2015

Enriching Occupational Therapy in Early Intervention: Using and Documenting the Evidence

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ENRICHING OCCUPATIONAL THERAPY IN EARLY INTERVENTION: USING AND DOCUMENTING THE EVIDENCE

Presented in Partial Fulfillment of the Requirements for the Degree of

Doctor of Occupational Therapy

Eastern Kentucky University

College of Health Sciences

Department of Occupational Therapy

Shelli Dry

2015

EASTERN KENTUCKY UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL THERAPY

Certification

We hereby certify that this capstone project, submitted by Shelli Dry conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.

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This project, written by Shelli Dry under direction of Christine Myers, Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

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Executive Summary

Occupational therapists working in Kentucky's Early Intervention System (First Steps) are required to use evidence-based practice within their treatment sessions. Evidence-based practice incorporates information from scientific research, the clinician's expertise and the family's values in an all-encompassing treatment approach. Implementing evidence-based practice into treatment sessions promotes efficiency in treatment by improving clinical outcomes in a shorter period of time. This capstone project was developed as a first step in identifying methods to promote the implementation and documentation of evidence-based practice into early intervention services. This project included developing an online continuing education course and exploring changes in occupational therapists perceptions regarding their ability to access, use and explain evidence-based practice in their intervention before, during and after participating in the course.

The project has been designed around the Knowledge-to- Action Framework (Straus, Tetroe, & Graham, 2006). The participants were selected from a convenience sample and each participant was treated as a case study. The data has been obtained from surveys and group discussions and then analyzed and organized into a checklist matrix. Several perceived barriers to implementation of evidence-based practice were identified. As the participants reviewed strategies, participated in discussions and were provided with links to databases, they were able to identify solutions to the barriers and set goals for improving their use of evidence-based practice. The project results support the use of interactive, online continuing education modules as an effective method for disseminating information that is applicable to the profession.

Acknowledgements

I would like to thank the Eastern Kentucky University's College of Health Sciences for developing a doctorate program in occupational therapy. To all of the instructors at EKU and the students who have shared in this journey, I would like to offer my gratitude for the encouragement you have provided. This capstone would not have been possible without the support I received from a variety of individuals who provided guidance, suggestions and assistance.

I would like to acknowledge the coordinator of the program, Christine Myers, Ph.D., OTR/L for all of her hard work in developing a successful program. I would like to thank Dr. Myers for the time and effort she has put into her role as my faculty mentor. Dr. Myers' expertise, insight and assistance were essential to the success of this project.

I would like to thank MaryEllen Thompson, Ph.D., OTR/L for the time and effort she has put into this project as a committee member and for sharing her resources and knowledge on qualitative research. Dr. Thompson provided resources that supported the analysis of this data and was a crucial part of the committee.

Furthermore, I would like to thank Pam Smithy, MS, OTR/L who acted in the role of content expert and as my mentor during the advanced leadership experience. She provided leadership and experience while helping develop my role as an educator.

Finally, I would like to acknowledge my husband and family for the support they have provided. The understanding and commitment to helping me succeed has been critical to my completion of this project.

EASTERN KENTUCKY UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY

CERTIFICATION OF AUTHORSHIP

Submitted to (Faculty Mentor's Name): Christine Myers, PhD, OTR/L
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Title of Submission: Enriching Occupational Therapy in Early Intervention: Using and Documenting the Evidence

Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

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Date of Submission: Aug 4, 2015

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Background

In early intervention, family expectations include the use of assessment and treatment that is based on scientific evidence (Law, 2000). The Individual's with Disabilities Education Act (IDEA, 2004) and the No Child Left Behind Act (NCLB, 2002) require interventions to be based on scientific research and evidence-based practice (Marder & Fraser, 2012). The Affordable Care Act (ACA) has also identified the need for approaches that are based on scientific evidence (HHS, 2013) and occupational therapists are required to demonstrate the effectiveness of their services through outcome studies (Lieberman & Scheer, 2002). However in the typical early intervention setting, therapists do not have quick and easy access to effective resources that include evidence-based treatment and scientific-based research for the majority of early intervention strategies (Law, 2000; Shonkoff & Fisher, 2013).

A need exists for improving implementation of evidence-based practice to facilitate development of healthy lifestyles for children and their families. Developing lifelong health is accelerated through the use of science and evidence-based intervention and contributes to a reduction in health care costs (Center on the Developing Child [COTDC], 2010). "When we invest wisely in children and families, the next generation will pay that back through a lifetime of productivity and responsible citizenship" (COTDC, 2007 p.5). Developing methods to facilitate implementation of evidence-based practice in early intervention occupational therapy supports reduction in healthcare costs by improving prediction of outcomes, prevention of complications, participation in services, and personalized and family-centered therapy (Persch, Braveman, Metzler, 2013). Evidence-based practice consists of unifying scientific research, clinical expertise, and the client's desired outcomes into effective treatment plans (Dopp,

Steultjens, & Radel, 2012; Graham, Robertson, & Anderson, 2013; Ilott, 2003; Sackett, 2000). Sackett et al. (2000) also states the use of evidence-based practice will optimize clinical outcomes and improve quality of life for clients (in Dopp, Steultjens, & Radel, 2012).

The American Occupational Therapy Association's (AOTA) Centennial Vision has identified the use of science-driven and evidence-based strategies as a core need for occupational therapy in the upcoming years (AOTA, 2007). The U.S. Department of Health and Human Services' (HHS) initiative, Healthy People 2020, identified early and middle childhood health and well-being as one of their primary objectives for improving the health of all Americans (HHS, 2013). The initiative identified the need for policy, research, and clinical practice that promotes physical, cognitive, and social-emotional foundations in this population (HHS, 2013). The COTDC (2010) report indicates developing lifelong healthy habits in early childhood will prepare the child for a lifetime of well-being and contribute to financial and social-emotional success when they are adults. For therapists to fulfill the AOTA Centennial Vision and the objectives of Healthy People 2020, it will be necessary to improve accessibility to information on science and evidence-based methods.

Problem Statement

The Individuals with Disabilities Education Act Part C (IDEA, 2004) requires states to provide early intervention and preventative services to individuals with disabilities. The Individuals with Disabilities Education Act and No Child Left Behind [NCLB] (NCLB, 2002) require interventions to include scientifically-based techniques in order to minimize the gap between research and practice (Marder & Fraser, 2012). Kentucky's Early Intervention System, First Steps, is partially funded through the IDEA and is required to meet the guidelines for including evidence-based practice within family-centered sessions (CHFS, 2013). The AOTA

(2007) announced its desire to include scientific and evidence-based practice in the Centennial Vision statement as a core standard for occupational therapists. The National Research Council (2001) as reported in Marder and Fraser (2012) identifies education of personnel as the primary method for ensuring evidence-based strategies are being applied. A disparity exists between information available in the early intervention literature and application of this information into practice and this gap widens with specific cultural communities (Spicer, Bigfoot, Funderburk, & Novins, 2012). Furthermore, therapists in early intervention frequently work without a mentor and lack quick and easy access to effective occupation-based practice resources that include evidence-based treatment strategies.

The problem addressed in this project was the barriers that prevented implementation of evidence-based practice for occupational therapy providers working in early intervention. This project focused on educating occupational therapy professionals in methods to easily access, use and explain evidence-based practice techniques within their intervention sessions. The author explored if changes occurred to occupational therapists' perceptions regarding implementation of evidence-based practice following completion of the course.

The capstone project included designing an online continuing education course for early intervention providers to improve efficiency in implementing scientific and evidence-based treatment for children who receive occupational therapy services in Kentucky. The course was separated into four sections: finding the evidence, implementing the evidence, documenting the evidence, and reviewing the topics through a case study. Participants completed a self-administered survey regarding their knowledge and use of evidence-based practice before accessing the course. They participated in group discussions, problem-based learning, and

networking during the course and after the course the participants completed an exit survey that included open-ended questions regarding their experiences implementing the strategies.

The goal of this project was to facilitate the use of evidence-based practice within early intervention occupational therapy. This project was a first step in beginning to address the following needs for early intervention occupational therapy: (1) facilitating implementation of evidence-based practice by discussing resolutions to barriers, (2) teaching methods to combine clinical expertise with the scientific research and the parents' desires, and (3) reducing overall costs associated with delays in development by improving efficiency in treatment.

Project Objectives

The following objectives guided the project: (1) create an online continuing education course to provide continued education for First Steps occupational therapy providers outlining the use of evidence-based practice and preventative care in occupational therapy and early intervention, and (2) identify any changes to occupational therapists' perceptions towards accessing, using and explaining evidence-based practice after completing the online course and implementing evidence-based practice into treatment sessions.

Theoretical Framework

The worldview of research leads to development of a research design that includes the individual lifetime experiences of the researcher and incorporates the researcher's social, emotional, life and work philosophy. For this project, the author's worldview included the philosophy that all children are valuable members of society; that occupational therapists are integral to effective treatment for children in early intervention; that treatment based on evidence should be implemented into treatment sessions; and that family-centered care requires parents to be informed of their options based on the available evidence and scientific research. The

philosophy guiding this project lead to the goal to facilitate the use of evidence-based practice in early intervention. Evidence-based practice in early intervention includes supporting and respecting family values, utilizing clinician's expertise and scientific research. To support this goal, the project will be designed around the Knowledge-to-Action Framework (Straus, Tetroe & Graham, 2006).

