# Transforming Transdisciplinary Early Intervention/Education Through the Use of Case Studies

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***Abstract***

*In the United States, children birth through age eight who receive early intervention or early childhood special education through the Individuals with Disabilities Education Improvement Act (IDEA) (2004) are often served by transdisciplinary teams that include professionals representing multiple disciplines and families. Teams collaborate to develop Individual Family Service Plans (IFSPs) or Individualized Education Programs (IEPs) to provide the best possible services for the children and families with whom they work. In the past, professionals such as educators, occupational therapists, physical therapists, and speech-language pathologists were educated separately and then expected to collaborate with other professionals. At the University of Alabama at Birmingham, graduate students in early childhood special education, occupational therapy, and physical therapy are prepared to plan, collaborate, and experience role release using transdisciplinary procedures during their first semester experience together. During the second semester, students are placed in transdisciplinary teams in which they must work through complex cases involving young children who qualify for services under IDEA and who live in diverse families and experience services in complicated or challenging settings. This article defines transdisciplinary teaming, describes the process of how teams approach arduous cases, and discusses what happens when teams work through the cases with the goal of providing the best possible early intervention/education for children and families.*

**Key words:** transdisciplinary teams, early intervention/education, case studies

## INTRODUCTION

Providing appropriate programs and practices for young children with special needs, birth through age eight, is a relatively new phenomenon, even in the United States. While the Individuals with Disabilities Education Improvement Act (IDEA) (2004) has provided guidelines, incentives, and resources for enacting early intervention and early childhood special education, participation of transdisciplinary teams in serving young children has been slow to be implemented (Gargiulo & Kilgo, 2014). The purpose of this article is to define transdisciplinary teaming, describe how teams are prepared to collaborate in problem solving with complex cases, and discuss what happens when team of graduate students representing multiple disciplines are prepared to work through cases to provide optimal services for young children with special needs and their families.

### The Transdisciplinary Team Approach

Although early intervention/education is a relatively new discipline, it has evolved rapidly and dramatically over the past 30 years (Gargiulo & Kilgo, 2014). In the past, young children with special needs who qualified for services in the United States under the Individuals with Disabilities Education Improvement Act (IDEA) (2004) were served through multidisciplinary or interdisciplinary teams (Kilgo, 2006). Multidisciplinary teams involved professionals developing and implementing their own goals that were most often independent of other professional or family member input. This proved to be too fragmented and, therefore, interdisciplinary teams developed. Team members still did their own assessments and planning, but shared information with other team members, in hopes of "providing services that are part of the total service plan" (Kilgo, 2006, p. 11).

Disadvantages also existed for interdisciplinary teams, especially because a primary service provider from one discipline was in charge of delivering services. Fortunately, a transdisciplinary model evolved that addressed many of the problems teams faced in implementing multidisciplinary or interdisciplinary approaches.

What is a transdisciplinary team? Ideally, early intervention/education teams, which include family members, work together to exchange expertise, knowledge, and information to build team capacity and jointly solve problems, plan, and implement interventions to ensure that programs achieve desired child and family outcomes and goals (DEC, 2014). Using a transdisciplinary team approach, "Professionals from different disciplines work together…Each member contributes equally to team functioning, is open to exchanging existing roles and acquiring new roles, and is committed to providing culturally competent, family-based services in natural environments for children with delays or disabilities" (Kilgo, 2006, p. 12). Unlike multidisciplinary or interdisciplinary teams, transdisciplinary teams "jointly identify the goals/outcomes, with discipline-specific goals/outcomes woven into the larger team goals" (p. 12).

Why is the transdisciplinary approach more beneficial than multidisciplinary and interdisciplinary models? A transdisciplinary approach:

1. Avoids fragmentation of services among disciplines;
2. Prevents duplication of services;
3. Integrates services focusing on the whole child;
4. Emphasizes the importance of family members as equal members of the team; and
5. Allows for role release among team members.

At the University of Alabama at Birmingham (UAB), graduate students who plan to work in early intervention/education are educated using a transdisciplinary model in which early childhood special education, occupational therapy, and physical therapy graduate students work together to develop the dispositions, knowledge, skills, and practices needed for applying transdisciplinary practices. In the past, general early childhood education, nursing, and speech-language pathology graduate students have also been a part of this program, funded by the U. S. Department of Education, Office of Special Education. In order to accomplish this, graduate students representing the various disciplines are educated in the same seminar/course, where they are prepared together for two semesters. University faculty for the program include an early intervention/early childhood special education professor, who is also the Principal Investigator on the federally-funded grant, an occupational therapist, a physical therapist, and general a early childhood educator.

