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INTERDISCIPLINARY TEAMWORK PEDAGOGY

A Dissertation submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

by

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Acknowledgements

“Unity is strength... when there is teamwork and collaboration, wonderful things can be achieved.” – Mattie Stepanek

From the beginning of my pursuit of a doctoral degree, I knew I wanted my learning to have a strong interdisciplinary focus. This became more evident when I decided to study interdisciplinary teamwork as my dissertation focus. My research in this area reinforced what I have experienced in practice – one person, one discipline alone is not as powerful as many together. This dissertation is no exception. My committee represents the interdisciplinary nature of my study: special educators, researchers, evaluators, educational leaders and planners, and nurses. Their interests and specialties are as varied: effective instruction, community engagement, adaptive expertise, inclusion, prevention of maltreatment of people with disabilities, full participation within communities of all people, and interdisciplinary teamwork.

The members of my dissertation committee have guided me, challenged me, asked questions, made suggestions, and reinforced the interdisciplinary teamwork in the study. Dr. Ann Cox introduced me years ago to interdisciplinary teamwork pedagogy when I was a student in her course, then when I co-taught with her. Dr. Fred Orelove, who literally wrote the book on teamwork, has guided me and challenged me further into the teamwork literature. Dr. Kathleen Lynch has provided expertise with managing data and understanding measurement issues that were important to analysis of the project. Dr. Donna Gilles provided constant support and connections to the LEND network, without which this study would have never began. Dr. Reed, who has been my program advisor and served as chair, introduced me to the How People Learn

framework. Through her guidance and use of these learning principles with me, I understand these important pedagogical principles and development of adaptive expertise.

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Dedication

I dedicate this dissertation to those who have gone through this entire process with me – my family. They have experienced the struggles, challenges, joys, and work with me. As discussed in my dissertation, teamwork requires role release and role blending, which is how this dissertation was completed. Kevin and Lauren extended their roles of helping out around the house and assumed new roles – making sure I completed my homework, did not procrastinate, and cheering me on at each stage. My husband, David, provided constant support throughout this entire process – from tutoring me in math when I first took the GRE's, to giving me the time I needed to work and selflessly re-arranging his schedule, making dinners, fixing my computer and printer, and helping me use Excel to analyze data. They all listened to me think aloud at each stage. I could never have done this without them and the completion of this program is a testament to them, their support, and our teamwork.

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Abstract

INTERDISCIPLINARY TEAMWORK PEDAGOGY

By Carole Kennedy Ivey

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University, Richmond, Virginia.

Virginia Commonwealth University, 2011

Dissertation Chair: Evelyn Reed, Ph.D., Department Chair, Special Education and Disability

Policy, School of Education

The purpose of this study was to describe the interdisciplinary teamwork pedagogy of the Leadership Education in Neurodevelopmental and Related Disabilities (LEND) training programs, specifically the content focus, instructional methods, and assessment practices. LEND programs are a national network providing long-term, graduate interdisciplinary training through federal funds from Health Resources and Service's Administration's Maternal Child Health Bureau. This study used a mixed method approach to describe the interdisciplinary teamwork pedagogy of LEND training programs. The study occurred in three stages: 1) a survey of LEND training directors, 2) a survey of LEND interdisciplinary teamwork instructors, and 3) document review of the national LEND website and LEND program websites. Data were analyzed using statistical and qualitative methods and interpreted through the use of professional competencies, the *How People Learn* framework, and research literature. This study provides for an understanding of interdisciplinary teamwork within one national program in order to inform efforts for training, practice, and research.

Keywords: interdisciplinary, teamwork, collaboration, pedagogy

Chapter 1

Introduction

Children with special health care needs are increasing in number and require complex and comprehensive services. The Maternal and Child Health Bureau defines children with special health care needs as “those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally” (McPherson et al., 1998, p.138). Based on the most recent National Survey of Children with Special Health Care Needs, the number of children with special health care needs in the United States has increased from 12.8 percent in 2001 to 13.9 percent in 2006 (U. S. Department of Health and Human Services, 2008). The number of households with children with special health care needs also increased from 20 percent to 21.8 percent. This represents approximately 10.2 million children ages 0-17 and 1 in 5 households in the U.S. with at least one child with special health care needs. The health and educational profile of these children is often complex, with 91% having one or more conditions and 25% having three or more conditions. The impact of the special health care needs on functional abilities, such as eating, dressing, and walking, is significant, with 85% of children experiencing one or more functional difficulties (Table 1). Of the 15% of children who experience no functional difficulties, 90% require treatment or therapies to manage their conditions and mitigate their functional difficulties.

Table 1

Functional Difficulties of Children with Special Health Care Needs

<u>Types of Functional Difficulties</u>	<u>Percent</u>
Bodily function (eating, dressing, bathing)	26.8%
Bodily function, activity participation, & emotion	16.9%
Activity participation & emotion/behavior	15.3%
Bodily function & activity participation	8.7%
Participation in activities (walking or running)	8.5%
Bodily function & emotion/behavior	5.1%
<u>Emotional or behavioral difficulties</u>	<u>3.4%</u>

(U. S. Department of Health and Human Services, 2008)

Statement of the Problem

Due to their complex health conditions and the impact of those conditions on their daily function, children with special health care needs often require a broad continuum of services from multiple professions across various systems. These services may include specialized medical needs (including health specialists, prescription medications, and hospital services), therapeutic services (including physical, speech, and occupational therapy, mental health, and home health), family support services, equipment, early intervention, and special education (U. S. Department of Health and Human Services, 2008). These services are often provided by multiple professionals working in different systems, such as early intervention agencies, schools, mental health agencies, doctors' offices, and specialty centers.

Interdisciplinary teamwork has been identified as an essential component to the provision of services to children with special health care needs in order to manage the multiple, complex needs that require the knowledge and skills from many professionals from a variety of systems, i.e., educational, medical, and community (Friend & Cook, 2010; Greiner & Knebel, 2003; Oandasan et al., 2004). Effective teamwork in the healthcare system is integral to improving the quality of patient outcomes, enhancing patient and workplace safety, and increasing job satisfaction among healthcare professionals (Oandasan et al., 2004). Similarly, effective teamwork in the schools is a key component to exemplary schools and positive outcomes for students (Giangreco, Edelman, Luiselli, & MacFarland, 1998; Hunt, Soto, Maier, Liboiron, & Bae, 2004; McLaughlin, 2002). Although research identifies the needs and value of interdisciplinary teamwork in professional practice and preparation programs, the specific content and pedagogy has not been described.

Rationale for Study of the Problem

Interdisciplinary teamwork as an integral component of services to children with special health care needs is recognized in legislation and policy. Most notable is the requirement for interdisciplinary teams within special education services. The Education for All Handicapped Children Act (PL 94-142), passed in 1975, first explicitly defined an Individualized Education Program (IEP) team as a team of professionals, parents, and the child (as appropriate). Subsequent reauthorizations in 1986, 1990, and 1997 continued to support the requirement that interdisciplinary special education personnel must work together and with families of children receiving special education services in order to be accountable for their learning. These reauthorizations added provisions for service coordination to infants and toddlers and their

families, general education teacher involvement as an IEP team member, and interdisciplinary teams in functional behavior assessment and positive behavior support plan (Henderson, 2002). The most recent reauthorization, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), continues to mandate interdisciplinary teamwork and collaborative activities in several areas: assessment, development and implementation of IEPs, education in the least restrictive environment, discipline and behavior support plans, mediation, and transition services (Hanft & Shepherd, 2008). It is clear within special education legislation that “educational personnel *must collaborate* with one another and with families of children eligible for special education services if they are to meet the unique and diverse needs of these children and youth” (Villa, Thousand, Nevin, & Malgeri, 1996, p. 170). In addition, increased accountability for student achievement and shared educational responsibility are hallmarks of IDEA 2004, along with the No Child Left Behind Act of 2001 (NCLB). Together “both NCLB and IDEA articulate the importance and necessity of collaboration and cooperation between general and special educators if their shared vision of improved educational outcomes for all students is to be realized” (Handler, 2006, p. 7).

Title V of the Social Security Act also provides support for interdisciplinary teamwork through the establishment of the U. S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau (n.d), which is focused on improving the health of mothers, children, and their families. Programs established under the Maternal and Child Health Bureau are focused on the implementation of “family-centered, community-based systems of coordinated care for children with special healthcare needs” (U. S. Department of Health and Human Services, n.d.). These programs focus on the

development of services and systems, as well as education and training of service providers. The Leadership Education in Neurodevelopmental and Related Disabilities (LEND) is one leadership program supported by the Maternal and Child Health Bureau that outlines a set of core leadership competencies, which includes interdisciplinary teamwork, required of all Maternal and Child Health leadership trainees (MCH Leadership Competencies Workgroup [MCH], 2009; Appendix A).

Based on the legal requirements and empirical support for interdisciplinary teamwork, professional organizations have incorporated interdisciplinary teamwork competencies into their professional standards of practice (Council for Exceptional Children [CEC], 2009; Greiner & Knebel, 2003; MCH, 2009; Appendices B and C). Professionals need to be prepared for the knowledge, skills, and attitudes that promote these competencies.

Statement of Purpose

The overall purpose of this study was to describe the interdisciplinary teamwork pedagogy of LEND training programs. The literature discusses the importance of content on interdisciplinary teamwork within personnel preparation programs to better prepare professionals to provide comprehensive, coordinated services to children with special health care needs. However, there is a lack of understanding about how this preparation is occurring. This descriptive study of interdisciplinary teamwork education was completed to contribute to the knowledge about interdisciplinary teamwork education. Previous literature and research have cited the need for additional studies in the areas of interdisciplinary teamwork competencies (Greiner & Knebel, 2003; Oandasan & Reeves, 2005), common terminology (Greiner & Knebel, 2003; Oandasan et al., 2004; Oandasan & Reeves, 2005), interdisciplinary education (Greiner &

Knebel, 2003; Oandasan et al., 2004), and teaching processes (Oandasan & Reeves, 2005). As stated by Oandasan et al. (2004),

Research is needed to understand the complexities related to collaborative practice and how it can be taught or developed amongst health care providers. Much of this explanatory and exploratory research will need to use qualitative research methodology... These include educational competencies (knowledge, skills and attitudes) and collaborative practice outcomes involving patients, professionals, the organization and system” (p. xx).

Literature/Research Background

Legal mandates have required the incorporation of interdisciplinary teamwork in practice. Interdisciplinary teamwork is also supported through literature and empirical studies in the education and healthcare fields as an essential, effective component to the provision of services to CSHCN and to support the collaboration between professionals working in a variety of systems (Friend & Cook, 2010; Greiner & Knebel, 2003; Oandasan et al., 2004).

Educational Support for Interdisciplinary Teamwork

Interdisciplinary teamwork has been well described in educational literature (DeBoer & Fister, 1995; Dettmer, Thurston, Knackendoffel, & Dyck, 2009; Friend & Cook, 2010; Garner & Orelove, 1994; Snell & Janney, 2005). Snell and Janney (2005) explain how teachers can collaborate to support inclusion of students with disabilities in general education settings. Their model is based on six components of collaborative teamwork: handling conflict, problem-solving and action planning, improving communication, building team structure, learning teamwork skills and coordinating team action, and teaching collaboratively. Similarly, Dettmer et al. (2009)

examine four elements of teamwork, collaboration, and consultation in special education: preparation for roles, delineation of roles, framework for structuring the roles, and evaluation of outcomes. Friend and Cook (2010) offer a framework for learning about collaboration, which includes one's personal commitment to collaboration, one's communication skills and interaction processes for collaboration, the programs and services in which collaboration occurs, and the contextual factors that support or negate collaboration.

While educational literature has promoted the importance of interdisciplinary teamwork, it is not well-established in empirical research. Collaboration and teamwork as concepts are difficult to study as they are often embedded within other programs and activities; however, several studies do establish empirical support for collaboration and teamwork at the system, school, program, and student levels.

Shannon and Bylsma (2004) completed a review and synthesis of the research literature on improved school systems. Through systematic evaluation of 23 reports and articles, four themes about improving systems emerged: 1) effective leadership; 2) quality teaching and learning; 3) support for system wide improvement; and 4) clear and collaborative relationships. The collaborative elements included nurturing professional and collaborative cultures marked by professional learning, mutual respect, trust, clear understanding of professionals' roles and responsibilities, and leadership that interprets and manages outside federal, state and local policies, community affairs, and other external influences.

Collaboration was identified across four different studies examining exemplary schools (McLaughlin, 2002). Despite the diversity across the four studies (in terms of different geographical areas, grades, school levels, school size, student populations, socioeconomic

capacities, and investigative practices), collaboration was an integral component in all of the exemplary schools, which were characterized by common goals, a collaborative culture, and shared responsibility. The importance of collaboration was evident within daily operations of each school and as a defining characteristic of each school (McLaughlin, 2002). In one study, Caron and McLaughlin (2002) examined six schools (four elementary and two middle) for indicators of their success in achieving exemplary results for all students, including children with disabilities. Results revealed that collaboration was a dominant feature among all schools, including collaborative planning and teaching activities, supports for collaboration, shared leadership and decision making, cohesive expectations for all students, and collaborative culture. In another study, Wallace, Anderson, and Bartholomay (2002) examined collaboration and communication practices among special and general education teachers of four high schools that achieved success in inclusion and high achievement. Success with inclusion and positive student outcomes was associated with collaboration, coordination, and communication among teachers. Specific elements that supported collaboration included planning time for instructional teams, frequent communication, shared responsibility for the performance for all students, and establishing a structure to support collaboration and inclusion.

A few studies have examined the effects of collaboration at the program and student level. Giangreco et al. (1998) evaluated the Vermont Interdependent Services Team Approach (VISTA), a support service decision-making process. Qualitative analysis revealed that VISTA successfully provided teams with a definitive team process for decision making to determine child focused services and avoid gaps, overlaps, and conflicts in services, as well as increasing parent and teacher involvement and team member satisfaction. VISTA also had an impact on

student inclusion within general education as well as changing professionals' practices and interactions. Challenges included team logistics (getting all team members together for meetings), role confusion, differences in professionals' frameworks, and problems with follow-up.

Hunt et al. (2004) completed two studies investigating the use of a structured collaborative teaming process to promote child performance outcomes of preschoolers with severe disabilities included in general education. Results showed increased student participation and engagement in classroom educational activities, decreased time in solitary or one-on-one time, and increased interactions with peers following the implementation of a collaborative teaming process. The structured collaborative teaming process included collaborative assessment, support plans developed through a consensus process, and monthly meetings for evaluation and plan revision. In addition to changes in student outcomes, team participants reported that the collaborative team process allowed for sharing of their expertise and perspectives and increased accountability and consistent implementation of the support plans. Team members suggested that the collaborative team process allowed for increased parent input.

Health Care Support for Interdisciplinary Teamwork

The importance of teamwork has been emphasized in healthcare reports and literature. Studies show that 70-80% of healthcare errors are caused by poor team communication and 60% of medication errors are due to poor interpersonal communication (Xyrichis & Ream, 2008). Due to these high rates of preventable medical errors resulting from inadequate teamwork, the Institute of Medicine (IOM) has outlined the following vision for all programs and institutions involved in the education of health professionals: "All health professionals should be educated to

deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics” (Greiner & Knebel, 2003, p. 45).

Studies report the effects of teamwork on increased job satisfaction and improved mental health for healthcare professionals and improved quality of care, patient outcomes, and patient satisfaction with services (Oandasan et al., 2004; Xyrichis & Ream, 2008). Teamwork has also been shown to reduce costs, increase workforce retention, and reduce staff turnover for healthcare organizations (Oandasan et al., 2004; Xyrichis & Ream, 2008).

Interdisciplinary Teamwork Pedagogy

Healthcare and educational literature support the need for professional preparation for teamwork; however, few empirical studies have been conducted on interdisciplinary teamwork pedagogy in these fields and the empirical studies that do exist are focused on interprofessional education (not specific to teamwork) in clinicians (not personnel preparation; Reeves et al., 2010). The fields of business and management have studied teamwork pedagogy, providing a foundation for understanding interdisciplinary teamwork preparation. Despite efforts for clarity and uniformity, teamwork continues to be a poorly defined term with inconsistent usages (Hall & Weaver; 2001; Oandasan, 2004; Xyrichis & Ream, 2008). Further, there is not consistency regarding the essential components that make up the knowledge, skills, and attitudes of interdisciplinary teamwork and whether this knowledge is standard across all educational and health care systems. Empirical or theoretical literature is limited regarding how to evaluate students’ teamwork skills, knowledge, and attitudes. These pedagogical studies were the subject of a systematic review, which is presented in Chapter 2.

Conceptual Framework

A pedagogical framework helped to provide the organizational structure needed to examine the interdisciplinary teamwork skills and knowledge that personnel need for practice and the instructional methods used for preparation. The framework presented by the National Research Council (2000) in *How People Learn* (HPL) establishes principles for designing effective learning environments that are based on cognitive science and applied to educational practice. This model has been extended and applied to teacher education by Darling-Hammond and Bransford (2005). The HPL model is built around three basic principles. First, student preconceptions can inhibit the learning and understanding of new concepts and information. Second, new knowledge needs to be organized around a conceptual framework to allow learners to access the new knowledge spontaneously for action. Finally, the HPL model proposes that learning is most effective when learners recognize one's current level of knowledge, thus allowing for identification and remediation of gaps in that knowledge. These three principles underlie the HPL learning environment.

An HPL learning environment consists of four overlapping lenses - learner centered, knowledge centered, assessment centered, and community centered - that guide learning (Figure 1; National Research Council, 2000). The learner centered lens uses learners' current capabilities as a starting point for learning, and focuses existing knowledge, skills, and attitudes (including their preconceptions about the content), their prior experiences, and their cultural perspectives. The knowledge centered lens focuses on the important content in the domain and achieving competence in the content area. The primary goal is building deep knowledge and understanding rather than surface level awareness without meaningful application. The assessment centered

lens builds frequent opportunities for students and teachers to monitor instruction and students' progress throughout the learning process. The community centered lens influences the overall context so that social learning opportunities provide ongoing challenge and support for community members.



Figure 1. Learning Environments of the How People Learn Framework (IRIS Center)

The HPL approach has been used to design instruction and curricula in such diverse areas as elementary mathematics, statistics, and biomechanics. Darling-Hammond and Bransford (2005) used this framework to review research on teaching and learning, contending that effective teachers balance and integrate all four lenses, and that personnel preparation needs to provide explicit and supported instruction in these learning principles. The HPL framework has been applied to special education professional education in the development of online modules in key content areas, including collaboration (IRIS Center).

Preliminary Study

A pilot study was conducted during the summer and fall semesters of 2008. The purpose of the pilot study was to describe one approach to teaching interdisciplinary teamwork and to

evaluate its effectiveness in promoting the knowledge, skills, and dispositions needed for effective practice. The preliminary study consisted of comparing a face-to-face week long course with a hybrid (part online, part face-to face) semester long course. The study examined the perceived and demonstrated changes in participants' teamwork knowledge, skills, and dispositions, along with their perceptions about the different course structures, experiences, and learning outcomes. The study also evaluated the differences in participant characteristics, teamwork competencies, and course ratings across the two classes. Results suggested that differences existed between the two interdisciplinary courses, particularly in the areas of 1) learners' prior experience and learner satisfaction with the course, course structure, assignments and activities, 2) improvements in teamwork knowledge and skills, and 3) the use of technology. The pilot study raised several questions for further research, including examining teamwork content in exemplary interdisciplinary programs and the alignment of teamwork content with professional standards, as well as specific teaching and assessment methods for teamwork knowledge and skills. Results from this study also questioned how information on business education pedagogy can be applied to interdisciplinary teamwork personnel preparation in serving children with special health care needs.

Research Questions

The overall purpose of this study was to describe the interdisciplinary teamwork pedagogy of LEND training programs, specifically to describe the content focus, instructional methods, and assessment practices. Specific research questions included:

1. What is the critical content for personnel preparation in interdisciplinary teamwork?

2. What are the knowledge and skills that are included in interdisciplinary teamwork course content?
3. What methods are used to teach and assess the acquisition of interdisciplinary teamwork knowledge and skills?

Methodology

The Leadership Education in Neurodevelopmental and Related Disabilities (LEND) programs form a national network focused on graduate level interdisciplinary training and the provision of interdisciplinary services and care to children with special health care needs and their families (AUCD, 2010). There are currently 39 LEND programs in 32 states and the District of Columbia comprising faculty and trainees from multiple professions along with family members as participants. The objectives of LENDs are:

1. Advancing the knowledge and skills of all child health professionals to improve health care delivery systems for children with developmental disabilities;
2. Providing high-quality interdisciplinary education that emphasizes the integration of services from state and local agencies and organizations, private providers, and communities;
3. Providing health professionals with skills that foster community-based partnerships; and
4. Promoting innovative practices to enhance cultural competency, family-centered care and interdisciplinary partnerships.

(AUCD, 2010)

This study used a mixed method design, incorporating survey information with document review, to describe the interdisciplinary teamwork content in LEND training programs. Survey participants were training directors of LEND programs and LEND interdisciplinary teamwork instructors. LEND training directors were surveyed on critical knowledge and skills for interdisciplinary teamwork. LEND instructors were also surveyed on critical knowledge and skills as well as pedagogical process.

In order to further describe and understand the interdisciplinary teamwork content, pedagogical activities, and assessment process used by LEND programs, a qualitative approach was proposed as a follow-up to the surveys (Bogdan & Biklen, 2007). Instructor interviews and document analysis of course syllabi and course assignment rubrics were intended to be the primary sources of data collection. However, while two course instructors responded that they would be willing to be contacted for further information, no contact information was provided. Instead, document review of LEND websites were completed, analyzing program descriptions, instructional methods, assessment procedures and course syllabi in relation to interdisciplinary teamwork.

Definition of Terms

Children with Special Health Care Needs

McPherson et al. (1998) define children with special health care needs as “those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally” (p. 138). This definition was developed by the Maternal and Child Health’s Division of Services for Children with Special Health Care Needs and has been

endorsed by professional organizations including the American Academy of Pediatrics. It was developed to “be specific and measurable; and reflect current scientific knowledge” (p. 138), and to be used across a broad range of service systems, including primary and specialty health services, therapy services, and educational services.

Further clarification of this definition is particularly needed for the term “health and related services,” as their definition of related services differs somewhat from the related services definition established in IDEA 2004. McPherson et al. (1998) define health and related services “broadly to include the continuum of services that may be required to maintain or improve the health and functioning of children” (p. 139). Health services may include specialized or enhanced medical and nursing services, physical, occupational, and speech therapy services, mental health services, family support services, and equipment and supplies. Related services include educational services, encompassing early intervention and special education, transportation, and social services. For clarity, this paper refers specifically to “educational services” when discussing early intervention and general and special education and “related services” when referring to related services as defined in IDEA 2004.

Interdisciplinary/Interprofessional

In discussing the interaction of two or more different professions, the terms interdisciplinary and interprofessional will both be used as there is not current consensus regarding terminology. Within international research and health literature, there is increased use of the term interprofessional, to clarify that individuals are from different health professions, rather than, for example, physicians from different fields like psychiatry, neurology, and rheumatology. While this distinction could be made in education (with different disciplines of

science, math, etc.), educational literature has not used the term interprofessional. The term interdisciplinary is also expanded further, in terms of models of teamwork in relation to the terms multidisciplinary, interdisciplinary, and transdisciplinary.

Related are the terms interprofessional education and interdisciplinary education, which will both be used in this paper. The Centre for Advancement of Interprofessional Education (CAIPE) defines interprofessional education as “Occasions when two or more professions learn from and about each other to improve collaboration and the quality of care” (Oandasan et al., 2004, p. 38). Internationally this has been an accepted definition for use in healthcare, however in education the term interdisciplinary remains common practice.

Thistlethwaite and Moran (2010) have recently proposed further terminology to use as a framework for classifying interprofessional learning outcomes. They propose the following categories: uniprofessional outcomes, multiprofessional outcomes, and interprofessional outcomes. Uniprofessional outcomes are described as “the learning of knowledge, skills, and/or attitudes that relate only to a particular profession and can be learnt uniprofessionally” (p. 504). Multiprofessional outcomes include the learning of knowledge, skills and attitudes “that should be achieved by two or more professions” (p. 504). Examples of these outcomes include clinical skills, such as blood pressure measurement, or foundation knowledge, such as anatomy. Interprofessional outcomes include “learning knowledge, skills or attitudes where interprofessional education adds value to the learning because of interaction between the participants and enhances the chances of meeting the outcomes such as communication skills, teamwork, collaborative practice, etc.” (p. 504).

Teamwork/Collaboration

A variety of terms are used to denote how professionals from different disciplines “work together,” including teams, teamwork, and collaboration. For instance, CEC includes collaboration as one of its ten standards, while the IOM and MCH use the term teamwork. One of the foremost definitions of teams, across the business, healthcare, and education fields, is from Katzenbach and Smith (2003). They define *team* as a “small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable” (p. 45). Teams are linked with productive performance. *Teamwork* is often described as the ways teams work together cooperatively and efficiently, or what “drives the engine for collaborative relationships among individuals with different personalities, areas of expertise, and responsibilities” (Hanft & Shepherd, 2008, pp. 3-4).

Teamwork is often used interchangeably with the term *collaboration*, while at other times, collaboration is considered to be one factor of effective teamwork (Rao & Suryaprakasam, 2004). Overall, the literature is less clear with the term *collaboration* as it is used in many different ways. Collaboration can incorporate elements of teamwork, in that it involves individuals working together toward a common goal (Rainforth & York-Barr, 1997). However, it can also be used to describe co-teaching or cooperative learning (Wiggins & Damore, 2006). While many of the characteristics between teamwork and co-teaching are similar, such as scheduled meetings, communication, common vision, and development of mutual trust and respect (Tannock, 2009), teamwork and co-teaching are implemented differently to reach different goals. The term collaboration is also paired with other words (such as *interpersonal*

collaboration, collaborative teaming, collaborative teamwork, collaborative consultative, and collaborative teaching) that also alters the meaning of the term and the use of the term. For instance, Cott (1997) used the term *collaborative team* to refer to a type of team that is considered a higher functioning or ideal team, where others refer to it as a group of people working together to support the education of students (Rainforth & York-Barr, 1997; Thousand & Villa, 2000). For clarity, the term teamwork will be used rather than collaboration, although the collaboration literature related to teamwork will be used.

Knowledge and Skills

LEND training emphasizes the development of knowledge and skills about neurodevelopmental and related disabilities, interdisciplinary team skills, and the family. LEND training programs are framed by MCH Leadership Competencies (Appendix A). The MCH Leadership Competencies outline the critical knowledge and skill areas necessary for all MCH leadership training programs (MCH, 2009). The competencies are conceptualized in three circles representing the developmental progression of leadership (Figure 2; MCH, 2009). The inner circle is focused on the development of the *self*. Critical knowledge and skills relates to knowledge of MCH, ethics and professionalism, self reflection, and critical thinking. The next developmental progression is to *others*, in which the knowledge and skill development can be used to influence the behavior and attitudes of coworkers and colleagues. The final circle is the extension of the leadership to the *wider community*, in which the leader impacts organizations, systems, and practice through policy and advocacy.

