

Paper 159-30
Towards effective student outcomes:
Survey data analysis for evaluation of school-based Transdisciplinary Autism Teaming

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ABSTRACT

“In the 1970’s, researchers finally realized that autism- first described in the 1940s- is in fact a wide range of mental disorders, not a single illness, that afflicts children from birth, and often in profoundly different ways “(Stephenson, 2003, p.9). With better diagnostic procedures, increasing numbers of children are being identified as autistic. Florida public school educators must be prepared to meet the expanding educational needs of students with autism.

The Transdisciplinary Autism Teaming purpose was to provide ongoing professional development and program development to school-based educators to meet more effectively the educational needs of special education students with multiple, complex problems, and to develop sustained changes in teacher behavior through exposure to the transdisciplinary model.

During 2002-2003, six teams were funded at four schools. The autism team survey instrument presented seven constructed items, one open-ended item, and fifteen Likert-type items. Mean item response was calculated by team and by overall respondents. Cronbach coefficient alpha, a measure of internal consistency, had a calculated value of .78 for the instrument. SAS[®] 8.2 code addressed multiple survey data analysis areas. Visual data displays were constructed using PROC GCHART, PROC G3D, and PROC GPLOT. Composite visual displays (PROC GREPLAY) aided group comparison.

Turner (2002) writes, “There are still too many children with disabilities that are not getting the education that they deserve. The main factor contributing to this is the lack of teacher training and support(p.12). Transdisciplinary autism teaming helped teachers develop strategies for school-based problem-solving, and provided the team support needed to successfully implement these strategies.

INTRODUCTION

“In the 1970’s, researchers finally realized that autism- first described in the 1940s- is in fact a wide range of mental disorders, not a single illness, that afflicts children from birth, and often in profoundly different ways “(Stephenson, 2003, p.9). With better diagnostic procedures, increasing numbers of children are being identified as autistic. Florida public school educators must be prepared to meet the expanding educational needs of students with autism.

The Transdisciplinary Autism Teaming purpose was to provide ongoing professional development and program development to school-based educators to meet more effectively the educational needs of special education students with multiple and complex problems. The Transdisciplinary Autism Teaming project goal was to develop sustained changes in teacher behavior through exposure to the transdisciplinary model.

THEORETICAL BACKGROUND

“The courts are clear in their preference for inclusion, the legal and educational mandate to educate handicapped students in the least restrictive environment. However, the implementation of inclusion programs is often unclear “(Berger, 1995, p.1). Crockett states “the hottest topic in special education over the past decade has been where, not how, students with disabilities should be taught. This emphasis on inclusion over instruction has threatened at times to overshadow the central mandate of the Individuals with Disabilities Education Act: the provision of a free and individually appropriate public education” (Crockett, 1999, p.543). While IDEA clearly states a mandate for free and individually appropriate public education, educators have noted non-compliance with both the letter and intent of the law. Corner writes, “There are still too many children with disabilities who are not getting the education that they deserve. There are too many teachers who are not trained and do not have the resources to give special education students what they need “(Corner, 2002, p.12).

This study was designed to enhance teacher-team training and ongoing professional development to help meet the educational needs of special education students, specifically students identified as autistic. Campbell (1987) identified the following three components of a Transdisciplinary teaming model: in-depth collaborative case conferencing, extensive cross-training of team members by team members, and integrated collaborative instructional planning and implementation. The Transdisciplinary model facilitates and promotes teaming that can result in:

- effective and efficient use of teacher knowledge and skills;
- continuous development and expansion of teacher skills and knowledge across disciplines;
- wrap-around services to students throughout school day, as appropriate;

- more efficient use of support services (e.g., OT, Speech); and
- development of an in-house cadre of experts to consult with other faculty members.

By utilizing an “across-disciplines” teaming model, seamless intensive service delivery to students with moderate to severe needs becomes a realistic goal. The transdisciplinary autism model offered consistent opportunities for teachers to access internal support through collaborative teaming and provided ongoing and consistent support to beginning teachers. The transdisciplinary autism model initiated a school-based forum to identify and receive professional development from outside sources as requested and sustained ongoing communication and collaboration with outside agencies, external service providers and parents/caregivers.

