Spring 2021

A Survey of SLP Graduate Students Pre- and Post-Telepractice Training During the COVID-19 Pandemic

Kelly Allison Frost
Western Kentucky University, kelly.frost88@gmail.com

Follow this and additional works at: https://digitalcommons.wku.edu/theses

Part of the Other Medicine and Health Sciences Commons, and the Speech Pathology and Audiology Commons

A SURVEY OF SLP GRADUATE STUDENTS PRE- AND POST- TELEPRACTICE
TRAINING DURING THE COVID-19 PANDEMIC

A Thesis
Presented to
The Faculty of the Department of Communication Sciences and Disorders
Western Kentucky University
Bowling Green, KY

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

By
Kelly Frost

May 2021

A SURVEY OF SLP GRADUATE STUDENTS PRE- AND POST- TELEPRACTICE TRAINING DURING THE COVID-19 PANDEMIC

Date Recommended 4/2/2021

Lauren E. Bland
Digitally signed by Lauren E. Bland
Date: 2021.05.04 15:50:22 -05'00'

Lauren Bland, Committee Chair

Allison Hatcher   05/04/2021

Allison Hatcher

Brian Weiler
Digitally signed by Brian Weiler
Date: 2021.05.04 16:38:06 -05'00'

Brian Weiler

Associate Provost for Research and Graduate Education

Richard Dressler for helping me find a way to deepen my knowledge of research

Thank you to my committee for dedicating so much time to helping me be successful

Friends and family who've supported me through this process

To the graduate students and WKU faculty who were apart of the study

TABLE OF CONTENTS

A SURVEY OF SLP GRADUATE STUDENTS PRE- AND POST- TELEPRACTICE
TRAINING DURING THE COVID-19 PANDEMIC

Kelly Frost   May 2021   35 Pages

Directed by: Lauren Bland, Allison Hatcher, and Brian Weiler

Department of Communication Sciences and Disorders   Western Kentucky University

Many university programs in speech-language pathology who offer clinical training as part of their graduate program, transitioned to a telepractice service delivery model in response to the COVID-19 pandemic. The purpose of the current research project was to survey graduate student opinions and perspectives on the telepractice service delivery model before and after training. Graduate students enrolled in a SLP distance program at WKU participated in a summer clinical internship and were asked to complete pre- and post-surveys about their remote clinical experience. Pre- and post-surveys were completed by 27 graduate students who were enrolled in the summer clinical internship that included a five-week formal telepractice training. The Wilcoxon Signed-Ranks test indicated that post-test Knowledge question scores were significantly greater than pre-test Knowledge question ($p < .001$). Likewise, post-test Comfort question scores were significantly greater than pre-test Comfort question scores ($p < .001$). The statistically significant impact on student knowledge and comfort in learning and using telepractice as a service delivery model further supports the need to integrate a telepractice component to clinical education for SLP programs at the graduate level.

Keywords: telepractice, speech-language pathology, clinical education

Introduction

The COVID-19 pandemic forced many allied health professions, including speech-language pathology (SLP), to rapidly train in and implement the service delivery model of telepractice. Likewise, various training institutions, including universities in the United States, were also charged with transitioning and supporting students to a strict online learning format due to the mandated shelter-in-place guidelines. Many university programs in speech-language pathology that require on-campus clinical training for graduate students also transitioned to a telepractice service delivery model in response to the COVID-19 pandemic. One program of particular interest is the Department of Communication Sciences and Disorders (CSD) at Western Kentucky University (WKU). Like other university programs across the U.S., WKU's CSD department quickly and carefully worked together to design and implement a remote clinical experience for a mandatory clinical internship that included educating and training students to provide synchronous telepractice services. This allowed graduate students in WKU's CSD distance learning program to move forward in their degree program by being allowed to accrue the required clinical training and clinical clock hours through telepractice during the summer of 2020.

Prior to the COVID-19 pandemic, telepractice had been deemed an appropriate model of service delivery for the profession of speech-language pathology and audiology (ASHA, n.d.). Telepractice has been an emerging area of service delivery in SLP for several years. Previous to COVID-19, most university-based programs across the U.S. were not training students to use this service delivery model through clinical education (Grogan-Johnson, et al., 2015). This is likely due to current accreditation standards for

graduate-level training programs in SLP not requiring coursework or clinical experience in telepractice (Lowman, 2017).

In 2016, the American Speech-Language-Hearing Association (ASHA) sent out a survey to 2,279 individuals who were affiliated with the ASHA Special Interest Group (SIG) 18 'Telepractice/telehealth' and to clinicians who stated telepractice expertise on their ASHA dues notice or membership form. ASHA received 569 completed surveys from SLPs and Audiologists (AuD) but only 316 respondents answered the question about initial telepractice training and were able to select more than one choice. It was reported that 58.5% of clinicians received telepratice training from their employer, 35.4% clinicians received training through the ASHA website or Practice Portal, and 59.5% clinicians received training through a continuing education webinar or continuing education conference. Only 22 clinicians (7%) stated that they had received telepractice training in some capacity at the graduate level. The question was broken down into 3 graduate training options: graduate education telepractice course (2.5%), graduate course in which telepractice was included to some degree (3.2%), and graduate education practicum (1.3%).

Recent research supports the validity and reliability in providing telepractice services (ASHA, 2020; Boisvert & Hall, 2018; Weidner & Lowman, 2020). Therefore, the need to train SLP students to use the telepractice service delivery model during their clinical education program cannot be overlooked in the aftermath of a global pandemic. Although telepractice has quickly became an essential part of many graduate clinical training programs across the nation, research is scarce regarding the best practices for training graduate-level student clinicians to utilize this service delivery model. However,

some researchers have investigated telepractice training and its impact on graduate-level clinical education, student learning and skills training, and client outcomes for those who received remote SLP and AuD services by student clinicians.