The Knowledge-to-Action Framework is designed to promote knowledge translation into an action cycle (Straus et al., 2006). The knowledge cycle includes researching the evidence, synthesizing it, and promoting it in a clear and concise format. The action cycle consists of several steps that include identifying gaps in knowledge, methods for adaptation, exploration of barriers and identification of interventions (Straus et al., 2006). To close the knowledge to practice gap, it is critical to identify which knowledge translations will promote knowledge acquisition (Menon, Korner-Bitensky, Kastner, McKibbon & Straus, 2009). The final two steps in the framework are evaluation of the outcomes and methods to sustain the outcomes (Straus et al., 2006).

Significance of the Project

This project was designed to support the profession of occupational therapy, the goals of the American Occupational Therapy Association (AOTA) and the World Federation of Occupational Therapy (WFOT) to educate professionals, to promote the use of evidence-based practice and to respect cultural diversity. The profession of occupational therapy was developed as a result of the many positive changes that could be made in a person's social, emotional, physical and overall well-being using occupation as intervention (Nelson, 1997). As changes in the healthcare system made fast, measurable objectives the ultimate goal for rehabilitation, occupational therapists were considered part of a medical model and focused less on the science

of occupation (Baum & Law, 1997; Fisher, 1998). As healthcare reform progresses, preventative care and evidenced-based interventions have come to the forefront of discussions and occupational therapy has shifted towards developing methods to include evidence-based practice within activities centered on occupation (Baum & Law, 1997). Occupation-based practice (OBP) is considered best practice and the occupational therapy profession strives to increase the evidence for OBP to enhance professional recognition (Estes & Pierce, 2012; Pierce, 2001; Price & Miner, 2007; Vroman, Simmons & Knight, 2010).

WFOT (2008) identified participation in all levels of education as one of the target areas to be addressed. Providing education for early intervention occupational therapists on evidence-based treatment strategies allowed the providers to improve their effectiveness in educating the youngest members of society. The discussions and questionnaires developed addressed the need to consider each family's values when identifying the evidence that supports treatment strategies.

With the new health care laws, the changing demographics and the increased focus on preventative care for the population, the AOTA and WFOT's position statements regarding human rights, health disparities and nondiscrimination are a welcome addition to the occupational therapy profession. A core philosophy of occupational therapy is to enable participation in society (AOTA, 2013). Promoting the use of evidence-based practice in early intervention to provide active participation in sessions, improve health awareness, and develop healthy lifestyles including preventative and predictive care allowed the therapists to support participation in society, community, and occupation-based services.

Summary

In summary, this project was designed to support early intervention occupational therapists ability to access, use, and explain evidence-based practice and to explore the

occupational therapists' perceptions after implementing evidence-based practice into their treatment sessions. This research study was designed to allow creative thought and accumulation of knowledge and the course included information on documentation of evidence-based practice strategies. This study supported the AOTA and the WFOT mission to promote science-driven and evidence-based research into therapy sessions and education. Finally this study promoted the objectives of Healthy People 2020 to focus on early childhood by increasing access to evidence-based research and development of social, emotional, physical and cognitive foundations.

Section II: Literature Review

Occupational therapists are skilled and creative problems solvers. Combining this creative nature with the use of scientific research, clinical expertise, and client values and desires creates a powerful and effective treatment plan. Occupational therapists who work in Kentucky early intervention are required to use evidence-based practice (D. Rakestraw, personal communication July 22, 2014). To be considered evidence-based, the treatment must combine research evidence, clinical expertise, and the values and preferences of the client (Dopp et al., 2012; McCluskey & Cusick, 2002). Early childhood approaches to evidence-based practice include improving the quality of education and care delivery, identification and appreciation of multiple types of knowledge, promotion of positive early experiences, and the necessity for fidelity during implementation (Brown, & Inglis 2013; Buysse, Wesley, Snyder & Winton, 2006; Center on the Developing Child, 2010; DeRousie 2008; Dunst 2014; Odom & Strain, 2002; Sari, 2014; Spoth, Guyll, Redmond, Greenber & Feinberg, 2011). This literature review will include information from both the early childhood literature and occupational therapy literature in order to identify the perceptions, barriers, approaches, collaboration and effectiveness of evidence-based practice.

Perceptions/Attitudes Towards Implementing Evidence-based practice

To provide a base for this study, the literature was searched to identify the perceptions of professionals regarding their attitudes towards implementing evidence-based practice. Several qualitative studies were reviewed that provided support for considering the perceptions of occupational therapists as they try to make changes within their practice to include implementation of evidence-based practice (Bennett et al., 2003; Dopp et al., 2012; Graham et al., 2013; Hu, 2012; Robertson, Graham & Anderson, 2013; Upton, Stephens, Williams &

Scurlock-Evans, 2014). Most occupational therapists have a positive perception of evidence-based practice however there is a low usage of incorporating scientific research into clinical decisions (Bennett et al., 2003; Dopp et al., 2012; Dysart & Tomlin, 2002; Graham et al., 2013; Hu, 2012; Lyons, Casey, Brown, Tseng & McDonald, 2010; McCluskey & Cusick, 2002; Upton et al., 2014). Furthermore, half of the therapists interviewed in Dopp et al. (2012) and Robertson et al. (2013) perceived evidence-based practice to require too much effort to implement despite having positive perceptions regarding the overall concept of evidence-based practice. Graham et al. (2013) and Lyons et al. (2010) found the perceptions and levels of confidence improved in implementation of evidence-based practice after attending a professional training regarding evidence-based practice. Unfortunately, evidence-based practice was perceived to be overly prescriptive and rigid by some therapists and educators (Graham, et al., 2013; Winton, Buysse, Rous, Lim & Epstein, 2013).

The early childhood literature supports the need for considering attitudes and encumbrances to implementation of evidence-based practice. According to Buysse et al. (2006) and Sari (2014) evidence-based practice is perceived as a method to empower professionals working in early childhood. Empowerment can come through using evidence-based practice to improve fidelity during implementation of strategies (DeRousie, 2008; Dunst, 2014; Odom & Strain, 2002). The early childhood literature adds the need for positive early experiences and relations for maintaining lifelong health (Brown & Inglis, 2013; Center on the Developing Child, 2010; Sari, 2014; and Spoth et al., 2011). A concern was identified to use evidence-based practice to combat toxic stress in children and the need for improved implementation of evidence-based practice during home visits (Center on the Developing Child, 2010; Gronski et al., 2013). Additionally, Shonkoff and Fisher (2013) found improvements in attitudes towards

evidence-based practice child care programs when the values of parents and caregivers were considered. The literature also identified evidence-based practice that included information on fidelity, participant responses and dosages for treatment was perceived as higher quality evidence-based practice (DeRousie, 2008; Dunst, 2014; Odom & Strain, 2002).

Encumbrances/Perceived Barriers to Implementing Evidence-based Practice

Despite having positive perceptions and the desire to implement evidence-based practice within treatment, therapists have identified several encumbrances to implementation. Many therapists and educators report time constraints and limited access to scientific studies as key areas that restrict the use of evidence-based practice (Arbesman & Lieberman, 2010; DeRousie, 2008; Dopp et al., 2012; DuToit et al., 2010; Graham et al., 2013; Hu, 2012; Humphris et al., 2000; Ilott, 2003; Lyons et al., 2010; McCluskey & Cusick, 2002; Robertson et al., 2013; Sari, 2014). Several therapists and educators report a lack of critical reasoning skills and ability to interpret scientific studies as a barrier to implementation of evidence-based practice (Arbesman & Lieberman, 2010; Buysse et al., 2006; Dopp et al., 2012; DuToit et al., 2010; Graham et al., 2013; Hu, 2012; Lyons et al., 2010; McCluskey & Cusick, 2002). A lack of managerial support and high productivity demands were reported as significant barriers to implementation of evidence-based practice (Arbesman & Lieberman, 2010; Brown & Inglis, 2013; DeRousie, 2008; Graham et al., 2013; Hu, 2012; Humphris et al., 2000; Robertson et al., 2013). Other barriers included: (1) high enrollment costs for continued education units and language barriers (Dopp et al., 2012), (2) an insufficiency of relevant evidence and recipe based practice in Graham et al. (2013), and (3) unclear results with diminished organization and quality of research (Buysse et al., 2006; DeRousie, 2008; Dopp et al., 2012; Hu, 2012; Ilott, 2003; Lyons et al., 2010). Odom

and Strain (2002) identified limited social validity and the lack of evidence for maintenance and generalization of strategies as barriers to implementation of evidence-based practice.