Educational Needs of Students with Autism

Simpson (1995) refers to autism as “the quintessential disability enigma.” Students with autism have multiple and complex educational needs. While some commonalities do exist, “no two persons with autism experience the world or behave in the same way” (CARD, 2001a, p. 1.) Autism is “a spectrum of mental disorders that can range from severe retardation all the way to quirky genius, including gifted individuals who might even be classified as savants...” (Stephenson, 2003, p. 9). Autism is a neurological disorder that can affect sensory processing, motor functions, language and communication, social interactions, and behaviors. Therefore, “it is unrealistic to expect that every teacher who is assigned to work with a student with autism will have completed an entire preservice program exclusively in the area of autism (Simpson, 1995, p.15).

Shortage of Qualified Teachers for Students with Autism

The need for properly prepared teachers of students with autism is complicated further by a shortage of special education teachers in general. School district across the nation suffer from critical teachers shortage in special education (Billingsley & McLeskey, 2004; McLeskey, Tyler, & Flippin, 2004; Miller, Brownell, & Smith, 1999). “In many districts, the retention and development of qualified teachers of students with severe disabilities (e.g., autism, multiple disabilities, dual sensory impairments) is a particular challenge” (Lang & Fox, 2004, p. 163). Therefore, necessary training must be provided through school district professional development to teachers after they are hired and working in classrooms.

Ineffective Inservice Programs

Many professional development programs depend on an outside “expert” providing knowledge in a “spray-and-pray” approach—a one-shot infusion of knowledge, typically through a partial day workshop.

“Despite recognition of its importance, the professional development currently available to teachers is woefully inadequate. Each year, schools, districts, and the federal government spend millions, if not billions of dollars on in-service seminars and other forms of professional development that are fragmented, intellectually superficial, and do not take into account what we know about how teachers learn.” (Borko, 2004, p. 3)

Therefore, we incorporated research-based components of successful professional development in our Transdisciplinary Autism model. According to Richardson (1992), application of extensive research on why teachers change practice has resulted in new professional development models, constructivist and empowering process focusing on specific content. Critical components include opportunities for teachers to (a) explore existing beliefs, (b) discuss existing and proposed practices, (c) function as partners in the professional development process, (d) be recognized for their expertise, and (e) observe and practice new strategies to be considered. Based on his analysis of various theories relevant to adult learning, Smylie (1995) identified specific conditions that promote teacher learning such as opportunities for (a) ongoing collective learning among individuals with differing knowledge and experience; (b) open exchange, examination of beliefs, and critical reflection through collaborative group work; (c) collective learning and exchange conducted among individuals with similar position and status; and (d) autonomy and choice in work roles and tasks.

METHOD

The Transdisciplinary Autism project was piloted in Spring 2002 and was fully implemented in the 2002-2003 academic year, funded with IDEA Comprehensive System of Personnel Development (CSPD) funds. We implemented the model in response to the request for assistance from the school district’s Director of Special Education who identified his most pressing need as finding and retaining qualified teachers for students with autism. We designed the TransD model to address three main and interconnected issues relevant to providing effective educational services to students with autism:

1. Students with autism typically have multiple and complex educational needs from across multiple educational disciplines.
2. Few school-based educators are prepared through preservice preparation programs to meet the specific educational needs of students with autism.

3. Typical professional development, or inservice programs, rarely result in the substantial, sustained changes in practice necessary for these school-based educators to meet the needs of their students with autism.

This study was based in a mid-size, suburban public school district. During the 2002-2003 academic year, six (6) teams were funded at four (4) schools as shown in Table 1, Autism Transdisciplinary Teams Composition Matrix.

Table 1

Autism TransDisciplinary Teams Composition Matrix

SCHOOL	Total Members	Autism Teachers	General Education Teachers	Teacher Assistant	OT	Speech/ Language
<i>Elementary School A</i>	6	2	0	2	1	1
<i>Elementary School B- Team 1</i>	5	1	0	2	1	1
<i>Elementary School B - Team 2</i>	4	1	0	2	0	1
<i>Middle School</i>	5	1	4	0	0	0
<i>Center School – Team 1</i>	5	1	NA	0	2	2
<i>Center School – Team 2</i>	5	1	NA	0	2	2
Totals	30	7	4	6	6	7

Four public schools in an urban, mid-sized Florida school district participated in this research project. The source of the data was survey responses elicited and supplied by each school-based group of team respondents (two schools had two teams). School-based participants teamed to train one another across disciplines and to plan, implement, and evaluate educational programming. This teaming allowed the participating educators to integrate educational strategies from other disciplines and, thus, to provide programming appropriate to meet students' various and complex needs throughout their school day. Team members committed to weekly 60-minute meetings for which they were paid a stipend through the project. Team members included Exceptional Education teachers, occupational therapists, speech and language pathologists, general education teachers, teacher assistants, and teacher aides.