The purpose of the current research project was to survey graduate student opinions and perspectives on the telepractice service delivery model before and after training. The survey assessed student knowledge and comfortability with the telepractice service delivery model after completion of a specifically designed telepractice training program for graduate students during a clinical internship in a university-based program during the COVID-19 pandemic. The study also included graduate student statements of their perspectives regarding the overall experience after hands-on training in using this service delivery model. The study took place at the Western Kentucky University (WKU) Communications Disorder Clinic (CDC), where clinical education is provided for the Communication Science Disorders (CSD) Program at WKU. This study addressed the following research question: How do ratings on knowledge and comfort related to the use of a telepractice service delivery model differ between pre- and post-telepractice training?

Literature Review

Grogan-Johnson et al., (2015) sent out a national survey to determine the extent of SLP and AuD programs offering telepractice training, types of telepractice models provided in clinical settings, tools used in telepractice, challenges in starting telepractice graduate education, and graduate students' knowledge of the telepractice delivery model. An 18-question survey was created and 97 respondents completed and returned the survey out of 256 invited. Of these 97 respondents, 42 were administrators, 35 were

clinical directors, and 20 were professors, supervisors or clinical educators who completed it. The respondents were distributed around the country with 19 universities from the Northeast, 33 universities from the Midwest, 33 universities from the South, 11 universities from the West, and one from the U.S. Territories.

The authors discovered that roughly 80% of respondents believed education and clinical training on telepractice should be provided at the graduate level. Ninety-two programs stated they had university-based clinics but only 23 utilized telepractice as a service delivery model for speech-language pathology services. Additionally, four other university clinics utilized telepractice for audiology services. The researchers also found that only 4 out of 97 programs provided training in telepractice to the majority of their graduate students. Sixty of the program respondents did not offer any academic training or courses in telepractice applications.

Gorgan-Johnson et al. (2015) also asked respondents about their future plans for telepractice at the graduate level. They discovered that 34% of the respondents had no plans, and 39% said there were plans underway but unsure when telepractice training would be available. Several themes were expressed by respondents as to why telepractice training was not offered, which included lack of funding, lack of resources/technology, lack of trained faculty, conflicting philosophies on telepractice, lack of knowledge with technology, lack of knowledge with rules, regulations, laws, billing, funding, reimbursement, and privacy requirements. Based on the survey results, researchers noted the potential benefit of telepractice trainings for graduate students in spite of the barriers previously listed.

Watts and Willis (2017) chose to investigate the opinions of audiology doctoral students. The researchers wanted to know if graduate students would be more inclined to use telepractice services if they were provided training and experience during their graduate program. Students were offered the opportunity to provide supervised audiology assessments through the Auburn University Speech and Hearing Clinic for children in Guatemala using telepractice. Due to lack of access to equipment, graduate students were instructed on use, procedures, and protocol during telepractice sessions with the assistance of a translator rather than having practice prior to the sessions. The authors discovered that prior to the experience, students were either neutral or in favor of telepractice. Data comparison of pre- and post- surveys completed by eight graduate students indicated an increase comfort in telepractice, however it was only statistically significant in the area of diagnostic testing. The researchers hypothesized the lack of statistical significance may have been due to high ratings of comfortability using telepractice on the pre-test survey.

Linking Kids to the SLP (LinKS) was developed to investigate "the gap between preparation and practice…in the use of telepractice" (Lowman, 2015, p. 50). The University of Kentucky created a two-semester program that offered select graduate students two telepractice courses and two clinical experiences that were aligned together. LinKS instruction and evaluation was derived from competencies of the Council of Academic Accreditation (CAA), ASHA, and articles written by Brennen et al. (2010) and Brienza & McCue (2013) (Lowman, 2017). Five domains were created to train students on how to provide high quality telepractice services upon completion of the program. Domains included (a) communication speech disorders (CSD); (b) ethical, legal and

reimbursement issues; (c) technology; (d) best practice; (e) sustainability. Lowman (2017) offered several recommendations for building telepractice training into a university-based SLP program that related to curriculum development, technology, materials and personnel in order to benefit the success of future SLPs.

Overby (2018) analyzed the perceptions of speech language pathology faculty and students about effective telepractice pedagogy in SLP in order to further define essential skills, competency, knowledge, and challenges that exist regarding the use of telepractice services. Overby's survey consisted of four demographic questions, three open-ended questions, and a follow up interview. Overby (2018) received responses from had 63 faculty, 31 graduates, and 16 telehealth SLPs. Twelve faculty, four graduates, and six telehealth SLPs from the response group participated in a follow-up interview. When learning telepractice, student participants listed practice and demonstrations (role playing or observing the clinical supervisor engaging in service delivery) as the most preferred pedagogical activities when compared to co-treating with another student clinician. Overby reported several skills related to telepractice that all participants agreed were important: telehealth clinical skills, technical skills, legal knowledge and knowledge of the telehealth literature were ranked the highest. Additionally, faculty participants ranked skills they believed were important for graduate students: appropriate selection and preparation of online materials, interpersonal engagement over the internet, how to manage e-helpers, behavior management of clients, and how to educate clients regarding technology use. While there were common agreements between participants' responses, no singular competency or skill was unanimously identified as being the most important.

Altogether, research is slowly being published about the use of telepractice services in graduate training programs. There is however, a continued need to best understand how to teach and train graduate students about best practice when providing services through telepractice delivery. Due to the combined efforts of the CSD Department at WKU, clinical education for the 2020 summer internship program was able to continue by providing graduate students with a short, yet informative telepractice training program. In spite of being in the midst of a global pandemic, faculty members from the CSD Program at WKU expedited a pilot study during the summer of 2020 by surveying graduate-level clinicians who participated in a five-week remote telepractice training program. Since there is relatively little information about teaching and training SLP graduate students how to effectively use telepractice, the author of this study sought to investigate student perspectives before and after a specifically designed, hands-on training in telepractice. Additionally, it was expected that analysis of the surveys might provide valuable information on the most effective components of the training program in order to improve instruction and training in the future and possibly provide useful information on effective pedagogy related to telepractice training for SLP.