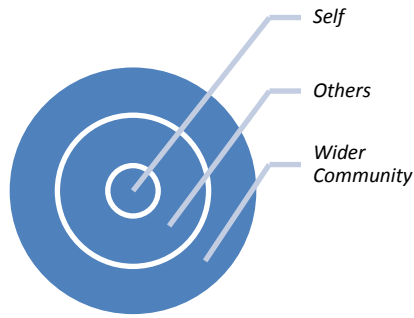


Figure 2. MCH Developmental Progression of Leadership (MCH, 2009).

The core principle of the second circle (Others) is interdisciplinary teamwork. The competencies in this area are the knowledge and skills necessary for effective interdisciplinary teamwork, specifically communication, negotiation and conflict resolution, cultural competency, family-centered care, and interdisciplinary team building (Appendix D). These competencies are supported by other professional organizations, including CEC and the IOM, and research studies as essential components for interdisciplinary teamwork (CEC, 2009; Fleming & Monda-Amaya, 2001; Greiner & Knebel, 2003; Rao & Suryaprakasam, 2004) and formed the basis for this study's evaluation of interdisciplinary teamwork knowledge and skills.

Chapter 2

Review of Literature

Legal mandates, professional competencies, and empirical support for interdisciplinary teamwork in practice have prompted professional preparation programs to increasingly incorporate teamwork education into their curricula. The fields of business and management led this movement, studying teamwork pedagogy within their professional programs. Their knowledge of teamwork provides a foundation for understanding interdisciplinary teamwork preparation for professionals working with children with special health care needs. This chapter will begin with an overview of the business pedagogy, followed by an examination of research on interdisciplinary teamwork pedagogy in the health care and education fields. The systematic review of the literature will be presented using the HPL framework (National Research Council, 2000) as an organizing structure to the literature review.

Systematic Review Guidelines

The literature search covered two main areas – business education pedagogy and health care/education pedagogy. Information on business education pedagogy was gathered by searching two databases: ABI/Inform Complete and Business Source Complete. ABI/Inform Complete was searched using the terms *team*, *teamwork*, and *education*. Business Source Complete was searched using the subject terms *teams* and *business education*.

Health care and education pedagogy was gathered by searching the following electronic databases: ERIC, Education Research Complete, PsychINFO, and CINAHL using combinations of the following search terms: *team*, *teamwork*, *collaboration*, *interdisciplinary*, *multidisciplinary*, *transdisciplinary*, *interprofessional* and *education*. Additionally the core

content standards of three professional organizations, the Institute of Medicine, the Council of Exceptional Children, and Maternal and Child Health, were also reviewed.

Overview of Related Areas

Business education introduced teamwork principles in professional programs based on employers' concerns that new graduates lacked teamwork skills (Markulis, Jassawalla, & Sashittal, 2006; Stone & Bailey, 2007). When business schools dramatically increased the use of student teams in coursework, group project assignments alone did not result in teamwork skill development (Barker & Franzak, 1997), so increased focus on teamwork pedagogy examined team based learning, pedagogical tools for student teams, and course efficacy in teamwork skill development (Ashraf, 2004; McKendall, 2000; Page & Donelan, 2003; Young & Henquinet, 2000). For example, frequent peer feedback reduces social loafing (Joyce, 1999) and improves student attitudes about group projects (Brooks & Ammons, 2003). Peer evaluations completed outside of class were more critical of students; however, they were more thorough and detailed in response to open-ended questions (Dommeyer, 2006). Markulis et al. (2006) found that students who emerge as team leaders in group projects are least effective, while instructor designated leaders are most effective in ensuring equal participation, frequent communication, and goal achievement. Stone and Bailey (2007) found that team experiences and team member support positively affected team conflict self-efficacy, which then affected career and current team outcome expectancy.

In a comprehensive review, Hansen (2006) examined the benefits and problems in business schools' team pedagogy. Despite common problems (lack of preparation, scheduling issues, grading schemes), students reported positive experiences with group projects. Effective

teaching methods included emphasizing teamwork importance, teaching team process skills, conducting team-building exercises, specifying team membership, clearly defining meaningful team projects, assigning roles, providing class time for team meetings, giving periodic feedback, promoting student documentation of individual contributions, and using peer evaluations.

Examination of Interdisciplinary Teamwork Pedagogy

The HPL pedagogical framework (National Research Council, 2000) helped to provide the organizational structure needed to examine the interdisciplinary teamwork skills and knowledge that personnel need for practice. The HPL framework establishes principles for designing effective learning environments that are based on cognitive science and applied to educational practice. HPL learning environments consist of four overlapping lenses, learner centered, knowledge centered, assessment centered, and community centered, that guide learning. Research has been reviewed and organized on the basis of these learning environments.

Learner Centered Environment

A learner centered environment uses learners' capabilities as a starting point for learning, and focuses on learners' prior experiences, preconceptions, current knowledge, skills, attitudes, and cultural perspectives (National Research Council, 2000). A learner centered environment is designed to use this information to introduce concepts and as a means to convey subject matter. A review of the literature revealed two important areas to consider when examining a learner centered environment related to interdisciplinary teamwork: systemic factors and pedagogical practices.

Systemic Determinants

Oandasan et al. (2004) identify systemic factors as one critical determinant to consider in collaborative work. Systemic factors are conditions outside the organization that influence interprofessional collaboration and include the social, cultural, professional and educational systems. These components impact collaboration and align with the important components in a learner centered environment (National Research Council, 2000).

The social system. Oandasan et al. (2004) identified power inequality as one of the main social factors affecting collaborative practice. Sources of power inequality stem from gender stereotypes and disparity in power status between different professional roles. Age and experience are not factors (Lerner, Magrane, & Friedman, 2009). Research has highlighted the power disparity between nurses and physicians and its negative impact on collaboration and collaborative relationships (Martin-Rodriquez, Beaulieu, D'Amour, & Ferrada-Videla, 2005). The complexities of power inequity are also seen between administration and faculty in education (Del Favero, 2004; Friend & Cook, 2010; Hammersley-Fletcher & Brundrett, 2008).

Perceptions of power inequity are one barrier to interprofessional, collaborative programs. In their review of literature, Lerner et al. (2009) highlighted the significantly lower scores of medicine faculties' perceptions of interprofessional education than nursing faculty. Similarly, female faculty and those with previous experiences with interprofessional education reported more positive attitudes.

The cultural system. Cultures hold values that may support or hinder collaboration. Some cultures are viewed to support more individualistic values of autonomy and specialization, which are counter to the values that support collaborative practice (Martin-Rodriquez et al.,

2005). These differences have been seen to impact perspectives of collaboration between physicians and nurses (Hojat et al., 2001) as well as within college students (Kobayashi, Kerbo, & Sharp, 2010). Researchers have also examined how individualistic or collectivist societies view and respond to disability (Meyer, 2010).

The professional system. The professional system is characterized by specialization and immersion in one's own professional values, philosophies, theories, and skills (Martin-Rodriquez et al., 2005). While specialization allows for in-depth exploration in assessment and treatment practices in specific areas, it promotes a singular, individualistic perspective which is disparate from the values and development of collaborative practice. The impact of professionalism, role demarcation, and role ambiguity is commonly discussed in professional literature as primary sources of conflict (Friend & Cook, 2010; Garner & Orelove, 1994).

Empirical studies report the impact of professionalism on teamwork. Professionals may equate collaborative practices with potential job elimination (Plash & Piotrowski, 2007) or lack of professional autonomy or trust (Hines, 2008; Scruggs, Mastropieri, & McDuffie, 2007). Professional training and practice can impact collaborative teaming. Hinojosa et al. (2001) found differences between therapists who were professionally immersed in the medical model and educators who were immersed in the social-emotional model. Their different professional perspectives and resultant practices resulted in a lack of inclusive services, equality in team member roles, inclusion of the family, and cooperative teaming.

The educational system. The educational system is one of the primary determinants for influencing interdisciplinary teamwork practice. Educational programs socialize future professionals into their professional roles, which includes training in their roles, skills, values,

and theoretical perspectives. Traditionally, professionals are trained within their respective programs with little to no interdisciplinary opportunities or practice. In one study, Mellin and Winton (2003) found that only 7% of faculty time was spent on interdisciplinary preservice teaching and that collaboration is not a part of instructional strategies used in preservice education. This is confirmed in other studies, as a nationally representative survey on personnel preparation in special education found that only 53% of special education teachers and 29% of general education teachers received content in their preservice training on collaboration (Carlson, Brauen, Klein, Schroll, & Willig, 2002). Health professionals face similar educational challenges, as fewer than 15% of nursing and medical schools have interprofessional programs (Greiner & Knebel, 2003) despite support for interprofessional programs from professional organizations, foundations, and government agencies over the last 50 years.

The availability of interdisciplinary programs is very limited due to the barriers to interdisciplinary education. Physical barriers are great, as professional programs are spread out across different campuses, thereby limiting interprofessional learning (Hall & Weaver, 2001; Holley, 2009). Additionally, researchers' recommendations regarding when interdisciplinary education should occur within a program are conflicting. Several studies suggest that interdisciplinary education should occur early within a program to prevent stereotypes from emerging (Cooper, Carlisle, Gibbs, & Watkins, 2001; Greiner & Knebel, 2003; Hall & Weaver, 2001). Others suggest that students must be strong in their own discipline; therefore, interdisciplinary and teamwork education should occur when students are seniors or postgraduates (Greiner & Knebel, 2003; Hall & Weaver, 2001; Lerner et al., 2009; Oandasan et al., 2004). Further, faculty need to be prepared to use different teaching methods, along with

being prepared for the new knowledge, attitudes, and skills of different disciplines to teach in an interdisciplinary environment (Hall & Weaver, 2001; Holley, 2009). Finally, system issues include the need for institutional support, since there are separate measures and rewards related to tenure, promotion, and time for interprofessional endeavors (Holley, 2009).

Researchers report a need for an education system that supports interprofessional, collaborative practice (Greiner & Knebel, 2003, Hall & Weaver, 2001; Oandasan et al., 2004). Researchers have noted that personnel trained in an interdisciplinary program were more likely to provide interdisciplinary, collaborative services (Chen, Klein, & Minor, 2009; Crais et al., 2004). Improved patient outcomes and professional perceptions result from interprofessional training, regardless of whether the training occurred through deliberate interprofessional focus, interprofessional modules as part of independent professional programs, a separate interprofessional course, or clinical placements (Cook, 2005). Researchers have found variations in training between different disciplines (Crais et al., 2004) and in the level of preparedness of different disciplines, particularly in the area of teaming (Bruder & Dunst, 2005). This common knowledge base is critical because of its influence on later practice. Evaluations of interdisciplinary personnel preparation programs found that graduates reported frequent opportunities in practice to use teamwork skills and confidence in their abilities to communicate and collaborate with families and other professionals due to their interdisciplinary training (Crais et al., 2003).

Pedagogical Practices

Identifying and accounting for the systemic determinants is one factor in developing a learner centered environment. Next, programs need to use specific pedagogical practices to

address the learners' needs and differences. The literature highlights three specific pedagogical practices to build a learner centered environment in an interdisciplinary teamwork program: accounting for the needs of interdisciplinary learners, creating relevant learning experiences, and addressing student preconceptions of teamwork and other professions.

Interdisciplinary participants. Interdisciplinary education adds additional components to consider for creating a learner centered environment. Interdisciplinary programs may incorporate professionals at different points in their program or career, with different understandings of their own and others' professional roles, experiences, training, and preconceptions (Chakroborti, Boonyasai, Wright, & Kern, 2008). For instance, special education teachers may be teaching in the classroom while working on their preservice education; physicians might be working on their residency; and therapists may have only a few field hours of hands-on experience.

Oandasan and Reeves (2005) reviewed the literature on the use of contact hypothesis as a means to increase positive attitudes between different groups or professionals. Contact hypothesis involves the creation of a non-threatening learning environment so that "poor attitudes held by members of different...groups can be improved through positive contact" (p. 25). Important conditions for successful contact hypothesis include the development of a cooperative atmosphere rooted in positive expectations, understanding of differences and similarities, openness, and equality. Reflection is another tool used to examine interdisciplinary perspectives. Oandasan and Reeves (2005) report that individual and group reflective exercises may help students develop "an appreciation and understanding of each other's roles, their unique

backgrounds and the professional perspectives on clinical decision making that ensures each profession is distinctive” (p. 26).

Relevant learning experiences. Research stresses that learners need to be provided with relevant learning experiences that they can connect to future work (National Research Council, 2000; Oandasan & Reeves, 2005). Oandasan and Reeves (2005) recommend incorporating professional accreditation standards and competencies related to teamwork and collaboration into educational objectives and curriculum development. Multiple researchers recommend providing opportunities to assert the importance of teamwork in work practice (Hansen, 2006; Oandasan & Reeves, 2005; Pfaff & Huddleston, 2003). Instructors can invite employers or former graduates to guest lecture on the importance of teams in their jobs, bring in professional leaders from different professional groups, review job postings for teamwork related job skills, and review research on teams within their professional practice areas, as strategies to link teamwork content to professional expectations.

Student preconceptions. A final learner centered pedagogical practice is to address students’ preconceptions about teams as well as their preconceptions about other professionals’ roles and skills. Students are highly likely to have preconceptions about teams since most people have been on teams previously, such as sports teams, academic teams, learning teams, or care teams. This may lead to preconceptions that teamwork is easy or difficult. Many of the concepts discussed in teamwork preparation courses are ideas that are already familiar to students, such as communication, problem solving, and decision making; however, students may not realize the knowledge, skills, and attitudes that are needed for effective teamwork. These preconceptions are important to address in teamwork preparation for professionals. Without this, deeper levels of

understanding will be more difficult for the learners as they will assimilate what is being taught with their preexisting preconceptions (National Research Council, 2000).

Hammerness et al. (2005) recommend the use of carefully constructed cases to help address preconceptions. Another method is to explore and make explicit the unexamined assumptions that the learners have and bring to their learning about teamwork. This could be done through a combination of methods using case analysis, self assessment questionnaires, and discussions. Additionally learners need to be made explicitly aware of their prior knowledge, beliefs and experiences. As stated by Hammerness et al. (2005):

A great deal of research establishes that individuals process and understand new information based on their experiences and prior knowledge and beliefs, and that they will often fail to remember, understand, or apply ideas that have no connections to their experience (p. 369).

Additionally, research supports that it takes time to change preconceptions (Hammerness et al., 2005; Oandasan & Reeves, 2005).

Reflection is another strategy used to help students understand their own preconceptions and attitudes as well as other professionals' roles, background and professional perspectives (Gallagher, Vail, & Monda-Amaya, 2008; Oandasan & Reeves, 2005). Students should be encouraged to reflect during and after professional learning opportunities. Gallagher et al. (2008) discuss the use of individual reflective journal writing as a means of analyzing student reflections about practice. Griffin, Jones, and Kilgore (2006) found that reflective assignments (such as analysis of professionals' roles, meeting summaries, and recording of contributions and problems

encountered during collaboration) helped increase students' awareness of facilitators and obstacles to collaboration.

Knowledge Centered Environments

For learners to acquire necessary knowledge and skills, the learning environment needs to have a strongly defined content focus that is well organized in its subject matter and its structure (disciplinary knowledge). Additionally the learning environment needs to be guided by knowledge of how to teach and promote the learning of that content (pedagogical content knowledge; National Research Council, 2000). Research was reviewed and analyzed on the basis of these two areas.

Disciplinary Knowledge

The knowledge centered lens of the HPL framework focuses on the critical elements that should be taught, with an understanding of its relevance. While there is abundant literature on the important components of teamwork and what elements professionals need to know to be prepared for practice, the overall knowledge base of teamwork is not well organized or well researched, and lacks consensus about the core content. The literature on interdisciplinary teamwork comes from an array of literature from different disciplines, including business (Hansen, 2006), organizational behavior (Forsyth, 2006), education (CEC, 2009; Friend & Cook, 2010; Snell & Janney, 2005), and health care (Greiner & Knebel. 2003; Hall & Weaver, 2001; Oandasan et al., 2004). While the information from all of these fields was considered, full exploration of definitions and content was based on fields related to children with special health care needs, specifically education and health care, due to the context specific nature of teamwork (Xyrichis & Ream, 2008). Literature related to definitions of interdisciplinary teamwork will first

be reviewed as the content focus needs to be clearly defined before consideration of the content knowledge for learning (Oandasan & Reeves, 2005). Next relevant teamwork objectives and content will be examined.

Interdisciplinary teamwork definitions. There is abundant literature on the concept of interdisciplinary teamwork; however, these terms are not consistently used across the literature. While this study is examining these terms together, each word will be examined individually, as there is not consistent use of the term interdisciplinary and teamwork.

Interdisciplinary/interprofessional. The literature search yielded an array of terms used to define the concept of two or more professionals working together. Education literature tends to use the term interdisciplinary to denote multiple providers with distinct training and from different disciplines (Bruder & Dunst, 2005; Chen et al., 2009; Crais et al., 2004; Hains et al., 2005). However, the use of this term needs to be considered carefully, as it sometimes refers to different fields (i.e., disciplines) of education, for example the math field and the history field. The term transdisciplinary is also used to qualitatively describe a level of team that is “collaborative and include[s] members of multiple disciplines” (Snell & Janney, 2005, p. 8), that use an interrelated and coordinated approach to meeting student needs.

The medical and health care fields often use the term multidisciplinary to refer to teams composed of different disciplines or professionals (Cott, 1997; Sehgal et al., 2008); however, interdisciplinary is also used within the health care field (Hinojosa et al., 2001; Howe, Hyer, Mellor, Lindeman, & Luptak, 2001). Like the education field, the term interdisciplinary can refer to fields within a specific profession, such as physiology and neurology in medicine. To

complicate matters further, the term interprofessional has been introduced predominantly in the health care field to denote work teams with more than one discipline (McCallin, 2001).

It should be noted that the terms multidisciplinary, interdisciplinary, and transdisciplinary are also used to define working relationships and the degree of interaction among team members of different disciplines, rather than the composition of the teams themselves (Friend & Cook, 2010; Hall & Weaver, 2001; Lerner et al., 2009). Multidisciplinary teams are composed of professionals from different disciplines, who function independently of each other. Each professional completes his/her own assessment, works towards individual treatment goals, and conducts treatment independently. Information is not consistently shared. Interdisciplinary teams also include professionals from different disciplines, but information and services are coordinated. Assessments and interventions might be completed independently; however, information is shared and coordinated to help prevent duplication of services or treatment gaps. Transdisciplinary teams include multiple professionals performing all aspects of assessment and treatment interactively.

Definition of teamwork/collaboration. The literature search yielded a wide variety of definitions for teamwork and collaboration, even when limited to the education and health care literature (Appendix E). One of the foremost definitions of teams, across the business, healthcare, and education fields, is from Katzenbach and Smith (2003), who define team as a “small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable” (p. 45).

Teamwork is often described as the way teams work together cooperatively and efficiently, or what “drives the engine for collaborative relationships among individuals with

different personalities, areas of expertise, and responsibilities” (Hanft & Shepherd, 2008, pp. 3-4). The term teamwork is used in the core competencies of the IOM and MCH. The IOM defines interdisciplinary teamwork as the ability to “cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable” (Greiner & Knebel, 2003, p. 45). MCH leadership competencies (2009) define interdisciplinary teamwork within the scope of working with others, to include competencies related to communication, negotiation, conflict resolution, cultural consideration, family-centered care, and interdisciplinary team building (Appendix A).

Teamwork is often used interchangeably with the term collaboration, while at other times, collaboration is considered to be one factor of effective teamwork (Rao & Suryaprakasam, 2004). Overall, the literature is less clear with the term collaboration, as it is used in many different ways, from teamwork, to coordination, to co-teaching and collaborative learning. CEC’s professional standards (2009) identify collaboration as one of its core competencies (Appendix B). CEC defines collaboration as the routine and effective interaction with “families, other educators, related service providers and personnel from community agencies in culturally responsive ways” (CEC, 2009, p. 28). The CEC description of collaboration also includes advocating for and acting as a resource to others.

Learning objectives. A review of the literature on interdisciplinary teamwork content included examination of standards and competencies for collaborative practice, interprofessional education, and teamwork. Literature was reviewed in education and health care, along with related professional competencies of the MCH, CEC, and IOM (Appendices D, F, and G). Three

main content areas emerged: knowledge of professional roles and competencies, group skills, and working with others.

Knowledge of professional roles and competencies. Knowledge of one's own professional roles, skills, and competencies, as well as knowledge of others' roles and competencies, was a central learning objective across interprofessional education and interdisciplinary teamwork literature (Barr, 1998; CEC, 2009; D'Amour, Ferrada Videla, San Martin Rodriguez, & Beaulieu, 2005; Greiner & Knebel, 2003; Hall & Weaver, 2001; MCH, 2009). This knowledge includes understanding of team members' educational training, background, scope of practice, and values, as well as the roles and competencies of individual disciplines (Greiner & Knebel, 2003; MCH, 2009). Knowledge and understanding of roles was viewed as essential because struggles which occur within interdisciplinary teams are often due to failure to understand one another or take advantage of the knowledge and skills of others (Orelove & Garner, 1998). Skills related to this competency include identifying and assembling appropriate team members and negotiating roles and responsibilities (Hall & Weaver, 2001; MCH, 2009). Attitudes to support this knowledge include openness to learning about other professions, mutual respect and trust in team members, recognizing the constraints of one's roles and responsibilities, tolerating differences and misunderstandings with other professions, and entering into interdependent relationships with other professions (Barr, 1998; Burke, Herrman, Evans, Cockram, & Trauer, 2000; Hall & Weaver, 2001; MCH, 2009).

Group process skills. The second essential element for interdisciplinary teamwork content is the development of group process skills. Effective communication, conflict resolution, negotiation, creation of shared team goals, values, problem solving, and decision making are

essential group process components for effective team performance (CEC, 2009; D'Amour et al., 2004; Greiner & Knebel, 2003; MCH, 2009). Communication involves communicating clearly, while accounting for differences in culture, ethnicity, economic class, language, professional philosophies, and professional language (Burke et al., 2000; Greiner & Knebel, 2003; MCH, 2009). Team members need to be able to express viewpoints openly, even when perspectives differ (Burke et al., 2000; CEC, 2009; Fleming & Monda-Amaya, 2001; Greiner & Knebel, 2003). When differences are present, team members need to have the knowledge of conflict resolution strategies and negotiation skills to positively effect change (Barr, 1998; Greiner & Knebel, 2003). Content on group process includes knowledge of the stages of team development (most notably forming, storming, norming, and performing; MCH, 2009; Tuckman, 1965) and team practice models (e.g., multidisciplinary, interdisciplinary, and transdisciplinary; Hall & Weaver, 2001; MCH, 2009). Group process skills include team development of shared vision, goals, roles, and responsibilities, facilitating team decision making and group problem solving, and assessing group dynamics (Burke et al., 2000; CEC, 2009; Fleming & Monda-Amaya, 2001; MCH, 2009).

Working with others. The final content objective for interdisciplinary teamwork is working with others to provide care. This involves working with others to customize, coordinate and integrate a variety of care processes from assessment through treatment and discharge (Barr, 1998; Burke et al., 2000; Greiner & Knebel, 2003). It involves the development of attitudes that value and honor diverse perspectives. Fostering respectful and beneficial relationships between families and professionals is an important skill (CEC, 2009; D'Amour et al., 2004).

Pedagogical Content Knowledge

Knowing what to teach is one step towards effective learning; however, knowing how to teach is just as important. The interprofessional nature of teamwork calls for careful examination of pedagogy. Examination of pedagogy for interdisciplinary teamwork is relatively new within the health care and education fields; therefore, the literature in the business field was searched as well. Through the review of research, several instructional principles are consistently recommended to guide pedagogical practice: 1) focus on learning for deep understanding; 2) promote metacognitive strategies; and 3) facilitate active learning through the use of non-traditional teaching models and strategies.

Learning for deep understanding. The first principle is one of the central HPL learning principles (National Research Council, 2000). The importance of learning for understanding and enactment refers to the challenge that learners face with not just knowing and understanding, but with application of learning in relevant situations. Learners need not only to have a strong grasp of the knowledge, but also an understanding of the conceptual framework and organizational structure of the knowledge in order to apply it to practice. Various studies conclude that teaching for action involves knowledge and skills that cannot be passed down and merely memorized (Hammerness et al., 2005; National Research Council, 2000). This concept is supported in teamwork research, as a “learning by doing” approach in teams resulted in greater comprehension and retention of information, higher motivation, and stronger team process skills (such as communication and interpersonal skills; Hansen, 2006).

Researchers suggest several methods to support the development of students’ understanding and enactment of teamwork skills. First, researchers have found that

preconceptions about teamwork (learners' attitudes toward teamwork and their ability to relate it to real-world situations) are positively related toward teamwork and team effectiveness (Hansen, 2006; Oandasan & Reeves, 2005). Students need to explicitly examine these preconceptions. Next, team experiences need to be grounded in real-world experiences that relate the knowledge and skills to practice (Oandasan & Reeves, 2005). This can be done through discussions of the value of teamwork and through providing opportunities for students to learn from experts about the importance of teams in their fields (Hansen, 2006; Williams, 1992). Real life contexts or experiences have been shown to be most effective for team learning (Cook, 2005). Real life contexts can include formal opportunities for clinical practice and service learning (Oandasan & Reeves, 2005). Learning experiences should also be informal as well, allowing time for interaction between team members and different professionals to exchange knowledge (Hall & Weaver, 2001; Oandasan & Reeves, 2005).

Researchers have also found that a learning method that allows for reflection promotes further learning (Hammerness et al., 2005). Teamwork research suggests that students need to have the knowledge and skills to ground teamwork (such as understanding the process of team development), but also balance that with enactment of skills, through conducting team building exercises, completion of team projects, and assignment of specific team roles (Hall & Weaver, 2001; Hansen, 2006). Selle, Salamon, Boarman, and Sauer (2008) examined whether students learned interprofessional teaming more effectively from the addition of faculty models of interprofessional teamwork, as opposed to discussion of research and role-playing alone. Results suggested that students benefited from discussions and role playing; however, students who experienced the modeling showed more significant improvements.

Another effective method to support students understanding and use of teamwork is “case based” or “problem based” instruction. Williams (1992) documented the effectiveness of case based and problem based instruction in the legal and medical fields. In addition, use of videos, case stories, and embedded data helped novices understand the cases and increased their motivation. Cases should be sequenced according to difficulty and diversity to support the changing needs of the learner and to build into real, authentic scenarios (D’Eon, 2005; Williams, 1992). The problem based instruction approach aligns with student teaming literature that supports a team project that is meaningful and relevant, with clear parameters and expected outcomes (Hansen, 2006).

Research supports that instructors that encourage learning for deep understanding are able to prioritize knowledge, organize it into categories based on the fundamental principles, and clearly relay this knowledge to others (Darling-Hammond & Bransford, 2005). Clark (2006) relays the particular importance of having a theory to guide interprofessional education because people tend to see the world in their own way, whereas in interprofessional practice, professionals need “to be able to see the world through the eyes of other professions, to be able to frame the patient’s problem and potential solutions to it in the terms of understanding of other kinds of health care providers” (p. 578). Theories can guide instructional practice through identifying major concepts in courses, specifying learning objectives, and determining instructional practices and assessment of outcomes (Clark, 2006). Different theoretical approaches have been explored to guide interprofessional education, including experiential learning, collaborative learning, the reflective practitioner, adult learning theory, and contact hypothesis (Clark, 2006; Rodger & Hofman, 2010).