The first semester of the Transdisciplinary Teaming seminar/course is a structured, intensive learning experience where students receive the background information necessary for working effectively on transdiscipinary teams to provide optimal services for children and families with whom they work. Topics include (a) the nature of early intervention and early childhood special education, (b) how transdisciplinary teams work, (c) team-based services, (d) legal applications, (e) evidence-based practices, (f) family diversity, and (g) socioeconomic diversity and poverty.

A major part of the second semester is focused on team-based problem solving with case studies of young children with delays or disabilities and their families. Graduate students are assigned to transdisciplinary teams where each team is assigned a complex, challenging case about a young child with special needs and her or his family. The next section describes the process that is followed as the student teams address the issues presented in their cases.

**Team-based Problem Solving with Case Studies**

During the second semester, graduate students are divided into teams in which each discipline is represented. All teams include a minimum of one early childhood special education major, an occupational therapy student, and a physical therapy student. Each team is assigned a particular case for problem solving. The transdisciplinary faculty collaboratively developed the cases based on their professional wisdom and experience.

Teams are required to meet on an ongoing basis. The demonstration of the principles involved in transdisciplinary teaming is required of each group. These principles include group planning for assessments goal/outcome development that is for the child/family rather than discipline specific goals, the use of natural environments, and role release in the implementation of services. Each team member has an equal voice, and each team must be involved in deep engagement with one another throughout the process.

During the first week of the seminars/class meetings of the second semester, graduate students are assigned to a transdisciplinary team and given a specific case the team will work on for the entire semester. Also during first week, each team reviews the case assigned to them and discusses the group assignments, roles and responsibilities required of the team, and the processes the group will use. Each team member is also required to discuss her or his personal characteristics and teaming skills with other members of the team. For every seminar/class meeting, students spend time working on their cases, while faculty members answer questions and provide feedback to each team.

By the second seminar/class meeting, each team discusses assessments and potential communication and team-building issues the team may face with their case. Each team develops Individual Family Service Plan or Individualized Education Program goals/outcomes and strategies for the child and family in their case.

Team members develop strategies for intervention during the third session. Each team determines what strategies will be used and how these strategies will be integrated with developmentally appropriate practices, which team member(s) will be responsible for implementation, and how other disciplines will be involved. Finally, each team determines how progress and effectiveness will be evaluated.

Family strengths, resources, and supports needed are the focus of the fourth session. Each team discusses potential issues in working with their case. By this time, each group has received feedback from the faculty members representing various disciplines. The team considers modifications needed, based on faculty input. Each team also identifies any unanswered questions concerning the case. Finally, each team discusses strategies to be used in addressing family issues.

Case study activities for the fifth session are focused on communication issues related to the children in each case. During this session, a speech-language pathologist who works directly with young children and their families is available for each team to consult. The faculty members are also available to answer questions and provide input.

The sixth session includes the expertise of a nurse who works in early intervention and early childhood special education, as well as another nurse who is the mother of a child with a disability. The nurses assist each team with issues regarding health care needs of the children in the cases. The nurses make suggestions for how health issues can be addressed, as well as provide input on available resources.

During the final two sessions, each transdisciplinary team presents their case to the class. After each presentation, faculty members and other teams ask challenging questions. Of particular interest to the faculty is how the team works together in a transdisciplinary manner. Faculty members look for goals/outcomes, evidence-based practices, and interventions that focus on the child and family rather than discipline-specific goals/outcomes that would be used by a traditional multidisciplinary or interdisciplinary team.

The following case is one example that has been used in the Transdisciplinary Teaming course/seminar. First, an example of an actual case assigned to one of teams of students is presented. This is followed by examples of how the team addressed the issues presented in the case.

***Jessica***

Jessica is a 50-month-old female with arthrogryposis multiplex congenital and a hearing impairment. Jessica was a full term pregnancy; her arthrogryposis was diagnosed immediately. The hearing impairment was diagnosed a year ago, with moderate loss in both ears. Hearing aids were recommended; however, the family is not accepting of the diagnosis and has refused to have Jessica fitted for the hearing aids.