Approaches to Facilitate Implementation of Evidence-based Practice

The approaches to improve implementation of evidence-based practice include improving the quality of family relationships (Brown & Inglis, 2013; Gronski et al., 2013), appraising research for quality and relevance (Buysse et al., 2006), developing a focus on strong foundations for health (Center on the Developing Child, 2010; Gronski et al., 2013) and the need for sustainability, maintenance and generalization (DeRousi, 2008; Spoth et al., 2011). The need for development of Communities of Practice and neighborhood resources to improve implementation of evidence-based practice has been identified by Buysse et al. (2006), Center on the Developing Child (2010), DeRousie (2008) and Gronski et al. (2013). Several studies encouraged more education on where to find the evidence, development of journal clubs and promoting a supportive work environment that values use of evidence-based practice within treatment (Bennett et al., 2003; Dopp et al., 2012; DuToit et al., 2010; Hu, 2012; Ilott, 2003; McCluskey & Cusick, 2002; Robertson et al., 2013). Discussion on development of guidelines for clinical practice, critical reflection and teaching scientific approaches as effective methods to increase the implementation of evidence-based practice in treatment was identified as an effective approach in multiple studies (Arbesman & Lieberman, 2010; Bennett et al., 2003; DuToit, Wilkinson, & Adam, 2010; Hu, 2012; Ilott, 2003; Lyons et al., 2010; McCluskey & Cusick, 2002; Robertson et al., 2013). Education on the learning cycle for evidence-based practice was promoted by Winton et al. (2013). Additionally, Colyvas et al. (2010), Graham et al. (2013), Hu (2012), and Humphris et al. (2000) all discuss the need to implement professional development on evidence-based practice and how to assimilate research into practice. Unique

approaches to improving implementation of evidence-based practice include developing receptiveness for change and commitment to change (Humphris et al., 2000; McCluskey & Cusick, 2002). An approach highlighted by McCluskey and Cusick (2002) suggested developing incentives for implementation of evidence-based practice.

Collaboration to Support Evidence-based Practice

Multiple studies identified collaboration with other early intervention professionals and colleagues as a valued technique for accessing evidence-based practice (Arbesman & Lieberman, 2010; Bennett et al., 2003; Brown & Inglis, 2013; Hu, 2012; McCluskey & Cusick, 2002; Robertson et al., 2013; Spoth et al., 2011). Collaboration has been suggested as a source of clinical decision making (Dopp et al., 2012; Graham et al., 2013; Hu, 2012) and some therapists value experience over scientific research (Humphris et al., 2000). The need to involve families in collaboration is supported in several studies (Colyvas et al., 2010; Dopp et al., 2012; Sari 2014). Collaboration among colleagues as a method to create a culture of asking questions and challenging pre-existing ideas to promote critical reflection in occupational therapy has been promoted by Robertson et al. (2013). International collaboration included videoconferences, teleconferences, interactive web based training and online collaboration (Bennett et al., 2003; Robertson et al., 2013; Winton et al., 2013). Finally, the Center on the Developing Child (2010) and Buysse et al. (2006) advocate for developing neighborhood resources and communities to support collaboration and synthesizing practical knowledge.

Effectiveness of Implementing Evidence-based Practice

Implementation of evidence-based practice is thought to increase productivity, prevention, physical health, and internal motivation for participation (Brown & Ingles, 2013; Buysse et al., 2006). Implementation of evidence-based practice may result in improvements in

personalized care and family- centered care (Brown & Ingles, 2013; Gronski et al., 2013; Sari, 2014; Shonkoff & Fisher, 2013). One study identified including education through professional development on implementing evidence-based practice techniques and its positive effect on treatment by requiring members to submit videotapes of their sessions after they received the training (Colyvas, Sawyer & Campbell, 2010). Implementing evidence-based practice will result in improved quality of care and safer and more effective treatment interventions (Ilott, 2003; Lyons et al., 2010) and it promotes accountability (Buysse et al., 2006; Center on the Developing Child, 2010). Evidence-based practice is effective in optimizing clinical outcomes and quality of life (Dopp et al., 2012; McCluskey & Cusick, 2002) and it has been found to be cost effective by Lieberman and Scheer (2002). Documenting the implementation of evidence-based practice allows occupational therapy practitioners to advocate to payer sources, to validate occupational therapy to families (Arbesman & Lieberman, 2010) and to justify a higher standard of practice (Robertson, 2013). Furthermore, implementing evidence-based practice will save time (Humphris et al., 2000).

Summary

This literature search provided reviews and efficacy studies to support the need for further education on implementing evidence-based practice in early intervention and improving the perceptions and beliefs of professionals regarding evidence-based practice. The barriers identified during the literature review were included in the online continuing education course along with the solutions presented. Research findings and literature further supported the concept that evidence-based practice contributes to more efficient and cost-effective treatment that is predictable and can be used for prevention and development of lifelong health. The articles identified how evidence-based practice can be used to justify occupational therapy

services and how the use of evidence-based practice provides value for professionals and supports quality of care and accountability. The combined information from these articles were relevant to the capstone project's course on evidence-based practice and teaching methods for accessing, implementing and explaining evidence-based practice. The information further supported the need to identify if perceptions on implementing evidence-based practice change after completion of the course.

Section III: Methods

The need for further education to decrease the barriers to implementing evidence-based practice within treatment is becoming apparent. Decreasing barriers should improve research utilization and decrease the research-to-practice gap. Many of the barriers identified in the literature search could be classified as perceived barriers. Perceived barriers are individualized obstacles that prevent progress towards adopting new behaviors (Hayden, 2014). Methods to facilitate behavior change and diminish the effects of perceived barriers include education, exploration and cues to action (Hayden, 2014). Hayden describes cues to action as events, people or things that promote behavior change (2014). In this project, the cue to action was the online continuing education course and discussion boards that allowed the occupational therapists to explore their perceptions regarding evidence-based practice. The purpose of this project was to explore changes in occupational therapists perceptions regarding their ability to access, use and explain evidence-based practice in their intervention after participating in an online continuing education course related to evidence-based practice.

Project Design

The project was based on the Knowledge-to-Action Framework (Straus et al., 2006). This framework provided methods to decrease the research to practice and knowledge-to-action gap that currently exists in occupational therapy's implementation of evidence-based practice. The Knowledge-to-Action Framework is designed to gather the knowledge or research, synthesize it, and then apply it to an action cycle in order to promote change (Straus et al., 2006). Each step of the action cycle was included within the online continuing education course, the discussions, questionnaires, the focus groups and the evaluation process of the study (see Table 1).

An online continuing education course was created that identified the process of evidence-based practice and methods to decrease barriers to implementing evidence-based practice. The course taught methods for finding, implementing and documenting evidence-based practice techniques specific to early intervention. The online continuing education course was approved for continuing education hours from the Kentucky Board of Licensure for Occupational Therapy and it was approved as a provider's choice for First Steps' professional development requirements.

The online continuing education course was separated into four modules that allowed the participants' time to discuss and absorb the content of each section. The modules consisted of video PowerPoint presentations, accompanying notes and suggested articles and/or videos to support the material presented. A separate wiki included resources and handouts to allow reviews of the material and easy access to a list of databases that support evidence-based practice. The terminology specific to evidence-based practice and the First Steps program was included in a word search puzzle format. The course was implemented using the Campus Pack software in Eastern Kentucky University's (EKU) Blackboard site.

The first module focused on the knowledge phase of the Knowledge-to-Action (KTA) Framework (Straus et al., 2006). As the participants reviewed this module they were introduced to the concepts of evidence-based practice and how to combine scientific research, clinician's expertise and the client or parents' desired outcomes. The framework for quality was introduced as a method to ensure synergy between clinical effectiveness, evidence-based practice, efficiency and promotion of quality services and a skilled workforce (Ilott, 2003). The process of evidence-based practice was defined for asking, acquiring, applying, analyzing and adjusting knowledge. The first module reviewed PICO (Person, Intervention, Comparable Intervention and Outcomes)

questions and provided a case study example using a PICO matrix. Instruction in how to quickly review the evidence and its relevance to the PICO question was provided.

Module 2 continued using knowledge-to-action strategies and reviewed the implementation process and discussed more barriers that limit implementation. Module 2 emphasized the need to use the best possible evidence, combined with the parents' values and the participants' expertise. The barriers to implementation were reviewed and some solutions of those barriers were discussed. The module included a live search using some of the available databases and explained again methods for interpretation. The module ended with a review and restating of some of the key areas of evidence-based practice implementation.

Module 3 discussed the importance of including the evidence-based practice strategies being used and the outcomes in documentation. This module was designed to empower the participants to develop strategies for including evidence-based practice language within their documentation. Law (2000) states empowerment, persuasive communication and active participation are methods for changing attitudes or behaviors. This module discussed using key phrases to help promote documentation of the evidence and using base counts of 10 for more accurate measures.

Module 4 focused on reviewing the information presented and practicing the information using an interactive PowerPoint and case study. The participants answered questions regarding the best possible evidence and identifying important information in relation to a PICO statement. The Knowledge-to-Action Framework includes the need to identify components to sustain knowledge as a portion of the action cycle (Straus et al., 2006).

The participants in the study were treated as a case study and the data obtained provided opportunities for thorough, in-depth analysis of the changes that occurred in thinking and

perception after completing the online continuing education course (Creswell, 2014). The use of case studies allowed an in-depth analysis to be conducted regarding the impact enhanced education has on a participant's perceptions of their ability to access, use and explain evidence-based practice within their individual therapy sessions. The case studies included detailed descriptions of the participants' backgrounds and attitudes towards evidence-based practice prior to engaging in the online continuing education course and any changes that occurred over the course of the study. The data was coded using both in-vivo codes and analyst-constructed typologies and organized into categories (Bailey, 1997). The categories were then detailed in a cross-case matrix for display (Miles, Huberman & Saldana, 2013).