The importance of metacognition in a complex environment. The next principle, using a metacognitive approach for learning, is another of the central HPL learning principles. Metacognition is “the ability to monitor one’s current level of understanding and decide when it is not adequate” (National Research Council, 2000, p. 47). The ability to recognize one’s current level of knowledge, identify and rectify gaps in that knowledge is an important skill for all learners. It is a particularly important concept related to adaptive expertise, because adaptive experts approach new situations flexibly and remain open to learning throughout their lifetime. “They not only use what they have learned, they are metacognitive and continually question their current levels of expertise and attempt to move beyond them” (National Research Council, 2000, p. 48).

Research supports the premise that helping learners become more active monitors of their learning facilitates their performance (Hammerness et al., 2005). A first step in developing metacognition is to make learning explicit through “an orientation or introduction during which time the students are told plainly and clearly what they will be learning, how and why” (D’Eon, 2005, p. 50). Next, reflection upon learning goals, experiences, and changes in skill is one way to help learners develop metacognition. The use of reflective experiences and analytic questions prompts the inquiry necessary to develop this skill. Gallagher et al. (2008) used journal entries as an assignment during a collaboration course to reveal students’ perceptions of their collaborative interactions with colleagues. Another method is providing learners with opportunities to monitor their learning through the use of reflections following team experiences or activities, or the completion of self assessments and/or team assessments (such as the Team Profile by Olson & Murphy, 1999). Teamwork research indicates that multiple points of feedback about team

performance are helpful to allow reflection on team member's contributions and periodic feedback of goals and achievements (Hansen, 2006).

Metacognition is important not only at the individual level, but also at the team level (McCarthy & Garavan, 2008). Team metacognition influences the team in terms of consistent focus on team goals and collective decision making. McCarthy and Garavan (2008) developed a model of team metacognition that incorporates the steps of the team 1) learning and generating the new knowledge; 2) diffusing the information across the entire team; 3) integrating the new knowledge into team routines and structures and 4) taking action based on their decisions. Reflection is highlighted as an important component in developing team metacognition. Exercises and activities aimed at increasing awareness of team behavior styles and preferences is an important component to facilitate team metacognition and has been shown to increase levels of team performance (McCarthy & Garavan, 2008). Team composition should also be explored as higher levels of diversity in teams can increase the learning process within teams. This is particularly relevant to interdisciplinary teams, based on their inherent diversity, which provides opportunities to learn how to manage and communicate with diverse members.

Teaching models. The third pedagogical principle for interdisciplinary teamwork is the use of teaching models and strategies that facilitate active learning. The literature on interprofessional learning and teamwork pedagogy highlights the use of non-traditional teaching methods (such as cooperative learning, experiential learning, problem-based learning, case-based learning, and team-based learning), as opposed to traditional, lecture-style teaching that emphasizes rote memorization (D'Eon, 2005; Lerner et al., 2009; Oandasan & Reeves, 2005; Selle et al., 2008). These learning models, which shift the focus to the learner, have been

effective in promoting teamwork skills (D'Eon, 2005; Rassuli & Manzer, 2005). While differences exist in the exact strategies, these different teaching models have many similarities. Students are active learners and problem solvers in team-based collaborative learning, while the instructors act as facilitators (Hansen, 2006; Joyce, 1999). Learning begins with the presentation of “complex, real world problems...used to motivate students to identify and research the concepts and principles they need to know to work through these problems” (Hansen, 2006, p. 222). Students work in teams to research, solve problems, and integrate information.

Barriers to team learning are well-documented, including concerns about student motivation, student “free-riding”, team grades, poorly structured projects, and inadequate preparation for group work (Ashraf, 2004; Brooks & Ammons, 2003, Joyce, 1999). Despite these barriers, active learning promotes knowledge acquisition as well as social skill development necessary for teamwork and group processing (D'Eon, 2005). While these teaching methods are increasingly incorporated into professional preparation programs, it remains unclear how these methods are being implemented and how faculty are being prepared to use these models (Chakraborti et al., 2008; Greiner & Knebel, 2003).

Assessment Centered Learning Environment

Assessment centered learning environments provide learners with feedback about their learning to encourage them to reflect and extend their learning. Assessment needs to be consistent with learning objectives (Young & Henquinet, 2000), and needs to use both formative and summative methods. There has been little research on these assessment methods in the health care and education fields (Oandasan et al., 2004); therefore the review of literature is drawn primarily from business education literature.

Formative Assessment

Formative assessment “involves the use of assessments (usually administered in the context of the classroom) as sources of feedback to improve teaching and learning” (National Research Council, 2000, p. 140). Researchers recommend that teamwork courses include multiple points of feedback (Hansen, 2006; McCarthy & Garavan, 2008; Snyder, 2009; Young & Henquinet, 2000). The overall goal of formative assessment in teamwork is to help teams avoid blaming and to promote problem solving, as this has been shown to promote higher levels of team learning (McCarthy & Garavan, 2008). Peer evaluations are one type of feedback mechanism suggested for teamwork courses (Hansen, 2006; Pfaff & Huddleston, 2003; Young & Henquinet, 2000). Peer evaluations can occur between members of the same team or between members of the entire class. Peer feedback within teams can prevent social loafing and promote even distribution and active discussions within teams (Brooks & Ammons, 2003; Hansen, 2006; Pfaff & Huddleston, 2003). Class feedback provides immediate feedback opportunities and promotes student involvement and leadership (Young & Henquinet, 2000). Not only do peer evaluations increase the quality of team work (Dommeyer, 2006), but higher satisfaction ratings are reported by students when peer evaluation is used (Pfaff & Huddleston, 2003). It appears that peer evaluations provide students with a stronger sense of control and empowerment since their voices and opinions count (Pfaff & Huddleston, 2003).

Another type of formative assessment is periodic reports from teams, in which they list their goals, achievements, and revised work plans (Hansen, 2006). This method allows students to periodically assess their team’s productivity and performance, while also allowing the instructor to determine if further instruction and intervention is needed. Requiring students to

keep an individual contribution file is another means of formative assessment suggested in the literature (Hansen, 2006). This alleviates barriers to teamwork, such as work imbalance within teams or social loafing, as instructors can identify these issues early and help struggling students and teams with work behavior and other teamwork issues.

Gallagher et al. (2008) used reflective journaling in their course to analyze students' perceptions, but also as a way to gauge students' needs. As a result of journal analysis, the course instructor consistently modified course content; for example, the instructor provided more content on communication (due to the number of journal entries related to effective and ineffective communication) and collaboration with paraprofessionals. Feedback and self reflection is another means used to help students reflect and revise their performance (Snyder, 2009). Specific questions recommended to help students self-reflect on their performance include:

1. How much information, analysis, and interpretation did I provide to the team?
2. Did I communicate my ideas even if they conflicted with someone else's?
3. Did I participate in the implementation of a timeline? Did I meet deadlines?
4. Did I facilitate the decision-making process? Or did I just go with the flow?

(Snyder, 2009, p. 77-78).

Formative assessment can also include evaluation of process components such as quality and quantity measurements of group participation, meeting preparation, and interpersonal skills (Young & Henquinet, 2000). While this type of evaluation is usually completed by the instructor, it can also be completed by peers or external observers, such as consultants or experts in the field.

Summative Assessment

Summative assessment “measures what students have learned at the end of some set of learning activities” (National Research Council, 2000, p. 140). Evaluation measures used to assess the knowledge, skills, and attitudes in interprofessional teamwork training are predominantly self-report measures (Chakroborti et al., 2008; Thannhauser, Russell-Mayhew, & Scott, 2010). Chakroborti et al. (2008) found that none of the knowledge assessments used to measure teamwork training in medical student education had been studied for validity or reliability. Skill measures are more frequently used to measure change (Chakroborti et al., 2008). The following instruments have been shown to be valid and reliable and have been used to measure teamwork skills with medical and education students: Rochester Communication Rating Scale (Epstein et al., 2004), Team Skills Scale (Fulmer et al., 2005), ALERT questionnaire (Feathersone, Smith, Linnell, Easton, & Osgood, 2005), Team Development Wheel (Hope et al., 2005), Team Dimensions Rating form (Shapiro et al., 2004), and the Team Climate Inventory Scale (Anderson & West, 1994; Xyrichis & Ream, 2008). In a separate review of measures of interprofessional education and collaboration, Thannhauser et al. (2010) identified six formal measures that are developing their psychometric properties: Index of Interdisciplinary Collaboration; Multidisciplinary Collaboration instrument; Interprofessional Perceptions Scale; Role Perceptions Questionnaire; University of Western England Interprofessional Questionnaire; and Modified Index of Interdisciplinary Collaboration. Additionally they identified two scales that are most commonly used and psychometrically valid: the Readiness for Interprofessional Learning Scale and the Interdisciplinary Education Perception Scale. Lerner et al. (2009)

recommend that ratings of team skills should be linked to clinical team performance; however there is little research to show this transfer of skills.

Summative assessment evaluates a product, or “final outcome/output, including project proposals, written papers, and oral presentations” (Young & Henquinet, 2000, p. 57). Like formative assessment, summative assessments are usually conducted by instructors; however, peer review, external evaluation, and self-evaluations can be used.

Community Centered Learning Environment

A community centered learning environment establishes the norms for learning in groups. The literature on interdisciplinary teamwork is clear – in order to learn about interdisciplinary teamwork, students need to learn within interdisciplinary teams. This involves the development of a community of learning that uses non-traditional teaching methods and the development of norms to guide teams within the classroom environment. Additionally this type of learning community often needs external support.

Non-Traditional Teaching Methods

Literature on interdisciplinary teamwork pedagogy supports an active team-based learning approach using adult learning principles (Lees & Meyer, 2011). Faculty and students need to be prepared for the different learning environments, different roles, and different expectations inherent in adult learning. For instance, faculty need to facilitate learning, rather than present information as experts. Clark (2006) stresses that this is done through modeling team behavior, such as taking time for group processing and assessing teamwork. Faculty need to be supported in this new instructional style through training in the principles and skills through co-teaching (Anderson, Thorpe, & Hammick, 2011). Students need to be prepared to learn

actively and work on team projects. Snyder (2009) stresses that students need to be prepared for teamwork before they participate in team projects. Preparation could include instruction about learning style differences, effective interactions, team development, and communication. Further, students need to be guided to “recognize that the teamwork process – of dealing with communication and conflict problems, for example – is the learning experience itself, not a distraction from learning” (Clark, 2006, p. 587). Next, teams need a safe learning environment for practicing team skills. Faculty can provide safe learning environments through establishing stable student teams with little rotation and providing clear objectives and outcome expectancies for the teams. In addition, faculty and students need to be prepared for individual and group assessment methods.

Classroom Norms

The literature on group learning emphasizes several factors to consider when developing teams: class time, group balance, team size, and group stability (Hansen, 2006; Oandasan & Reeves, 2005). These factors are essential to create “a learning environment...which has the potential for participants to share tasks, which enable them to learn from one another” (Oandasan & Reeves, 2005, p. 27).

Class time. Studies indicate that class time should be used for student teams to work on assignments. Time can be used to exchange resources, discuss project timelines, and share work related to their project, but also for team formation, establishing roles and responsibilities, and enhancing team meeting skills (Hansen, 2006; Pfaff & Huddleston, 2003). Class time for teamwork prevents scheduling conflicts and improves student attitudes toward teamwork (Pfaff & Huddleston) and learning transfer (Lees & Meyer, 2011). In addition, instructors have

opportunities to monitor team issues and facilitate team formation, which enhances knowledge and skills of the learners (Oandasan & Reeves, 2005).

Team size. Studies show that team size is an important factor in successful teams. Teams with many members offer more resources, but larger teams tend to be less productive, limit active involvement by all members, split off into smaller groups, and have fewer quality interactions (Buckenmyer, 2000; Forsyth, 2006; Oandasan & Reeves, 2005; Wheelan, 2010). Smaller teams also have fewer challenges with scheduling and increased communication by all members (Snell & Janney, 2005). The literature suggests a wide range for ideal team size – from two to 25, with fewer than ten being the most effective and five to seven being optimal (Michaelsen, n.d.; Oandasan & Reeves, 2005; Snell & Janney, 2005; Wheelan, 2010).

Group balance. Teams should be balanced across a variety of different areas, with each team having its fair share of what Michaelsen (n.d.) refers to as assets and liabilities. Assets include experience, discipline knowledge, previous related coursework, and cultural perspectives. Liabilities include negative attitudes, language or cultural barriers, and limited experience or knowledge. Other characteristics need to be considered as well, including professional disciplines, gender, previous relationships between team members, or possible subgroups, which may be formed on the basis of language, culture, nationality, professional background, or gender. In order to achieve learning, instructors need to balance assets, liabilities, and characteristics. This is most successfully done through instructor-selected teams (Hansen, 2006; Michaelsen, n.d.; Siciliano, 2001). Although many learning teams are student selected, studies show that these teams are frequently “leaderless and often directionless teams that breed cynicism” (Markulis et al., 2006, p. 148). Instructor-selected teams have more stability and

equitable contributions; they are also more effective and rated more positively by students (Hansen, 2006; Markulis et al., 2006). Hansen (2006) also suggests that they are more effective in preparing students for the workplace.

Group stability. Learning teams also need to be stable, so that they have time to form and build effective teamwork. Researchers recommend learning teams should remain intact throughout the entire learning term or semester (Michaelsen, n.d.) or across professional courses (Oandasan & Reeves, 2005).

Community Support

A review of the literature on interdisciplinary teamwork education and interprofessional education demonstrates that these programs are often developed or supported through a community larger than a professional program or a university. Outside agencies, such as the U. S. Department of Health and Human Services' Agency for Healthcare Research and Quality or Canada's First Ministers of Health, promote interdisciplinary teamwork or interprofessional education (Lerner et al., 2009; Oandasan et al, 2004). Interdisciplinary education has also been supported through personnel preparation funding, such as grants through the Office of Special Education Programs, U. S. Department of Education (Chen et al., 2009; Hains et al., 2005). University Centers for Excellence in Developmental Disabilities, supported by the Developmental Disabilities Assistance and Bill of Rights Act, are university organizations that focus on developmental disabilities and emphasize an interdisciplinary approach; therefore, they are also well suited to support interdisciplinary teamwork endeavors (Kilgo & Bruder, 1997).

Developing a community to support interdisciplinary education is pertinent to the success of the program. Lees and Meyer (2011) found that learning was impacted by students who were

not comfortable or committed to the group learning process. They suggest that a community with organizational support and careful selection of learners may help prevent these problems. This concept may be extended to educators, as Anderson, Thorpe, and Hammick (2011) reported that involvement in interprofessional education can positively affect educators' attitudes towards interprofessional education, that "learning about team working and collaborative practice together was valuable" (p. 15).

Summary and Limitations of Existing Literature

The existing literature provided insight for developing learning environments that support preparation for interdisciplinary teamwork. Few empirical studies exist on interdisciplinary teamwork pedagogy in the healthcare and educational literature. Despite various efforts for clarity and uniformity about key concepts, interdisciplinary teamwork continues to be poorly defined. The literature revealed consistent recommendations about teaching methodologies and established teaching models that provide the foundation for interdisciplinary teamwork preparation. Research on the essential content elements was fairly consistent, with knowledge of professional roles and competencies, group process skills, and working with others comprising the essential knowledge and skills of interdisciplinary teamwork. There was limited research on the impact of contextual factors (such as different systems) on these elements. There was also limited description or examination of specific pedagogical practices to create effective preparation programs for interdisciplinary teamwork. Much of the literature on pedagogical practices was drawn from the business field and it is unclear how well this information transfers to the different contexts within education and health care.

There were considerable gaps in the literature about the current state of interdisciplinary teamwork preparation, particularly regarding who is currently teaching this content; who are the learners; what is the content and should all professionals working with CSHCN share the same collaborative content; what pedagogical practices are they using to support this content; and what assessment methods are they using. As summarized by Oandasan et al., 2004, “Currently, there is little in the literature to help educators understand how to facilitate interdisciplinary education in a successful manner and hence there is an urgent need for faculty development in this area” (p. xii).

Chapter 3

Methodology

The overall purpose of this study was to describe the interdisciplinary teamwork pedagogy of LEND training programs. This descriptive study was completed to contribute to the knowledge about interdisciplinary teamwork education, since there is a need for additional research to understand the complexities of personnel preparation in interdisciplinary teamwork particularly related to interdisciplinary education, teamwork competencies, terminology, and teaching processes (Greiner & Knebel, 2003; Oandasan et al, 2004; Oandasan & Reeves, 2005). This study described the content focus, instructional methods, and assessment practices of the LEND training programs. Specific research questions were:

1. What is the critical content for personnel preparation in interdisciplinary teamwork?
2. What are the knowledge and skills that are included in interdisciplinary teamwork course content?
3. What methods are used to teach and assess the acquisition of interdisciplinary teamwork knowledge and skills?

Study Design

This study used a mixed method design, incorporating survey information with qualitative data, to describe interdisciplinary teamwork preparation in LEND training programs. Survey research provided information about core content and instructional methods used in interdisciplinary teamwork training in LEND programs, while providing a detailed profile of pedagogy within LEND interdisciplinary teamwork courses. In order to obtain this information, this study used two surveys – a Training Director Survey and an Instructor Survey (Appendices H and I). A structured qualitative approach (Maxwell, 2005) was used as a follow-up to the

surveys to further describe course content, pedagogical activities, and assessment processes used by the programs. Document review of LEND websites, including program descriptions, instructional methods, assessment procedures, and course syllabi were completed.

Mitchell and Jolley (2007) recommend using a survey when the focus of the study is to learn about a group's characteristics, to complete detailed profiling of a group, or to examine a relationship between variables. For this study, surveys were determined to be the most effective research strategy to learn about interdisciplinary teamwork personnel preparation within the LEND programs (Appendix J). Specifically, surveys were used to complete a detailed profiling of what LEND programs characterize as the critical knowledge and skills for personnel preparation in interdisciplinary teamwork within LEND programs. Surveys were also used to learn the instructional methods and assessment practices used within LEND interdisciplinary teamwork training.

In addition to profiling the characteristics of LEND teamwork training, this study described the pedagogical processes of the programs. Qualitative research was determined to be the most effective research strategy to address this focus on descriptive data and concern with process (Bogdan & Biklen, 2007). The qualitative research within this study focused on describing teamwork content, the methods used to teach interdisciplinary teamwork, and the methods used to assess the acquisition of knowledge and skills (Appendix J).

Sample Selection

The focus of the study was interdisciplinary teamwork education within LEND training programs. LEND programs meet several criteria essential to this study. First, they represent a national sample, with programs in 32 states and the District of Columbia. Second, LEND training programs focus on improving services to children with special health care needs and

their families. Third, these programs are interdisciplinary. There are currently 39 LEND programs; the Training Directors of these programs comprised the target population for the first stage of the study, the Training Director Survey. Training directors and their emails were identified through the national LEND directory at

<http://www.aucd.org/directory/directory.cfm?program=LEND>.

For the second stage of the study, the proposed sample was to include instructors for interdisciplinary teamwork courses in LEND programs. Identification of LEND programs with teamwork courses, as well as recommended instructors, was determined by responses on the Training Director Survey. Specifically, programs with teamwork courses were identified through training directors' responses to the question "what format does your LEND program use to train long-term LEND trainees in the area of interdisciplinary teamwork and collaboration?" Responses of "a teamwork/collaboration course" prompted participants to recommend their course instructors for participation in the second stage of the study, the Instructor Survey. In the original proposal, the recommended course instructors were to be recruited through email (Appendices K, L, and M), requesting their participation and completion of the Instructor Survey. However, no course instructors were recommended by the training directors. To address this unexpected response, the dissertation committee discussed changes in recruitment strategies as well as changes in participants. A Change in Research submission was submitted to the VCU IRB outlining the change in participants (from instructors teaching a course on interdisciplinary teamwork to all instructors who teach interdisciplinary teamwork content) and recruitment strategies (an email to the same group of LEND training directors requesting them to forward the email with an embedded survey link to the instructor that teaches the interdisciplinary teamwork content portion of their LEND program). Therefore, instructors who teach interdisciplinary

teamwork content for LEND programs comprised the target population for the second stage of the study, the Instructor Survey.

The third stage of the study was to include course instructor interviews (Appendix N) and document review. The intention was to recruit participants from Instructor Survey respondents who were asked, “Yes, I would like to be contacted” (and be prompted to provide contact email or telephone number) or “No, I would not like to be contacted.” Two instructors responded that they were willing to be contacted, but, like the training directors, they failed to provide contact information. As a result, Phase Three was revised following committee approval to a document review of the LEND program websites.

Instrumentation

The overall purpose of this study was to describe the interdisciplinary teamwork pedagogy of LEND training programs, specifically to describe knowledge and skills that are currently being taught, instructional methods, and assessment practices. Survey and document analysis were the sources of data (Appendix J).

Surveys

Two surveys, the Training Director Survey (Appendix H) and the Instructor Survey (Appendix I), were developed for this study. The Training Director Survey was used to gather information regarding the characteristics of interdisciplinary teamwork training options and perceptions of the critical content for personnel preparation in interdisciplinary teamwork. The Instructor Survey was used to gather perceptions about critical content for personnel preparation in interdisciplinary teamwork, through identical questions from the Training Director Survey. The Instructor Survey was also designed to gain information on specific pedagogical methods for teaching and assessing interdisciplinary teamwork. Due to changes with instructor recruitment,

questions from the Training Director Survey on training in lectures, seminars, and conferences were added to the original Instructor Survey (pages 1, 2, 3, and 4 in Appendix I), as participants expanded to all instructors not just course instructors.

Survey items on the critical content for personnel preparation in interdisciplinary teamwork were derived from a review of the teamwork competencies of the Institute of Medicine (IOM; Appendix F), Maternal and Child Health (MCH; Appendix D), and Council for Exceptional Children (CEC; Appendix G). When possible, the competency was stated verbatim from the original document; however, some competencies were broken down to individual knowledge and skill items. For example, the IOM's competency "demonstrate basic group skills, including communication, negotiation, delegation, time management, and assessment of group dynamics" became three different items: "demonstrate negotiation skills," "demonstrate time management skills," and "demonstrate assessment of group dynamics." Survey items on teaching methods and assessment practices were based on the review of the literature (Chapter 2) across business, health care, and education fields.

Expert review and field testing was completed to examine the new surveys. The surveys were reviewed by several expert reviewers who were identified based on their knowledge of LEND programs and/or interdisciplinary teamwork courses. Specifically, four experts reviewed the surveys and provided feedback: Ann Cox, Fred Orelove, Donna Gilles, and Crystal Pariseau. Ann Cox, Ph.D. is currently the Project Director for the National Professional Development Center on Autism Spectrum Disorders at Frank Porter Graham Child Development Institute at the University of North Carolina at Chapel Hill. She was formerly the Associate Director at the Partnership for People with Disabilities, Virginia Commonwealth University (VCU), Virginia's University Center for Excellence in Developmental Disabilities (UCEDD). Dr. Cox also taught

the Interdisciplinary Teamwork course offered as part of VCU's LEND training program. Fred Orelove, Ph.D. is the Executive Director of the Partnership for People with Disabilities at VCU. He is also the VCU faculty member on the Virginia Consortium for Teacher Preparation in Severe Disabilities and teaches a course on teamwork for the consortium. Donna Gilles, Ed.D. is the Associate Director at the Partnership for People with Disabilities at VCU and the Training Director of VCU's VA-LEND program. Crystal Pariseau is the LEND Program Director at the Association of University Centers on Disabilities. Based on their feedback, changes were made to the Training Director survey to encompass the broad array of LEND programs in order to better evaluate how they are including interdisciplinary teamwork content within their programs, as this was an area of interest from the LEND Program Director and it was an area of concern of several reviewers due to the varied nature of LEND training programs. Changes were also made to the survey in order to quantify a "course," as only course instructors would complete the questions on the Instructor survey pertaining to instructional strategies. Based on feedback from the expert reviewers and parameters gathered from the literature review, a course was defined as: 1) providing 32 hours or more of instruction, 2) having a syllabus, 3) having assessment measures of knowledge and skills, and 4) existing independently from other courses. Expert review also resulted in changes to the Interdisciplinary Teamwork competencies in the Training Director and Instructor surveys. Some item measures were modified due to difficulty distinguishing between items. For instance, under Knowledge of Roles, "knowledge of the roles of individual disciplines" and "knowledge of the competencies of individual disciplines" were combined due to difficulty distinguishing between the two knowledge areas. Items on conflict were also added to Group Process Knowledge.

Following the expert reviews and changes, a field test was conducted. Field testers were selected based on their knowledge of LEND programs and/or interdisciplinary teamwork courses. Three field testers were identified: Belinda Hooper, Janet Willis, and Joann Bodurtha. Belinda Hooper, Ed.S. has been the grant coordinator for three federally funded personnel preparation grants at VCU and has taught an interdisciplinary teamwork course as part of the grants. Janet Willis, MPH, RD is the Assistant Director of VCU's VA-LEND training program. Joann Bodurtha, M.D., MPH is the Program Director of VCU's VA-LEND training program. Following field testing, changes were made to the order of items, for instance, having questions regarding focus of course directly following didactic course questions rather than following experiential question, and wording (changed hospital to medical under setting). Following these changes, the surveys were used for the study.

Document review

LEND program websites were reviewed for content related to interdisciplinary teamwork. Specifically, program websites were reviewed for content training related to interdisciplinary teamwork, including didactic and experiential opportunities, assessment, course descriptions, and course syllabi. Course descriptions on the websites and course objectives on course syllabi were analyzed and coded for information on knowledge and skills that are included in interdisciplinary teamwork training. Course assignments and course schedules from the syllabi were analyzed and coded for information on teaching methods. Course assignments from the syllabi were analyzed and coded for information on methods used to assess the acquisition of interdisciplinary teamwork knowledge and skills.

Procedure

Data collection occurred in three phases: 1) Training Director Survey, 2) Instructor survey, and 3) document review. This study was accepted by Virginia Commonwealth University's Institutional Review Board as exempt review on November 22, 2010. Following receipt of IRB approval, the Training Director survey was placed online by the VCU Office of Assessment and Technology Services (OATS) using *Inquisite*© survey software. The OATS office sent an e-mail letter (Appendix O), with the survey link embedded, to LEND training directors requesting their involvement in the study on November 30, 2010. OATS authenticated surveys, sending follow up e-mails to individuals who did not respond to the initial request. Follow up e-mails (Appendices P and Q) were sent to non-responders at one-week (December 7th) and two-week (December 14th) intervals following the initial request. Due to email responses from participants indicating that they were particularly busy with end of semester duties and the time of year, a Change in Research submission was submitted to VCU's IRB requesting permission to send one final email reminder (Appendix R). Additionally, a review of the Training Director Survey responses revealed no contact information on course instructors was provided, necessitating a change in the second phase of the study. Therefore, changes to the instructor recruitment were included in the Change in Research submission. These changes included 1) expanding instructors to include all instructors who teach interdisciplinary teamwork content, not just *course* instructors, and 2) emailing the training directors a request to forward an email and survey link to instructors who complete the training on interdisciplinary teamwork content. As previously described, this request also included changes to the Instructor survey, expanding questions on training to include seminars and lectures. Permission from IRB was

received on January 26th. The final email reminder was sent to Training Directors on January 27, 2011.