Method

Graduate students enrolled in a CSD distance program at WKU participated in a summer clinical internship and were asked to complete pre- and post-surveys about their remote clinical experience. The surveys included 25 questions each and were approved by the WKU Institutional Review Board. The internship lasting 5-weeks consisted of telepractice education and training, including a supervised clinical experience providing

SLP telepractice services to existing clients of the WKU Communication Disorders Clinic (CDC). Students were provided a brief, yet informationally dense training by a WKU CSD faculty member who specialized in telepractice. Education and training included a full-day workshop, additional hands-on learning labs with a partner following the workshop, online learning checks (quizzes), and through a four-week hands on training experience providing SLP intervention services via telepractice. All student clinicians were supervised by ASHA-certified and state-licensed SLPs who had previously received training in telepractice; however, supervisors varied in the extent of professional development and experience with telepractice.

Participants

Participants were graduate students enrolled in the CSD distance program at Western Kentucky University. Fifty students participated in the online summer clinical internship; however, only 27 participants (see Table 1) completed both pre- and post-surveys (see Appendix A). The survey was voluntary and not required to be completed as a part of the summer internship program. All graduate students who completed the clinical internship had completed their first year in the CSD distance program and were completing the summer clinical internship as a requirement prior to beginning off-campus clinical externships in the field of SLP.

Twenty-five participants stated in the pre-test survey that they believed telepractice should be taught in clinical training while only two participants stated this as a 'maybe'. Only one participant had received telepractice training experience as a graduate student prior to this workshop and clinical experience. When asked to elaborate, she stated that it was an informal one hour training through work as an SLP-A. Four

additional graduate students stated that they had used telepractice services as an SLP-A

(speech-language pathology assistant) but did not elaborate on their years of experience.

Table 1

Survey Demographics

| Gender		Age				Demographics					Education	
F	M	18 - 21	22 - 29	30 - 39	40 - 49	White	African American	Asian	White/ American Indian	White/ Hispanic	Bachelor's Degree	Master's Degree
26	1	3	15	7	2	22	2	1	1	1	24	3

Procedures

  Graduate students were first asked to complete the optional survey prior to starting the first day of training. The first day of the telepractice training included an approximate eight-hour online synchronous workshop that was divided into four separate seminars approximately 1.5-2 hours in duration (see Figure 1). For all seminar trainings, the trainer created PowerPoint presentations that included relevant information from several materials and resources provided by ASHA, other published research on telepractice, personal and colleagues' clinical experiences, and sharing several video examples of telepractice sessions. Students also participated in both large and small breakout group discussions when prompted.

  The WKU CDC selected the videoconferencing system and voice over Internet protocol (VoIP) platform, Zoom, for all online trainings and telepractice sessions. All students continued their training through hands-on experience by providing telepractice services to WKU CDC clients while supervised. All students had a clinic supervisor who observe and provided feedback during and after all telepractice sessions. Following their last therapy session of the term, students were asked to complete the optional post-telepractice training survey.

Figure 1

Flowchart of 5 week telepractice training
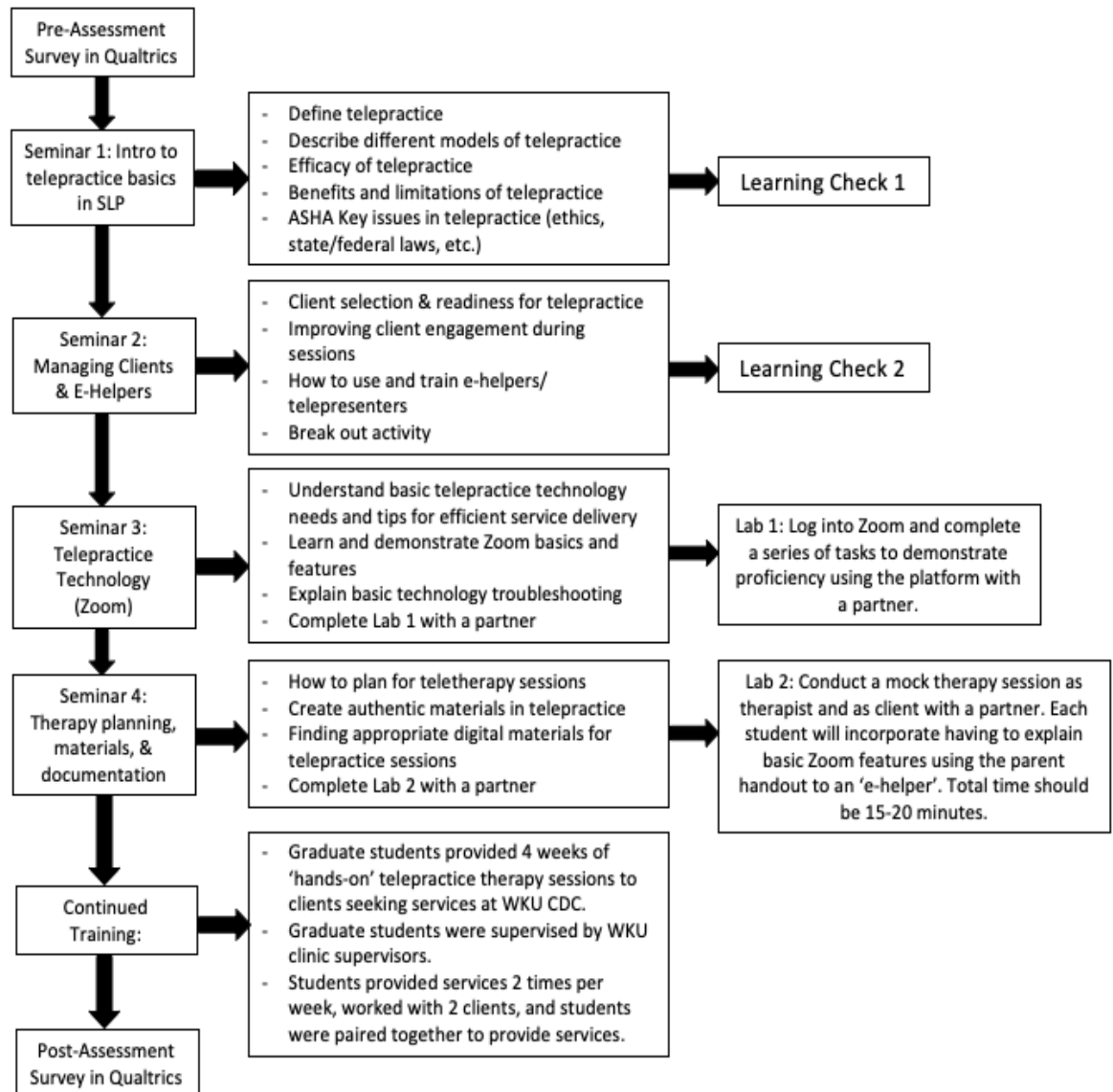
Telepractice Training