Prior to beginning the course, the participants completed a survey and an introductory discussion board as a part of the knowledge phase. The discussion board and surveys included information identifying total time in practice, time practicing in early intervention, general attitude towards evidence-based practice, and ease of comfort with communicating evidence-based practice strategies to family members. During the course of the study, the participants engaged in discussion boards and focus groups using an online format. The discussion board questions were open ended to help participants identify their perceptions and attitudes towards implementing evidence-based practice techniques. The list of discussion board prompts can be found in Table 2. At the end of the study, an exit survey was completed by the participants to identify if changes occurred in their perceptions. The results have been written in a narrative format after the data was organized and coded into specific themes (Bailey, 1997).

The information from the pre and post-course surveys and the input on the discussion boards were used to identify the changes that occurred to the participants' perceptions regarding evidence-based practice. In addition to posting on all discussion boards, the participants were

asked to include responses to other participants on two of the discussion boards. The author also provided input on the discussion posts and clarification to the material presented as necessary. The author decreased the input provided on discussion boards over the six week course and promoted discussion through weekly reminder emails in order to support participants comfort in use of their growing knowledge. The author used field notes and memos to describe the data (Bailey, 1997). A cross-case analysis was used to develop the checklist matrix (Miles, Huberman, Saldana, 2013).

The in-depth data analysis focused on whether the participants believed the data accurately portrayed their experiences, whether the data is comprehensive enough to look at all perspectives and situations and if the data can accurately reflect the experiences of the participants who participated in the study (Kielhofner, 2006). The results were written in a narrative format after the data was organized, coded, categorized, and placed in a matrix. To strengthen this study and reduce limitations related to accuracy, stakeholder or member checking was used by providing the participants with copies of the findings and asking them to verify the data (Creswell, 2014, Kielhofner, 2006). This narrative report included the potential for bias as the author is an occupational therapist that has a vested interest in improving the quality of therapy services provided to early intervention clients. To account for the potential bias, all unexpected findings and negative reports are included in the narrative report. An audit trail was kept of the procedures used and the data obtained (Lysack, Luborsky, & Dillaway, 2006).

Setting and Participants

Participants were occupational therapists practicing in the First Steps program for early intervention. First Steps provides services under Part C of the Individuals with Disabilities Education Act (IDEA, 2004), the federal law that provides education for all children with

disabilities starting at birth. First Steps therapists work in individual homes, daycares and learning centers across the state of Kentucky. The course was available in an online format that was open for viewing by invitation only. Each participant was sent a link allowing them access to the course after signing the informed consent document.

The participants were randomly selected using a convenience sample of participants listed on the provider matrix for early intervention providers. Therapists from each area of the state were electronically mailed an introduction letter outlining the study and a request for participation. Therapists were excluded from consideration if the caseload they supported was less than five individuals or if they were unavailable during any portion of the study. In order for the study to be effective, the participants needed time to implement the strategies that were presented and if the caseload was limited, there may not have been enough opportunities to practice the strategies. All participation was voluntary.

Ethical Considerations

The three core ethical principles in research include respect for others, beneficence and justice (Hartwig, Calleson, & Williams, 2013). The AOTA Code of Ethics (2010) includes the areas of beneficence, nonmaleficence, autonomy and confidentiality, social justice, procedural justice, veracity and fidelity. After researching both documents and reviewing the information in Kielhofner (2006) and Creswell (2014), careful consideration was given to developing the informed consent. The informed consent ensured good-faith and fidelity by providing assurance that the goal was not to make others feel uncomfortable and that participation could be terminated at any time. The project was submitted to and approved by the Eastern Kentucky University Institutional Review Board (IRB). (Appendix A)

This project provided a benefit for occupational therapists to be identified as leaders in the field of evidence-based practice. A secondary benefit to the early intervention program, First Steps, offered providers a place to access the best possible treatments for the individuals they serve. Since First Steps uses a collaborative service delivery model it is important for therapists to work at a higher level of competency in less time and to know how to collaborate effectively with the other professionals and the parents on the team. This project supported that mission.

Project Phases

Knowledge phase. The first phase included completion of an evidence-based practice survey and general questions related to attitudes and perceptions regarding evidence-based practice. The survey and information from the discussion boards were used to identify the knowledge and participants' perceptions regarding their ability to access, use and explain evidence-based practice within their interventions and to formulate each individual case study. The next step in the knowledge phase included completion of the course. This phase remained open for 28 days to ensure all individuals had ample time for completion.

Action phase. The action phase provided the basis for the data collection using the information from the discussion boards, the focus groups, the surveys, the memos and the field notes. The participants implemented the knowledge generated on evidence-based practice within their individual treatment sessions during this phase and were invited to group discussions using the online discussion boards to analyze their experiences and to discuss any questions or concerns. The information obtained in the action phase was coded into specific themes, included reflections or other remarks regarding the data, identification of familiar phrases and identification of relationships and differences in the data (Bailey, 1997). This phase lasted six weeks.

Evaluation phase. After implementing techniques within their practice, the participants were provided with access to the post course survey by electronic mail. The final portion of the project was the data analysis to identify the changes that occurred in participants' perceptions of implementing and documenting evidence-based practice into their treatment sessions.

Timeline of Project Phases

Week 1	Email introduction letter to occupational therapists listed on the provider matrix
Week 2	Email informed consents to the occupational therapists who expressed interest in participating in the study.
Week 3	Email to participants to provide them access to campus pack
Week 4	Email link for pre-course survey
Week 5	Continue supporting activities within the course. Follow up with participants on the discussion board introduction
Week 6	Review the process of evidence-based practice and practice PICO questions, critical appraisal and research utilization on discussion board 2.
Week 7 -10	Keep course open for a reference as participants are implementing strategies within their practice.
Week 11	Finalize discussion boards. Send link for post-course survey. Email Continued Education Certificates
Week 11 -15	Organize the data and develop final report

Resources

The resources needed for this study were minimal and included time, Surveymonkey.com monthly fees, paper, ink and a learning management system for the online continuing education course. The course was designed using Eastern Kentucky University's Blackboard Campus Pack. The majority of this study occurred online or through electronic mail. The participants needed access to an internet for completion of the courses, the surveys, discussion boards and the focus groups. All participants were already required to have access to computers for online documentation through First Steps so this was not a hardship or limit to the study. The focus groups took place as responses to discussion board prompts. After completion of the study, each

participant was emailed a thank you and a certificate of continued education and the hours completed. The total estimated cost for the resources was $52.00.

Outcome measures

1. Qualitative data obtained from online discussion boards and checklist matrix was analyzed to determine participants' perceptions of using evidence-based practice in early intervention.
2. The pre-course survey was used as a measurement tool to identify the participants' perceptions before participating in the online continuing education course.
3. An exit survey with open-ended questions and the information from the discussion boards were used to identify the changes in the participants' perceptions as a result of the course.

Summary

This project was a first step to developing an occupational therapy workforce that is more efficient and comfortable implementing evidence-based practice techniques across cultures and populations. The Knowledge-to-Action Framework was the guiding source for this project. The participants were obtained through a convenience sample obtained from participants listed on the provider matrix for First Steps. Completion of the course earned the participants continued education credit through the Kentucky Board of Licensure for Occupational Therapy and the First Steps provider choice continued education requirement. The project explored changes to the participants' perceptions following completion of the online interactive course.

Section IV: Results and Discussion

Early intervention occupational therapists are required to implement evidence-based practice within family-centered therapy. In order to fulfill this requirement, the therapists need to be skilled in combining scientific research with the family outcomes and their own clinical expertise. Shonkoff and Fisher (2013) identified the need to consider the values of parents and caregivers to improve implementation of evidence-based practice and Law (2000) reports family expectations include the use of assessment and treatment that is based on scientific research and evidence-based practice. Therapists need to be comfortable explaining and documenting these evidence-based interventions to families and within their treatment notes. However, many therapists have perceived barriers to implementing, explaining and documenting evidence-based practice that include limitations with time, access, comprehension, and the high costs of education (Arbesman & Lieberman, 2010, Dopp et al., 2012, DuToit et al., 2010, Graham et al., 2013, Hu, D 2012, Humphris et al., 2000, Ilott, 2003, McCluskey & Cusick, 2002, Robertson et al., 2013).

The barriers that limit integration of evidence-based practice within treatment sessions have been addressed through interactive education programs that promote knowledge utilization and knowledge transfer (Grimshaw et al., 2012; Zidarov et al., 2013 in Rivard, Camden, Pollock & Missiuna, 2015). Education on literature that has already been appraised and summarized was included to address the barrier of time constraints and to develop knowledge inquiry. Vogel (2012) reports teaching students to search for and utilize secondary literature is an effective method to save time on the job. She further reports knowledge sustenance can occur by developing confidence in the use of evidence-based practice (Vogel, 2012). In a survey regarding occupational therapists perceptions of evidence-based practice, Bennett et al. (2003)

identified a larger percentage of therapists prefer to search literature in brief summaries of the evidence developed by other professionals.

The Knowledge-to-Action Framework is an effective tool for designing knowledge transfers and addressing perceived barriers to utilization (Rivard et al., 2015). This project was designed to identify if an online continuing education course could reduce the evidence-to-practice gap that exists in early intervention occupational therapy. This study explored the perceptions of occupational therapists regarding the use of evidence-based practice in early intervention. The desire is to identify if changes can occur to therapists' perceptions after participating in an online continuing education course. Changes to the perceptions of the occupational therapists regarding implementing evidence-based practice and identification of actions plans for changing practice are reported in these results.