Phase II recruitment for the Instructor Survey was accomplished through an email to the same group of LEND training directors, requesting them to forward the email with an embedded survey link to the instructor that teaches the interdisciplinary teamwork content portion of their LEND program (Appendix S). This recruitment email was sent to Training Directors on January 31, 2011, with a follow-up email reminder sent one week later (February 7; Appendix T). The online survey was available to instructors until March 2, 2011.

Upon completion of the Instructor Survey phase, surveys were evaluated for further participation in a telephone interview and document analysis. Two instructors stated that they were willing to be contacted; however no contact information was provided. At this time, a meeting was held with the dissertation committee to provide a cursory review of data in relation to research questions. Several options were proposed and the committee agreed that a review of program websites, in lieu of telephone interviews, could be used to complete the document review for the final phase of the study.

Data Analysis

Data were compiled from multiple sources (Training Director Survey, Instructor Survey, and document review), resulting in a mixed method of statistical and qualitative analysis (Appendix J). Survey responses were compiled by OATS and transferred to PASW Statistics 18 for statistical analyses using descriptive tests. Specifically, means and frequencies were calculated on the knowledge and skill competencies. Teaching methods and assessment procedures, from the Instructor survey, were also analyzed using descriptive statistics.

Qualitative data from surveys (from open-ended questions) and document reviews were analyzed and interpreted. Analysis “involves working with the data, organizing them, breaking them into manageable units, coding them, synthesizing them, and searching for patterns” (Bogdan & Biklen, 2007, p. 159). Data analysis began with organizing the open-ended questions from the surveys and coding them for themes. Syllabi were then coded according to competencies, teaching methods, and assessment methods. Documents were coded according to HPL categories (community, knowledge, assessment, and learner).

Following this analysis, data interpretation was initiated, which “involves explaining and framing your ideas in relation to theory, other scholarship, and action” (Bogdan & Biklen, 2007, p. 159). Data from the surveys and document analysis were first framed in relation to the competencies of the IOM, MCH, and CEC. Next, data were synthesized according to the HPL framework, and then analyzed in relation to the literature review in order to make sense of other themes and patterns.

Summary

This study used a mixed method approach to describe the interdisciplinary teamwork pedagogy of LEND training programs. The study occurred in three stages: 1) a survey of LEND training directors, 2) a survey of LEND interdisciplinary teamwork course instructors, and 3) document review of LEND program websites. Data were analyzed using statistical and qualitative methods and interpreted through the use of competencies, HPL framework, and research literature. Several procedures were used to improve the rigor of the study including triangulation of data methods and data sources, expert reviewers and field testing.

Chapter 4

Results

Children with special health care needs require a broad continuum of services, requiring multiple professions across various systems to work together to provide comprehensive, coordinated care. Literature on interdisciplinary education and professional practice standards discuss the importance of preparing professionals to work on interdisciplinary teams; however the specific content and pedagogy has not been described. The overall purpose of this study was to describe the interdisciplinary teamwork pedagogy of LEND training programs in order to provide insight into the content and the instructional and assessment strategies being used. This study employed survey data from two groups (LEND training directors and teamwork instructors) and document review from LEND program websites to describe content focus, instructional methods, and assessment practices of interdisciplinary teamwork.

Participants

The study involved three phases. LEND training directors and teamwork instructors comprised the survey sample over two phases of the study. The first phase involved sending the Training Director Survey to LEND training directors. Names and email addresses of LEND training directors were gathered from the national LEND website; if no training director was indicated, the survey was sent to the LEND program director. An email was sent to the training director or program director of each LEND program, requesting participation in the survey, with an attached survey link embedded in the email. The surveys were emailed to 38 people, representing 38 of the 39 LENDs in 32 states (Virginia was omitted from the study as the LEND training director is on the Dissertation Committee and the teamwork instructor is the doctoral student completing the study).

The survey was available to training directors over the course of nine weeks, from November 30, 2010 until February 3, 2011. Of the 38 directors who were contacted, five returned incomplete surveys (survey link was opened, but four had no questions answered and one had only three questions answered), yielding an adjusted sample size of 33. Based on this number, a response rate of 72.7% was obtained ($n = 24$). Respondents identified themselves as a LEND Training Director ($n = 17$) or LEND Administrator ($n = 6$), with eight identifying themselves as both. One respondent did not identify his/her role. Many respondents ($n = 16$) indicated having more than one role. For instance, some individuals who are LEND Training Directors or Administrators are also University Centers for Excellence in Developmental Disabilities (UCEDD) Training Directors or Administrators or are faculty for LEND or UCEDD (Table 2). Two also identified themselves in other roles, one as a course instructor and coordinator, and the other as a training coordinator for speech language pathology.

Table 2

Participants for Training Director Survey

Role	Frequency
LEND Training Director	17
LEND Administrator (Program, Associate or Co-Director)	14
LEND Faculty	10
UCEDD Administrator (Program, Associate or Co-Director)	8
UCEDD Faculty	8
UCEDD Training Director	7
Other	2

Following the final recruitment email for phase I, the Instructor Survey was sent to instructors who provide interdisciplinary teamwork training for the LEND programs. Phase II recruitment for the Instructor Survey was accomplished through an email to the same group of LEND training directors, requesting them to forward the email with an embedded survey link to the instructor who taught the interdisciplinary teamwork content portion of their LEND program. The email with the Instructor Survey link was sent to Training Directors on January 31, 2011, with a follow-up email reminder sent one week later (February 7). The survey was available online until March 2, 2011.

Nineteen surveys were collected; however, three returned incomplete surveys (survey link was opened, but two had no questions answered and one had only three questions answered), yielding an adjusted sample size of sixteen. Due to the method of email distribution, it was not possible to ascertain the number of potential participants who received the survey invitation but did not respond to it.

Following the completion of Phase II, a review of each of the 38 LEND websites was undertaken to assess information on content related to interdisciplinary teamwork and methods used to teach and assess interdisciplinary teamwork competencies. The 38 LEND websites, in addition to the national LEND website, comprised the sample for Phase III. Data from the two surveys and website reviews were then compiled and analyzed to describe critical content for personnel preparation in interdisciplinary teamwork and methods used to teach and assess the acquisition of interdisciplinary teamwork knowledge and skills.

Critical Content for Interdisciplinary Teamwork

Information on the critical content for personnel preparation in interdisciplinary teamwork (research question #1) was derived from 60 survey items based on a review of

teamwork competencies of the Institute of Medicine (IOM; Appendix F), Maternal and Child Health (MCH; Appendix D), Council for Exceptional Children (CEC; Appendix G) and a review of the literature on personnel preparation in interdisciplinary teamwork. The survey competencies measuring critical content were identical on the Training Director Survey (Appendix H) and the Instructor Survey (Appendix I) and were rated by respondents on a 4-point Likert-type scale ranging from 1 (Not Very Important) to 4 (Very Important). Outlier analysis on both surveys revealed no outliers across the critical content survey items. Reliability analyses yielded a Cronbach's alpha of 0.94 for total scores on the 60 items for both the Training Director and Instructor surveys.

Analysis of mean and frequency of response was completed for each competency item on the Training Director Survey and the Instructor Survey. Appendix U presents the item means and frequencies from the training director responses, ordered highest to lowest. Appendix V presents the item means and frequencies from the instructor responses, ordered highest to lowest.

A visual analysis of training director and instructor item responses was completed to determine similarities and differences in perceptions of the critical content for personnel preparation in interdisciplinary teamwork; a *t*-test was not used due to low sample sizes. Training directors and instructors rated the same three competencies as the most important: 1) Listen to concerns of families of children with special health care needs; 2) Communicate effectively with families of children with special health care needs; and 3) Maintain confidential communication about children with special health care needs. Both groups rated several other competencies within the top ten most important (Table 3).

Table 3

Top Ten Competencies, with Training Director and Instructor Means

Survey Competencies	Training Director mean	Instructor mean
Listen to concerns of families of children with special health care needs	3.96	4
Communicate effectively with families of children with special health care needs	3.92	4
Maintain confidential communication about children with special health care needs	3.83	3.87
Collaborate with families and others in assessment of children with special health care needs	3.83	3.8
Listen attentively and actively to team members	3.75	3.87
Value and honor diverse perspectives of team members	3.75	3.71
Assist children with special health care needs and their families in becoming active participants in the team	3.71	3.73
Openness to learning about other professions	3.75	3.67
Tailor information for the intended audience(s) by using appropriate communication modalities (verbal, written, nonverbal)	3.67	3.8
Communicate effectively with team members from diverse backgrounds	3.63	3.8

Communicate with other team members about the characteristics and needs of children with special health care needs	3.63	3.8
Knowledge of culturally responsive factors that promote effective communication and collaboration	3.75	3.6
Facilitate the sharing of open views to bring out differences	3.67	3.67
Share leadership based on appropriate team members' strengths	3.63	3.73
Knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning	3.63	3.67

Similarly, training directors and instructors both rated the following seven items as the least important: a) knowledge of the stages of team development; b) knowledge of theories pertaining to conflict management and negotiation among groups with conflicting interests; c) model techniques and coach others in instruction or accommodations; d) demonstrate assessment of group dynamics; e) demonstrate delegation skills; f) knowledge of models and strategies of consultation; and g) knowledge of team meeting principles. “Knowledge of the stages of team development” was the only item that had a mean of less than three (rating of 2 = Somewhat Important and 3 = Important) for both groups (training director mean = 2.67; instructor mean = 2.87); training directors also rated “knowledge of team meeting principles” (mean = 2.75) and “knowledge of the theories pertaining to conflict management and negotiation among groups with conflicting interests” (mean = 2.88) below three.

Items that were rated differently by training directors and instructors were identified through comparing means (Table 4). Mean differences of .25 or greater were considered to be of

practical significance. This number was determined through visual inspection of differences and the effect of the difference of mean on the ranking of items. For instance, “knowledge of principles of communication” was ranked fifth by instructors (mean = 3.71), but it was ranked 19th by training directors (mean = 3.46). Similarly, “coordinate and integrate care processes” was ranked seventh by course instructors (mean = 3.67) but was ranked 22nd by training directors (mean = 3.42).

Table 4

Competencies Rated Differently by Training Directors and Instructors

Competency	Training Director mean	Instructor mean	Difference
Knowledge of principles of communication	3.46	3.71	.25
Coordinate and integrate care processes	3.42	3.67	.25
Knowledge of how to manage team dynamics	3.62	3.33	.29
Share thoughts, ideas, and feeling effectively in discussions, meetings, and presentations with diverse individuals and groups	3.38	3.64	.26
Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care	3.58	3.2	.38
Identify team members appropriate to a given task	3.42	3.13	.29
Knowledge of team meeting principles (size of teams, meeting agendas, assigned roles, etc.)	2.75	3.13	.38

Because of the similarity of responses for competencies, training director and instructor responses were combined using a weighted mean to account for the difference in sample sizes between the two survey groups. This was calculated by the adding the product of the training director mean and sample size with the product of the instructor mean and sample size, divided by the total number of participants. Table 5 presents the competencies, ordered by weighted means from highest (most important) to lowest.

Table 5

Competencies, Ordered by Weighted Means, with Training Director and Instructor Means

Competencies (Source)	Weighted Mean	Training Director Mean (SD) (n = 24)	Instructor Mean (SD) (n = 15)
Listen to concerns of families of children with special health care needs (CEC)	3.97	3.96 (.20)	4 (0)
Communicate effectively with families of children with special health care needs (CEC/MCH)	3.95	3.92 (.28)	4 (0)
Maintain confidential communication about children with special health care needs (CEC)	3.85	3.83 (.48)	3.87 (.35)
Collaborate with families and others in assessment of children with special health care needs (CEC)	3.82	3.83 (.48)	3.8 (.41)
Listen attentively and actively to team members (MCH)	3.79	3.75 (.44)	3.87 (.35)

Value and honor diverse perspectives of team members (MCH)	3.74	3.75 (.44)	3.71 (.47) (n = 14)*
Assist children with special health care needs and their families in becoming active participants in the team (CEC)	3.72	3.71 (.55)	3.73 (.46)
Openness to learning about other professions (Literature)	3.72	3.75 (.44)	3.67 (.62)
Tailor information for the intended audience(s) by using appropriate communication modalities (verbal, written, nonverbal) (MCH)	3.72	3.67 (.48)	3.8 (.41)
Communicate effectively with team members from diverse backgrounds (CEC)	3.69	3.63 (.58)	3.8 (.41)
Communicate with other team members about the characteristics and needs of children with special health care needs (CEC)	3.69	3.63 (.50)	3.8 (.41)
Knowledge of culturally responsive factors that promote effective communication and collaboration (CEC)	3.69	3.75 (.44)	3.6 (.51)
Facilitate the sharing of open views to bring out differences (Literature)	3.67	3.67 (.57)	3.67 (.49)
Share leadership based on appropriate team members' strengths (MCH)	3.67	3.63 (.50)	3.73 (.46)

Knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning (CEC)	3.64	3.63 (.65)	3.67 (.9)
Ensure that accurate and timely information reaches those who need it at the appropriate time (IOM)	3.62	3.67 (.48)	3.53 (.64)
Learn about other team members' expertise, background, knowledge, and values (IOM)	3.62	3.58 (.50)	3.67 (.62)
Collaborate with others in integrating children with special health care needs into various settings (CEC)	3.59	3.54 (.66)	3.67 (.49)
Write clearly and effectively to express information (MCH)	3.59	3.63 (.50)	3.53 (.52)
Knowledge of principles of communication (Literature)	3.55	3.46 (.66)	3.71 (.47) (<i>n</i> = 14)*
Collaborate in order to customize care (IOM)	3.54	3.5 (.59)	3.6 (.51)
Coordinate and integrate care processes (IOM)	3.51	3.42 (.65)	3.67 (.62)
Knowledge of how to manage team dynamics (MCH)	3.51	3.62 (.50)	3.33 (.72)
Communicate with other members of the team in a shared language (IOM)	3.49	3.5 (.66)	3.47 (.74)

Foster respectful and beneficial relationships with team members (CEC)	3.49	3.5 (.59)	3.47 (.52)
Knowledge of the roles and competencies of individual disciplines (MCH)	3.49	3.54 (.59)	3.4 (.74)
Recognize the constraint of one's role and skills (Literature)	3.49	3.54 (.78)	3.4 (.91)
Share thoughts, ideas, and feeling effectively in discussions, meetings, and presentations with diverse individuals and groups (MCH)	3.47	3.38 (.58)	3.64 (.5) (n = 14)*
Knowledge of the strategies and techniques useful in successful negotiation (MCH)	3.46	3.46 (.59)	3.47 (.74)
Use group problem-solving skills to develop, implement, and evaluate collaborative activities (CEC)	3.46	3.46 (.66)	3.47 (.52)
Demonstrate time management skills (IOM)	3.44	3.38 (.65)	3.53 (.64)
Plan and conduct collaborative team conferences/team meetings (CEC)	3.44	3.42 (.65)	3.47 (.64)
Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care (MCH)	3.44	3.58 (.58)	3.2 (.94)
Manage smooth transitions across settings (IOM)	3.42	3.35 (.65) (n = 23)*	3.53 (.64)
Develop and articulate a shared team vision (MCH)	3.41	3.5 (.59)	3.27 (.7)

Facilitate group process for team-based decisions (MCH)	3.36	3.29 (.55)	3.47 (.52)
Knowledge of challenges to communication and approaches to overcome those challenges (MCH)	3.36	3.33 (.57)	3.4 (.63)
Resolve conflicts with other members of the team (IOM & MCH)	3.36	3.42 (.50)	3.27 (.59)
Understand nonverbal communication cues in self and others (MCH)	3.34	3.22 (.6) (n = 23)*	3.53 (.52)
Demonstrate the ability to manage conflict in a constructive manner (MCH)	3.33	3.42 (.58)	3.2 (.68)
Knowledge of individual roles used to work collaboratively (IOM)	3.33	3.21 (.59)	3.52 (.52)
Knowledge of various approaches to practice (e.g., multidisciplinary, interdisciplinary, transdisciplinary) (MCH)	3.33	3.42 (.58)	3.2 (.78)
Use shared outcomes to promote team synergy (MCH)	3.33	3.29 (.91)	3.4 (.63)
Knowledge of the principles of communication for all three communication modalities - verbal, written, and nonverbal (MCH)	3.32	3.23 (.75) (n = 22)*	3.47 (.74)
Identify team members appropriate to a given task (MCH)	3.31	3.42 (.65)	3.13 (1.06)

Demonstrate negotiation skills (<i>IOM & MCH</i>)	3.30	3.26 (.54) (<i>n</i> = 23)*	3.33 (.62)
Identify forces that influence team dynamics (MCH)	3.28	3.33 (.57)	3.2 (.78)
Knowledge of sources of potential conflict in an interdisciplinary setting (MCH)	3.28	3.29 (.62)	3.27 (.8)
Use technology to support team communication (Literature)	3.26	3.22 (.80) (<i>n</i> = 23)*	3.33 (.62)
Develop and articulate shared roles and responsibilities (MCH)	3.26	3.29 (.55)	3.2 (.41)
Knowledge of characteristics of conflict (MCH)	3.26	3.21 (.66)	3.33 (.82)
Negotiate roles and responsibilities with other team members (Literature)	3.23	3.25 (.61)	3.2 (.56)
Knowledge of models and strategies of collaboration (CEC)	3.21	3.21 (.72)	3.2 (.94)
Demonstrate delegation skills (<i>IOM</i>)	3.08	3.08 (.65)	3.07 (.7)
Knowledge of models and strategies of consultation (CEC)	3.05	3.04 (.69)	3.07 (.88)
Demonstrate assessment of group dynamics (<i>IOM</i>)	3.03	3.00 (.72)	3.07 (.83) (<i>n</i> = 14)*
Model techniques and coach others in instruction or accommodations (CEC)	3.03	3.00 (.67) (<i>n</i> = 23)*	3.07 (.8)

Knowledge of the theories pertaining to conflict management and negotiation among groups with conflicting interests (MCH)	2.92	2.88 (.68)	3 (.76)
Knowledge of team meeting principles (size of teams, meeting agendas, assigned roles, etc.) (Literature)	2.90	2.75 (.68)	3.13 (.92)
Knowledge of the stages of team development (e.g., forming, storming, norming, and performing) (MCH)	2.74	2.67 (.92)	2.87 (.92)

Note: * = items with a different *n*.

Survey items were grouped according to the literature and professional competencies into five categories (Knowledge of Roles, Group Process Knowledge, Teamwork Skills, Communication Knowledge and Skills, and Collaboration Skills) for ease of survey administration. Mean ratings for the five categories were analyzed based on training director means and instructor means (Table 6). Both training directors and instructors rated Communication Knowledge and Skills as the highest competency category and rated Teamwork Skills and Group Process Knowledge as fourth and fifth, respectively.

Table 6

Mean Ratings for Competency Categories

Competency Category	Mean Rating (Training Director)	Mean Rating (Instructor)
Knowledge of Roles	3.58	3.45
Group Process Knowledge	3.20	3.25
Teamwork Skills	3.30	3.31
Communication Knowledge and Skills	3.59	3.66
Collaboration Skills	3.56	3.63

Knowledge and Skills in Course Content

Examination of the knowledge and skills that are included in interdisciplinary teamwork course content (research question #2) was gathered from information available through the LEND websites. All LEND websites were reviewed for posted course or seminar syllabi. Course names that were provided in the surveys were also searched. This review resulted in six syllabi that included teamwork or collaboration within the description, objectives, or lecture topics: CSD 312 Interdisciplinary Seminar in Neurodevelopmental Disabilities, Part II; OCC TH 558 Interdisciplinary Leadership and Team Development; LEND Seminar, Spring; Core Seminar, Spring; Seminar and Discussion Schedule; and Interdisciplinary Web-Based Modules. The two seminars did not include seminar objectives, so they were not reviewed. The remaining four courses were reviewed for objectives related to interdisciplinary teamwork, with the following results.

Course 1: Selected Course Objectives (objectives not related to teamwork were not included):

- Skills necessary for leadership, including those needed to work with and advocate for persons with neurodevelopmental disabilities and their families effectively
- Benefits and challenges of interdisciplinary teams. This includes understanding the perspective of each discipline involved in providing services and supports to persons with neurodevelopmental disabilities and their families
- Family-centered and culturally competent philosophy and practices for persons with neurodevelopmental disabilities and related disabilities

Course 2: Course Objectives (all objectives were included as they all related to teamwork):

- Demonstrate the ability to interact through oral and nonverbal communication with colleagues, clients, and others
- Demonstrate the ability to effectively represent her/his own discipline on an interdisciplinary team
- Demonstrate awareness of the roles of other disciplines in service provision for children with disabilities and their families
- Acquire knowledge about other discipline roles and develop strategies that will lead to trust as a basis of team formation
- Acquire and implement techniques that strengthen interpersonal relationships and support team development
- Participate in the development/continuation of a student team
- Explore the relationship of communication skills and providing feedback to leadership
- Practice giving and receiving constructive feedback effectively

Course 3: Selected Course Objectives (objectives not related to teamwork were not included):

- To increase the knowledge of...trainees/fellows, faculty, graduate students and community professionals of various models of interprofessional collaboration and teaming and service provision in the health care of children with special health needs and their families
- To increase understanding and skill in developing partnerships with families, and learn how families and professionals can work collaboratively in providing family-centered, high quality integrated services
- To increase the cultural sensitivity and competence level of ...trainees/fellows, faculty, graduate students and community professionals in their interactions with families and their children with special health needs including disability, age, gender, religion, and culture

Course 4: This course consisted of web-based modules on “the roles of members of an interdisciplinary team who work with children and youth with developmental disabilities and their families.” The course objectives vary slightly to account for differences in interdisciplinary team members (occupational therapy, physical therapy, audiology, nutrition, etc.), but overall include:

- Understand the core foundation and framework of [the team member]
- Appreciate how this framework is applied to evaluation and intervention
- Know the unique contributions of [the team member] within an interdisciplinary team
- Identify the assessment tools and strategies typically used by [the team member]
- List intervention strategies that might be employed by [the team member]

Methods Used to Teach Teamwork

Responses from the Training Director Survey ($n = 24$) and the Instructor Survey ($n = 16$), along with data obtained through review of LEND websites, were analyzed to describe methods used to teach and assess acquisition of interdisciplinary teamwork knowledge and skills.

Overview of Interdisciplinary Teamwork Training

LEND programs provide graduate level interdisciplinary training to long-term trainees (trainees who spend 300 or more total hours in the LEND program). Each LEND program develops its own focus; however all LEND programs “provide interdisciplinary training, have faculty and trainees in a wide range of disciplines, and include parents or family members as paid program participants” (AUCD, 2010). While LEND’s objectives do not specifically include teamwork, LEND programs follow the Maternal and Child Health Leadership Competencies, which do include Interdisciplinary Team Building and related competencies of Communication and Negotiation and Conflict Resolution.

The 38 websites were reviewed for a description of how interdisciplinary teamwork fits into their training program. Fifteen of the websites clearly denoted the role, focus, or purpose of interdisciplinary teamwork in their program; however, many did not use the term “interdisciplinary teamwork.” All used the term interdisciplinary, but paired it with team process, partnerships, training, collaboration, collaborative processes, or team building.

Duration of Interdisciplinary Teamwork Training

Nineteen training directors (79.2%) reported that 40 or more hours are focused on training long term trainees in the area of interdisciplinary teamwork and collaboration. Two respondents (8.3%) reported 30-39 hours, two (8.3%) reported 20-29 hours, and one (4.2%) reported five to nine hours of training on interdisciplinary teamwork and collaboration.

Disciplines Involved in Interdisciplinary Teamwork Training

Respondents reported the involvement of the conventional core disciplines of LEND in the teamwork training: family (95.8%), psychology (95.8%), social work (91.7%), pediatrics/medicine (91.7%), speech language pathology (91.7%), nursing (87.5%), physical therapy (87.5%), occupational therapy (83.3%), nutrition (70.8%), audiology (70.8%), special education (70.8%), health administration (45.8%), and genetics (41.7%). Other disciplines reported in training included disability studies, early childhood, genetic counseling, pediatric dentistry, psychiatry, and sociology.

All respondents indicated interdisciplinary faculty involvement in the overall training on interdisciplinary teamwork and collaboration through multiple methods. Interdisciplinary involvement occurs through two or more interdisciplinary faculty co-teaching (70.8%), guest lecture (70.8%), observation (70.8%), primary instruction (62.5%), modeling (62.5%), evaluation or assessment of trainees (58.3%), and role playing (20.8%). Five respondents added other interdisciplinary faculty involvement in their programs, including clinical supervision, clinical training, cross discipline matching, mentor and direct interaction, and trainee's discipline supervisor. All but one respondent (who indicated that involvement varied each year) reported multiple disciplines involved in the teamwork training.

In addition to interdisciplinary faculty involvement in teamwork training, 21 respondents (87.5%) indicated that community partners are also involved in the overall teamwork training. Community partners are mostly involved in guest lecture (70.8%); however, training from community partners also occurs through direct instruction (41.7%), observation (25%), modeling (16.7%), and evaluation and assessment of trainees (12.5%). Respondents also reported that

community partners are involved through advisory board membership, clinical faculty, informal feedback, mentoring, and teams working with community agencies on projects.

Delivery of Interdisciplinary Teamwork Training

Responses from the Training Director Survey ($n = 24$) and the Instructor Survey ($n = 16$) were analyzed for information regarding delivery of interdisciplinary teamwork training. All respondents ($n = 40$) reported that training in interdisciplinary teamwork and collaboration is completed through a combination of didactic and experiential opportunities. Evidence of combined training opportunities was evident in the review of the LEND program websites. Most of the websites included at least a brief description of how their program uses a combination of activities. For instance, one site stated training uses “research and practicum experiences using a combination of activities located in both clinical and community training sites.” Another listed training occurs through a “didactic curriculum and interdisciplinary clinical teams.”

Survey respondents reported experiential opportunities of interdisciplinary collaboration activities in environments such as clinics, schools, and independent living centers ($n = 40$), leadership projects ($n = 39$), experiences with individuals with disabilities and their families ($n = 39$), and team research projects ($n = 30$). One respondent added that they complete team policy projects, while another reported that they participated in community organizations, community interagency councils, or center organization committee work.

Didactic opportunities for training on interdisciplinary teamwork or collaboration include a lecture or series of lectures on teamwork and collaboration within another course or courses ($n = 16$) or a seminar, conference, or seminar series on teamwork not affiliated with a course ($n = 10$). Didactic opportunities for training on interdisciplinary teamwork and collaboration also include a stand-alone course on teamwork and collaboration with a syllabus,

assessment of knowledge and skills, and regular meetings for university credit ($n = 8$) or without university credit ($n = 5$). Caution needs to be taken when looking at these results, as some of these training opportunities are being reported twice, once by the training director and once by the instructor.