The first telepractice seminar focused on telepractice "basics" in the field of speech language pathology. Specific content topics are listed in Figure 1. The telepractice trainer used many materials and resources provided by ASHA, other information from published research on telepractice, and several video examples. Students also participated in both large and small breakout group discussions when prompted. Following the first seminar, there was a short break and students were informed of the need to complete a learning check through the clinical internship course site on Blackboard before the end of the day. Questions on the learning check pertained strictly to seminar one and used a multiple choice, multiple answer, short answer, and true/false format. Students were required to pass with an 80% or better on each learning check. All students were able to pass their learning checks the first time.

The second seminar contained information about client candidacy, engaging and managing clients, and working with and training e-helpers/telepresenters. Seminar 2 was followed by announcing a second learning check to be completed by end-of-day. Graduate students were provided a longer break before beginning the second half of the full-day training.

Seminar three provided information on how to use telepractice technology at WKU CDC. As stated previously, Zoom was the only platform utilized for the training and telepractice experiences. Using this VoIP platform was the focus of the third seminar. After the completion of the seminar, students were paired together and asked to practice using Zoom and certain functions and tools (i.e., creating a meeting invite, starting a

meeting, sharing the screen, using annotation tools) available within the platform over the next couple of days. This type of student hands-on learning task was called a "Lab." For Labs, students were strategically paired together based on a previous experience with telepractice (if applicable) and completed a skills checklist and peer evaluation for each other. Peer evaluation questions focused on user success when utilizing specific functions within Zoom (see Appendix B).

The final and fourth seminar contained information about therapy planning, ideas for both authentic and commercially-based materials, and clinical documentation specific to the WKU CDC. Upon completion of the final seminar, the trainer reviewed instructions for the final Lab. For Lab 2, students were asked to role play a therapy session given a specific case example with their designated partner with each graduate student playing both therapist and client. Students were also given directions to continue with practice explaining Zoom and features of this platform, to prepare for situations in which they may need to give directions to an e-helper or telepresenter prior to telepractice sessions beginning. The primary WKU CSD telepractice trainer also created parent/client handouts for students to utilize and share with clients and caregivers. Once Lab 2 was complete, graduate students were asked to complete another skills check peer evaluation that focused on the clinical skills competency of their partner (see Appendix B). All Lab skills checks were asked to be completed outside of the workshop time.

Pre- and Post- Assessments

The pre- and post- survey questionnaire design was influenced by surveys published by Watts & Willis (2017), Overby (2018) and Grogan-Johnson et al. (2015). The survey was custom designed by the primary telepractice trainer through Qualtrics.

Qualtrics is an online software program used to develop and administer online surveys that can be analyzed within the site. The telepractice survey consisted of 13 Likert scaled questions, 11 demographic questions, and two open ended questions. These questions inquired about student perceptions regarding their knowledge and comfort in telepractice and using the various components of telepractice as a service delivery model. Students were also able to include open-ended comments or state any relevant concerns regarding the training or their overall telepractice training experience (See Appendix A). To ensure that only WKU CSD graduate students participated in the survey, the survey was sent to students through the clinical internship Blackboard course site as a web-based Qualtrics survey link. The survey was active and accepted responses for 24 hours for the pre-telepractice training survey and 48 hours for the post-training survey. Survey participants were directed to the first question of the survey only after offering informed consent to participate in the survey. If student participants did not accept informed consent, the survey ended. Clinical educators were also asked to complete a survey to investigate the perspectives of supervising the clinical experience using telepractice as the service delivery model; however, results of the supervisor survey are not within the scope of the current study.

Data Analysis

Pre- and post-survey ratings were collected from Qualtrics. Data were entered into SPSS 21 (Statistical Package for the Social Sciences; IBM, Chicago IL) to complete statistical analyses. Questions were ranked in the following manner for comfort questions: 5 *extremely comfortable*, 4 *moderately/Slightly comfortable*, 3 *neither comfortable or uncomfortable*, 2 *moderately/slightly uncomfortable*, 1. *extremely*

uncomfortable. Knowledge questions were ranked in following manner: 5 *extremely knowledgeable*, 4 *very knowledgeable*, 3 *moderately knowledgeable*, 2 *slightly knowledgeable*, 1 *not knowledgeable at all*.

Results

Pre- and post- surveys were offered to 50 graduate students who were enrolled in the summer clinical internship that included a five-week formal telepractice training. Twenty-six females and 1 male completed both pre- and post-surveys. Change between pre- and post- survey results were evaluated using a repeated measure analysis. Twenty-three participants' responses were excluded from the analysis for two reasons. The first reason for excluding a survey was due to the participant not completing the post-survey. The second reason participant response was excluded was due to the inability to irrefutably pair a pre- and post- survey due to the lack of matching GPS coordinates that also aligned with the correct demographic information of the participant. A summary of the descriptive statistics is provided in Table 2.