Project Objectives

The objectives of this project included (1) developing an online continuing education course for early intervention occupational therapy providers outlining evidence-based practice and (2) identifying if any changes occurred to the occupational therapists' perceptions after completing the course and implementing evidence-based practice strategies within their treatment sessions.

Results

This project identified changes to the perceptions of occupational therapists related to evidence-based practice in early intervention after completing an interactive online education course.

Participants. Seventeen therapists expressed interest in the study, however four did not meet the criteria and one individual did not return the informed consent. Six therapists from

various First Steps districts started the course. One participant dropped right after completing the introduction and another participant completed the first module before dropping the course. Neither participant provided a reason for dropping. Four participants completed the entire online continuing education course, including: the questionnaires, the online discussions and implementation of evidence-based practice within their treatment sessions.

The demographics of the participants included two participants who had been practicing occupational therapy for over 10 years and two participants who had been practicing for 2 years. All participants had been practicing more than one year in early intervention and the counties varied across respondents. Table 3 outlines the participants' number of total years practicing occupational therapy, number of years working in early intervention, and the Kentucky counties they served.

Survey findings. Initial indicators from the pre-course survey and the introductory discussion board demonstrated that participants identified a need for evidence-based practice to improve efficiency in therapy and to validate the need for occupational therapy to families. However, only 20% (N=2) of participants on the pre-course survey acknowledge integrating information from scientific evidence into treatment sessions. Half of the individuals (N=5) agreed they could effectively communicate the use of evidence-based practice and half of the individuals (N=5) agreed or strongly agreed critically appraising the evidence was necessary for implementation of the evidence-based practice process.

The post-course survey identified significant changes in the perceptions of the participants towards implementation of evidence-based practice. On the post-course survey, 100% (N=4) of the participants agreed or strongly agreed with the intent to continue developing their use of evidence-based practice and 100% (N=4) of the participants agreed they felt

comfortable communicating and implementing strategies based on the scientific evidence, the their expertise and in conjunction with the child's outcomes. When asked how comfortable they were in reporting the evidence to the clients, the responses on the open-ended questions included "very comfortable", "I am becoming more comfortable, but think it will improve with more time and opportunities" and "I am fairly comfortable citing research articles to parents" (N=4). When asked to identify difficulty with documenting evidence-based practice in treatment notes the responses ranged from time constraints and consistency for accurate documentation to no difficulty, but the need to make it more of a habit. Two (N=4) of the participants ranked their knowledge of evidence-based practice as beginners and two (N=4) of the participants ranked their knowledge of evidence-based practice as advanced. The participants all identified the course as being either very convenient or extremely convenient to use and half of them (N=4) stated they would recommend the course to colleagues. Ten individuals completed the pre-course survey and four individuals completed the post-course survey. In order to keep the survey anonymous participant codes were not included for either survey, therefore direct comparisons were not possible. See Table 4 for survey data.

Cross-case analysis. The statements participants entered on the discussion boards indicated the perceptual changes during the progression from the knowledge cycle to the action cycle. The participants also identified methods for sustaining knowledge throughout the course. Table 4 identifies the perceptual changes related to the Knowledge-to-Action Framework (Straus, et al., 2006).

Initial perceptions. The perceptions regarding implementation of evidence-based practice prior to engaging in the course included attempts to implement evidence-based practice with specific populations and a desire to implement evidence-based practice in all settings. P4

stated she "tried using evidence-based practice specifically with children that have cerebral palsy" and "I try to implement evidence-based strategies and use peer reviewed articles as much as possible". Perceived barriers included difficulty dedicating time and attention and having a better comfort level when communicating and implementing anecdotal information. P2 remarked anecdotal information "seems easier to find" and "it takes much more time to sift through research articles to understand them". P3 stated it is "so hard to make a part of the therapy a discussion of what the evidence says behind the technique". The newer participants in this study (P1 and P2) also noticed the use of evidence-based practice dropping off since leaving the school setting, "As a relatively recent graduate using databases and EBP [evidence-based practice] was second nature…I have unfortunately let myself fall away from these practices" (P1). "I felt confident that I would be all about EBP after we used it constantly in school but once reality set in, unfortunately I have not kept up like I hoped" (P2). While one of the experienced participants (P3) remarked on having basic knowledge of the evidence, but was not comfortable in reporting the evidence to the parents.

Perceived barriers. The participants identified time as one of their main concerns. P3 stated "I don't have time to look up the articles" and P5 stated "driving to my appointments, documentation and scheduling… does not leave much time for browsing through research articles". The other participants also mentioned concerns over time and the ability to balance research with practice. Of particular interest was the participant who identified the barrier of communicating information to families (P3) and P4 who identified difficulty with identifying the protocols used from the research articles, " I find it difficult at times to determine what the exact protocol were in the studies".

Perceptual shifts. Using information from the knowledge cycle in the Knowledge-to-Action Framework, the participants identified methods for using evidence-based practice to make treatment decisions. Subtle changes to the perceptions of the participants were evident in their discussions. One participant identified the need for our profession to make more research available. Another participant remarked on the need to include fidelity in implementation using the following statement "I feel that the evidence is correct, however the use of the equipment has to be used consistently and results have to be carefully documented to address the concerns of the family" and "I have to feel confident in implementation before I pass it on to my parents (P3). P2 also identified the need to have fidelity in her own implementation before making the recommendations to the families or caregivers. The most significant indicator of a perceptual shift was identified by P3 who stated:

> At first thought, the tasks of using EBP during all my treatment session seemed so daunting. I thought, that would take up so much more of my time, I would almost double my time at the computer, carrying such a heavy caseload right now. I consistently thought of all the negative parts of using EBP, but not how the team would be able to see our progress and how I would be able to show my families where we started and where we were at the end of our plans. I would like to say that [when] we break down what it means to use EBP, we have probably been doing more than what we thought we were, at least I have. I think I can say for most of us that we have been using some sort of EBP, but documenting it in a way that sounds more professional has been a weak point. I do use frequency counts and percentages at time, but not always consistently. I often find myself, these days, adding " as evidenced by..." to many of my notes which helps show the progress that a child has had or reference back to one of the goals a child had on the

> plan. I feel like I am doing better at adding documentation to my notes as well as finding that it is easier on my end when doing frequency counts of 10 trials, to document the progress better. I think the only concern I have is being diligent enough to make the time to research and use these strategies not just this month but from now on. Thanks for this opportunity to better our treatment practices.

Improved awareness of evidence-based practice. A portion of the action cycle in the Knowledge-to-Action Framework specifies the need to assess barriers/facilitators to knowledge use (Straus et al., 2006). During this early discussion, the participants started to acknowledge the benefit from including evidence-based practice within treatment. When a chart was introduced to integrate the three areas of evidence-based practice, the participant stated "providing [parents] with the evidence that they can set up mini play sessions with their child to encourage scribbling and identifying colors will be very helpful" (P2). They were moving from the knowledge inquiry state towards the action cycle in the Knowledge-to-Action Framework (Straus et al., 2006). The participants began acknowledging the clinician's expertise as an important component of evidence-based practice "Despite there being little evidence, I feel this is a good approach to take to introduce concepts of scribbling, coloring and making lines to set the foundation for future writing and FM development" (P2). "Even though the evidence isn't very high, I still think it is enough to support this intervention" (P1). One participant addressed using clinical expertise in this manner "but know from experience that a child that gets to have that sensory input versus just pencil to paper, seem to be more interested in participation" (P3). The focus on implementation facilitated the transfer into the initial steps of the action cycle of the Knowledge-to-Action Framework. The participants were becoming adept at identifying the knowledge-to-action gaps and adapting the knowledge to the local context. They had started

addressing the barriers to knowledge use and they were in the process of selecting, tailoring and implementing the interventions learned during participation in the course.

Early perceptions of family values included the feeling that parents want their children "fixed"; P4 state "a parent tell me [sic] that they were doing all the therapist [sic] in hopes that their child would be undiagnosed with ASD" and P3 stated she feels "[parents] want to know what we are doing is beneficial and eventually will see the benefit of our sessions" but "care less about the evidence or research that goes into the practice". Both P3 and P5 stated most families do not inquire about the research and P2 stated "I am finding parents want to hear about our experience with other families and how a technique worked for them". P4 did identify feelings of confidence when evidence-based practice is used, "I do feel more confident in getting parent '"buy in"' though when I can say '"studies show…"'".

Early on in the course, the participants started to identify the need to consider family values as a portion of evidence-based practice. A concern was identified regarding parents' values as just wanting therapy to be completed and not caring much about the "why" of therapy (P3). Other examples were also evident of including parents' values and desires into sessions when participants remarked on making the parents an active part of treatment (P1), wanting the parents to feel successful (P3) and considering the value the parents place on specific techniques or strategies (P5).

More than halfway through the course, the perceptions of the participants again shifted into more awareness of the concepts of evidence-based practice and they were now identifying methods related to their use of evidence-based practice. P5 stated she realized she may not have been as diligent using evidence-based practice while P2 stated she is only using minimal evidence-based practice. A difference between newer participants and more experienced

participants' perceptions of evidence-based practice strategies became evident in their conversations regarding communicating the evidence. One of the more experienced participants (P3) stated she focused more on how to get the child to the desired outcomes, without having the evidence to support why she selected specific techniques. This same participant had a significant perceptual shift as the discussion progressed and she stated "I need to be more confident in my conversations with parents, because it seems that I am using [evidence-based] practice, just not giving it credit" (P3).