Didactic lectures, seminars and conferences. For the 26 LEND respondents that reported training on interdisciplinary teamwork and collaboration is completed through a lecture or series of lectures or a seminar, 11 (42.3%) reported that they meet on the area of interdisciplinary teamwork and collaboration seven or more times, seven (26.9%) meet five to six times, four (15.4%) meets three to four times, and three (11.5%) meet one time on the area of interdisciplinary teamwork and collaboration (with one not reporting). They reported that each seminar, lecture, or conference on interdisciplinary teamwork and collaboration is seven or more hours ($n = 2$; 7.7%), five to six hours ($n = 1$; 3.8%), three to four hours ($n = 8$; 30.8%), two hours ($n = 6$; 23.1%) and one hour ($n = 9$; 34.6%). Of this group, the range of lecture on interdisciplinary teamwork is from two hours to 39 hours, with an average of 12 hours focused on interdisciplinary teamwork and collaboration. Two use a syllabus, two assess trainees' knowledge and skills, and 11 use both a syllabus and assessment. Eleven (42.3%) use neither a syllabus nor assessment within the lecture or lecture series.

Didactic coursework. Training directors were first surveyed on didactic opportunities involving coursework. Four respondents reported that didactic opportunities for training on interdisciplinary teamwork and collaboration include a stand-alone course on teamwork and collaboration for university credit and four responded that it included a course without university credit. However, one of these reported a course for both university credit and without university credit, yielding a total of seven programs with a stand-alone course on teamwork and

collaboration. Further analysis of responses made it unclear as to whether the seven courses that respondents reported represent a high number, as analysis of course names revealed titles focused on leadership aspects as opposed to teamwork or collaboration (“Leadership Dialogues” or “Leadership Education in Neurodevelopmental Disabilities”). One responded that it is “not a course, but our interdisciplinary seminars,” though they had previously responded that the didactic instruction is a course and not seminars. Two reported course titles strongly focused on interdisciplinary teamwork and collaboration (“Fundamentals in Interdisciplinary Teamwork and Family-Centered Care” and “Interdisciplinary Training and Interagency Collaboration in Delivering Family-Centered Health Care”).

Analysis of Instructor Surveys provided greater clarity regarding the status of coursework on interdisciplinary teamwork. Instructors reported five courses on interdisciplinary teamwork and collaboration, four for university credit and one without university credit. All the courses focus on the provision of services to children with special health care needs. Four of the courses are traditionally taught (face to face or classroom format) and one is web based (synchronous or asynchronous, web-based). The courses vary in titles with three have a teaming focus in their course titles (“Interdisciplinary Teaming Fundamentals”, “Interdisciplinary Health Care Teams”, and “Leadership, Teamwork and Consultation”), while the other two are focused on teamwork and collaboration within disabilities (“Neurodevelopmental Disabilities 101” and “Maternal Child Health and Disabilities I and II”).

Timing and Nature of Interdisciplinary Teamwork Education

Of the seven programs who reported having a course on interdisciplinary teamwork and collaboration, four have this course as one of the first courses for trainees, while the other three programs report no specific sequence or the sequence varies between trainees.

Of the 12 reported courses on interdisciplinary teamwork and collaboration, three courses (without university credit) are focused only on teamwork within the medical setting and one course (for university credit) is focused only on teamwork within a clinic/private practice setting. The remaining courses are focused on teamwork across multiple settings, addressing teamwork in two settings (early intervention and medical settings) to all seven settings (Table 7).

Table 7

Setting Focus on Interdisciplinary Teamwork and Collaboration Course

Setting	Frequency ($N = 12$)
School or School Systems	6
Early Intervention	8
Post-Secondary	3
Clinic/Private Practice	7
Medical (including hospital in-patient and out-patient)	10
Public Health/Title V	5
Community Based Services	7
Other: University Clinics	1

Learners in Interdisciplinary Teamwork Courses

All of the respondents indicated that the interdisciplinary teamwork course is open to non-LEND long term trainees. Respondents that indicated that they teach a course on teamwork were asked the number of learners from each discipline in the most recent course they taught. Based on four respondents, each course enrolled students from more than one discipline, with one having five different disciplines and three having eight different disciplines (Table 8). LEND

trainees represented an equal mix of graduate students (primarily full-time), doctoral students, post-doctoral, and clinical practitioners.

Table 8

Number of Students from Each Discipline in Recent Courses

Discipline of Student	Number of Students
Family	4
Audiology	5-9
Genetics	0
Health Administration	1
Nursing	2
Occupational Therapy	4-6
Pediatrics/Medicine	4-6
Physical Therapy	5-9
Psychology	8-16
Social Work	4-6
Special Education	1
Speech Language Pathology	5-7
Others	
Nutrition	8-10
Pediatric Dentistry	1

Instructional Strategies in Courses

Respondents that teach a course ($n = 4$) were asked about their use of instructional strategies. Respondents reported the use of a variety of instructional strategies used to teach interdisciplinary teamwork content, including lecture or other didactic instruction (100%), case studies, real and simulated (100%), reflection (100%), instructor/faculty modeling (100%), video-based discussions (100%), problem-based learning (75%), journal writing (75%), role play (75%), team building exercises (75%), course guide/reader (75%), simulated clinical environments (50%), and experiential learning (50%). However, differences were seen in their perceptions of the effectiveness of these instructional strategies (Table 9). The use of real case studies/clinical placements is the only strategy used by all instructors and that is rated very effective by all instructors. Reflection, journal writing, and instructor/faculty modeling was also used by all instructors and rated effective to very effective. Other items, such as role play, were rated very effective to not at all effective.

Table 9

Instructional Strategies Used to Teach Interdisciplinary Teamwork and Ratings of Effectiveness

Instructional Strategy	Not Used	Not Very Effective	Somewhat Effective	Effective	Very Effective
Lecture	0	0	2	2	0
Case studies/scenarios (simulated)	0	0	1	1	2
Case studies/clinical placements (real)	0	0	0	0	4
Simulated clinical environments	2	1	0	1	0
Experiential learning	2	0	0	0	2
Problem-based learning	1	0	0	1	2

Reflection	0	0	0	3	1
Journal writing	1	0	0	3	0
Role play	1	1	1	0	1
Video-based discussions	0	1	1	1	1
Instructor/faculty modeling	0	0	0	3	1
Team building exercises	0	1	1	1	1
Course guide/reader	0	1	2	1	0

Of the four respondents who taught a course, two placed students in teams as part of the course. They both indicated that they did not use a specific team instructional model, though one did note that they incorporated problem-based learning. Both used instructor assignment to form the teams used in class, with one class keeping the teams constant throughout the course and one rotating teams during the course. One required teams to have specific assigned roles (such as recorder, facilitator, etc.); the other did not. The average size of one class team was three students and the other was four. Students were given class time to meet with their teams every class period in one course, while the other course allowed meeting time every few classes.

Assessment and Evaluation of Interdisciplinary Teamwork

Formative and summative assessment and evaluation of interdisciplinary teamwork was analyzed through review of surveys from course instructors ($n = 4$) and a review of the course syllabi ($n = 5$) from program websites.

Formative assessment. Course instructors were asked questions regarding their use of formative assessment. Table 10 presents responses on formative assessment strategies. Like instructional strategies, the responses were variable with formative assessments used and their

rating of effectiveness. One type of formative assessment technique not used was individual contribution files.

Table 10

Formative Assessments Used and Rating of Effectiveness

Formative Assessments	Not Used	Not Very Effective	Somewhat Effective	Effective	Very Effective
Peer Evaluations	3	0	1	0	0
Periodic report from teams	3	0	0	1	0
Reflective journals/diaries	2	1	0	0	1
Instructor/Expert feedback	0	0	0	3	1
Self-reflection/self-assessment	0	0	1	2	1
Evaluation of attendance/ participation	2	0	1	1	0
Evaluation of preparation for class or team meetings	1	0	2	1	0
Essays	2	0	1	1	0

Available course syllabi were also reviewed for formative assessment pieces. Of the five syllabi available, two had components of formative assessment. Attendance and participation in class discussions and seminar evaluation were used, with one discussing “taking personal responsibility for your learning is a priority value in this class” and demonstrating how formative assessment will be used by stating “instructors...will provide timely and responsive feedback to

student assignments and questions.” Another incorporated meeting “with your LEND faculty once a month to discuss progress in your leadership goals and activities.”

Summative assessment. Course instructors were asked about use of standardized assessments. No course instructors reported use of any standard knowledge assessment. One reported use of the teamwork skill measure, Readiness in Interprofessional Learning, and rated it as somewhat effective. None of the other teamwork skill or attitudes measures were used (Rochester Communication Rating Scale, Team Skills Scale, ALERT Questionnaire, Team Development Wheel, Team Dimensions Rating form, Team Climate Inventory scale, Team Profile, Human Factors Attitude Survey, and Attitudes Toward Health Care Rating Scale).

Course instructors were asked what summative product measures they use in their course. Table 11 presents the summative product measures used, their rating of effectiveness, and whether the measures are completed individually (I) or as a team (T). Objective structured clinical examination and written examination were not used by any of the course instructors. Course instructors did not list any other formative or summative measures used.

Table 11

Summative Product Measures and Rating of Effectiveness

Summative Products	Not Used	Not Very Effective	Somewhat Effective	Effective	Very Effective
Project proposals	1	0	1 (I)	2 (T)	0
Paper or Essays	2	0	0	1 (I)	1 (T)
Oral Presentation	1	0	0	1 (I)	2 (I & T)
Poster presentation(s)	3	0	0	0	1 (T)
Community profile(s)	2	0	0	2 (I & T)	0

Case presentation(s)	1	0	0	1 (I)	2 (I & T)
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Note: I = products completed individually; T = product completed by a team

Available course syllabi were also reviewed for summative assessment practices. Of the five syllabi available, three had components of summative assessment. The first stated the use of final student project presentations; however, no description was given. The second had summative assignments of an article review, article critical appraisal, a book review, and an applied assignment, which were all done individually. These assignments all had an application focus (reflect and apply information from readings and your own knowledge to the assignment). The applied assignment had the clearest link to teamwork, as the student was expected to “define the issues in the child and family story that might arise in each of the five competency areas as a team works with the child and family.” The third course had a summative assignment to “reflect and summarize the 5 major leadership and team development points you learned and how this will impact your future professional goals.”

Assessment of leadership competencies. Websites were also reviewed for assessment of competencies. Several programs use the MCH Leadership Competencies for students to review. Some sites used these competencies for summative evaluation, having the students complete a self-assessment at the beginning of their program in order to evaluate their skills, to plan their program, and to assess skill improvements at the end. Some use this in a formative way, having students complete the self-assessment every semester of training.

Two programs adapted the MCH Leadership Competencies and developed their own. One maintained an interdisciplinary teamwork focus through the core competency of “Interdisciplinary Training/Practice and Service Integration.” Specific objectives related to this competency include “increase their skills as effective interdisciplinary team members through

experiences in a range of care configurations and interdisciplinary models” and “participate in multiple service delivery models and settings.” The other adapted the competencies and developed a self-evaluation of competencies to be completed multiple times throughout the training period. Competencies related to interdisciplinary teamwork include conducting assessments “within the context of interdisciplinary team function,” “demonstrate ability to function as a team member and team leaders in settings with interdisciplinary team arrangements,” “demonstrate skill in reporting information to professionals across disciplines in various settings,” “compare and contrast team functions, resources and constraints of various teams,” “evaluate team process,” “demonstrate ability to comprehend and utilize information from multiple disciplines.”

Summary of Results

The results demonstrate that LEND programs are responding to the call for interdisciplinary training and education, as all respondents reported a diverse mix of professions as faculty/instructors and trainees; however, content, instructional methods, and assessment practices vary among programs. Within curricula, programs are devoting critical time to focus on interdisciplinary teamwork training, as almost 80% of respondents reported that 40 or more hours are focused on interdisciplinary teamwork. This interdisciplinary teamwork training occurs through both experiential and didactic learning. While experiential learning was not a primary focus of this study, findings indicate that all of the programs are involved in experiential opportunities in clinics, schools, and independent living centers. Findings demonstrate that didactic opportunities for training are widely varied among the programs, with 65% of interdisciplinary teamwork training occurring through lectures, seminars, and conferences. Even more diversity exists within this training, as the duration of training is from two hours to 39

hours, with an average of 12 hours focused on interdisciplinary teamwork. Didactic opportunities are also provided through courses at a lower rate (somewhere between 12-30% of the programs) and the instructional strategies and assessment used vary widely. A more detailed summary and a discussion of the findings are presented in the next chapter.

Chapter 5

Summary and Discussion

Despite increasing recognition of the importance of interdisciplinary teamwork within personnel preparation and the provision of services to children with special health care needs, there is little information regarding content and pedagogy of interdisciplinary teamwork education. This descriptive study was completed to contribute to the knowledge about interdisciplinary teamwork education using the national network of the Leadership Education in Neurodevelopmental Disabilities (LEND) training programs. LEND programs, comprised of 39 programs across 32 states and the District of Columbia, were specifically selected because of their national presence, their focus on improving services to children with special health care needs and their families, and the interdisciplinary nature of the training. This study provides for an understanding of interdisciplinary teamwork education within one national program in order to inform efforts for training, practice, and research. This chapter will provide a brief restatement of the research problem and review the major methods used in the study. The primary sections of this chapter will summarize the results and discuss their implications for teaching and research.

Problem and Methodology

Research, evidence based best practice standards, and professional competencies identify the need and value of interdisciplinary teamwork in professional practice and preparation programs; however, the specific content and pedagogy has not been described. The overall purpose of this study was to describe the interdisciplinary teamwork pedagogy of one national network of interdisciplinary training programs. Specifically, this study described the content focus, instructional methods, and assessment practices of the LEND programs. Specific research questions included:

1. What is the critical content for personnel preparation in interdisciplinary teamwork?
2. What are the knowledge and skills that are included in interdisciplinary teamwork course content?
3. What methods are used to teach and assess the acquisition of interdisciplinary teamwork knowledge and skills?

This study used a mixed method design, incorporating survey information with qualitative document review, to describe interdisciplinary teamwork personnel preparation in LEND training programs. Survey participants were training directors of LEND programs and LEND interdisciplinary teamwork instructors. LEND training directors provided information on critical knowledge and skills for interdisciplinary teamwork through responses to a survey. Course instructors responded to a survey on the same critical knowledge and skills as well as pedagogical process. In order to further describe and understand interdisciplinary teamwork content and pedagogy within LEND programs, a document review of LEND websites was conducted. Data were compiled from multiple sources (Training Director Survey, Instructor Survey, and document review) resulting in a mixed method of descriptive statistical and qualitative analysis.

Summary of Results

This study described critical content for interdisciplinary teamwork personnel preparation and methods used to teach and assess the acquisition of interdisciplinary teamwork knowledge and skills across LEND programs. It is clear that LEND programs are responding to the call for interdisciplinary training and education, as all respondents reported a diverse mix of professions as both faculty/instructors and trainees. Within curricula, programs are devoting critical time to interdisciplinary teamwork training, as almost 80% of respondents reported that 40 or more

hours are focused on interdisciplinary teamwork. This interdisciplinary teamwork training occurs through both experiential and didactic learning. While experiential learning was not a primary focus of this study, findings indicate that all of the programs are involved in experiential opportunities in clinics, schools, and independent living centers. Findings demonstrate that didactic opportunities for training are widely varied among the programs, with 65% of interdisciplinary teamwork training occurring through lectures, seminars, and conferences. Even more diversity exists within this didactic training, as the duration of training is from two to 39 hours, with an average of 12 hours focused on interdisciplinary teamwork. These findings suggest that most of the interdisciplinary teamwork training is occurring through experiential learning. The experiential learning opportunities evident in the LEND programs provide real life contexts and relevant learning experiences which has been shown to be most effective for team learning (Cook, 2005). However, how programs are explicitly including opportunities to examine student preconceptions about teams and professional roles and skills within this framework is unknown and an area for further research.

Didactic training occurs through a course devoted to interdisciplinary teamwork in somewhere between 12-30% of the programs. The interdisciplinary teamwork courses are primarily traditionally taught, i.e., in a face to face or classroom format, though one program did report a web-based course. Courses are all focused on the provision of services to children with special health care needs and most (66.6%) address the provision of these services across multiple settings.

This study also provided data to describe training directors' and instructors' perceptions of the critical content for personnel preparation in interdisciplinary teamwork. Findings indicate that the three most critical competencies are 1) listen to concerns of families of children with

special health care needs; 2) communicate effectively with families of children with special health care needs; and 3) maintain confidential communication about children with special health care needs. Communication, culture and diversity, and knowledge and understanding of roles were three themes present in the highest rated competencies by both groups. Items related to communication include “listen attentively and actively to team members,” “tailor information for the intended audience(s) by using appropriate communication modalities,” and “communicate with other team members about the characteristics and needs of children with special health care needs.” Knowledge and skill with culture and diversity was seen in items such as “communicate effectively with team members from diverse backgrounds,” “value and honor diverse perspectives of team members,” “knowledge of culturally responsive factors that promote effective communication and collaboration,” and “facilitate the sharing of open views to bring out differences.” Knowledge and understanding of roles included items “openness to learning about other professions,” “share leadership based on appropriate team member strengths,” and “knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning.”

Items that were not perceived as critical to training in interdisciplinary teamwork included information on knowledge of stages of team development, conflict management theories, consultation, and team meeting principles, along with assessment of group dynamics and delegation skills.

These results need to be analyzed within the context of the How People Learn framework, interprofessional education literature, literature on interdisciplinary teamwork, and professional competencies. This is the focus of the next section.

Discussion

The How People Learn (HPL) pedagogical framework (National Research Council, 2000) was used as the organizational structure to examine the results. The HPL framework establishes principles for designing effective learning environments. HPL learning environments consist of four overlapping lenses - learner centered, knowledge centered, assessment centered, and community centered - that guide learning. Results have been reviewed and organized on the basis of these learning environments and compared and contrasted with other research in the area of interprofessional education, interdisciplinary teamwork pedagogy and professional standards (Table 12).

Learner

A learner centered environment uses learners' capabilities as a starting point for learning, and focuses on their prior experiences, preconceptions, current knowledge, skills, attitudes, and cultural perspectives (National Research Council, 2000). Results from this study provide information to describe the learners within the LEND programs. LEND programs have an interdisciplinary mix of professionals, typically from at least five different disciplines. This diversity allows for learners to develop hands-on knowledge about different professional roles and competencies and how to communicate with other professionals, two competencies which were found to be important in the literature as well as in this study. LEND programs provide training to graduate students, who include a mix of full-time and part-time graduate students, clinical practitioners, doctoral, and post-doctoral students. This is significant and different than most national professional programs since fewer than 15% of health profession programs have interprofessional programs (Greiner & Knebel, 2003) and fewer than 53% of special education programs even have content on collaboration (Carlson, Brauen, Klein, Schroll, & Willig, 2002).

LEND programs were selected due to their interdisciplinary nature; and it appears that grant funding is successful in supporting the interdisciplinary features of the program.

What is less clear in the findings is how the LEND programs use information about trainees to develop a learner centered environment. Results indicate a few learner centered instructional and assessment strategies that are being used within LEND programs. Several LEND programs cited the use of an Individualized Learning Plan, which trainees complete upon acceptance to examine current knowledge and skills and to tailor training experiences to meet personalized goals and learning objectives. One program uses the Readiness for Interprofessional Learning scale, which is described as a tool “designed to assess the readiness of healthcare students for shared learning” (Thannhauser et al., 2010, p. 339). It would be instructive to know how these tools are used to shape instructional methods.

The learner focus is particularly important given the differences in background and experience that can exist among graduate students and professionals in the program. The literature addresses the influence that systemic factors have on interdisciplinary collaboration. Of particular importance are factors of power disparity within the social system and role specialization within the professional system, as these attitudes of specialization, professional immersion, and role inequality may be already engrained at this training level. Further investigation of these learner-centered factors would provide additional insight into the next focus area – the critical knowledge base.

Knowledge

For learners to acquire necessary knowledge and skills, the learning environment needs to have a strongly defined content focus that is well organized in its subject matter and its structure (disciplinary knowledge). Additionally the learning environment needs to be guided by how to

teach and promote learning of that content (pedagogical content knowledge; National Research Council, 2000). Findings were analyzed on the basis of these two areas.

Disciplinary knowledge. The knowledge centered lens of the HPL framework focuses on the critical elements that should be taught, with an understanding of its relevance. The literature demonstrates widespread confusion over the terms “interdisciplinary” (often interchanged with multidisciplinary, transdisciplinary and interprofessional) and teamwork (often interchanged with collaboration). LEND programs, unlike the literature, consistently use the term interdisciplinary across its program websites and syllabi. The use of the term teamwork is not used as consistently, as a variety of terms (team process, partnerships, training, and collaboration) were found. Despite confusion with specific terminology, all programs reported training in the area of interdisciplinary teamwork and collaboration.

A review of the literature and professional competencies of three organizations (CEC, IOM, and MCH) were synthesized into three main content areas: knowledge of professional roles and competencies, group skills, and working with others. These content areas were not entirely supported by the findings of this study, which resulted in three different content themes: 1) communication, 2) culture and diversity, and 3) knowledge and understanding of roles. While “knowledge of professional roles and competencies” and “knowledge and understanding of roles” may seem similar, the roles defined in this study expanded beyond professional roles and competencies to include the roles of families and children with special health care needs on the team. This is consistent with LEND’s program objective promoting innovative practices to enhance family-centered care (AUCD, 2010). Additionally, LEND recognizes the role of families on teams, as they include parents and family members as paid program participants. The broader competency of group skills that was identified in the literature was given a more specific

communication focus in this study. Other group skills, such as conflict resolution, negotiation, problem solving and decision making, were perceived as less important by LEND participants in this study. This is consistent with findings from Thistlethwaite and Moran (2010), whom identified communication as a primary learning outcome from their detailed literature review on interprofessional education, with sub-themes related to negotiation, expressing opinions, listening, and shared decision-making. Finally, working with others was also defined more specifically in this study in terms of culture and diversity. Again, this is consistent with LEND's objective related to promoting innovative practices to enhance cultural competency (AUCD, 2010).

Ratings of critical content were also compared to the Maternal and Child Health (MCH) Leadership Competencies, which guides LEND programs. The results of this study suggest that the training directors' and instructors' perceptions of interdisciplinary teamwork competencies are not aligned with the MCH leadership competencies. Of the survey items rated the ten highest (which is actually 15 items due to ties), only five are derived from MCH competencies. Nine are derived from Council for Exceptional Children (CEC) competencies and two from the literature (note this adds up to 16, as one item was derived from both CEC and MCH). Looking at the top 20 highest rated items (which are the top 34 items due to ties), 13 items are from CEC standards, 11 from MCH, seven from the Institute of Medicine (IOM), and four were derived from the literature (again note that one item was derived from both CEC and MCH). This brings into question whether the MCH standards need to be re-evaluated or whether the programs need to re-align their emphasis with the competencies. It also raises the question of whether there are shared competencies across the different professional organizations.

Evaluation of these competencies should also be compared carefully to learning outcomes synthesized by Thistlethwaite and Moran (2010). In their literature review and synthesis of learning outcomes for interprofessional education, they identified six themes: 1) teamwork, 2) roles and responsibilities, 3) communication, 4) learning and reflection, 5) the patient, and 6) ethics and attitudes. They conclude that learning outcomes need to be viewed in terms of which outcomes can only be provided through interprofessional practice, citing “teamwork learning outcomes... modeling of collaboration, role negotiation and prioritization of service delivery” (p. 512) as examples. This also brings into question whether there is a difference between interprofessional education learning outcomes and interdisciplinary/interprofessional teamwork learning outcomes. Of the identified six themes for interprofessional education, three (teamwork, roles and responsibilities, and communication) are directly linked to interdisciplinary teamwork and overlap with the results of this study and the literature review completed. One theme, learning/reflection, is related to adult learning principles, which corresponds to the How People Learn framework of this study. The theme of the patient was present in the results of this study, and was identified as part of role and responsibilities, rather than a separate theme.

Pedagogical knowledge. Findings from the instructor survey demonstrated that course instructors use a variety of non-traditional teaching models and strategies supported by the literature that focus on learning for deep understanding and that facilitate active learning. Specific strategies reported by course instructors include the use of reflection, instructor modeling, real life cases, and clinical practice. Instructors also use metacognitive strategies such as reflection, self-assessment measures, and journal writing which are supported by literature. However, one of the critical elements for helping promote metacognition in learners is to make

learning explicit, which is often done through use of a syllabus that outlines learning objectives. With 42.3% of the instructors not using a syllabus, it is unclear how learning objectives are being made explicit to trainees. Findings also suggest that theoretical frameworks (such as contact hypothesis, case-based learning, or problem-based learning) are not used to guide instruction in interdisciplinary teamwork education. This is consistent with findings from a global study on interprofessional education which found that learning objectives were not made explicit or assessed and that theoretical frameworks are not used to guide interprofessional education (Rodger & Hoffman, 2010).

Finally, it is unclear how trainees are being prepared for interdisciplinary teamwork within experiential learning opportunities. While these opportunities are grounded in real life experiences and active learning, more research is needed to look at how metacognitive strategies and learning for deep understanding is being incorporated into these experiences. Research supports that placement in teams alone does not provide for team learning; preparation of the knowledge and skills to participate in teams is needed (Hansen, 2006). Furthermore, without the strategies to address preconceptions and learning for deeper levels of understanding, learners are more likely to assimilate what is being taught with their preexisting preconceptions rather than learning new knowledge (National Research Council, 2000).

Assessment

Best practice in teamwork pedagogy highlights the use of formative and summative assessment which is explicit to the learners and aligned with learning objectives (National Research Council, 2000; Thistlethwaite & Moran, 2010; Young & Henquinet, 2000). Findings from this study suggest that learning objectives are not explicit and not assessed, as 42.3% of instructors teaching a seminar or lecture did not use a syllabus and assess outcomes. While this is

not consistent with best practice, it is consistent with current practices in interprofessional education (Rodger & Hoffman, 2010), which found that only 37% of participants assessed learning outcomes. Findings reveal that course instructors appear to be assessing outcomes more than seminar or lecture instructors; however, the types of assessments used are not consistent with recommendations from the literature. For instance, all of the course instructors used instructor feedback and self reflection/self-assessments as formative assessments, which are supported by the literature. But only 25% used peer evaluations and none use individual contribution files, two practices supported by the literature (Brooks & Ammons, 2003; Hansen, 2006; Pfaff & Huddleston, 2003; Young & Henquinet, 2000).

Instructors used a variety of product measures as summative assessments. Of particular interest, summative products that are completed by teams (e.g., project proposals, papers, or presentations) are perceived by instructors as more effective than individually completed projects; however, it does not appear that team products are consistently required. Only one instructor reported the use of a standardized skill measure in the course and none used standardized knowledge or attitude measures. This is consistent with the literature, which found that although numerous tools are available to measure interprofessional collaborative practice, these tools lack sound psychometric properties or are limited in their scope (e.g., only measuring nurse-physician collaboration; Thannhauser et al., 2010). In this study, LEND programs reported the use of self report assessments, such as the MCH Leadership Competencies. Again, this is consistent with reviews of learning outcomes for interprofessional education, in which outcomes that are used measure changes in attitude or behavior, rather than knowledge (Thistlethwaite & Moran, 2010). However, perceptions of the critical content for interdisciplinary teamwork

personnel preparation did not align with the MCH Leadership Competencies, so it is unclear if this measure is matching learning objectives and learning content.