Jessica has hip abduction and external rotation contractures. Her hips can be brought to a neutral

rotation position with some difficulty and discomfort; the same is true for hip flexion. She has no hip extension; hip flexion is present to 90 degrees. Ninety-degree knee flexion contractures are present in both knees. She has no active shoulder flexion but passive shoulder flexion is present to 80 degrees bilaterally. Active shoulder internal rotation is present to 45 degrees on the right and 30 degrees on the left. There is no passive or active shoulder external rotation. Both elbows have flexion contractures with -30 degrees of elbow extension on the right and -50 degrees on the left arm. Both wrists have 60 degrees of wrist flexion contractures with about 10 degrees of active flexion. Mild flexion contractures are present at the joints of all fingers with webbing between all fingers. The thumbs have mild flexion contractures at the CMC and MCP joints; she has active adduction in her thumbs and fingers and about 20 degrees of active elbow movement, but not enough to bring her hands to her mouth. Jessica can roll from prone to supine and back with some difficulty due to her hip deformities. She moves around at home by rolling. When placed in sitting on the floor and in a small chair, she can sit independently but is unable to come to sitting by herself. When in sitting she can pivot with considerable exertion of her head and trunk. She is unable to stand or be placed in standing due to her lower limb deformities. Her parents carry her at home to move her from place to place.

Jessica's significant upper limb deformities limit severely her hand function. She can ease her fingers around objects such as a large marker, blocks, and small balls, but is unable to do much with them once grasped because she cannot move her elbows or shoulders much. In lieu of hand function, Jessica picks up objects with her mouth—she colors with her mouth, moves objects from place to place, and turns pages in books with her chin. She can indicate toileting needs by saying "pot pot" but is unable to take care of any toileting needs. Similarly, she is unable to feed herself but can drink with a straw. Jessica is unable to dress or undress herself.

Jessica is somewhat irritable. Her attention span is short and she becomes frustrated when she cannot do what she wants with toys and when she wants to move someplace but cannot roll to get there. Jessica can say a few words, attempts many others, demonstrates many sound substitutions, and is difficult to understand. She is easily frustrated when others do not understand her.

Jessica's parents are Mark, age 28, and Liddy, age 26. They married young when Liddy became pregnant with Jack. Mark finished high school; however, Liddy did not. His job is as an agricultural worker—he drives farm equipment on a large farm; the work is seasonal and the family has trouble paying their bills each month. Their income is too high for Medicaid, especially because Mark works longer hours during the harvest. Jessica is the youngest of three children. Her siblings are both brothers, Jack at age eight and Peter at age six. They try to play with Jessica but her irritability and short attention span frustrate them; therefore, they do not spend a lot of time with her.

The family is of the Pentecostal Christian religion; they believe that Jessica's mobility problems will be healed through prayer so that she can walk. They resist any efforts at providing mobility aids as well as fitting her for hearing aids. Jessica attends a preschool five days a week for half a day. Liddy takes Jessica to school in her Greco stroller, which creates problems for the teachers and classmates because she is poorly positioned in a reclined position, which limits her ability to use her mouth significantly. There are hygiene concerns at school when she uses her mouth to pick up and manipulate objects.

There are several specific issues that need to be addressed by the team. Mark and Liddy's faith and belief that Jessica will be healed and their refusal to consider mobility aids and hearing aids are concerns for the teachers and therapists in the school setting. The physical and occupational therapists want her to be independently mobile using a power chair to facilitate her education, mastery motivation, peer interactions, as well as to help address her behavior issues. Her speech limitations, short attention span, social challenges, behavior, and communication difficulties are in large degree due to her hearing impairment. Without the hearing aids, the ability of teachers and therapists to address her challenges is limited. Jessica's significantly limited hand function limits her ability to interact with objects and educational tasks. The teachers are concerned about the hygiene issues created by Jessica's use of her

mouth to hold objects. Assistive technology solutions are needed to facilitate her access to learning and engagement with objects. While the therapists and teachers are concerned primarily with her performance at school, they also would like Jessica to be able to play, communicate and get around at home better. The family refuses to consider any technology in the home.

When teams work together to address needs, issues, and challenges presented in real-world cases such as this, opportunities for team-based learning experiences occur. A brief summary follows of what the team assigned to Jessica's case determined to address the issues of this case and design appropriate plans for intervention.

**Assessment**

Team members decided to use several assessment instruments and processes. These included the *Battelle Developmental Inventory II* and *the Developmental Assessment of Young Children II*. Because the family will not consent to the use of hearing aids, the team modified the environment of the assessment by insuring no background noise occurred. They also used voice amplifiers. The team provided explicit information about the results of the assessment process.