Some of the barriers to collecting data and the limited research available were becoming more apparent in the perceptions of the participants. P2 stated "I feel like collecting data to use seems like a daunting task and P5 stated "I have not officially collected data but have relied on anecdotal evidence from families". Regarding the limited research available P5 stated "Again, I have done research online but most of the evidence I'm finding is anecdotal" and P2 stated "...very little specific to this program. Even less when looking at the EI populations". The participants identified their desire to have more information available as well as training materials to provide to parents (P2).

Documenting evidence-based practice. Most participants did not feel they were including good outcome results in their documents, but some of the participants professed to include the evidence-based strategies in progress notes. One participant remarked it was "easier to document the evidence based strategies than to document data" (P1). Another participant (P5) identified documenting data as an area of weakness "I have not made an effort to document "evidence" and P2 stated she definitely needs to improve on the "evidence" in her documentation. Most participants identified that they use general statements or approximations of how well the child did in therapy and may discuss the level of assistance required. "I too find

myself using the more generic statements like “completed task at 50% accuracy with min A” (P2)”.

When identifying an action plan for sustaining good documentation skills, the participants remarked they were interested in using key phrases, frequency counts, and base counts of ten to increase accuracy in outcome measures. “I will also make an attempt to use frequency counts etc. to document evidence (P5)” and “In the future I will include the key phrases outlined in the video and powerpoint such as “evidence points to…” and “as evidenced by…”(P1). “I have recently seen a co-worker pull out a small note pad with short hand for the goals of the session written out and make tally marks…this is something I will begin to use in my sessions to increase the accuracy of the evidence I collect” (P2). The final participant was more definitive in her response “I will make an effort to research once a week and gather info that is pertinent to the families I serve” (P3).

Sustaining knowledge. The participants identified actions they wanted to take to increase the use of evidence-based practice during early intervention therapy sessions. Action-based solutions the participants identified included attending continuing education courses that include scientific evidence, creating personal accountability for reviewing scientific evidence, creating handouts or identifying databases and articles as resources for parents, helping parents understand how the techniques being used will help meet the family’s desired outcomes, setting goals to increase diligence in finding research-based strategies and dedicating an hour a week to finding the evidence.

As a portion of the action cycle for sustaining knowledge, the participants identified methods to address fidelity in implementation of strategies. Many of the participants discussed that they began creating handouts and including the evidence that supports the handouts. “I have

created a handout that outlines everything" (P1). This same participant also suggests parents make videos of her implementing specific techniques rather than search online for videos of the techniques being implemented to maintain fidelity.

The participants using the course information as facilitators to knowledge is consistent with step 3 in the action cycle of the Knowledge-to-Action Framework. When discussing the parents' values the participants were more likely to identify with the family concerns over the desire to know why and how the strategies will help their child improve (P2) and taking advantage of opportunities to share information with families (P3). "I find that when I offer "why" even when not telling the parent it is EBP, they are more willing to try (P3)". Another method to sustain knowledge included providing a list of easily accessible databases that support evidence-based practice on one of the discussion boards. Several of the participants remarked they were unaware of the strategies and databases available that provide reviews of scientific evidence. "Providing these specific databases is very helpful since I was not aware of most of them" (P5) and "It's hard to look for search engines that have credible info listed!"(P3).

Discussion

Prior studies have identified there is low usage of incorporating scientific research into treatment despite the positive perceptions towards evidence-based practice (Bennett et al., 2003; Dopp et al., 2012; Dysart & Tomlin, 2002; Graham et al., 2013; Hu, 2012; Lyons, et al., 2010; McCluskey & Cusick, 2002; Upton et al., 2014). Education has been identified as a method to improve the implementation of evidence-based practice. Education of personnel is recognized as one of the primary methods for ensuring the use of evidence-based strategies (Marder & Fraser, 2012). Graham et al. (2013) and Lyons et al. (2010) found the perceptions and levels of confidence improved in implementation of evidence-based practice after attending a professional

training regarding evidence-based practice. Furthermore knowledge translation strategies that include interactive learning and use a variety of strategies have been identified as being more successful in diminishing the knowledge to practice gap than traditional education on research and development of written reports (Camden, Rivard, Pollock, & Missiuna, 2015).

There is a concern over the multiple barriers that impede implementation of evidence-based practice. Studies have identified therapists comment on the effort and time required as significant barriers to implementation of evidence-based practice (Dopp et al., 2012 & Robertson et al., 2013). Therapists have previously identified time constraints, limited access to information, lack of ability to interpret scientific studies and high productivity demands as some of the barriers to implementing evidence-based practice (Arbesman & Lieberman, 2010; DeRousie, 2008; Dopp et al., 2012; DuToit et al., 2010; Graham et al., 2013; Hu, 2012; Humphris et al., 2000; Ilott, 2003; Lyons et al., 2010; McCluskey & Cusick, 2002; Robertson et al., 2013; Sari, 2014).

The barriers that have been identified during this project were consistent with the information obtained in the literature. Barriers to interpretation of scientific studies have been identified in multiple studies (Arbesman & Lieberman, 2010; Buysse et al., 2006; Dopp et al., 2012; DuToit et al., 2010; Graham et al., 2013; Hu, 2012; Lyons et al., 2010 McCluskey & Cusick, 2002). Communicating information has been identified by Tickle-Degnen as one of the main steps to support clinical reasoning (2000).

In this study, the methods participants identified to find treatment strategies were similar to methods identified in other research articles on improving the use of evidence-based practice. The identified solutions included relying on continued education courses, using only the evidence-based practice that is well identified such as forced use and social stories; collaborating

with other therapists and relying on anecdotal experience. Multiple studies identified collaboration with other early intervention professionals and colleagues as valued techniques for accessing treatment strategies (Arbesman & Lieberman, 2010; Bennett et al., 2003; Brown & Inglis, 2013; Hu, 2012; McCluskey & Cusick, 2002; Robertson et al., 2013; Spoth et al., 2011). Some therapists also reported to place more value on experience over scientific research (Humphris et al., 2000). Tickle-Degnen (2000) reports the need to use descriptive information and to report information that is relevant to the client's own situation in order to help the client comprehend the relevance of therapy.

Recent graduates of occupational therapy are thought to possess the basic knowledge and skills for evidence-based practice (Coster & Schwarz, 2004). Once these therapists leave the school setting, the use of evidence-based practice has been noticed to diminish in direct relation to decreased time for research (Coster & Schwarz, 2004). The literature also indicates a pattern between new graduates being discouraged from using evidence-based practice, despite having been trained thoroughly in evidence-based practice methods (Dopp, Steultjens, & Radel, 2012). Tickle-Degnen, (2000) reports communicating about the evidence is an essential part of the evidence-based practice process although Coster & Schwarz (2004) identify more experienced practitioners struggle to understand and communicate evidence-based practice in their current practice environments.

The main barriers that persisted in discussions were time constraints, limited evidence available and difficulty understanding the evidence available. These areas are consistent with the survey conducted by Humphris et al. (2000) that identified the barriers most frequently expressed were limited time/workload pressure, insufficient resources and limited understanding of the evidence. Two of the participants expressed surprise over finding limited support in the

scientific literature for techniques they frequently used. Another definite shift in the perceptions towards barriers was apparent when a participant identified limited experience with the population served as a need for engaging in evidence-based practice instead of a barrier.

The need to monitor knowledge use, evaluate outcomes and sustain knowledge are the final steps in the action cycle of the Knowledge-to-Action Framework (Camden, et al., 2015). Tickle-Degnen (2000) identified the need for therapists to evaluate the intervention procedures as they are implemented with a client in order to make changes and revisions to the treatment if necessary.

Strengths and Limitations of the Project

This project included the development of an online continuing education course for teaching evidence-based practice to larger groups of people in all areas of the state. Kentucky has multiple rural areas with limited access to direct continuing education programs. In a survey regarding perceptions of evidence-based practice, Bennett et al. (2003), identified the desire for greater access to evidence-based practice training through interactive web based training to serve therapists in rural or remote locations. The interactive online training of this program is one of its strengths.

This project is not without limitations. The sample of occupational therapists were taken from the practitioners already established in First Steps. The need for using evidence-based practice in First Steps has been reported in provider manuals and on the online documentation system and the participants in this sample may have been pre-exposed to the need for implementing evidence-based practice. There were initially twelve individuals who expressed interest in this course, and six individuals started the course, but only four individuals completed each of the modules. The reasons for dropping were not provided, however there is a concern

that this type of online education course may have been contributed to the attrition. The course did require individuals to interact and respond to other participants online and the demands of the online learning may have been another limitation. The results may not be representative of therapists working in early intervention in other states. The author who implemented this project is also an early intervention occupational therapist in First Steps and has a direct interest in improving the quality and efficiency of therapy services for the families and children.

Because participant codes were not generated for the survey and all individuals who expressed initial interest in the course were provided with the link to the pre-course survey, but only the individuals who completed the course were provided with access to the post course survey the results of the survey may be biased towards a positive outcome.