The Wilcoxon Signed-Ranks test indicated that post-test Knowledge question scores (M= 3.52; SD = .49) were significantly greater than pre-test Knowledge question scores (M = 1.63; SD = .43), $Z = 4.53$, $p < .001$. Likewise, post-test Comfort question scores (M= 4.43; SD = .42) were significantly greater than pre-test Comfort question scores (M = 3.01; SD = .79), $Z = 4.55$, $p < .001$.

Qualitative feedback from open-ended questions on the post-training survey indicated both benefits and challenges associated with the telepractice training and overall virtual clinical internship experience. The most commonly reported aspects of the training that students found most beneficial were: watching videos of teletherapy sessions

during the initial workshop, skills checks, working with a partner for first-time clinicians, detailed training on the telecommunications technology (troubleshooting and learning the tools and capabilities of the software, Zoom), managing and engaging clients during telepractice sessions, and how to create and use authentic materials for client's individual needs. Other components of the training that students found helpful were being able to manage actual client cases across a treatment term, receiving feedback from clinical supervisors following treatment sessions, learning and demonstrating tele-etiquette during remote sessions, and how to access and use online digital materials and resources for speech and language therapy.

Common concerns that were reported by student clinicians regarding the telepractice training experience were not having access to enough digital therapy materials and resources, having to manage and engage clients who presented with moderately challenging behaviors, and not feeling competent with clinical documentation in the area of coding such as understanding CPT and ICD-10 codes. One student wrote that she felt "at a major disadvantage" compared to SLP-As in the cohort who already had some telepractice experience. Lastly, a few additional comments provided by student participants stated a general appreciation of the training and acknowledged the benefit of receiving detailed and hands-on training while providing SLP intervention through telepractice. One student wrote: "I definitely think a telepractice course needs to be added to the curriculum that includes practice clients."

Table 2

Descriptive Statistics of Pre- and Post- Surveys

Survey	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Knowledge	27	1.14	2.71	1.63	.43
Post-Test Knowledge	27	2.57	4.57	3.52	.49
Pre-Test Comfort	27	1.67	4.33	3.01	.79
Post-Test Comfort	27	3.67	5.00	4.43	.42

Discussion

Due to COVID-19, many allied health professions, especially speech-language pathology, had to transition to telepractice as a service delivery model. Likewise, many university-based programs were also thrust into a world of telepractice in order to continue clinical education requirements for accredited program in CSD. Fortunately, some research regarding the efficacy and cost-benefits of telepractice had already been established. Of concern was the scarcity of literature in SLP investigating how to specifically train graduate students to use the telepractice service delivery model. Overby (2018) and Overby & Baft-Neff (2017) were able to collect important insights from faculty, students, and clinicians. The information they gathered from their surveys helped develop a clearer picture of the needs of SLP graduate programs using and teaching telepractice. Lowman (2017) also provided vital information for improving SLP telepractice pedagogy; she provided evidence of her own graduate pilot program with the goal of graduating highly qualified SLPs in area of telepractice.

WKU's CSD program provided a unique and rich opportunity for their 2020 summer graduate students who were enrolled in the clinical internship course. Due to COVID-19, the clinical internship was required to be completed remotely. Like many universities across the U.S., the CSD faculty at WKU decided to train their graduate students who were enrolled in a summer clinical internship to use telepractice. Other clinical training opportunities at WKU were utilized such as patient simulations using software and engaging with live, standardized patients remotely; however, these additional training opportunities are not within the scope of the current study. Services

were provided at no cost to established clients at the WKU CDC who desired to continue SLP services remotely. WKU CSD faculty members viewed this opportunity as a valuable learning experience, thus developing a survey to further evaluate beneficial and challenging components of the telepractice training program and to compare changes in student knowledge and comfort before and after a specifically-designed telepractice training.

Data collected from the knowledge pretest questions demonstrated that the average knowledge was a 1, *extremely unknowledgeable*, but there was a range from *extremely unknowledgeable* to 4, *very knowledgeable*. In the posttest, researchers found that the knowledge level average was a 3, *moderately knowledgeable*, with a range from 2, *slightly knowledgeable* to 5, *extremely knowledgeable*.

Data collected from the comfort level of the pretest demonstrated that average comfort level of students was a 3, *neither comfortable or uncomfortable*, however the answers ranged from *extremely comfortable*, 5, to *extremely uncomfortable*, 1. In the posttest, researchers discovered that the comfort level average was a 4, *moderately/slightly comfortable* with a range from 2, *slightly/moderately uncomfortable* to 5, *extremely comfortable* for individual answers.

Pre- and post-telepractice training surveys provided useful pedagogical information for the WKU CSD department that could be utilized to modify future clinical education components regarding telepractice training for graduate students. The data from the surveys collected after the 5-week clinical internship demonstrated a significant and positive change in student knowledge and comfort on various aspects of telepractice.

Implications and Future Directions

This study provides evidence on the benefits of providing a dedicated telepractice training for graduate students. The current study and other research supports a need for CSD clinical education programs to include training in telepractice (Grogan et al., 2015; Lowman, 2017; Overby, 2018; Overby & Baft-Neff, 2017; Watts & Willis, 2017).

Limitations

There were several limitations in the current study, partially due to the project being expedited because of COVID-19. Initially, the survey was set up in Qualtrics and was submitted anonymously by the WKU graduate students. In order to run a Wilcoxon Signed-ranks test, researchers had to match surveys completed by participants from pre-test to post-test. This was later made possible by comparing GPS tags in each survey submitted and using further demographic data to confirm the same participant to pre- and post- survey. During the summer externship students traveled to other states. This impacted the ability to pair some surveys, especially if there were not significant demographic details to tell them apart. Surveys were only used that had an exact GPS match, or undeniable demographic data that allowed the surveys to be paired to only that participant.