Community

A community centered learning environment involves the development of a community of learning that uses non-traditional teaching methods and the development of norms to guide teams within the classroom environment. This type of learning community often needs external support. Findings confirm the interdisciplinary nature of the LEND training programs, with respect to the educators and the trainees. This interdisciplinary focus is also extended into community support, as 87.5% of the respondents indicated that community partners are involved in the interdisciplinary teamwork training. Findings revealed that only half of the courses are using student teams in the teamwork training. This runs counter to the literature that clearly states that in order to learn about interdisciplinary teamwork, students need to learn within interdisciplinary teams. Additionally, the courses that are using teams do not appear to be systematically using recommendations from the literature about class norms for team size, class meeting time, and role assignments.

Table 12

Assessment of Similarities/Differences Between Research Evidence and Real-World LEND

Interdisciplinary Teamwork Education Practices

HPL	Evidence-Based Practice	LEND Program Practice	x/☑
Learner	1. Account for needs of interdisciplinary learners	Several of the LEND programs cited use of an Individual Learning Plan that is developed with every trainee according to their experiences and	?

	2. Create relevant learning experiences	learning needs. One instructor reported use of the Readiness for Interprofessional Learning scale, but not <i>how</i> this scale was used.	
	3. Address student preconceptions of teamwork and other professions		
Knowledge	<u>Disciplinary Knowledge</u>		
	1. Consistent use of terms	The term “interdisciplinary” was reflected across the LEND programs; variations of teamwork are used.	<input checked="" type="checkbox"/>
	2. Learning objectives	Training directors and course instructors rated	?
	a. Knowledge of professional roles and competencies	content related to “knowledge and understanding of roles,” “communication with families, children, and team members,” and “culture and diversity” as the critical content areas. These ratings were not consistent with MCH professional competencies.	
	b. Groups skills		
	c. Working with others		
	<u>Pedagogical Knowledge</u>		
	1. Focus on learning for deep understanding	Course instructors used a variety of strategies with all reporting the use of reflection, instructor modeling, real life cases and clinical practice. Did not use theoretical frameworks to guide learning.	<input checked="" type="checkbox"/> X

	2. Promote metacognitive strategies	Use of reflection (100%), self assessment measures (100%) and journal writing (100%); however only 42.3% made learning objectives explicit with the use of a syllabus.	?
	3. Facilitate active learning through the use of non-traditional teaching models and strategies	Variety of instructional strategies used, including evidence of effective non-traditional teaching methods of real-life case studies and clinical placements	<input checked="" type="checkbox"/>
Assessment	Assessment procedures should be explicit and based on learning objectives.	42.3% did not use a syllabus and assessment measures.	X
	1. Formative Assessment	Of the instructors who had a course with a syllabus and assessment, 100% used instructor/expert feedback and self reflection/self-assessments. Only 25% reported use of peer evaluations; 0 reported use of an individual contributions file.	X
	2. Summative Assessment	Only one standardized assessment was used; use of self-report measure but unclear if this matches the knowledge content taught. Mixed use of a variety of summative products, but those	X

		completed by a team tended to be rated higher than those completed individually.	
Community	Use of interdisciplinary teams	100% of faculty and trainees were interdisciplinary. Only 50% of the course instructors placed students in teams.	X
	1. Non-traditional teaching methods	Course instructors reported a variety of non-traditional teaching methods, including problem-based and case-based learning, use of real-life cases or clinical practice.	<input checked="" type="checkbox"/>
	2. Class Norms	100% of course instructors using teams used instructor assigned teams. Team size was 3 and 4. Teams met in class, but 50% only met every few sessions.	?
	3. Community support	87.5% of the programs used community partners in teamwork training.	<input checked="" type="checkbox"/>

Note: = LEND program practice is aligned with best practice; X = LEND program practice is not aligned with best practice; and ? means further evaluation is needed.

Study Limitations

The primary limitations of this study are small sample size, particularly for course instructors. This study aimed to provide detailed information about the interdisciplinary teamwork pedagogy of the LEND training programs and was therefore limited to a population of 38 programs. While this limited number was anticipated, timing of the email invitation coincided with holidays, end of semester duties, and ultimately a major grant deadline for LEND programs. To account for this, deadlines were extended and an additional email reminder was sent. The

results represent perspectives of leaders in 63.2% of the LEND programs and must be cautiously applied to the LEND network. Furthermore, the instructor survey participant size was anticipated to be small, as not every LEND program offers an interdisciplinary teamwork course. However, following phase I, no instructors were referred to phase II. To account for the initial lack of participation, the recruitment strategy was changed to have training directors email instructors the recruitment email and survey link. At this time, the Instructor Survey was also modified to include not only *course* instructors, but all instructors (seminar, lecture and course) who teach interdisciplinary teamwork content. This increased the sample size considerably, resulting in a much broader survey of instructors. Despite this, the focus on didactic instructional and assessment strategies remained on interdisciplinary teamwork *courses*, and therefore, the sample was limited to four.

Another identified limitation to this study is the survey instrumentation. The surveys were new instruments developed for the purposes of this study. In that sense, they are specific to the needs of this study and the population; however, they were new instruments. In order to account for this limitation, several strategies were employed. The surveys were reviewed by expert reviewers familiar with LEND programs and interdisciplinary teamwork coursework. Following expert review, changes were made to encompass the broad array of LEND programs in order to better survey the interdisciplinary teamwork training methods as this was an area of interest from the LEND Program Director and it was an area of concern of several reviewers due to the varied nature of LEND training programs. Changes were also made to some items for clarification and content was added in areas identified as relevant (such as conflict resolution). Following expert review, field tests were conducted with participants with specific knowledge of LEND programs and/or interdisciplinary teamwork courses. Changes were once again made to

the survey, primarily focusing on order of items. Every attempt was made to increase the validity of the surveys based on the expert reviews and field testing. Despite this, the surveys were still self-report measures. It appears that a number of items still were unable to capture the variability of the LEND programs, as some responses did not match or indicated confusion about the definition of instructional formats (for instance, one response indicated that they have a teamwork course, but then later describing it as a seminar). As a result, findings remain unclear as to the number of courses taught or how they are taught.

A major limitation to this study was the lack of participants in the final phase of the study in which a qualitative approach was going to be used as a follow-up to the surveys with course instructors. Information through instructor interviews and document analysis was going to be used to further describe the course content, pedagogical activities, and assessment processes. While general content, instructional activities, and assessment processes were revealed through the study, *how* these activities and assessments are used within the courses is unknown. Of particular importance are the remaining questions regarding how learner-centered principles are applied in the program. For instance, how is the Individualized Learning Plan used to shape instructional methods for individualized learning or how do programs address differences in background and experiences to address student preconceptions?

Implications for Practice

Findings from this study include several implications for interdisciplinary teamwork personnel preparation. At a national level, program competencies should be reviewed in light of the findings from this study along with findings from similar studies on interprofessional education (Rodger & Hoffman, 2010; Thistlethwaite & Moran, 2010) in order to guide programs regarding appropriate disciplinary knowledge. However, at this time, it appears that two

competencies are strongly supported by LEND program directors and instructors, as well as international interprofessional programs (Rodger & Hoffman) and literature (Thislethwaite & Moran): 1) the role of children with special health care needs and the family and 2) professional roles and responsibilities. Programs should examine their competencies and pedagogical practices related to these two areas.

The role of children with special health care needs and the family was exemplified through strong support for competencies related to listening to the concerns of families and communicating effectively with families. Practical implications include examination of the roles of families in didactic and experiential opportunities as well as instructional methods and assessment strategies. LEND programs include families as a core discipline for trainers and trainees, and 95.8% of respondents reported that families are involved in the teamwork training. However, programs need to evaluate how the families are involved. Questions to ask include: Are opportunities being provided to learn about, practice, reflect on, and receive feedback on listening and communicating with families? Are methods being used to address pre-conceptions regarding families? Are learning objectives regarding families made clear with related strategies to monitor learning? Does assessment address interactions with families and are families a part of this assessment process?

Similarly, the results of this study along with professional competencies, interprofessional programs, and the literature also strongly support competencies related to understanding roles and responsibilities. LEND programs reported that multiple professions are involved in teamwork training as faculty and trainees. Again, programs need to evaluate how the professions are involved and how the learning occurs. Questions to guide this evaluation include: How explicit are learning objectives related to professional roles and responsibilities? How are

learners' examining their preconceptions regarding their own and others' professional roles?

What opportunities are being given to support and provide disciplinary team opportunities, such as assignments, projects, etc.? Results from this study revealed several courses with course objectives related to role and responsibilities, which could be used to guide learning objectives and outcomes.

Another implication for practice is the necessity to make learning explicit. While LEND programs provide relevant learning opportunities in an interdisciplinary environment, these learning opportunities need to be made explicit. As Clark (2006) pointed out, students need to “recognize that the teamwork process – of dealing with communication and conflict problems, for example – is the learning experience itself, not a distraction from learning” (p. 587). With almost 43% of programs reporting no use of syllabi or learning objectives, it appears that the learning process is not being made explicit. While there are a variety of instructional methods across LEND programs (seminars, lectures, courses), the literature supports that making learning explicit helps develop metacognition. In practice, learners need to be told clearly what they are learning, why they are learning it, and how they will be learning it (D'Eon, 2005). Then, they need to reflect on what they have learned, their experiences, and how it relates to their individual and team learning goals. This needs to be done frequently so that ongoing examination of the learning process about interdisciplinary teamwork becomes a well-established professional skill and disposition. Reflection questions, journals, self-assessments, and team assessments should be used to encourage this analysis and to help bring interdisciplinary teamwork to the forefront of learning.

A final implication for practice is to develop a community of learning to extend and share the instructional methods and assessment practices being used. The MCH Training Grantee

Network has an established website that provides information through an open forum about its leadership competencies and the conceptual framework (MCH, 2009). Within each competency, information is provided regarding relevant knowledge and skills, as well as educational experiences and assessment tools. Currently there are no educational experiences listed under the competency Interdisciplinary Team Building. This forum could provide an opportunity for a faculty learning community to share pedagogical approaches used across LEND and MCH programs and to assess learning outcomes across the network.

Recommendations for Further Research

While this study yielded a descriptive study of interdisciplinary teamwork education, there are many unanswered questions and areas for improvement and future research. One focus of this study was to describe interdisciplinary teamwork instructional strategies and assessment methods used in didactic course instruction. Based on this study, it appears that most of the learning experiences that occur in the area of interdisciplinary teamwork within LEND programs occur through experiential opportunities. To fully understand the extent of interdisciplinary teamwork training, experiential opportunities need to be fully examined. Examination of experiential opportunities needs to consider use of conceptual frameworks and organizational structures used to guide learning, explicit examination of students' preconceptions, reflection and other strategies to promote metacognition, opportunities to monitor learning (explicit learning, individual and team reflection on learning and goals), formative assessment (use of peer evaluations, report from teams, reflection journals), and summative assessment. Furthermore, the varied nature of LEND training programs, and perhaps use of their terms for what constitutes a course, seminar, and lecture, made it challenging to quantify training opportunities in a survey. Further research using focus groups or interviews would allow for full description of the

programs and clarification regarding the methods used for training, such as differences between courses, seminars, and lectures. Focus groups and interviews could also provide for increased understanding regarding the nature of interdisciplinary teamwork training opportunities, particularly the experiential opportunities.

Another focus of this study was to describe the critical content for personnel preparation in interdisciplinary teamwork. Perceptions from this study about critical content, compiled from training directors and instructors, are not congruent with MCH Leadership Competencies or recommendations from the literature. Additionally, recent research on interprofessional education learning outcomes (Thistlethwaite & Moran, 2010) appears to be interconnected with interdisciplinary teamwork learning outcomes. Further research on learning outcomes at the LEND program level and the international level are warranted. This may include further analysis of the knowledge and skill competencies within the surveys. Survey items were grouped according to the literature and professional competencies into five categories (Knowledge of Roles, Group Process Knowledge, Teamwork Skills, and Communication Knowledge and Skills, Collaboration Skills) for ease of survey administration. Factor analysis to verify these categories could not be completed due to low sample sizes; however, this may be examined in the future.

Additional research should be done to evaluate the competency items on the survey with different professional groups, such as special educators and health care providers, to determine if there are shared competencies. For instance, LEND's program objectives are family-centered, which was demonstrated in the high rating of family-centered competencies. Similarly, LEND programs rated team meeting principles and stages of team development as not as important; however, LEND programs tend to operate in team settings that are not as traditional as described

in the team-based literature. Determining if these competencies are specific to LEND or are consistent across different professional organizations would expand these findings.

This information could be aligned with research from Thistlethwaite and Moran to inform professional standards, such as IOM, CEC, and MCH.

Finally, it is necessary to research outcomes of interdisciplinary training on interprofessional practice. Assessments used within programs need to be examined in order to research the effect of training on learning outcomes. Additionally, since the purpose of interdisciplinary teamwork training is to make an impact on the provision of services to children with special health care needs and their families, research needs to examine the effectiveness of and the relationship between education and practice (Clark, 2011). In order to do this, professional competencies need to be clearly defined and aligned with learning objectives and adequate tools to assess interdisciplinary teamwork need to be identified (Thannhauser et al., 2010).

Summary

This descriptive study provided for an understanding of interdisciplinary teamwork pedagogy within one national network of training programs. Results demonstrate the presence of interdisciplinary teamwork training across the nation. Many professions, families, and community agencies are involved in the training, which appears related to the support of the interdisciplinary nature of the grant supporting this program. Findings revealed many examples of instructional strategies and assessment methods that are aligned with the literature and best practice standards; however, it is clear that interdisciplinary teamwork training has not been systematically implemented. Reasons for this include the varied nature of the training programs themselves, which need further study. However, the differences between the directors' and

instructors' perceptions of important competencies and the competencies highlighted by the national organization may also be influencing how programs are implementing the training within their programs. I hope this will be a catalyst in promoting discussion and examination about practice competencies and sharing examples of how to introduce pedagogical principles across training methods to support interdisciplinary teamwork education.

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Appendix A

Maternal Child Health Leadership Competencies

- I. Self
 - a. MCH Knowledge Base
 - b. Self-reflection
 - c. Ethics and Professionalism
 - d. Critical Thinking
- II. Others
 - a. Communication
 - b. Negotiation and Conflict Resolution
 - c. Cultural Competency
 - d. Family-centered Care
 - e. Developing Others through Teaching and Mentoring
 - f. Interdisciplinary Team Building
- III. Wider Community
 - a. Working with Communities and Systems
 - b. Policy and Advocacy

(MCH, 2009)

Appendix B

Council for Exceptional Children Professional Standards

1. Foundations
2. Development and Characteristics of Learners
3. Individual Learning Differences
4. Instructional Strategies
5. Learning Environments and Social Interactions
6. Language
7. Instructional Planning
8. Assessment
9. Professional and Ethical Practice
10. Collaboration

(CEC, 2009)

Appendix C

Institute of Medicine Core Competencies

- Provide patient-centered care
- Work in interdisciplinary teams
- Employ evidence-based practice
- Apply quality improvement
- Utilize informatics

(Greiner & Knebel, 2003)

Appendix D

Maternal and Child Health Leadership Competency: Others

A. Communication

a. Knowledge Areas

Through participation in this program, a participant will know:

- Principles of communication for all three communication modalities – verbal, written, and nonverbal.
- Challenges to communication, such as contextual mediators, literacy levels, cultural meanings, professional terms, and acronyms; and approaches to overcome those challenges.
- The MCH vocabulary (for example, acronyms and terms specific to the MCH field) to express and understand information.

b. Skill Areas

Basic. Through participation in this program, a participant will:

1. Share thoughts, ideas, and feelings effectively in discussions, meetings, and presentations with diverse individuals and groups.
2. Write clearly and effectively to express information about issues and services that affect MCH population groups.
3. Understand nonverbal communication cues in self and others.
4. Listen attentively and actively.
5. Tailor information for the intended audience(s) (consumers, policymakers, clinical, public, etc.) by using appropriate communication modalities (verbal, written, nonverbal).

Advanced. With more experience and building on the basic skills, MCH leaders will:

6. Demonstrate the ability to communicate clearly through effective presentations and written scholarship about MCH populations, issues, and/or services.
7. Articulate a shared vision for improved health status of MCH populations.
8. Employ a repertoire of communication skills that includes disseminating information in a crisis, explaining health risks, and relaying difficult news.
9. Refine active listening skills to understand and evaluate the information shared by others.
10. Craft a convincing MCH story designed to motivate constituents and policymakers to take action.

B. Negotiation and Conflict Resolution

a. Knowledge Areas

Through participation in this program, a participant will know:

- Characteristics of conflict and how conflict is manifested in organizational contexts.
- Sources of potential conflict in an interdisciplinary setting. These could include the differences in terminology and cultures among disciplines and the relationships between mentors and students.
- The theories pertaining to conflict management and negotiation among groups with conflicting interests.
- The strategies and techniques useful in successful negotiation.

b. Skills

Basic. Through participation in this program, a participant will:

1. Apply strategies and techniques of effective negotiation and evaluate the impact of personal communication and negotiation style on outcomes.

Advanced. With more experience and building on the basic skills, MCH leaders will:

2. Demonstrate the ability to manage conflict in a constructive manner.

C. Cultural Competency

a. Knowledge Areas

Through participation in this program, a participant will know:

- The influence of personal biases and assumptions on individual and organizational behavior.
- How cultural, ethnic, and socioeconomic factors influence the access to health care services.
- The impact of culturally competent health care practices on individuals' access to health services, participation in health promotion and prevention programs, adherence to treatment plans, and overall health outcomes.

b. Skills

Basic. Through participation in this program, a participant will:

1. Conduct personal and organizational self-assessments regarding cultural competence.
2. Assess strengths of individuals and communities and respond appropriately to their needs based on sensitivity to and respect for their diverse cultural and ethnic backgrounds and socioeconomic status.

3. Suggest modifications of health services to meet the specific needs of a group or family, community, and/or population.

Advanced. With more experience and building on the basic skills, MCH leaders will:

4. Employ strategies to assure culturally-sensitive public health and health service delivery systems.
5. Integrate cultural competency into programs, research, scholarship, and policies.

D. Family-Centered Care

a. Knowledge Areas

Through participation in this program, a participant will know:

- The definition of family-centered care and the origin of the family-centered care perspective.
- At least one example of the principles of family-centered care in MCH policies, programs, or clinical practice (e.g., a medical home model of primary care).

b. Skills

Basic. Through participation in this program, a participant will:

1. Solicit and use family input in a meaningful way in the design or delivery of clinical services, program planning and evaluation.
2. Operationalize the “family-centered care” philosophical constructs (e.g., families and professionals share decision making; professionals use a strengths-based approach when working with families) and use these

constructs to critique and strengthen practices, programs, or policies that affect MCH population groups.

Advanced. With more experience and building on the basic skills, MCH leaders will:

3. Ensure that family perspectives play a pivotal role in MCH research, clinical practice, programs, or policy (e.g., in community needs assessments, processes to establish priorities for new initiatives or research agendas, or the development of clinical guidelines).
4. Assist primary care providers, organizations, and/or health plans to develop, implement, and/or evaluate models of family-centered care.
5. Incorporate family-centered and medical home models of health care delivery into health professions and continuing education curricula and assess the effect of this training on professional skills, health programs, or policies.

E. Developing Others through Teaching and Mentoring

a. Knowledge Areas

Through participation in this program, a participant will know:

- A variety of teaching strategies appropriate to the goals and context of the session.
- Principles of adult learning.
- Characteristics of a positive mentoring relationship, including confidentiality, mutuality of purpose, and trust.
- Responsibilities of both parties in the mentor-protégé relationship.

b. Skills

Basic. Through participation in this program, a participant will:

1. Recognize and create learning opportunities for others.
2. Participate in a mutually beneficial mentoring relationship.

Advanced. With more experience and building on the basic skills, MCH leaders will:

3. Teach audiences of different sizes, backgrounds, and settings.
4. Incorporate feedback from learners to evaluate teaching effectiveness.
5. Give and receive constructive feedback about behaviors and performance.

F. Interdisciplinary Team Building

a. Knowledge Areas

Through participation in this program, a participant will know:

- Team building concepts:
 - Stages of team development.
 - Practices that enhance teamwork.
 - Managing team dynamics.
- Various approaches to practice (evolution from multidisciplinary to interdisciplinary to transdisciplinary practice).
- The roles and competencies of individual disciplines.

b. Skills

Basic. Through participation in this program, a participant will:

1. Identify and assemble team members appropriate to a given task (e.g., research question, program, curriculum, clinical care issue).

2. Develop and articulate shared vision, roles and responsibilities.
3. Facilitate group processes for team-based decisions (e.g., foster collaboration and cooperation).
4. Value and honor diverse perspectives (e.g., discipline, ethnic, cultural, economic) of team members.

Advanced. With more experience and building on the basic skills, MCH leaders will:

5. Identify forces that influence team dynamics.
6. Enhance team functioning, redirect team dynamics, and achieve a shared vision.
7. Share leadership based on appropriate use of team member strengths in accomplishing activities and managing challenges for the team.
8. Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care.
9. Use shared outcomes to promote team synergy.

Appendix E

Definitions of Collaboration and Teamwork

Collaboration	“formal and informal interactive processes among teachers and related services personnel for planning, development, and monitoring of interdisciplinary interventions”	Barnes & Turner, 2001, p. 83
	“a system of planned cooperative activities where general educators and special educators share roles and responsibilities”	Wiggins & Damore, 2006, p. 49
	“an interactive process in which individuals with varied life perspectives and experiences join together in a spirit of willingness to share resources, responsibility, and rewards in creating inclusive and effective educational programs and environments for students with unique learning capacities and needs”	Rainforth & York-Barr, 1997
	“enables educators with diverse expertise to generate creative approaches to traditional educational approaches...include[s] the following: (a) Participants must have mutual goals, (b) they must voluntarily participate in the activity, and (c) they must each have equally valued personal or professional resources to contribute”	Coben, Thomas, Sattler, & Morsink, 1997, p. 429
	“Collaboration is essential because invention requires reflective problem solving through discourse, a social constructivist process in which the voice and collaboration of each team member contributes to the construction of new knowledge (meaning) within the organization”	Skrtic, Sailor, & Gee (1996), p. 144
	“an interactive process that enables people with diverse expertise to generate creative solutions to mutually defined problem	Villa, Thousand, Nevin, & Malgeri, 1996, p. 170
Interpersonal collaboration	“a style for direct interaction between at least two co-equal parties voluntarily engaged in shared decision making as they work toward a common goals”	Friend & Cook, 2010, p. 7

Collaborative teaming	“two or more people working together toward a common goal”	Rainforth & York-Barr, 1997
Collaborative team	“a group of people with a common goal and a shared belief system who work with parity and distributed functions in a collaborative teaming process”	Thousand & Villa, 2000
Collaborative teamwork	<p>“a group of educators, related services providers, and family members who work together to pursue shared goals and share skills for implementing specific educational strategies or programs to support children with disabilities to learn in general education classes”</p> <p>“a set of values that encourages behaviors such as listening and constructively responding to points of view expressed by others, giving others the benefit of the doubt, providing support to those who need it, and recognizing the interests and achievements of others”</p> <p>“work accomplished jointly by a group of people in a spirit of willingness and mutual reward”</p>	<p>Giangreco, Prelock, Reid, Dennis, & Edelman, 2000</p> <p>Katzenbach & Smith, 1993, p. 21</p> <p>Orelove & Garner, 1998, p. 4</p>
Collaborative consultation	“an interactive process that enables teams of people with diverse expertise to generate creative solutions to mutually defined problems. The outcome is enhanced, altered and produces solutions that are different from those that any individual team member would produce independently. The major outcome of collaborative consultation is to provide comprehensive and effective programs for students with special needs within the most appropriate context, thereby enabling them to achieve maximum constructive interaction with their nonhandicapped peers”	Idol, West, & Lloyd, 1988, p. 55
Collaborative school consultation	“interaction in which school personnel and families confer, consult, and collaborate as a team to identify learning and behavioral needs and to plan, implement, evaluate, and revise as needed the educational programs for serving those needs”	Dettmer, Dyck, & Thurston, 1999, p. 6.
Teams	“discrete units of performance”	Katzenbach & Smith, 1993, p. 21

Teamwork	<p>“encourages and helps teams succeed”</p> <p>“the ways people work together cooperatively and effectively”</p>	<p>Katzenbach & Smith, 1993, p. 21</p> <p>Manion, Lorimer, & Leander, 1996, p. 5</p>
Team	<p>“a small number of consistent people committed to a relevant shared purpose, with common performance goals, complementary and overlapping skills, and a common approach to their work. Team members hold themselves mutually accountable for the teams’s results or outcomes”</p> <p>“a specific structural unit in the organisation”</p> <p>“small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable”</p>	<p>Manion, Lorimer, & Leander, 1996, p. 6</p> <p>Manion, Lorimer, & Leander, 1996, p. 5</p> <p>Katzenbach & Smith, 1993, p. 45.</p>
Interdisciplinary collaboration	<p>“an interpersonal process through which members of different disciplines contribute to a common product or goal.</p>	<p>Berg-Weger & Schneider, 1998, p. 98</p>

Appendix F

Institute of Medicine Competency: Work in Interdisciplinary Teams

- Learn about other team members' expertise, background, knowledge, and values
- Learn about individual roles and processes required to work collaboratively.
- Demonstrate basic group skills, including communication, negotiation, delegation, time management, and assessment of group dynamics.
- Ensure that accurate and timely information reaches those who need it at the appropriate time.
- Customize care and manage smooth transitions across settings over time, even when the team members are in entirely different physical locations
- Coordinate and integrate care processes to ensure excellence, continuity, and reliability of the care provided.
- Resolve conflicts with other members of the team.
- Communicate with other members of the team in a shared language, even when the members are in entirely different physical locations.

(Greiner & Knebel, 2003, p. 56)

Appendix G

Council for Exceptional Children Professional Standard: Collaboration

Knowledge

1. Models and strategies of consultation and collaboration
2. Roles of individuals with exceptional learning needs, families, and school and community personnel in planning of an individualized program
3. Concerns of families of individuals with exceptional learning needs and strategies to help address these concerns
4. Culturally responsive factors that promote effective communication and collaboration with individuals with exceptional learning needs, families, school personnel, and community members

Skills

1. Maintain confidential communication about individuals with exceptional learning needs
2. Collaborate with families and others in assessment of individuals with exceptional learning needs
3. Foster respectful and beneficial relationships between families and professionals
4. Assist individuals with exceptional learning needs and their families in becoming active participants in the educational team
5. Plan and conduct collaborative conferences with individuals with exceptional learning needs and their families
6. Collaborate with school personnel and community members in integrating individuals with exceptional learning needs into various settings

7. Use group problem-solving skills to develop, implement and evaluate collaborative activities
8. Model techniques and coach others in the use of instructional methods and accommodations
9. Communicate with school personnel about the characteristics and needs of individuals with exceptional learning needs
10. Communicate effectively with families of individuals with exceptional learning needs from diverse backgrounds
11. Observe, evaluate and provide feedback to paraeducators

(CEC, 2009)

Appendix H

Training Director Survey (Version 2 11/1/2010)

Page 1

How many total hours are focused on training long term trainees in the area of interdisciplinary teamwork and collaboration?