The team also administered informal assessments that included a Family Focused Interview and a Routines Based Interview (McWilliam, 1992). The team explained how these assessments determined the concerns of Jessica's parents, as well as the skills needed in Jessica's routines and daily activities. The team used the assessment process to gather authentic information about Jessica's needs within the context of her natural environment and to prioritize the families' priorities.

The physical and occupational therapy students on the team independently evaluated Jessica using formal and informal assessment instruments specific to their disciplines. They used the *Peabody Developmental Motor Scales* (PDMS-2) and the *Pediatric Evaluation of Disability Inventory* as two formal assessments. Informal assessments included a neuromusculoskeletal evaluation where the therapists observed muscle tone, range of motion, balance responses, posture, gait, and physical strength. The other informal assessment used by this team was a play skills evaluation, where team members observed how Jessica played and interacted with her peers.

At this point, the faculty members thoughtfully considered their instrument and process selections because transdisciplinary teaming emphasizes holistic assessment in contrast with discipline specific assessment. The faculty made recommendation about how all team members should be included in the assessment process and, if this is not possible, how the results can be shared with other team members via video, Skype, and other means. Discussion was initiated among all class members about the importance of holistic assessment and sharing assessment information among all team members.

**Team-Based Goals**

After considering the assessment information and the priorities for goals that Jessica's parents requested for her, the team constructed five Individualized Education Program (IEP) goals to focus on for this case. These involved imitation, pointing with a head mouse, using a mobile arm support for classroom table activities, playing with peers, and using her mouth to pick up and eat small portions of food after an adult presents it to her. These goals were functional, holistic, and were needed to function in the natural environment.

**Cultural Adaptations**

The team was quite concerned about the family's decisions for Jessica related to their Pentecostal faith. Jessica's parents believe in faith healing and reject medical treatments. While the parents do not want technology devices for Jessica in the home, they accept that she can use them in school. The team hopes that when the parents see how helpful the technology aids were at school that they will become interested in using them in the home as well. However, the team realizes that when making suggestions, they must be respectful of the family's religion and must accept their faith-based decisions, even when they do not agree with them.

**Interventions**

All team members were involved in planning interventions for Jessica that focused on her needs in the natural environment, which includes the preschool class Jessica attends. The occupational therapist suggested a mobile arm ball bearing feeder to help Jessica manipulate objects on her table and a head mouse to allow her to use the computer. Because Jessica's parents objected to hearing aids, a personal FM system was suggested so that Jessica could better hear what is going on in her environment.

The physical therapist suggested a wheelchair and classroom seating that will help Jessica maintain better posture for participating in classroom activities. If the parents refuse to use mobility aids at home, such as the use of a power wheelchair for independent mobility, the physical therapist would fit Jessica for a manual wheelchair at school. The physical therapist would also help Jessica progress in rolling, pivoting, and transition skills so she would be able to participate in group activities and playtime more easily with her peers.

The team determined Jessica's cognitive functioning was close to that of her typically developing peers. Because of this, the team did not place special emphasis on interventions in this area. She can follow the same curriculum as her peers, provided the modifications are made to meet her physical needs. The team did stress the Individualized Education Program goals should be embedded into the natural learning environment to allow a more meaningful intervention. Finally, the team documented the resources they used in developing interventions that would be appropriate for Jessica (Campbell, 2012; Donohoe, 2012; Horn & Banerjee, 2009; McLean, Hemmeter, & Snyder, 2014).

**Conclusions**

The transdisciplinary early intervention/education program at the University of Alabama at Birmingham (UAB), which began in 1999, has continually educated professionals representing multiple disciplines using a transdisciplinary approach since that time. Data from each cohort have been collected to assess the effectiveness of the program and make improvement for future cohorts. Professionals from multiple disciplines involved in Transdisciplinary Teaming at the UAB developed a book, *Transdisciplinary Teaming in Early Intervention/Education: Navigating Together with Families and Children* (Kilgo, 2006), as a resource for other universities, school systems, professional organizations and government agencies interested in implementing a transdisciplinary approach. The model developed by these professionals has also been presented at numerous national and international conventions and meetings, including conferences of the Council for Exceptional Children (CEC), Division for Early Childhood (DEC), Association for Childhood Education International (ACEI), National Association for the Education of Young Children (NAEYC), and the World Organization for Early Childhood Education (OMEP), as well as numerous state and local conferences. Hopefully, information from this transdisciplinary personnel preparation approach can be used to produce graduates representing multiple disciplines who are well qualified to provide high quality teaming and collaboration practices in early intervention/education.

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