Rotating facilitators were provided to support and assist each team. All team members collaborated to plan, implement, and evaluate needed services to the students through utilization of Campbell's (1987) model. Particular emphasis was placed on recognizing the various reasons for students' inappropriate behaviors and the teachers' ability to identify and implement appropriate interventions in effort to improve student behaviors beyond external teacher control.

At each school site, the transdisciplinary autism team members were asked to complete a survey instrument designed to gather information regarding model implementation and perceived effectiveness. The transdisciplinary autism team survey instrument presented seven constructed items for written response, and provided an eighth item to solicit anecdotal, open-ended information from the respondents. Additionally, fifteen Likert-type items were included in the survey to elicit empirical responses by the respondents. Written survey directions indicated the respondents were to read each statement, and circle the number (1 – 4) that corresponded to their chosen response for each statement. Marking '1' indicated strong disagreement with the statement, marking '2' indicated disagreement, marking '3' indicated agreement, and marking '4' indicated strong agreement with the statement. When measuring respondent perception, a neutral position was not provided for survey item response.

SAS 8.2 programming code was written to address the multiple data analysis areas presented by the empirical survey items, and the open-ended, anecdotal items. An algorithmic flowchart for the SAS code is shown below in Figure 1, Algorithmic Flowchart.

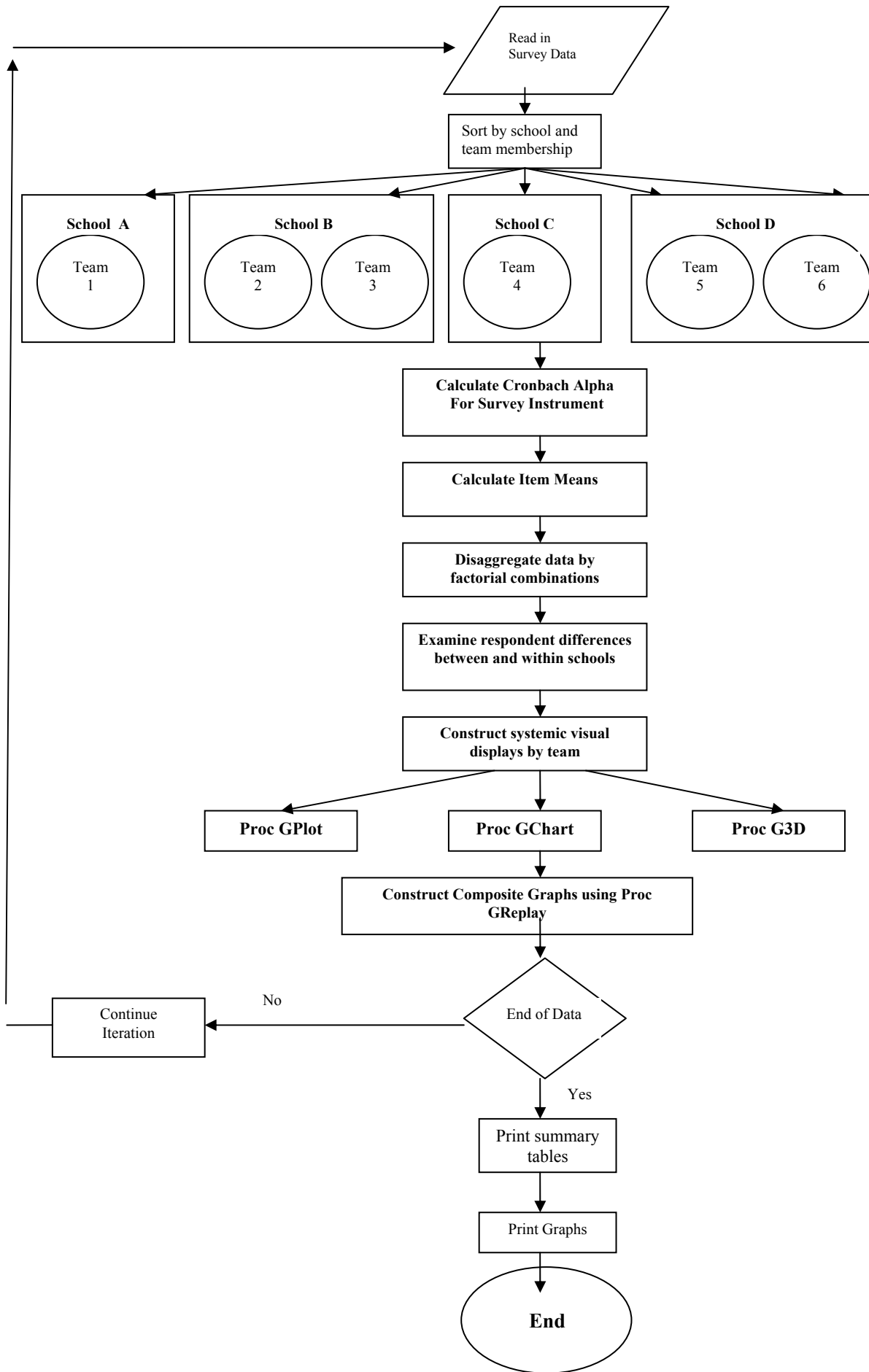


Figure 1. Algorithmic Flowchart

Table 2

Algorithm Variable Assignments

System Variable	SAS Variable Name	Type of Variable
Respondent	MEMBER	Quantitative
School	SCHOOL	Quantitative, recoded
Type teacher	POSITION	Categorical
Gender	GENDER	Categorical, assigned
Age	AGE	Quantitative
Years worked in education	EDYEARS	Quantitative
Years worked in Special education	SEYEARS	Quantitative
Years in autism project	PROJYEAR	Quantitative
Mean score per respondent over all items	RAWSCORE	Quantitative

RESULTS AND DISCUSSION

Results from the fifteen Likert-type item responses were analyzed using SAS 8.2. Mean item response was calculated for each item by school and over all respondents. Cronbach coefficient alpha, a measure of internal consistency, had a calculated value of .78 for the instrument. Calculating the Cronbach coefficient alpha value without item 13 (deleted variable: *I believe it is important for our team to meet weekly*) would have resulted in a higher reported value. Item 2 and item 5 posted statistically significant responses among the schools. Tukey's Studentized Range (HSD) was employed to examine item response differences between schools.