{Choose one}

- 40 or more hours
- 30-39 hours
- 20-29 hours
- 10-19 hours
- 5-9 hours
- Less than 5 hours

Is the training in interdisciplinary teamwork and collaboration completed through

{Choose one}

- Didactic opportunities (e.g. weekly lecture series or courses, monthly seminars, group projects, university courses for credit)
- Experiential opportunities (e.g. clinics, leadership project opportunities, research)
- Both

This survey is designed to inform us about current preparation in interdisciplinary teamwork, specifically about the critical content and the current methods used to prepare LEND long-term trainees in the area of interdisciplinary teamwork.

Please answer the following questions regarding how your LEND program prepares long-term trainees in the area of interdisciplinary teamwork.

Page 2

Do your didactic opportunities for training on interdisciplinary teamwork and collaboration primarily involve

{Choose all that apply}

- a stand-alone course on teamwork and collaboration (for university credit) with a syllabus, assessment of knowledge and skills, and regular meetings.
- a stand-alone course on teamwork and collaboration (no university credit) with a syllabus, assessment of knowledge and skills, and regular meetings
- lecture or series of lectures on teamwork and collaboration within another course or courses (e.g., focused on disability, leadership, etc.)
- a seminar, conference, or seminar series on teamwork (not affiliated with a course, with no syllabus or assessment of knowledge and skills)

What setting(s) are the focus of the course?

(please check all that apply)

{Choose all that apply}

- School or School Systems (including early childhood, elementary, and secondary)
- Early Intervention
- Post-Secondary Setting
- Clinic/Private Practice
- Medical (including hospital in-patient and out-patient)
- Public Health/Title V
- Community Based Services
- Other []

What is the name of the course?

{Enter text answer}

[]

When is the course offered for most trainees in relation to the other courses in your program?

{Choose one}

- Teamwork is one of the first courses trainees take
- Teamwork in in the middle of the program
- Teamwork in one of the last courses trainees take
- There is no specific sequence/the sequence varies

Is the course open to non-LEND long-term trainees?

{Choose one}

- Yes
- No

Page 3

How many times does the seminar, conference or seminar series meet on the area of interdisciplinary teamwork and collaboration?

{Choose one}

- 1 time
- 2 times
- 3-4 times
- 5-6 times
- 7 or more

How long is each seminar or conference on interdisciplinary teamwork and collaboration?

{Choose one}

- 1 hour
- 2 hours
- 3-4 hours
- 5-6 hours
- 7 or more

Are the following used within the series or seminar?

(do not include syllabi or assessments written for a different course that is not on teamwork)

{Choose one}

- syllabus only
- only assessment of trainees' knowledge and skills (e.g., tests, quizzes, graded projects)
- both syllabus and assessment of trainees' knowledge and skills
- neither is used

Page 4

What experiential opportunities does your LEND program use to train in the area of interdisciplinary teamwork?

(please check all that apply)

{Choose all that apply}

- Interdisciplinary collaboration activities (in clinics, school, independent living centers., etc.)
- Leadership project opportunities
- Experiences with individuals with disabilities and their families
- Team research projects
- Other []

Page 5

Are interdisciplinary faculty involved in the overall training of interdisciplinary teamwork and collaboration?

{Choose one}

- Yes
- No

How are they involved in the teamwork training?

(please check all that apply)

{Choose all that apply}

- primary instructor
- two or more interdisciplinary faculty co-teach
- interdisciplinary faculty guest lecture
- role-play
- modeling
- evaluation (assessment) of trainees
- observation
- Other []

What interdisciplinary faculty disciplines are involved in teamwork training?

(please check all that apply)

{Choose all that apply}

- Audiology
- Family
- Genetics
- Health Administration
- Nursing
- Nutrition
- Occupational Therapy
- Pediatrics/Medicine
- Physical Therapy
- Psychology
- Social Work
- Special Education
- Speech Language Pathology
- Other []

Page 6

Are community partners involved in the overall teamwork training?

{Choose one}

Yes

No

How are they involved in the teamwork instruction?

(please check all that apply)

{Choose all that apply}

Direct Instruction (lectures, leading activities, etc.)

Guest Lecture

Role Play

Modeling

Evaluation (assessment) of trainees

Observation

Other []

Page 7

Knowledge of Roles

Knowledge of the roles and competencies of individual disciplines

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Identify team members appropriate to a given task

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Learn about other team members' expertise, background, knowledge, and values

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Openness to learning about other professions

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Recognize the constraint of one's role and skills

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

The following are competencies related to interdisciplinary teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Page 8

Group Process Knowledge

Knowledge of the stages of team development (e.g., forming, storming, norming, and performing)

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of how to manage team dynamics

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Identify forces that influence team dynamics

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of various approaches to practice (e.g., multidisciplinary, interdisciplinary, transdisciplinary)

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of models and strategies of consultation

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of models and strategies of collaboration

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of individual roles used to work collaboratively

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of principles of communication

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of team meeting principles (size of teams, meeting agendas, assigned roles, etc.)

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of characteristics of conflict

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of sources of potential conflict in an interdisciplinary setting

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of the strategies and techniques useful in successful negotiation

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of the theories pertaining to conflict management and negotiation among groups with conflicting interests

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to interdisciplinary teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Page 9

Teamwork Skills

Demonstrate negotiation skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate delegation skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate the ability to manage conflict in a constructive manner

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate time management skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate assessment of group dynamics

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Use group problem-solving skills to develop, implement, and evaluate collaborative activities
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Resolve conflicts with other members of the team
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Develop and articulate a shared team vision
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Model techniques and coach others in instruction or accommodations
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Develop and articulate shared roles and responsibilities
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Negotiate roles and responsibilities with other team members
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Facilitate group process for team-based decisions
{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Share leadership based on appropriate team members strengths

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Use shared outcomes to promote team synergy

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to interdisciplinary teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Page 10

Communication Knowledge and Skills

Knowledge of the principles of communication for all three communication modalities - verbal, written, and nonverbal

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of challenges to communication and approaches to overcome those challenges

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of culturally responsive factors that promote effective communication and collaboration

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Share thoughts, ideas, and feeling effectively in discussions, meetings, and presentations with diverse individuals and groups

{Choose one}

- Not Very Important

- Somewhat Important
- Important
- Very Important

Write clearly and effectively to express information

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Understand nonverbal communication cues in self and others

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate with other members of the team in a shared language

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Ensure that accurate and timely information reaches those who need it at the appropriate time

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate with other team members about the characteristics and needs of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate effectively with families of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate effectively with team members from diverse backgrounds

{Choose one}

- Not Very Important
- Somewhat Important
- Important

Very Important

Maintain confidential communication about children with special health care needs

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Listen to concerns of families of children with special health care needs

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Listen attentively and actively to team members

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Facilitate the sharing of open views to bring out differences

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Tailor information for the intended audience(s) (e.g., consumers, policymakers, clinic, public, etc.) by using

appropriate communication modalities (verbal, written, nonverbal)

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Use technology to support team communication

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

The following are competencies related to interdisciplinary teamwork and collaboration gathered from literature and

professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork

and collaboration for training long-term trainees.

Page 11

Collaboration Skills

Collaborate with others in integrating children with special health care needs into various settings

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Collaborate with families and others in assessment of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Coordinate and integrate care processes

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Plan and conduct collaborative team conferences/team meetings

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Foster respectful and beneficial relationships with team members

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Collaborate in order to customize care

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Manage smooth transitions across settings

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Assist children with special health care needs and their families in becoming active participants in the team

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Value and honor diverse perspectives of team members

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to interdisciplinary teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Page 12

What is your role?

(please check all that apply)

{Choose all that apply}

- LEND Training Director
- LEND Administrator (Program Director, Associate Director, Co-Director)
- LEND Faculty
- UCEDD Training Director
- UDEDD Administrator (Program Director, Associate Director, Co-Director)
- UCEDD Faculty
- Other []

Page 13

Thank you very much for completing this survey.

I would like to send a survey to the course instructor of your teamwork/collaboration course to gather further

information on teamwork instruction. Can you refer your course instructor?

{Choose one}

- Yes
- No

Please click Finish to submit your responses.

Exit Page

Thank you for your willingness to refer your course instructor. To ensure privacy of your responses on this survey, please click on the link below so that I may gather the contact information on the course instructor.

[Click Here to enter the contact information](#)

Appendix I

Appendix B Course Instructor Survey (Version 3 12/27/2010)

Page 1

Do you teach/complete training on interdisciplinary teamwork content?

{Choose one}

- Yes
- No

This survey is designed to inform us about current preparation in interdisciplinary teamwork, specifically about the critical content and the current methods used to prepare students in the area of interdisciplinary teamwork.

Is the training in interdisciplinary teamwork and collaboration completed through

{Choose one}

- Didactic opportunities (e.g. weekly lecture series or courses, monthly seminars, group projects, university courses for credit)
- Experiential opportunities (e.g. clinics, leadership project opportunities, research)
- Both

Page 2

Do your didactic opportunities for training on interdisciplinary teamwork and collaboration primarily involve

{Choose all that apply}

- a stand-alone course on teamwork and collaboration (for university credit) with a syllabus, assessment of knowledge and skills, and regular meetings.
- a stand-alone course on teamwork and collaboration (no university credit) with a syllabus, assessment of knowledge and skills, and regular meetings
- lecture or series of lectures on teamwork and collaboration within another course or courses (e.g., focused on disability, leadership, etc.)
- a seminar, conference, or seminar series on teamwork (not affiliated with a course, with no syllabus or assessment of knowledge and skills)

What setting(s) was the focus of the course?

(please check all that apply)

{Choose all that apply}

- School or School Systems (including early childhood, elementary, and secondary)
- Early Intervention
- Post-Secondary Setting
- Clinic/Private Practice
- Medical (including hospital in-patient and out-patient)
- Public Health/Title V
- Community Based Services
- Other []

What was the name of the course?

{Enter text answer}

[]

Was the course open to non-LEND long-term trainees?

{Choose one}

Yes

No

Did the students in the course represent more than one discipline?

{Choose one}

Yes

No

Was the course focused on teamwork for the provision of services to children with special health care needs?

{Choose one}

Yes

No, please state the population focus of course []

What was the format of the course?

{Choose one}

traditional (e.g., face-to-face or classroom format)

web-based (e.g., synchronous or asynchronous, online)

distance learning (e.g., live, remote site broadcasts)

hybrid format (some classes meet face to face, some online or distance)

Course Information

Please answer the following questions based on the most recent course you taught.

Page 3

What experiential opportunities do you use to train in the area of interdisciplinary teamwork?

(please check all that apply)

{Choose all that apply}

Interdisciplinary collaboration activities (in clinics, school, independent living centers., etc.)

Leadership project opportunities

Experiences with individuals with disabilities and their families

Team research projects

Other []

Page 4

How long is each seminar or conference on interdisciplinary teamwork and collaboration?

{Choose one}

1 hour

2 hours

3-4 hours

5-6 hours

7 or more

Are the following used within the series or seminar?

(do not include syllabi or assessments written for a different course that is not on teamwork)

{Choose one}

syllabus only

- only assessment of trainees' knowledge and skills (e.g., tests, quizzes, graded projects)
- both syllabus and assessment of trainees' knowledge and skills
- neither is used

How many times does the seminar, conference or seminar series meet on the area of interdisciplinary teamwork and collaboration?

{Choose one}

- 1 time
- 2 times
- 3-4 times
- 5-6 times
- 7 or more

Page 5

Student Information

Please give information regarding the learners (students) in the most recent course you taught.

Please fill in all the rows that apply. If you did not have any students from a particular discipline, please check 0.

Student Discipline Information

Family - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Family - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Audiology - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Audiology - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)

- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Genetics - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Genetics - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Health Administration - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Health Administration - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Nursing - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Nursing - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Occupational Therapy - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Occupational Therapy - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Pediatrics/Medicine - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Pediatrics/Medicine - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Physical Therapy - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7

8-10

more than 10

Physical Therapy - Describe the learners' current role

{Choose all that apply}

Clinical Practice (e.g., professional development, or in-service training)

Graduate program (full-time student)

Graduate program (part-time student, not working the field)

Graduate program (part-time student, working in the field)

Doctoral (including Ph.D, EdD, and medical students)

Post-doctoral (including medical residents and fellows)

Psychology - How many learners from this discipline participated in the course?

{Choose one}

0

1

2-4

5-7

8-10

more than 10

Psychology - Describe the learners' current role

{Choose all that apply}

Clinical Practice (e.g., professional development, or in-service training)

Graduate program (full-time student)

Graduate program (part-time student, not working the field)

Graduate program (part-time student, working in the field)

Doctoral (including Ph.D, EdD, and medical students)

Post-doctoral (including medical residents and fellows)

Social Work - How many learners from this discipline participated in the course?

{Choose one}

0

1

2-4

5-7

8-10

more than 10

Social Work - Describe the learners' current role

{Choose all that apply}

Clinical Practice (e.g., professional development, or in-service training)

Graduate program (full-time student)

Graduate program (part-time student, not working the field)

Graduate program (part-time student, working in the field)

Doctoral (including Ph.D, EdD, and medical students)

Post-doctoral (including medical residents and fellows)

Special Education - How many learners from this discipline participated in the course?

{Choose one}

0

1

- 2-4
- 5-7
- 8-10
- more than 10

Special Education - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Speech Language Pathology - How many learners from this discipline participated in the course?

{Choose one}

- 0
- 1
- 2-4
- 5-7
- 8-10
- more than 10

Speech Language Pathology - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Were there other disciplines in your teamwork course that were not listed in the above table?

{Choose one}

- Yes
- No

Page 6

Student Discipline Information

Write in other disciplines that participated - Discipline

{Enter text answer}

[]

Write in other disciplines that participated - How many learners from this discipline participated in the course?

{Choose one}

- 1
- 2-4
- 5-7
- 8-10

more than 10

Write in other disciplines that participated - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Write in other disciplines that participated - Discipline

{Enter text answer}

[]

Write in other disciplines that participated - How many learners from this discipline participated in the course?

{Choose one}

- 1
- 2-4
- 5-7
- 8-10
- more than 10

Write in other disciplines that participated - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)
- Post-doctoral (including medical residents and fellows)

Write in other disciplines that participated - Discipline

{Enter text answer}

[]

Write in other disciplines that participated - How many learners from this discipline participated in the course?

{Choose one}

- 1
- 2-4
- 5-7
- 8-10
- more than 10

Write in other disciplines that participated - Describe the learners' current role

{Choose all that apply}

- Clinical Practice (e.g., professional development, or in-service training)
- Graduate program (full-time student)
- Graduate program (part-time student, not working the field)
- Graduate program (part-time student, working in the field)
- Doctoral (including Ph.D, EdD, and medical students)

Post-doctoral (including medical residents and fellows)

Write in other disciplines that participated - Discipline

{Enter text answer}

Write in other disciplines that participated - How many learners from this discipline participated in the course?

{Choose one}

1

2-4

5-7

8-10

more than 10

Write in other disciplines that participated - Describe the learners' current role

{Choose all that apply}

Clinical Practice (e.g., professional development, or in-service training)

Graduate program (full-time student)

Graduate program (part-time student, not working the field)

Graduate program (part-time student, working in the field)

Doctoral (including Ph.D, EdD, and medical students)

Post-doctoral (including medical residents and fellows)

Write in other disciplines that participated - Discipline

{Enter text answer}

Write in other disciplines that participated - How many learners from this discipline participated in the course?

{Choose one}

1

2-4

5-7

8-10

more than 10

Write in other disciplines that participated - Describe the learners' current role

{Choose all that apply}

Clinical Practice (e.g., professional development, or in-service training)

Graduate program (full-time student)

Graduate program (part-time student, not working the field)

Graduate program (part-time student, working in the field)

Doctoral (including Ph.D, EdD, and medical students)

Post-doctoral (including medical residents and fellows)

Please describe the other disciplines that participated in the course.

Page 7

Knowledge of Roles

Knowledge of the roles and competencies of individual disciplines

{Choose one}

Not Very Important

Somewhat Important

- Important
- Very Important

Identify team members appropriate to a given task

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Learn about other team members' expertise, background, knowledge, and values

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Openness to learning about other professions

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Recognize the constraint of one's role and skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork

and collaboration for training LEND long-term trainees.

Page 8

Group Process Knowledge

Knowledge of the stages of team development (e.g., forming, storming, norming, and performing)

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of how to manage team dynamics

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Identify forces that influence team dynamics

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of various approaches to practice (e.g., multidisciplinary, interdisciplinary, transdisciplinary)

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of models and strategies of consultation

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of models and strategies of collaboration

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of individual roles used to work collaboratively

{Choose one}

- Not Very Important
- Somewhat Important
- Important

Very Important

Knowledge of principles of communication

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of team meeting principles (size of teams, meeting agendas, assigned roles, etc.)

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of characteristics of conflict

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of sources of potential conflict in an interdisciplinary setting

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of the strategies and techniques useful in successful negotiation

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

Knowledge of the theories pertaining to conflict management and negotiation among groups with conflicting interests

{Choose one}

Not Very Important

Somewhat Important

Important

Very Important

The following are competencies related to teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Page 9

Teamwork Skills

Demonstrate negotiation skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate delegation skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate the ability to manage conflict in a constructive manner

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate time management skills

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Demonstrate assessment of group dynamics

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Use group problem-solving skills to develop, implement, and evaluate collaborative activities

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Resolve conflicts with other members of the team

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Develop and articulate a shared team vision

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Model techniques and coach others in instruction or accommodations

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Develop and articulate shared roles and responsibilities

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Negotiate roles and responsibilities with other team members

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Facilitate group process for team-based decisions

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Share leadership based on appropriate team members strengths

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Use shared outcomes to promote team synergy

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Communication Knowledge and Skills

Knowledge of the principles of communication for all three communication modalities - verbal, written, and nonverbal

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of challenges to communication and approaches to overcome those challenges

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Knowledge of culturally responsive factors that promote effective communication and collaboration

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Share thoughts, ideas, and feeling effectively in discussions, meetings, and presentations with diverse individuals and groups

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Write clearly and effectively to express information

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Understand nonverbal communication cues in self and others

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate with other members of the team in a shared language

{Choose one}

- Not Very Important

- Somewhat Important
- Important
- Very Important

Ensure that accurate and timely information reaches those who need it at the appropriate time

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate with other team members about the characteristics and needs of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate effectively with families of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Communicate effectively with team members from diverse backgrounds

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Maintain confidential communication about children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Listen to concerns of families of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Listen attentively and actively to team members

{Choose one}

- Not Very Important
- Somewhat Important

- Important
- Very Important

Facilitate the sharing of open views to bring out differences

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Tailor information for the intended audience(s) (e.g., consumers, policymakers, clinic, public, etc.) by using appropriate communication modalities (verbal, written, nonverbal)

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Use technology to support team communication

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork and collaboration for training long-term trainees.

Page 11

Collaboration Skills

Collaborate with others in integrating children with special health care needs into various settings

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Collaborate with families and others in assessment of children with special health care needs

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Coordinate and integrate care processes

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Plan and conduct collaborative team conferences/team meetings

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Foster respectful and beneficial relationships with team members

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Collaborate in order to customize care

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Manage smooth transitions across settings

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Assist children with special health care needs and their families in becoming active participants in the team

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

Value and honor diverse perspectives of team members

{Choose one}

- Not Very Important
- Somewhat Important
- Important
- Very Important

The following are competencies related to teamwork and collaboration gathered from literature and professional organizations.

Please rate how important you think it is to address each competency within the content on interdisciplinary teamwork

and collaboration for training long-term trainees.

Page 12

Instructional Strategies

Lecture or other didactic instruction

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Case studies/scenarios (simulated)

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Case studies/clinical placements (real)

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Simulated clinical environments

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Experiential learning

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Problem-based learning

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Reflection

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Journal writing

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Role play

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Video-based discussions

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Instructor/Faculty modeling

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Team building exercises

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Course guide/reader

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective

- Effective
- Very Effective

Are there other instructional strategies that you use that were not listed?

{Choose one}

- Yes
- No

INSTRUCTION

Please indicate which instructional strategies you have used and rate their effectiveness. If you did not use a particular method, please indicate 0- Not Used

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Instructional Strategies

Please list and rate instructional strategy - Instructional Strategy

{Enter text answer}

[]

Please list and rate instructional strategy - Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Please list and rate instructional strategy - Instructional Strategy

{Enter text answer}

[]

Please list and rate instructional strategy - Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Please list and rate instructional strategy - Instructional Strategy

{Enter text answer}

[]

Please list and rate instructional strategy - Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Please list and rate instructional strategy - Instructional Strategy

{Enter text answer}

[]

Please list and rate instructional strategy - Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective

- Effective
- Very Effective

Please list and rate instructional strategy - Instructional Strategy

{Enter text answer}

[]

Please list and rate instructional strategy - Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Please describe the other instructional strategies that you use.

Page 14

Did students work in teams as part of the course?

{Choose one}

- Yes
- No

Did you use any of these specific team instructional models?

(please check all that apply)

{Choose all that apply}

- Team-based learning (Michaelson)
- TeamSTEPPS
- TeamWorks!
- Problem-based learning
- Case method instruction
- I didn't use a specific model
- I used a model not listed. Please specify []

What method of team formation did you use?

{Choose one}

- Instructor assigned
- Student selected
- Random assignment

Did your teams

{Choose one}

- remain the same throughout the course
- rotate during the course

Did you require teams to have specific assigned roles (such as recorder, facilitator, timekeeper, etc.)?

{Choose one}

- Yes
- No

What was the average size of your teams? (number of students in each team)

{Enter text answer}

[]

How often were students given time to meet with their teams in class?

{Choose one}

- Never
- Every few classes
- Every other class
- Every class

Please give information regarding the learners (students) in the most recent teamwork course you taught.

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ASSESSMENT

In this section, you will be answering questions about two types of assessment - formative and summative.

Formative assessment "involves the use of assessments (usually administered in the context of the classroom) as sources of feedback to improve teaching and learning" (National Research Council, 2000, p. 140).

Please indicate which formative assessment strategies you used and rate their effectiveness.

If you did not use a particular method, please indicate 0- Not Used.

Formative Assessment

Peer Evaluations

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Periodic report from teams

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Individual contribution file

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Reflective journals/diaries

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Instructor/Expert feedback

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Self reflection/self-assessment exercises

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Evaluation of attendance and/or participation

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Evaluation of preparation for class or team meetings

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Essays

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

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Summative assessment "measures what students have learned at the end of some set of learning activities" (National Research Council, 2000, p. 140).

Summative assessment can be divided into measurement of skills, attitudes, and knowledge.

Did you use any standard knowledge assessments?

{Choose one}

- No
- Yes - please list: []

Please indicate which summative assessment strategies you used and rate their effectiveness. If you did not use a

particular method, please indicate - Not Used.

Teamwork Skill Measures

Rochester Communication Rating Scale

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Team Skills Scale

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

ALERT Questionnaire

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Team Development Wheel

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Team Dimensions Rating form

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Team Climate Inventory scale

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Team Profile

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Teamwork Attitude Measures

Human Factors Attitude Survey

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Attitudes Toward Health Care Rating Scale

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Readiness in Interprofessional Learning

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

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Please indicate which summative assessment strategies you used and rate their effectiveness. If you did not use a particular method, please indicate - Not Used.

Product Measures

Project proposals - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Project proposals - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Paper or essays - Scale of Effectiveness

{Choose one}

- Not Used

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Paper or essays - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Oral presentation(s) - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Oral presentation(s) - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Poster presentation(s) - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Poster presentation(s) - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Community profile(s) - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Community profile(s) - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Case presentation(s) - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective

- Effective
- Very Effective

Case presentation(s) - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Objective structured clinical examination - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Objective structured clinical examination - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Written examination - Scale of Effectiveness

{Choose one}

- Not Used
- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Written examination - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Are there other formative or summative assessments that you use that were not listed?

{Choose one}

- Yes
- No

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Assessment Measures

Please list other measure - Measure

{Enter text answer}

[]

Please list other measure - Scale of Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Please list other measure - Indicate if product is done individually or as a team

{Choose all that apply}

Individually

Team

Please list other measure - Measure

{Enter text answer}

Please list other measure - Scale of Effectiveness

{Choose one}

Not Very Effective

Somewhat Effective

Effective

Very Effective

Please list other measure - Indicate if product is done individually or as a team

{Choose all that apply}

Individually

Team

Please list other measure - Measure

{Enter text answer}

Please list other measure - Scale of Effectiveness

{Choose one}

Not Very Effective

Somewhat Effective

Effective

Very Effective

Please list other measure - Indicate if product is done individually or as a team

{Choose all that apply}

Individually

Team

Please list other measure - Measure

{Enter text answer}

Please list other measure - Scale of Effectiveness

{Choose one}

Not Very Effective

Somewhat Effective

Effective

Very Effective

Please list other measure - Indicate if product is done individually or as a team

{Choose all that apply}

Individually

Team

Please list other measure - Measure

{Enter text answer}

Please list other measure - Scale of Effectiveness

{Choose one}

- Not Very Effective
- Somewhat Effective
- Effective
- Very Effective

Please list other measure - Indicate if product is done individually or as a team

{Choose all that apply}

- Individually
- Team

Please describe the other assessment measures that you use.

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Thank you for completing this survey.

I am interested in getting more information about instructional and assessment strategies used in teaching

teamwork through follow-up interviews. Can I contact you for an interview?

{Choose one}

- Yes, I am willing to be contacted
- No, I would not like to be contacted

Please click "Finish" to submit your responses.

Exit Page

Thank you for your willingness to be contacted for further interview. To ensure privacy of your responses on this

survey, please click on the link below so that I may gather your contact information.

Click on this link to enter your contact information.

Appendix J

Methodology Logic Model

Focus Area	Question	Indicators	Data Analysis
Knowledge and Skills	1. What is the critical content for personnel preparation in interdisciplinary teamwork?	Training director & Instructor Surveys	<ul style="list-style-type: none"> • Means across competencies • Comparison of Training Director and Instructor Surveys • Comparison of means to national competencies of IOM, MCH, CEC
	2. What are the knowledge and skills that are included in interdisciplinary teamwork course content?	Instructor Survey & Website review	<ul style="list-style-type: none"> • Comparison of survey questions, program website review, and course syllabi objectives
Instruction and Assessment	3. What methods are used to teach and assess the acquisition of interdisciplinary teamwork knowledge and skills?	Training Director Survey & Instructor Survey; Website review	<ul style="list-style-type: none"> • Means across different types of methods used • Means of teaching and assessment methods in Instructor Survey • Analysis, coding, and comparison of data from website review (program descriptions, syllabi, assessments)

Appendix K

Email Letter to Course Instructors

From: Carole Ivey (civey@vcu.edu)
Subject: LEND Interdisciplinary Teamwork Survey

I am writing to ask for your participation in a survey that I am conducting with the School of Education at Virginia Commonwealth University in Richmond, Virginia. I am a doctoral student completing my dissertation on interdisciplinary teamwork education. As a former LEND trainee and a current course instructor for LEND, I am very interested in this area and realize the importance of increased understanding of interdisciplinary teamwork preparation. I am asking all LEND interdisciplinary teamwork course instructors to reflect on their interdisciplinary teamwork courses.

Your responses to this survey are very important and will help in describing current preparation in interdisciplinary teamwork. As part of the survey, I am asking about the current methods you use to prepare trainees in the area of interdisciplinary teamwork and the critical content that you think trainees need in this area.