Implications for Practice and Healthcare

This project has been designed to support the AOTA Centennial Vision, the Affordable Care Act requirements and the requirements of IDEA to include scientific research and evidence-based practice within therapy sessions. The drive to include evidence-based practice within therapy sessions has been enhanced by the need to use healthcare resources wisely and to improve efficiency in treatment. The profession of occupational therapy has identified evidence-based practice as an important method for ensuring high quality care and a method for promoting the profession (College of Occupational Therapists, 2003. Crist 2010 in Upton et al., 2014). Furthermore, evidence-based practice has been associated with improvements in healthcare outcomes and a reduction in healthcare costs (Melnyk et al., 2010 in Upton et al., 2014).

The online continuing education course was designed to improve the use of evidence-based practice for occupational therapists in First Steps. The feedback from the participants will be used to update and improve some of the course material and then it will be released as a

continued education choice for First Steps providers. The course was approved from the State Lead Agency as 6 of the 12 required hours for providers to renew their First Steps Contracts. Releasing the course to all occupational therapy providers will support continued education on the need for evidence-based practice for occupational therapists practicing in early intervention in Kentucky.

Future Research

This project was a first step in developing methods to reduce the perceived barriers to implementation of evidence-based practice. The limited number of participants and the convenience sample used in this project may have biased the results. Further research should include more participants and more material on outcomes studies and methods to document the results of therapy in relation to the evidence used. Further research is required to identify if the changes discussed are sustainable over a longer period of time.

Summary

The use of an interactive online continuing education course was successful in promoting the knowledge cycle and awareness of strategies for accessing, implementing and documenting evidence-based practice within early intervention. The use of group discussions helped participants collaborate on methods to improve their use of evidence-based practice and identify methods for promoting communication and documentation of techniques. The action cycle was completed through identification of the barriers, acknowledgement of the knowledge-to-action gaps, and identifying methods to improve and sustain knowledge use. Over a six week period, the participants were able to change their perception that evidence-based practice is time consuming and only about scientific research to identification of methods that include family values, the clinician's expertise and the best possible research. The participants also learned

methods to improve the evidence for each child by documenting outcomes more accurately and including evidence within their discussions with family and team members. The results suggest interactive education and collaboration is an effective option for developing a science-driven and evidence-based profession with a highly qualified workforce.

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Table 1

Knowledge-to-Action Framework

		Knowledge Funnel	
	Knowledge Inquiry	Evidence-based practice requires the ability to engage in knowledge inquiry rapidly	Education on searching the databases; limit responses; identify significance
	Knowledge Synthesis	Summaries of the information	Introduction to databases
	Knowledge Tools/Products	Presentation of knowledge in clear/concise manners	Education on clinical guidelines; protocols; critical pathways
		Action Cycle (Straus & Leung, n.d. section 3.1)	
1.	Identification of the knowledge-to-action gaps	Needs assessment to develop the starting point for knowledge implementation	Initial questionnaire Introduction discussion board
2.	Adapting the knowledge to the local context	Support adapting the knowledge to the context of early intervention.	Discussion boards, wiki resources, and video presentations
3.	Assessing barriers/facilitators to knowledge use.	The barriers/facilitators to implementation of evidence-based practice are being addressed as a part of the course	Discussion boards, wiki resources, questionnaires, and data analysis
4.	Selecting, tailoring, and implementing interventions	Specific to the needs of the early intervention	Education on including parent values' and desires into evidence-based practice
5.	Monitoring knowledge use	Focus discussions on methods to decrease the barriers to implementation of evidence-based practice.	Group discussions
6.	Evaluating outcomes	Evaluate the impact of the knowledge use, the fidelity in implementation, the participant perceptions and time factors	Exit survey
7.	Sustaining knowledge use	Identify methods for continued implementation of evidence over time through	Identifying goals for improving the use of evidence-based practice and methods to improve documentation of outcomes

Table 2

Discussion board prompts

No.	Item
1.	Please provide a brief introduction that includes the district(s) you serve, your typical schedule and any experience you have with using evidence-based practice. Respond to at least two of the other participants in order to create a "discussion".
2.	Using the resources provided in Module 1, find the evidence to support the intervention and discuss whether the evidence is strong, moderate or minimal and why. Do you recommend this intervention and why?
3.	Describe how you are currently using evidence-based practice in your treatment sessions and how comfortable you are with implementing evidence-based practice. Identify 2 strategies for how you can make your early intervention treatment sessions evidence-based and how you will use these in your practice.
4.	Describe how you are currently documenting evidence-based practice in your progress notes and how comfortable you are relaying evidence-based practice strategies. Identify 2 strategies for how you can make include evidence-based terminology into your documentation and where you can place these on the TOTS log.
5.	Please share your thoughts and reactions to implementation of evidence based practice within your treatment sessions. What concerns do you have? Were you able to discuss the evidence supporting treatment with your clients? Are you having any difficulty including evidence-based strategies within your documentation?

Table 3

Demographics

Participant	Total Years Working as an Occupational Therapist	Total Years Working in Early Intervention	Counties Served
P1	2	1.5	Clark, Robertson, Fayette, Jessamine, Bourbon, Scott, Montgomery, Madison, Nicholas
P2	2	2	Fayette, Scott, Bourbon, Jessamine
P3	10	8.5	Jefferson
P4	Not provided	Not provided	Not provided
P5	12+	7	Jefferson and Oldham

Table 4

Surveys

Survey Question	Pre-Course	Survey questions	Post-Course
I use techniques based on my experience and don't feel the need to review the literature.	3.60 (N=10)	I can easily combine my clinical experience with the scientific literature to determine activities to meet the parents' outcomes.	2.25 (N=4)
I feel comfortable developing clinical questions.	2.20 (N=10)	I can comfortably apply PICO questions to develop efficiency in research	3.00 (N=4)
I feel comfortable implementing new strategies based on information from scientific articles.	2.50 (N=10)	I feel comfortable implementing new strategies based on information from scientific articles	2.00 (N=4)
I can effectively communicate the use of evidence-based practice at team meetings.	2.60 (N=10)	I feel comfortable accessing, implementing and explaining evidence.	1.75 (N=4)
I feel comfortable discussing relevant scientific literature with parents.	2.30 (N=10)	I feel comfortable discussing client's values and my own expertise in conjunction with scientific evidence.	2.00 (N=4)
I understand how using EBP validates the need for occupational therapy to families	1.90 (N=10)	I understand how using EBP validates the need for occupational therapy to families	1.50 (N=4)
I believe implementing evidence-based practice has improved my efficiency in therapy.	1.80 (N=10)	I believe implementing evidence-based practice has improved my efficiency in therapy.	2.00 (N=4)
I can advocate for increasing the number of therapy visits by documenting evidence-based practice results.	2.30 (N=10)	I can use my documentation of EBP to advocate for increasing the number of therapy visits if necessary.	2.25 (N=4)
I can easily implement EBP to optimize clinical outcomes and improve a child's quality of life.	2.00 (N=10)	I can easily implement EBP to optimize clinical outcomes and improve a child's quality of life.	2.00 (N=4)
I believe implementing EBP will allow me to provide safer and more effective interventions	2.10 (N=10)	Evidence-based practice will improve the quality of my work	1.50 (N=4)
I feel comfortable implementing new strategies based on information from scientific articles	2.50 (N=10)	I can quickly apply critical appraisal skills to scientific articles in order to solve clinical questions	2.40 (N=4)

Note. Values are the mean of reported scores on a 5-point scale; 1= strongly agree, 5= strongly disagree.

Table 5

Cross-Case Checklist Matrix

	Perceptions Regarding Evidence-Based Practice
Knowledge cycle	
Use of evidence-based practice limited to specific populations	"tried using evidence-based practice specifically with children that have cerebral palsy" (P4).
Desire to implement; but limited consistency	"unfortunately do not use EBP as much as I would like" (P2). "I like many of my colleagues find it difficult to provide EBP to families" (P3).
Limited availability	"anecdotal as that information seems easier to find" "have found no conclusive evidence" (P2). "Very little specific to this program. Even less exists when looking at the EI population" (P2). "Most of the evidence I'm finding is anecdotal" (P5).
Difficult to discuss	"It is so hard to make a part of the therapy a discussion of what the evidence says" (P3).
Action cycle	
Need for more research	"It would be very beneficial for our profession if there was more research available for on these kinds of interventions" (P2).
Need for fidelity	"I do not feel comfortable enough with it yet [lack of experience] to make the recommendation" (P2). "I feel that the evidence is correct, however the use of the equipment has to be used consistently and results have to be carefully documented to address the concerns of the family" (P3). "I have to feel confident in implementation before I pass it on to my parents" (P3).
Handouts	"I have created a handout that outlines everything that I explain to parents as a reference" (P1).
Videos	"I also tell them to not to look it up on youtube, but to video record it when I demonstrate it" (P1).
Diligence	"I have unfortunately fallen away from these practices" (P1). "I have come to realize I have not been as diligent with using EBP as I should be" (P5).