School comparisons significant at the 0.05 level included comparison A-D on item 2, *I believe having a project facilitator assigned to the team is an important component of the model*, and school comparisons A-C, A-D, B-C, B-D on item 5; *I believe that integrated planning is an important component of the model*.

Item means on the majority of the survey items were similar, which indicates survey subjects tended to have high agreement in their response patterns. The highest item mean value (3.93) was for item 10, *My students have benefited from my participation in the team*, which indicates a highly positive response to this statement. Overall, item mean values ranged from 3.06 to 3.93, which indicated subject responses between 3.0 (agree) and 4.0 (strongly agree) on all items.

Examples of specific student outcomes reported by Transdisciplinary Autism Team members included decreased incidence of inappropriate behaviors which include but are not limited to teeth grinding, running/bolting, climbing, sweeping objects, screaming, and other maladaptive behaviors. Autism transdisciplinary team members also reported increased verbal requests; more natural verbal interaction, and increased student attention, expressive language and reciprocity.

The multiple and complex educational needs of students with special needs were more efficiently and effectively addressed when appropriate strategies were integrated throughout the school day rather than strictly provided through "pull out" service delivery (or no service delivery). Professional development of transdisciplinary autism team participants was ongoing and grounded in presenting student needs. Transdisciplinary autism team participation was voluntary for teachers and team members. Teachers were not asked to give up current practices but to expand options they considered when implementing interventions and strategies. Each school adopting the model implemented the key components in a way that met the particular needs of that school. Initial time invested in the training and implementing stages resulted in increased efficiency in planning and communication among team members.

CONCLUSION

Turner (2002) writes, "There are still too many children with disabilities that are not getting the education that they deserve. The main factor contributing to this is the lack of teacher training and support. There are too many teachers who are not trained and do not have the resources to give special education students what they need" (p. 12). Developing and maintaining a school-based, on-site transdisciplinary autism team can help with both aspects Turner describes: the lack of teacher training, and the lack of teacher support. Transdisciplinary teaming helped teachers develop strategies for school-based problem-solving, and provided teachers with the team support needed to successfully implement these strategies. This research study has contributed valuable information to the special education knowledge base to aid school-based practitioners.

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