This is a short survey and should take you no more than 25 minutes to complete. Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Your participation in this survey is entirely voluntary and all of your responses will be kept confidential. The access code is used to remove you from the list once you have completed the survey. No personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at civey@vcu.edu or 804-986-7224.

I appreciate your time and consideration in completing the survey. If you would like to obtain a copy of the results, please contact me. Thank you for participating in this study!

Many thanks,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix L

Follow-up Email #1 to Course Instructors

From: Carole Ivey (civey@vcu.edu)
Subject: LEND Interdisciplinary Teamwork Survey

I recently sent you an email asking you to respond to a brief survey about interdisciplinary teamwork preparation of LEND trainees. Your responses to this survey are important and will help in describing current preparation in interdisciplinary teamwork.

This survey is short and should only take you 25 minutes to complete. If you have already completed the survey, I appreciate your participation. If you have not yet responded to the survey, I encourage you to take a few minutes to complete the survey.

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Your response is important. Getting direct input from the course instructors is crucial to improving the quality of LEND programs and interdisciplinary teamwork training. Thank you for your help by completing the survey.

Sincerely,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix M

Follow-up Email #2 to Course Instructors

From: Carole Ivey (civey@vcu.edu)
Subject: LEND Interdisciplinary Teamwork Survey

I understand this is a busy time of the year. I am hoping you may be able to give about 25 minutes of your time to help me collect important information for my dissertation with the School of Education at Virginia Commonwealth University by completing a short survey.

If you have already completed the survey, I greatly appreciate your participation. If you have not yet responded to the survey, I encourage you to take a few minutes to complete the survey. I plan to end this phase of the study next week, so I wanted to email everyone who has not responded to make sure you had a chance to participate.

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Thank you in advance for completing the survey. Your responses are important!

Sincerely,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix N

Interview Protocol

Describe your Teamwork course. (grand tour question)

- Is it part of a required program or an elective? How was this determined?
- How does this course fit within the LEND program?

Describe the students that take your class. (community-centered, learner centered)

- Are they full-time/part-time students, working, pre-service/post-graduate?
- Is the class interdisciplinary?
 - What is the make-up?
 - How was this determined?
- How do you respond to differences in students' experience and knowledge?
 - How do you address student's prior teamwork experiences?
 - Do you find that their previous experiences with team impacts their willingness to listen or learn more?
 - What are their preconceived assumptions?

In general terms, Describe the learning objectives for the course. (knowledge-centered)

- How did you decide to focus on these elements?
 - Where did you get your information from to develop this course?
 - What influences your preparation for this course?
- How is the course organized to support these learning objectives?
- Is the subject matter aligned with relevant standards? How?

How is this course different from other courses that you teach? (comparison/contrast question)

Describe the activities that you use in the course. (knowledge, learner, and assessment centered)

- Tell me about one of your most effective or favorite class activities. (specific examples question)
- Tell me about one of your most effective or favorite classes. (specific examples question)

Describe the assignments/assessment procedures that you use in the course. (assessment centered)

- Tell me about one of your assignments.
- Tell me about your rubrics. (one that was shared)

Is there anything/any other topics we haven't discussed? (Closing)

Appendix O

Email Letter for Training Directors

From: Carole Ivey (civey@vcu.edu)
Subject: LEND Interdisciplinary Teamwork Survey

I am writing to ask for your participation in a survey that I am conducting with the School of Education at Virginia Commonwealth University in Richmond, Virginia. I am a doctoral student completing my dissertation on interdisciplinary teamwork education. As a former LEND trainee and a current course instructor for LEND, I am very interested in this area and realize the importance of increased understanding of interdisciplinary teamwork preparation. I am asking all LEND training directors to reflect on the interdisciplinary teamwork preparation of LEND trainees.

Your responses to this survey are very important and will help in describing current preparation in interdisciplinary teamwork. As part of the survey, I am asking about the current methods your LEND program uses to prepare trainees in the area of interdisciplinary teamwork and the critical content that you think trainees need in this area.

This is a short survey and should take you no more than 25 minutes to complete. Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Your participation in this survey is entirely voluntary and all of your responses will be kept confidential. The access code is used to remove you from the list once you have completed the survey. No personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at civey@vcu.edu or 804-986-7224.

I appreciate your time and consideration in completing the survey. If you would like to obtain a copy of the results, please contact me. Thank you for participating in this study!

Many thanks,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix P

Follow-up Email #1 to Training directors

From: Carole Ivey (civey@vcu.edu)
Subject: LEND Interdisciplinary Teamwork Survey

I recently sent you an email asking you to respond to a brief survey about interdisciplinary teamwork preparation of LEND trainees. Your responses to this survey are important and will help in describing current preparation in interdisciplinary teamwork.

This survey is short and should only take you 25 minutes to complete. If you have already completed the survey, I appreciate your participation. If you have not yet responded to the survey, I encourage you to take a few minutes to complete the survey.

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Your response is important. Getting direct input from LEND Training Directors is crucial to improving the quality of LEND programs and interdisciplinary teamwork training. Thank you for your help by completing the survey.

Sincerely,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix Q

Follow-up Email #2 to Training Directors

From: Carole Ivey (civey@vcu.edu)
Subject: LEND Interdisciplinary Teamwork Survey

I understand this is a busy time of year. I am hoping you may be able to give about 25 minutes of your time to help me collect important information for my dissertation with the School of Education at Virginia Commonwealth University by completing a short survey.

If you have already completed the survey, I greatly appreciate your participation. If you have not yet responded to the survey, I encourage you to take a few minutes to complete the survey. I plan to end this phase of the study next week, so I wanted to email everyone who has not responded to make sure you had a chance to participate.

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Thank you in advance for completing the survey. Your responses are important!

Sincerely,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix R

Follow-up Email #3 to Training Directors

From: Carole Ivey (civey@vcu.edu)

Subject: LEND Interdisciplinary Teamwork Survey for **Training Directors**

Happy New Year! Before the holidays, I requested your participation in a survey that I am conducting with the School of Education at Virginia Commonwealth University in Richmond, Virginia. I am a doctoral student completing my dissertation on interdisciplinary teamwork education. As a former LEND trainee and a current course instructor for LEND, I am very interested in this area and realize the importance of increased understanding of interdisciplinary teamwork preparation.

I understand that I sent this at a particularly busy time of year; therefore I am sending a final request for your participation. I am hoping you may be able to give about 25 minutes of your time to help me collect important information for my dissertation with the School of Education at Virginia Commonwealth University by completing a short survey.

I encourage you to take a few minutes to complete the survey. I plan to end this phase of the study soon, so I wanted to email everyone who has not responded to make sure you had a chance to participate.

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Thank you in advance for completing the survey. Your responses are important!

Sincerely,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix S

Email to Training Directors requesting Course Instructors

From: Carole Ivey (civey@vcu.edu)

Subject: LEND Interdisciplinary Teamwork Survey for **Course Instructors**

In other emails I requested your completion of the LEND Interdisciplinary Teamwork survey. I appreciated the responses I received as they were helpful for the first phase of my study. In the second phase of my study, I am hoping to gain greater insight into the strategies LENDs are using to teach interdisciplinary teamwork. To do this, I need **Course Instructors** to complete the next survey. I am asking you to forward this email and survey link to **the course instructor that teaches the interdisciplinary teamwork** content portion of your LEND program.

COURSE INSTRUCTORS:

I am writing to ask for your participation in a survey that I am conducting with the School of Education at Virginia Commonwealth University in Richmond, Virginia. I am a doctoral student completing my dissertation on interdisciplinary teamwork education. As a former LEND trainee and a current course instructor for LEND, I am very interested in this area and realize the importance of increased understanding of interdisciplinary teamwork preparation. I am asking instructors who teach LEND interdisciplinary teamwork course content to reflect on their instructional strategies.

Your responses to this survey are very important and will help in describing current preparation in interdisciplinary teamwork. As part of the survey, I am asking about the current methods you use to prepare trainees in the area of interdisciplinary teamwork and the critical content that you think trainees need in this area.

This is a short survey and should take you no more than 25 minutes to complete. Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Your participation in this survey is entirely voluntary and all of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at civey@vcu.edu or 804-986-7224.

I appreciate your time and consideration in completing the survey. If you would like to obtain a copy of the results, please contact me. Thank you for participating in this study!

Many thanks,
Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix T

Follow-up Email to Training Directors requesting Course Instructors

From: Carole Ivey (civey@vcu.edu)

Subject: followup to LEND Interdisciplinary Teamwork Survey for **Course Instructors**

Last week I requested your assistance in seeking out instructors of the interdisciplinary teamwork content for your LEND program. Can you please forward them this email to request their participation in the study?

Thank you!

COURSE INSTRUCTORS:

I am writing to ask for your participation in a survey that I am conducting with the School of Education at Virginia Commonwealth University in Richmond, Virginia. I am a doctoral student completing my dissertation on interdisciplinary teamwork education. As a former LEND trainee and a current course instructor for LEND, I am very interested in this area and realize the importance of increased understanding of interdisciplinary teamwork preparation. I am asking all LEND interdisciplinary teamwork course instructors to reflect on their interdisciplinary teamwork courses.

Your responses to this survey are very important and will help in describing current preparation in interdisciplinary teamwork. As part of the survey, I am asking about the current methods you use to prepare trainees in the area of interdisciplinary teamwork and the critical content that you think trainees need in this area.

This is a short survey and should take you no more than 25 minutes to complete. Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link:

Personal Access Code:

Your participation in this survey is entirely voluntary and all of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at civey@vcu.edu or 804-986-7224.

I appreciate your time and consideration in completing the survey. If you would like to obtain a copy of the results, please contact me. Thank you for participating in this study!

Many thanks,

Carole Ivey, MHS, OTR/L
Doctoral Student
Virginia Commonwealth University

Appendix U

Item Means and Frequencies from Training Director Responses, ordered highest to lowest

Survey Items	N	Mean	SD	Frequency			
				Very Important	Important	Somewhat Important	Not Very Important
Listen to concerns of families of children with special health care needs (CEC)	24	3.96	0.204	23 (95.8%)	1 (4.2%)		
Communicate effectively with families of children with special health care needs (CEC & MCH)	24	3.92	0.282	22 (91.7%)	2 (8.3%)		
Maintain confidential communication about children with special health care needs (CEC)	24	3.83	0.482	21 (87.5%)	2 (8.3%)	1 (4.2%)	
Collaborate with families and others in assessment of children with special health care needs (CEC)	24	3.83	0.482	21 (87.5%)	2 (8.3%)	1 (4.2%)	
Openness to learning about other professions (Literature)	24	3.75	0.44	18 (75%)	6 (25%)		
Knowledge of culturally response factors that promote effective communication and collaboration (CEC)	24	3.75	0.442	18 (75%)	6 (25%)		
Listen attentively and actively to team members (MCH)	24	3.75	0.442	18 (75%)	6 (25%)		
Value and honor diverse perspectives of team members (MCH)	24	3.75	0.442	18 (75%)	6 (25%)		
Assist children with special health care needs and their families in becoming active participants in the team (CEC)	24	3.71	0.55	18 (75%)	5 (20.8%)	1 (4.2%)	

Ensure that accurate and timely information reaches those who need it at the appropriate time (IOM)	24	3.67	0.482	16 (66.7%)	8 (33.3%)		
Tailor information for the intended audience(s) (MCH)	24	3.67	0.482	16 (66.7%)	8 (33.3%)		
Facilitate the sharing of open views to bring out differences (Literature)	24	3.67	0.565	17 (70.8%)	6 (25%)	1 (4.2%)	
Share leadership based on appropriate team members strengths (MCH)	24	3.63	0.495	15 (62.5%)	9 (37.5%)		
Write clearly and effectively to express information (MCH)	24	3.63	0.495	15 (62.5%)	9 (37.5%)		
Communicate with other team members about the characteristics and needs of children with special health care needs (CEC)	24	3.63	0.495	15 (62.5%)	9 (37.5%)		
Communicate effectively with team members from diverse backgrounds (CEC)	24	3.63	0.576	16 (66.7%)	7 (29.2%)	1 (4.2%)	
Knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning (CEC)	24	3.63	0.65	17 (70.8%)	5 (20.8%)	2 (8.3%)	
Knowledge of how to manage team dynamics (MCH)	24	3.62	0.5	15 (62.5%)	9 (37.5%)		

Learn about other team members' expertise, background, knowledge, and values (IOM)	24	3.58	0.5	14 (58.3)	10 (41.7%)		
Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care (MCH)	24	3.58	0.58	15 (62.5%)	8 (33.3%)	1 (4.2%)	
Knowledge of the roles and competencies of individual disciplines (MCH)	24	3.54	0.59	14 (58.3%)	9 (37.5%)	1 (4.2%)	
Collaborate with others in integrating children with special health care needs into various settings (CEC)	24	3.54	0.658	15 (62.5%)	7 (29.2%)	2 (8.3%)	
Recognize the constraints of one's role and skills (Literature)	24	3.54	0.78	16 (66.7%)	6 (25%)	1 (4.2%)	1 (4.2)
Develop and articulate a shared team vision (MCH)	24	3.5	0.59	13 (54.2%)	10 (41.7%)	1 (4.2%)	
Foster respectful and beneficial relationships with team members (CEC)	24	3.5	0.59	13 (54.2%)	10 (41.7%)	1 (4.2%)	
Collaborate in order to customize care (IOM)	24	3.5	0.59	13 (54.2%)	10 (41.7%)	1 (4.2%)	
Communicate with other members of the team in a shared language (IOM)	24	3.5	0.659	14 (58.3%)	8 (33.3%)	2 (8.3%)	
Knowledge of the strategies and techniques useful in successful negotiation (MCH)	24	3.46	0.59	12 (50%)	11 (45.8%)	1 (4.2%)	
Use group problem-solving skills to develop, implement, and evaluate collaborative activities (CEC)	24	3.46	0.658	13 (54.2%)	9 (37.5%)	2 (8.3%)	
Knowledge of principles of communication (Literature)	24	3.46	0.66	13 (54.2%)	9 (37.5%)	2 (8.3%)	
Resolve conflicts with other members of the team (IOM & MCH)	24	3.42	0.504	10 (41.7%)	14 (58.3%)		
Knowledge of various approaches to practice (e.g., multidisciplinary, interdisciplinary, transdisciplinary) (MCH)	24	3.42	0.58	11 (45.8%)	12 (50%)	1 (4.2%)	

Demonstrate the ability to manage conflict in a constructive manner (MCH)	24	3.42	0.584	11 (45.8%)	12 (50%)	1 (4.2%)	
Identify team members appropriate to a given task (MCH)	24	3.42	0.65	12 (50%)	10 (41.7%)	2 (8.3%)	
Coordinate and integrate care processes (IOM)	24	3.42	0.654	12 (50%)	10 (41.7%)	2 (8.3%)	
Plan and conduct collaborative team conferences/team meetings (CEC)	24	3.42	0.654	12 (50%)	10 (41.7%)	2 (8.3%)	
Share thoughts, ideas, and feelings effectively in discussions, meetings, and presentations with diverse individuals and groups (MCH)	24	3.38	0.576	10 (41.7%)	13 (54.2%)	1 (4.2%)	
Demonstrate time management skills (IOM)	24	3.38	0.647	11 (45.8%)	11 (45.8%)	2 (8.3%)	
Manage smooth transitions across settings (IOM)	23	3.35	0.647	10 (41.7%)	11 (45.8%)	2 (8.3%)	
Knowledge of challenges to communication and approaches to overcome those challenges (MCH)	24	3.33	0.565	9 (37.5%)	14 (58.3%)	1 (4.2%)	
Identify forces that influence team dynamics (MCH)	24	3.33	0.57	9 (37.5%)	14 (58.3%)	1 (4.2%)	
Develop and articulate shared roles and responsibilities (MCH)	24	3.29	0.55	8 (33.3%)	15 (62.5%)	1 (4.2%)	
Knowledge of sources of potential conflict in an interdisciplinary setting (MCH)	24	3.29	0.62	9 (37.5%)	13 (54.2%)	2 (8.3%)	
Facilitate group process for team-based decisions (MCH)	24	3.29	0.69	10 (41.7%)	11 (45.8%)	3 (12.5%)	
Use shared outcomes to promote team synergy (MCH)	24	3.29	0.908	13 (54.2%)	6 (25%)	4 (16.7%)	1 (4.2%)
Demonstrate negotiation skills (MCH & IOM)	23	3.26	0.541				
Negotiate roles and responsibilities with other team members (Literature)	24	3.25	0.608	8 (33.3%)	14 (58.3%)	2 (8.3%)	
Knowledge of the principles of communication for all three communication modalities – verbal, written, and nonverbal (MCH)	22	3.23	0.752	9 (37.5%)	9 (37.5%)	4 (16.7%)	

Understand nonverbal communication cues in self and others (MCH)	23	3.22	0.6	7 (29.2%)	14 (5.3%)	2 (8.3%)	
Use technology to support team communication (Literature)	23	3.22	0.795	9 (37.5%)	11 (45.8%)	2 (8.3%)	1 (4.2%)
Knowledge of individual roles used to work collaboratively (IOM)	24	3.21	0.59	7 (29.2%)	15 (62.5%)	2 (8.3%)	
Knowledge of characteristics of conflict (MCH)	24	3.21	0.66	8 (33.3%)	13 (54.2%)	3 (12.5%)	
Knowledge of models and strategies of collaboration (CEC)	24	3.21	0.72	9 (37.5%)	11 (45.8%)	4 (16.7%)	
Demonstrate delegation skills (IOM)	24	3.08	0.654	6 (25%)	14 (58.3%)	4 (16.7%)	
Knowledge of models and strategies of consultation (CEC)	24	3.04	0.69	6 (25%)	13 (54.2%)	5 (20.8%)	
Model techniques and coach others in instruction or accommodations (CEC)	23	3	0.674	5 (20.8%)	13 (54.2%)	5 (20.8%)	
Demonstrate assessment of group dynamics (IOM)	24	3	0.722	5 (20.8%)	15 (62.5%)	3 (12.5%)	1 (4.2%)
Knowledge of the theories pertaining to conflict management and negotiation among groups with conflicting interests (MCH)	24	2.88	0.68	3 (12.5%)	16 (66.7%)	4 (16.7%)	1 (4.2%)
Knowledge of team meeting principles (size of teams, meeting agendas, assigned roles, etc.) (Literature)	24	2.75	0.68	2 (8.3%)	15 (62.5%)	6 (25%)	1 (4.2%)
Knowledge of the stages of team development (e.g., forming, storming, norming, and performing) (MCH)	24	2.67	0.92	4 (16.7%)	11 (45.8%)	6 (25%)	3 (12.5%)

Appendix V

Item Means and Frequencies from Instructor Responses, ordered highest to lowest

Survey item	<i>N</i>	Mean	<i>SD</i>	Very Important	Important	Somewhat Important	Not Very Important
Listen to concerns of families of children with special health care needs (CEC)	15	4	0	15 (100%)			
Communicate effectively with families of children with special health care needs (CEC & MCH)	15	4	0	15 (100%)			
Maintain confidential communication about children with special health care needs (CEC)	15	3.87	0.35	13 (86.7%)	2 (13.3%)		
Listen attentively and actively to team members (MCH)	15	3.87	0.35	13 (86.7%)	2 (13.3%)		
Tailor information for the intended audience(s) (MCH)	15	3.8	0.41	12 (80%)	3 (20%)		
Communicate with other team members about the characteristics and needs of children with special health care needs (CEC)	15	3.8	0.41	12 (80%)	3 (20%)		
Communicate effectively with team members from diverse backgrounds (CEC)	15	3.8	0.41	12 (80%)	3 (20%)		
Collaborate with families and others in assessment of children with special health care needs (CEC)	15	3.8	0.41	12 (80%)	3 (20%)		

Share leadership based on appropriate team members strengths (MCH)	15	3.73	0.46	11 (73.3%)	4 (26.7%)		
Assist children with special health care needs and their families in becoming active participants in the team (CEC)	15	3.73	0.46	11 (73.3%)	4 (26.7%)		
Knowledge of principles of communication (Literature)	14	3.71	0.47	10 (66.7%)	4 (26.7%)		
Value and honor diverse perspectives of team members (MCH)	14	3.71	0.47	10 (66.7%)	4 (26.7%)		
Facilitate the sharing of open views to bring out differences (Literature)	15	3.67	0.49	10 (66.7%)	5 (33.3%)		
Collaborate with others in integrating children with special health care needs into various settings (CEC)	15	3.67	0.49	10 (66.7%)	5 (33.3%)		
Openness to learning about other professions (Literature)	15	3.67	0.62	11 (73.3%)	3 (20%)	1 (6.7%)	
Learn about other team members' expertise, background, knowledge, and values (IOM)	15	3.67	0.62	11 (73.3%)	3 (20%)	1 (6.7%)	
Coordinate and integrate care processes (IOM)	15	3.67	0.62	11 (73.3%)	3 (20%)	1 (6.7%)	
Knowledge of the roles of children with special health care needs, families, school, and community personnel in assessment and program planning (CEC)	15	3.67	0.9	13 (86.7%)		1 (6.7%)	1 (6.7%)
Share thoughts, ideas, and feelings effectively in discussions, meetings, and presentations with diverse individuals and groups (MCH)	14	3.64	0.5	9 (60%)	5 (33.3%)		
Knowledge of culturally response factors that promote effective communication and collaboration (CEC)	15	3.6	0.51	9 (60%)	6 (40%)		
Collaborate in order to customize care (IOM)	15	3.6	0.51	9 (60%)	6 (40%)		
Write clearly and effectively to express information (MCH)	15	3.53	0.52	8 (53.3%)	7 (46.7%)		
Understand nonverbal	15	3.53	0.52	8 (53.3%)	7		

communication cues in self and others (MCH)					(46.7%)		
Demonstrate time management skills (IOM)	15	3.53	0.64	9 (60%)	5 (33.3%)	1 (6.7%)	
Ensure that accurate and timely information reaches those who need it at the appropriate time (IOM)	15	3.53	0.64	9 (60%)	5 (33.3%)	1 (6.7%)	
Manage smooth transitions across settings (IOM)	15	3.53	0.64	9 (60%)	5 (33.3%)	1 (6.7%)	
Knowledge of individual roles used to work collaboratively (IOM)	15	3.52	0.52	8 (53.3%)	7 (46.7%)		
Use group problem-solving skills to develop, implement, and evaluate collaborative activities (CEC)	15	3.47	0.52	7 (46.7%)	8 (53.3%)		
Facilitate group process for team-based decisions (MCH)	15	3.47	0.52	7 (46.7%)	8 (53.3%)		
Foster respectful and beneficial relationships with team members (CEC)	15	3.47	0.52	7 (46.7%)	8 (53.3%)		
Plan and conduct collaborative team conferences/team meetings (CEC)	15	3.47	0.64	8 (53.3%)	6 (40%)	1 (6.7%)	
Knowledge of the strategies and techniques useful in successful negotiation (MCH)	15	3.47	0.74	9 (60%)	4 (26.7%)	2 (13.3%)	
Communicate with other members of the team in a shared language (IOM)	15	3.47	0.74	9 (60%)	4 (26.7%)	2 (13.3%)	
Knowledge of the principles of communication for all three communication modalities – verbal, written, and nonverbal (MCH)	15	3.47	0.74	9 (60%)	4 (26.7%)	2 (13.3%)	
Use shared outcomes to promote team synergy (MCH)	15	3.4	0.63	7 (46.7%)	7 (46.7%)	1 (6.7%)	

Knowledge of challenges to communication and approaches to overcome those challenges (MCH)	15	3.4	0.63	7 (46.7%)	7 (46.7%)	1 (6.7%)	
Knowledge of the roles and competencies of individual disciplines (MCH)	15	3.4	0.74	8 (53.3%)	5 (33.3%)	2 (13.3%)	
Recognize the constraints of one's role and skills (Literature)	15	3.4	0.91	9 (60%)	4 (26.7%)	1 (6.7%)	1 (6.7%)
Use technology to support team communication (Literature)	15	3.33	0.62	6 (40%)	8 (53.3%)	1 (6.7%)	
Knowledge of how to manage team dynamics (MCH)	15	3.33	0.72	7 (46.7%)	6 (40%)	2 (13.3%)	
Demonstrate negotiation skills (MCH & IOM)	15	3.33	0.72	7 (46.7%)	6 (40%)	2 (13.3%)	
Knowledge of characteristics of conflict (MCH)	15	3.33	0.82	8 (53.3%)	4 (26.7%)	3 (20%)	
Resolve conflicts with other members of the team (IOM & MCH)	15	3.27	0.59	5 (33.3%)	9 (60%)	1 (6.7%)	
Develop and articulate a shared team vision (MCH)	15	3.27	0.7	6 (40%)	7 (46.7%)	2 (13.3%)	
Knowledge of sources of potential conflict in an interdisciplinary setting (MCH)	15	3.27	0.8	7 (46.7%)	5 (33.3%)	3 (20%)	
Develop and articulate shared roles and responsibilities (MCH)	15	3.2	0.41	3 (20%)	12 (80%)		
Negotiate roles and responsibilities with other team members (Literature)	15	3.2	0.56	4 (26.7%)	10 (66.7%)	1 (6.7%)	
Demonstrate the ability to manage conflict in a constructive manner (MCH)	15	3.2	0.68	5 (33.3%)	8 (53.3%)	2 (13.3%)	
Knowledge of various approaches to practice (e.g., multidisciplinary, interdisciplinary, transdisciplinary) (MCH)	15	3.2	0.78	6 (40%)	6 (40%)	3 (20%)	
Identify forces that influence team dynamics (MCH)	15	3.2	0.78	6 (40%)	6 (40%)	3 (20%)	
Use knowledge of disciplinary competencies and roles to improve teaching, research, advocacy, and systems of care (MCH)	15	3.2	0.94	7 (46.7%)	5 (33.3%)	2 (13.3%)	1 (6.7%)

Knowledge of models and strategies of collaboration (CEC)	15	3.2	0.94	7 (46.7%)	5 (33.3%)	2 (13.3%)	1 (6.7%)
Knowledge of team meeting principles (size of teams, meeting agendas, assigned roles, etc.) (Literature)	15	3.13	0.92	6 (40%)	6 (40%)	2 (13.3%)	1 (6.7%)
Identify team members appropriate to a given task (MCH)	15	3.13	1.06	7 (46.7%)	5 (33.3%)	1 (6.7%)	2 (13.3%)
Demonstrate delegation skills (IOM)	15	3.07	0.7	4 (26.7%)	8 (53.3%)	3 (20%)	
Model techniques and coach others in instruction or accommodations (CEC)	15	3.07	0.8	5 (33.3%)	6 (40%)	4 (26.7%)	
Demonstrate assessment of group dynamics (IOM)	14	3.07	0.83	5 (33.3%)	5 (33.3%)	4 (26.7%)	
Knowledge of models and strategies of consultation (CEC)	15	3.07	0.88	5 (33.3%)	7 (46.7%)	2 (13.3%)	1 (6.7%)
Knowledge of the theories pertaining to conflict management and negotiation among groups with conflicting interests (MCH)	15	3	0.76	4 (26.7%)	7 (46.7%)	4 (26.7%)	
Knowledge of the stages of team development (e.g., forming, storming, norming, and performing) (MCH)	15	2.87	0.92	4 (26.7%)	6 (40%)	4 (26.7%)	

Vita

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