Table 5 Continued

Perceptions Regarding Evidence-Based Practice	
Sustaining knowledge	
Including clinician's expertise	"Despite there being little evidence, I feel this is a good approach to take…" (P2). "I still think it [the evidence] is enough to support this intervention" (P2). "I often take the play approach…know from experience that a child that get to have that sensory input versus just pencil to paper, seem to be more interested in participation" (P3). "Even though the level of evidence isn't very high I still think it is enough to support this intervention" (P1)
Considering parent values	"Makes the parents feel they are an active part of treatment" (P1). "This mom happens to like research and did some of her own but was unable to find anything for his age aside from case studies of anecdotal information" (P2). "I don't want the parents to feel unsuccessful" (P3). "the parents just want it "done" and don't seem to care "why" although we should" (P3). "I have worked with several families that have found the blanket to be invaluable" (P5).
Explaining why	"So providing them with the evidence that they can set up mini play sessions with their child to encourage scribbling and identifying colors will be very helpful" (P2).
Perceptions Regarding Documentation	
Knowledge cycle	
Limited use of outcome documentation	"Right now, I do not use a lot of EBP in my progress notes" (P1). "I will have to admit that 75% of the time I use general statements about how they did or how much they have improved" (P1). "Currently, I do not really feel like I am documenting much EBP" (P2). "This is an area I am lacking in" (P5). "I do not document the why" (P5). "Documenting data is definitely an area of weakness for me as a therapist"(P5).
Difficult to achieve	"Easier to document evidence based strategies than it is to document data" (P1). "I struggle with this as well, it really is all about effort" (P1). "I feel like collecting data to use seems like a daunting task and [I] would not know where to start" (P2). "It is hard to remember trials, and % and show a functional way to document this" (P3). "I find it hard and a bit time consuming to give exact info from research" (P3). "I have not officially collected data, but have relied on anecdotal evidence from families" (P5). "I have not made an effort to document "evidence" (P5).

Table 5 Continued

	Perceptions Regarding Documentation
Action cycle Adapting the knowledge	"I think with practice it will become easier" (P1). "I do use phrases like "As observed by… when documenting notes and feel like it gives a picture of what the child is doing even if notes are written in narrative form."(P3). "I always make an effort to document the strategies implemented during sessions"(P5).
Terminology/use of evidence-based practice	"Right now I do try to use evidence based strategies as much as possible and I will list them by name" (P1). "this is one place I could improve upon my use of evidence-based terminology to state more specifically the evidence behind choosing one intervention technique over another" (P2) . "One thing that I need to stop doing is using generic phrases" (P5).
Sustaining knowledge Use key phrases, Base counts & Tally marks, Databases	"I think key phrases are a great idea" (P5). "Another method you mentioned is base counting by using 10 trials, etc. which I have not utilized before" (P5). "Providing these specific databases is very helpful since I was not aware of most of them" (P5). "I can also see plugging in some of the key words mentioned (P2). "The idea of based counting using 10 trials is something I think will really increase the accuracy of the "evidence" we are gathering" (P2). "In the future I will include the key phrases outlined in the video and powerpoint" (P1)."These sound like great ideas, I can use base 10 counting and tally marks" (P3). "Thank you for sharing this info, it's hard to look for search engines that have credible info listed!"(P3).
Increase effort	"I need to make more of an effort to utilize & document EBP" (P5). "I will also make an attempt to use frequency counts etc. to document evidence" (P5). "Make a professional goal for ourselves such as putting at least on definitive measurable description in every not we write. That will make progress so much more clear over time" (P1) "Maybe I am using more EBP than I thought I was... I tend to place the same info in [the] respective boxes in TOTS but don't consistently use % or labeling the frequency counts. I'll work harder to do that in my notes." (P3).

Table 5 Continued

Perceptions Regarding Barriers to EBP	
Knowledge cycle	
Time limitations	"It is difficult to find the time to research as much as we would like…do not have the time to sift through peer-reviewed articles to understand them determine what is effective/not effective" P2 I find it difficult to dedicate the time and attention necessary to read current research articles P5 "Most therapists consult more than do research for the sake of time" (P4). Frankly, I don't have the time to look up the articles" (P3).
Communication difficulty	"So glad I am not alone in finding it difficult to dictate evidence to families" (P2). "How to explain the stats makes it more difficult" (P3). "If I was asked for a more in-depth explanation or evidence, I wouldn't have the answer" (P5).
Complications interpreting studies	"…find that the statistical part of the info is overwhelming" (P3). "Difficult to determine what the exact protocols were" (P4).
Expensive training courses	"Require specific and sometimes expensive training courses to be implemented properly" (P4).
Not family-friendly	"parents want to hear about our experience with other families and how a technique worked with them" (P2). "more time to find a parent friendly way to present them" (P2). "hard to incorporate them into daily sessions and make it interesting to families" (P3)
Costs of the equipment	"if they cannot afford it I will recommend use of a backpack with some weight in it" (P1). "The difficulty that I face is the cost of the vest and having insurance purchase for the family" (P3).
Action cycle	"I had recently attended a course that provided me with the resources I could share" (P2).
CEUs	"I often chose professional courses that peak my interest" (P3). "I do quote some things off the top of my head from previous courses I've attended" (P5).
Family-Centered	"I try my best to provide the best family-centered services to my clients (P5).
Researched evidence with specific diagnoses	"I do find that using constraint induced therapy and weight bearing with children who have brain injuries or CP to be very effective" (P4)
Collaboration	"I use a lot of strategies that have anecdotal evidence that are suggested by other OTs" (P1). "Most of my current intervention methods come from collaborating with other therapists" (P2). "I find it easier to contact a seasoned therapist to ask questions" (P3).

Table 5 Continued

Perceptions Regarding Barriers to EBP	
Anecdotal Evidence	"Just looking up information on a case by case basis…often this is anecdotal" (P2). "I occasionally look up topics online… but most are anecdotal rather than evidence-based research" (P5).
Sustained knowledge Research	"will make an effort to research once a week and gather info that is pertinent to the families I serve" (P3).
Improved confidence	"I will be much more comfortable to share this information with parents" (P2). "I need to be more confident in my conversations with my parents, because it seems that I am using practice, just not giving it credit" (P3).
Improved awareness	"We take for granted the hard work and research that others have done and miss out on the opportunities to share this great info with our families!" (P3).
Accountability	"I need to make more of an effort to write down questions/topics that I need to research to hold myself more accountable"(P5).
Improve carryover	"My goal is to…create handouts or something similar to share with families that will help them understand the importance of carrying out the techniques and why we are doing them"(P2).
Improve Diligence	"My goal is to be more diligent about finding research based strategies for some of the most common problems I see (i.e. sensory processing issues, feeding issues, etc.)" (P1).
Provide resources	"I could make my sessions more evidence based by presenting to parents resources of articles or websites so they can do their own research on the topics to feel more comfortable with what I am telling them…" (P2). "I agree with giving the parents resources that are simple and easy to understand" (P5).

Appendix

Graduate Education and Research
Division of Sponsored Programs
Institutional Review Board

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NOTICE OF IRB APPROVAL
Protocol Number: 15-181
Institutional Review Board IRB00002836, DHHS FWA00003332

Review Type: ☐Full ☒Expedited

Approval Type: ☐New ☐Extension of Time ☐Revision ☐Continuing Review

Principal Investigator: **Shelli Dry** Faculty Advisor: **Dr. Christine Myers**

Project Title: **Enriching Occupational Therapy in Early Intervention: Using and Documenting the Evidence**

Approval Date: **2/27/15** Expiration Date: **1/31/2016**

Approved by: **Dr. Pat Litzefelner, IRB Member**

This document confirms that the Institutional Review Board (IRB) has approved the above referenced research project as outlined in the application submitted for IRB review with an immediate effective date.

Principal Investigator Responsibilities: It is the responsibility of the principal investigator to ensure that all investigators and staff associated with this study meet the training requirements for conducting research involving human subjects, follow the approved protocol, use only the approved forms, keep appropriate research records, and comply with applicable University policies and state and federal regulations.

Consent Forms: All subjects must receive a copy of the consent form as approved with the EKU IRB approval stamp. Copies of the signed consent forms must be kept on file unless a waiver has been granted by the IRB.

Adverse Events: Any adverse or unexpected events that occur in conjunction with this study must be reported to the IRB within ten calendar days of the occurrence.

Research Records: Accurate and detailed research records must be maintained for a minimum of three years following the completion of the research and are subject to audit.

Changes to Approved Research Protocol: If changes to the approved research protocol become necessary, a description of those changes must be submitted for IRB review and approval prior to implementation. Some changes may be approved by expedited review while others may require full IRB review. Changes include, but are not limited to, those involving study personnel, consent forms, subjects, and procedures.

Annual IRB Continuing Review: This approval is valid through the expiration date noted above and is subject to continuing IRB review on an annual basis for as long as the study is active. It is the responsibility of the principal investigator to submit the annual continuing review request and receive approval prior to the anniversary date of the approval. Continuing reviews may be used to continue a project for up to three years from the original approval date, after which time a new application must be filed for IRB review and approval.

Final Report: Within 30 days from the expiration of the project, a final report must be filed with the IRB. A copy of the research results or an abstract from a resulting publication or presentation must be attached. If copies of significant new findings are provided to the research subjects, a copy must be also be provided to the IRB with the final report.

Other Provisions of Approval, if applicable: None

Please contact Sponsored Programs at 859-622-3636 or send email to tiffany.hamblin@eku.edu or lisa.royalty@eku.edu with questions about this approval or reporting requirements.