Treatment sessions included two student clinicians, one client, and a clinic supervisor. Therapy approaches varied depending on the need of the client, the comfort of the graduate student, the materials prepared by the clinicians, and the participation given by the client. Clinicians may have requested a student to be completely independent as lead clinician during a therapy session. Client and student absences also

impacted the amount of experience time student clinicians received so clinical time varied by student.

A few survey questions showed discrepancies in answer choices related to the Likert scale. For example, the pre-training survey had a 7-point Likert scale answer option for the comfort questions and the same questions on the post-training survey showed only a 5-point Likert scale answer option. In order to run the statistical analyses appropriately, the 7-point scaled answers were collapsed from "slightly" and "moderately" pre-test categories into a single "somewhat" category in order to align with the 5-point Likert scale post-test answer choice categories. (1 *extremely comfortable* 2 *moderately comfortable* 3 *slightly comfortable* 4 *neither comfortable nor uncomfortable* 5 *slightly uncomfortable* 6 *moderately uncomfortable* 7 *extremely uncomfortable* → 1 *extremely comfortable* 2 *slightly/moderately comfortable* 3 *neither comfortable nor uncomfortable* 4 *slightly/moderately uncomfortable*, 5 *extremely uncomfortable*).

A final limitation was that students were not required to complete either survey. There were several students who completed a pre-survey, completed all trainings, and provided teletherapy, but did not complete the post-survey. Students were not coerced to take the final survey as part of IRB guidelines and ethical considerations. This impacted the number of total surveys that could be analyzed, which could have yielded more valuable information on benefits and challenges that students reported regarding the overall telepractice training experience.

Conclusion

Offering a robust and specially-designed telepractice training to graduate students in speech-language pathology is proving to be an effective pedagogical piece to university degree programs. The statistically significant impact on student knowledge and comfort in learning and using telepractice as a service delivery model further supports the need to integrate a telepractice component to clinical education for CSD programs at the graduate level. There are several benefits to investing time and resources into developing a telepractice training component in a university-based CSD program. Telepractice is already a recognized and widely accepted service delivery model by ASHA. Given the recent global pandemic, many university-based programs and students have already been thrust into learning and using this model of service delivery. Students would benefit from additional training in a variety of service delivery models, including telepractice. Specifically, students would benefit by being better prepared to enter the workforce with a wider skill set, expanding their ability to use best practice approaches when placed in a telepractice setting, and being better equipped to reach more clients in need of services.

Future Research

The current findings for this study suggest a need for research in areas regarding specific aspects of a clinical education curriculum for telepractice training for university CSD programs. Future studies may include program evaluations in order to identify the most beneficial processes and program components used when training student clinicians to use telepractice. This could also include reporting specific successes and limitations in providing programs that train students in telepractice. Additional survey research could be conducted to gather data from clients, supervisors, students, university administrators,

and caregivers in order to gain more insight and information on the impact

of telepractice services and telepractice training.

Evidence, such as what emerged in the current study, continues to uncover the

benefits and challenges of providing a dedicated training in telepractice service delivery

for graduate students. It is clear that more research is needed regarding telepractice

training in university programs in CSD. Many graduate-level programs are still seeking

or further developing specific curriculum components of telepractice training. As

university-based CSD programs better prepare and train student clinicians, future service

providers, the more clients will benefit from those practitioners who can best serve them

using the telepractice service delivery model.

References

American Speech-Language-Hearing Association (2020). *Telepractice*. Retrieved March

    31, 2021 from www.asha.org/Practice-Portal/Professional-Issues/Telepractice/.

American Speech-Language-Hearing Association. (2016). 2016 SIG 18 telepractice

    survey results. Available from www.asha.org

American Speech-Language-Hearing Association (n.d.). Telepractice. (Practice Portal).

    Retrieved March, 31, 2021, from www.asha.org/Practice-Portal/Professional-

    Issues/Telepractice/

Boisvert, M. and Hall, N. (2018). Telepractice for school-based speech and language

    services: A workload management strategy. *Perspectives of the ASHA Special*

    Interest Groups, 4(1), 211-216.

Brennan, D., Tindall, L., Theodoros, D., Brown, J., Campbell, M., Christiana, D., & Lee,

    A. (2010). A blueprint for telerehabilitation guidelines. *International Journal of*

    Telerehabilitation, 2(2), 31. https://doi.org/10.5195/IJT.2010.6063

Brienza, D. M., & McCue, M. (2013). Introduction to telerehabilitation. In S. Kumar &

    E. R. Cohn (Eds.), *Telerehabilitation* (pp. 1-11). Springer: London.

Grogan-Johnson, S., Meehan, R., McCormick, K., & Miller, N. (2015). Results of a

    national survey of preservice telepractice training in graduate speech-language

    pathology and audiology programs. *Contemporary Issues in Communication*

    Science and Disorders, 42, 122-137.

Lowman, J. J. (2017). LinKS: Graduate students in telepractice. *Perspectives of the*

    ASHA Special Interest Groups 18, 2(part2), 49-52.

Overby, M. (2018). Stakeholders' qualitative perspectives of effective telepractice

pedagogy in speech-language pathology. *International Journal of Language and Communication Disorders, 53*(1), 101-112. https://doi.org/10.1111/1460-6984.12329

Overyby, M. & Baft-Neff, A. (2017). Perceptions of telepractice pedagogy in speech-language pathology: A quantitative analysis. *Journal of Telemedicine and Telecare, 23*(5), 550-557. https://doi.org/10.1177/1357633X16655939

Watts, K. & Willis, L. (2017) Telepractice: A survey of AuD students pre- and post-telepractice. *Perspectives of the ASHA Special Interest Groups 18, 2*(part2), 28-41.

Weidner, K., & Lowman, J. (2020). Telepractice for adult speech-language pathology services: a systematic review. *Perspectives of the ASHA Special Interest Groups*, *5*(1), 326-338.

Appendix A

STUDENT SURVEY: PRE-TELEPRACTICE TRAINING IN CSD

Q1 Are you a graduate student in speech-language pathology?
     Yes (1)
     No (2)
     (If no, survey ends)
Q2 Please select your gender
     Male
     Female
     Prefer to self-describe
Q3 Please indicate your age in years.
     18-21
     22-29
     30-39
     40-49
     50-59
     60-69
     70 and up
Q4 Please describe your race/ethnicity by selecting all that apply.
     Hispanic or Latino
     White
     Black or African American
     American Indian or Alaska Native
     Asian or Asian American
     Native Hawaiian
     Pacific Islander
     Prefer to self-describe
Q5 What is your highest level of education?
     Bachelor's degree
     Master's degree
     Doctoral degree
Q6 Do you think telepractice (service delivery via live, interactive videoconferencing) should be taught in clinical training for graduate students in speech-language pathology and/or audiology?
     Yes
     Maybe
     No
Q7 Have you ever received any type of training on telepractice as a graduate student?
     Yes
     No
Q8 If yes to the above question, please explain below the type and how much telepractice training you have received.

Q9 Have you ever used telepractice as an SLP-A using live, interactive videoconferencing to deliver services at your place of employment

    Yes

    No

Q10 If yes to the above question, estimate the time you have provided SLP services using live, interactive videoconferencing.

    less than one year

    1-2 years

    3-4 years

    5 years or more

Q11 How comfortable are you with being trained to use telepractice during your clinical internship

    Extremely comfortable

    Somewhat comfortable

    Neither comfortable nor uncomfortable

    Somewhat uncomfortable

    Extremely uncomfortable

Q12 How knowledgeable are you about telehealth/telepractice models?

    Extremely knowledgeable

    Very knowledgeable

    Moderately knowledgeable

    Slightly knowledgeable

    Not knowledgeable at all

Q13 How knowledgeable are you about telepractice in regard to delivering speech-language pathology services?

    Extremely knowledgeable

    Very knowledgeable

    Moderately knowledgeable

    Slightly knowledgeable

    Not knowledgeable at all

Q14 How knowledgeable are you about state and federal regulations regarding telepractice for speech-language pathology?

    Extremely knowledgeable

    Very knowledgeable

    Moderately knowledgeable

    Slightly knowledgeable

    Not knowledgeable at all

Q15 How knowledgeable are you about licensing laws affecting telepractice across state boundaries?

    Extremely knowledgeable

    Very knowledgeable

    Moderately knowledgeable

    Slightly knowledgeable

    Not knowledgeable at all

Q16 How knowledgeable are you about compliance with ASHA's professional Code of Ethics in speech-language pathology as it relates to telepractice?

Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q17 How knowledgeable are you about client selection for telepractice?
Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q18 How comfortable are you with managing and engaging a client during
a telepractice therapy session?
Extremely comfortable
Moderately comfortable
Slightly comfortable
Neither comfortable nor uncomfortable
Slightly uncomfortable
Moderately uncomfortable
Extremely uncomfortable

Q19 How knowledgeable are you about the use of e-
helpers/telepresenters for telepractice? Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q20 How comfortable are you with training an e-helper to assist you (and your client)
during telepractice sessions?
Extremely comfortable
Moderately comfortable
Slightly comfortable
Neither comfortable nor uncomfortable
Slightly uncomfortable
Moderately uncomfortable
Extremely uncomfortable

Q21 How comfortable are you with using Zoom as a videoconferencing platform
for telepractice sessions?
Extremely comfortable
Moderately comfortable
Slightly comfortable
Neither comfortable nor uncomfortable
Slightly uncomfortable
Moderately uncomfortable
Extremely uncomfortable

Q22 How comfortable are you with using the toolbar and annotation tools in Zoom for teleprac-tice sessions?

    Extremely comfortable

    Moderately comfortable

    Slightly comfortable

    Neither comfortable nor uncomfortable

    Slightly uncomfortable

    Moderately uncomfortable

    Extremely uncomfortable

Q23 How comfortable are you with finding appropriate digital materials to use during telepractice sessions?

    Extremely comfortable

    Moderately comfortable

    Slightly comfortable

    Neither comfortable nor uncomfortable

    Slightly uncomfortable

    Moderately uncomfortable

    Extremely uncomfortable

Q24 How comfortable are you with generating digital materials yourself for client's individual needs for telepractice sessions?

    Extremely comfortable

    Moderately comfortable

    Slightly comfortable

    Neither comfortable nor uncomfortable

    Slightly uncomfortable

    Moderately uncomfortable

    Extremely uncomfortable

Q25 Add any comments or concerns you have about training to use telepractice during your clinical internship.

STUDENT SURVEY: POST-TELEPRACTICE TRAINING IN CSD

Q1 By agreeing to participate, you are indicating that: you are a graduate student in speech-language pathology and you have read and comprehend the informed consent.

    Yes I have read the informed consent and I am a graduate student of speech-language pathology.

    No (end survey if 'no')

Q2 Did you receive telepractice training during your clinical internship this semester?

    Yes

    No (end surgery if 'no')

Q3 Please select your gender

    Male

    Female

    Prefer to self-describe

Q4 Please indicate your age in years.

    18-21

    22-29

    30-39

    40-49

    50-59

    60-69

    70 and up

Q5 Please describe your race/ethnicity by selecting all that apply.

    Hispanic or Latino

    White

    Black or African American

    American Indian or Alaska Native

    Asian or Asian American

    Native Hawaiian

    Pacific Islander

    Prefer to self-describe

Q6 What is your highest level of education?

    Bachelor's degree

    Master's degree

    Doctoral degree

Q7 Do you think telepractice (service delivery via live, interactive videoconferencing) should be taught in clinical training for graduate students in communication sciences and disorders?

    Yes

    No

Q8 How would you rank the quality of your training on telepractice as a graduate student during this semester?

    Extremely good

    Somewhat good

    Neither good nor bad

Somewhat bad
Extremely bad

Q9 Please explain in your own words below, the most beneficial components of your telepractice training that you received this semester.

Q10 How many sessions did you manage, under supervision, using telepractice with your as-signed client(s) this semester (answer in whole numbers)?

Q11 How comfortable are you now with using telepractice as a service delivery model for SLP?
Extremely comfortable
Somewhat comfortable
Neither comfortable nor uncomfortable
Somewhat uncomfortable
Extremely uncomfortable

Q12 How knowledgeable are you now about the specific telehealth/telepractice model of synchronous videoconferencing?
Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q13 How knowledgeable are you now about telepractice to deliver speech-language pathology services?
Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q14 How knowledgeable are you now about state and federal regulations regarding telepractice for speech-language pathology?
Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q15 How knowledgeable are you now about licensing laws affecting telepractice across state boundaries?
Extremely knowledgeable
Very knowledgeable
Moderately knowledgeable
Slightly knowledgeable
Not knowledgeable at all

Q16 How knowledgeable are you now about compliance with ASHA's professional Code of Ethics in speech-language pathology as it relates to telepractice?
Extremely knowledgeable

Very knowledgeable

Moderately knowledgeable

Slightly knowledgeable

Not knowledgeable at all

Q17 How knowledgeable are you now about client selection for telepractice?

Extremely knowledgeable

Very knowledgeable

Moderately knowledgeable

Slightly knowledgeable

Not knowledgeable at all

Q18 How comfortable are you now with managing and engaging a client during a telepractice therapy session?

Extremely comfortable

Somewhat comfortable

Neither comfortable nor uncomfortable

Somewhat uncomfortable

Extremely uncomfortable

Q19 How knowledgeable are you now about the use of e-helpers/telepresenters for telepractice?

Extremely knowledgeable

Very knowledgeable

Moderately knowledgeable

Slightly knowledgeable

Not knowledgeable at all

Q20 How comfortable are you now with training an e-helper to assist you (and your client) dur-ing telepractice sessions?

Extremely comfortable

Somewhat comfortable

Neither comfortable nor uncomfortable

Somewhat uncomfortable

Extremely uncomfortable

Q21 How comfortable are you now with using Zoom as a videoconferencing platform for tele-practice sessions?

Extremely comfortable

Somewhat comfortable

Neither comfortable nor uncomfortable

Somewhat uncomfortable

Extremely uncomfortable

Q22 How comfortable are you now with using the toolbar and annotation tools in Zoom for tele-practice sessions?

Extremely comfortable

Somewhat comfortable

Neither comfortable nor uncomfortable

Somewhat uncomfortable

Extremely uncomfortable

Q23 How comfortable are you now with finding appropriate digital materials to use during tele-practice sessions?

      Extremely comfortable

      Somewhat comfortable

      Neither comfortable nor uncomfortable

      Somewhat uncomfortable

      Extremely uncomfortable

Q24 How comfortable are you now with generating/creating digital materials yourself for client's individual needs for use in telepractice sessions?

      Extremely comfortable

      Somewhat comfortable

      Neither comfortable nor uncomfortable

      Somewhat uncomfortable

      Extremely uncomfortable

Q25 Please add any comments or concerns you have about your telepractice training and hands-on experience at the WKU CDC during your clinical internship as a graduate student.

Appendix B

Telepractice Seminar 3: Zoom Skills Check with a Partner

Created by: Dr. Allison Hatcher (Telepractice Training, 2020)

Student: _____ Partner: _____

	Skill	Complete (check)
1.	My partner successfully scheduled a meeting with a required password.	
2.	My partner successfully sent a Zoom meeting invitation to my email, complete with all required information.	
3.	My partner successfully started a Zoom meeting with me as the participant, admitting me from the waiting room.	
4.	My partner successfully share his/her screen during our Zoom meeting.	
5.	My partner successfully used the toolbar to turn audio and video on/off when requested.	
6.	My partner successfully used the toolbar to share his/her screen to share a PowerPoint or a Word document.	
7.	My partner successfully used at least 4 features draw, color, etc.) of the annotation toolbar to make marks on a PowerPoint or a Word document when sharing his/her screen.	
8.	My partner used the "View Options" feature to request my remote and then he/she successfully & respectfully took brief control of my remote.	
9.	My partner successfully ended a meeting and waited on me to leave first before ending the meeting.	

10. Check the best answer:

Overall, my partner had _____ difficulty with this skills check.
    a. No
    b. Almost no
    c. An occasional amount of
    d. A moderate amount of
    e. A great deal of

Telepractice Seminar 4: Telepractice Skills Check with a Partner
Case Example: Raul

Created by: Dr. Allison Hatcher (Telepractice Training, 2020)

Student: _____ Partner: _____
Total Amount of Time Spent (combined): _____

Teleractice LAB 2 Instructions: You and your partner will do a mock therapy session and then switch roles. You will also each incorporate having to explain some basic Zoom features using the parent handout to an "e-helper." The total amount of time should be at least 15-20 minutes.	Complete (check)
1. My partner role-played the part of the clinician in our mock-therapy session.	
2. My partner role-played the part of the case example client "Raul" and the "e-helper" in our mock-therapy session.	
3. My partner successfully shared an appropriate therapy material that was goal-oriented using his/her screen during our Zoom meeting.	
4. My partner used appropriate dialogue while role-playing the clinician to explain an activity and demonstrated how to do the activity.	
5. My partner successfully facilitated and age-appropriate activity using digital material(s), while role-playing the clinician for at least 5 minutes.	
6. My partner successfully facilitated turn-taking and being "interactive" while using an age-appropriate activity (using a digital material), while role-playing the clinician.	
7. My partner practiced explaining to me the parent handout that was provided- while role-playing as the clinician, and me as the e-helper.	
10. Please answer the following reflection questions: a. What I enjoyed most about this activity/skills check was: b. What I found the most challenging about this activity/skills check was:	