) reinforcement; 3) prompting; 4) generalization; and 5) incidental teaching. An additional learning module was utilized that provided an overview of autism and the diagnostic criteria for receiving an autism diagnosis. At the end of each workshop participants were instructed to view the video again and take a multiple choice 10-question posttest, the posttest was embedded in the Rethink learning platform. Participants repeated the posttest until they achieved a 90% success rate to indicate their understanding of the content. Participants also left each session with a printed applied practice activity to be completed in their classroom work environment (Appendix B). These applied practice activities are embedded into the Rethink platform via a downloadable PDF. In addition, participants had access to the video models to view at any time via Rethink the online professional learning platform.

After the last learning session, all participants completed a short multiple-choice posttest exam to assess their overall content knowledge of learning characteristics of students with autism and their self-efficacy of their understanding of evidence-based practices support learners with autism (Appendix A). Participants were made aware of their results on the knowledge section of the posttest; results were not shared publicly with other participants.

Results

The posttest demonstrated a 28% increase (pretest 57% to posttest 85%) in paraprofessionals knowledge of effective teaching practices and basic understanding of autism. The self-efficacy measure also demonstrated increased confidence in the paraprofessionals perception of their ability to meet the needs of students with autism. Paraprofessionals were asked to answer yes/no to "I know how to support my teacher regarding class organization and instruction to effectively meet the needs of students with autism." Prior to the professional learning 84% of paraprofessionals answered affirmatively to this query after the training 100% of the paraprofessionals answered affirmatively. Paraprofessionals were also asked to answer yes/no to "I have access to resources to help me understand how to best meet the needs of students with autism." Prior to professional learning 46% of the paraprofessionals answered affirmatively and after the professional learning 100% of the paraprofessionals answered affirmatively.

Social Validity

Supervising classroom teachers were asked to complete a pretest and posttest evaluating the participating paraprofessionals performance (Table 1).

Table 1. *Social Validity Assessment: Pre-Posttest of Teacher's Perception of Paraprofessional Performance*

	Most of the Time		Sometimes		Hardly Ever	
	Pre	Post	Pre	Post	Pre	Post
The staff in my classroom provide an appropriate amount of prompting/ assistance	72	91	24	9	4	0
The staff in my classroom consistently maintain a positive learning environment	80	94	16	6	8	0

The staff in my classroom have a strong rapport with students	88	95	12	5	0	0
The staff in my classroom deal with problem behavior in an effective and pro-active manner	78	91	22	9	0	0
The staff in my classroom facilitate smooth transitions for students between activities	72	100	26	0	2	0
The staff in my classroom are actively engaging students throughout the day	60	87	30	13	10	0

The Individuals with Disabilities Education Act (1990) in the United States describes paraprofessionals as a "school employee who works under the direction of a certified staff member to support and assist in providing instructional programs and services to children with disabilities or eligible young children." Assessing the perception of the supervising educator provided a context for the social importance of the intervention and the perceived benefit to students and the instructional environment. In all measured social validity categories, there was a positive perceived change.

Discussion

Paraprofessionals are vital members of special education classrooms yet there is limited information regarding effective professional learning for paraprofessionals and paraprofessionals report that they are not adequately trained. The workshop model in isolation is not effective. This study utilized a workshop model paired with access to video modeling and applied practice activities via a web-based technology platform to promote professional learning. The paraprofessionals reported that the workshops were helpful but they also learned from revisiting the video models and engaging in applied practice activities within the instructional environment. Pairing technology with the traditional workshop model may increase the application of professional learning. In this case video models were accessible to the paraprofessionals during the workshops but they could also access them post training to revisit the concepts and review their application with their student population.

Educators need access to effective tools to support the professional learning of paraprofessionals. The integrated nature of the technology utilized in this applied research ensures that paraprofessionals could access the content and activities at any time, they were not reliant upon an expert to deliver the content at a circumscribed time. While engaged in the applied practice activities they could review the video models of the evidence-based practice to assist them in their professional learning. Indeed, the participants described this behavior when discussing the research outcomes. Technology also allows a scalable implementation model. The sheer numbers of

paraprofessionals in schools and the attrition rate of this professionals requires that educational environments develop more efficient professional learning models for this group of professionals.

The paraprofessionals in this study also reported increased self-efficacy in their ability to meet the demands of their job. They shared that they often do not have access to professional development. Having the school district invest in their professional development honored their work and improved their perceived ability to meet the needs of the students. Special educators and paraprofessionals must work collaboratively to promote optimal outcomes for the students they support. The social validity measure completed by the special education teacher, demonstrating on all measures the benefit of this paraprofessional learning, further validates the importance of providing professional learning to paraprofessionals. Given the incredible responsibility paraprofessionals face in supporting the learning and development of children, particularly children with unique learning needs like autism, effective and efficient paraprofessional training should be a higher priority in the educational system

Paraprofessionals were an assigned group from a much larger pool of potential participants. This may imply that their interest in professional development produced outcomes may not be consistent across all paraprofessionals in the educational setting. The design of this study was participatory action research that has many limitations including lack of engagement from all relevant parties and researcher influence (Cornwall & Jewkes, 1995). Indeed, researcher influence may be even greater in this study as the participating researcher is employed by the company that developed Rethink. The current research to practice gap requires that we engage in participatory action research as an effort at overcoming the barriers of translating the current body of evidence into the environment where children are receiving services.

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Appendix A

Paraprofessional Pre-Posttest Utilized in Year Two

1. Autism is a Developmental Disability characterized by deficits in:
   a. Impairment in talking, making eye-contact and tying shoes
   b. Impairment in social interaction, communication and repetitive/stereotyped patterns of behavior and interest
   c. Impairment in sitting still, completing tasks and making eye-contact
   d. Impairment in daily living skills, academic achievement and ability to live independently

2. Autism is the fastest growing serious Developmental Disability in the United States:
       True   False

3. Types of reinforcement may include:
   a. Praise, breaks from work, stickers or tokens that lead to a reward
   b. Time out, removing a reward, sitting out of an activity
   c. Snacks, toys, fun physical interactions, video games
   d. A and C

4. Breaking down new skills into simple responses to effectively teach as student is an example of:
   a. Punishment
   b. Prompting
   c. Reinforcement
   d. Discrete Trial Teaching

5. Teaching a student to identify a dog using pictures of dogs, toy dogs, real dogs, videos of dogs, different staff members teaching the lesson about identifying dogs, and teaching the lesson about dogs in different rooms is an example of:
   a. Generalization
   b. Consequences
   c. Functional Teaching Strategy
   d. Task Analysis

6. Anything you do that helps a student respond correctly to an instruction is an example of:
   a. Discrete Trial Teaching
   b. Prompting
   c. Ethical teaching practice
   d. Naturalistic Intervention

7. If a problem behavior occurs when you give a direction or ask the child to complete a task, the most likely reason for that behavior is:
   a. To gain your attention
   b. To get a preferred item or activity
   c. To escape or avoid
   d. A & B

Appendix B

Applied Practice Example

Applied Practice: Reinforcement

1. Record experiences, thoughts & questions you had when working with your student/child.
2. Write down a specific skill you worked on with a student that involved delivering reinforcement.
3. What did you use as a reinforcer?
4. Why did you choose it?
5. What was the child/student's response when you gave him/her the reinforcer?
6. What worked well about the chosen reinforcer and delivery?
7. What other similar reinforcers could you use the next time?
8. What did you find challenging about the chosen reinforcer and delivery?
9. What would you do differently next time to be more effective?
10. Note any questions or additional thoughts below: