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Perceptions and Effects of Online Clinical Preparation Modules for First-Semester Speech-Language Pathology Graduate Students

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Perceptions and Effects of Online Clinical Preparation Modules for First-Semester Speech-Language Pathology Graduate Students

Cover Page Footnote

The authors would like to thank the clinical faculty at KU and KUMC who supported the development of the modules as well as our students for their participation and feedback.

A key requirement for certification from the American-Speech-Language Hearing Association (ASHA) and a significant component of speech-language pathology graduate programs is the accrual of 400 clinical clock hours (Standard V-C; Council for Clinical Certification in Audiology and Speech-Language Pathology of the ASHA, 2018). The majority (i.e., at least 325) of these are earned at the graduate level through supervised clinical experiences (Standard V-D). Clinical training helps students develop the knowledge and skills they need to provide quality services to individuals with communication disorders but can come with a significant learning curve. This article presents the results of using online modules as a method for preparing first-year graduate students to engage in clinical practicum and a preliminary investigation into the effects of the modules on students' clinical skills.

Clinical Education

Clinical education encompasses the application of theoretical knowledge to clinical practice. Among the goals ASHA has defined for clinical education are the development of critical thinking and clinical decision-making skills, implementation of clinical practices and methodology, and application of evidence-based practices (ASHA, n.d.). Guilford et al. (2007) reported that SLPs' expertise is marked by interpersonal skills, professional skills, problem solving skills, technical skills, and knowledge and experience. While these factors provide a goal to work toward, there is less evidence that suggests what skills first-time clinicians should have when embarking on clinical experiences and how clinical skills develop. Rapillard et al. (2019) found that student clinicians viewed their abilities in a more technical manner and focused on simpler or procedural clinical activities when starting their training but developed comfort with clinical activities requiring higher-level skills as their training progressed. They concluded, "It appears that the students have to develop some expertise with the logistical and technical components of the therapeutic process before they can engage in a meaningful therapeutic relationship with their clients" (Rapillard et al., 2019, p. 14).

Graduate coursework in communication disorders supports students' understanding of the characteristics of a disorder and the clinical procedures to be used, preparing them to apply that knowledge in clinical situations. In most graduate programs, students are expected to begin clinical practicum their first semester. At that time, they may be concurrently enrolled in coursework related to the disorders they are working with in practicum or may not have the related coursework until later in their program. Thus, they are initially limited in their practices because they have not yet learned about essential topics that would help them provide speech-language services (e.g., understanding and developing goals, common intervention strategies, using evidence to inform clinical decision making). Because first-semester graduate students do not immediately receive the course content that would help them be successful, they must rely on the previous experiences they bring with them to the clinical learning environment.

Student Preparedness for Clinical Experiences. Incoming graduate students bring varying degrees of knowledge and skills related to clinical practice, based on their coursework and other experiences from their undergraduate programs. However, academic (i.e., GPA and GRE scores) and nonacademic variables (e.g., age, personality, and prior work experience as an SLP assistant) are not current predictors of clinical success in SLP graduate students (Richardson et al., 2020). To ensure some basic level of preparedness for graduate work, nearly all SLP graduate programs

require prerequisite coursework (Sylvan et al., 2020). While the number and type of prerequisites vary across programs, Sylvan et al. (2020) reported that 52% of programs required a clinical methods course, suggesting that some students may enter graduate school without an introduction to clinical practice. Students' retention of their prerequisite coursework is a separate issue. Tessel and Grover (2020) developed a student survey to assess incoming graduate students' accuracy with foundational knowledge in eight course areas commonly used as prerequisites. Their study revealed that a student's performance on the survey did not differ based on their undergraduate major, age, university type, or whether they completed the course in an online or in-person format, but those who completed their undergraduate work less than 2 years prior to graduate school scored significantly higher than those who were starting graduate school more than 2 years after their undergraduate work. Of the content they presented, students had the lowest accuracy with phonetics and neuroanatomy, but the authors also noted that students had difficulty with the concepts of extension and expansion as they related to language disorders, suggesting that students may not yet understand basic treatment methods. Limited understanding of clinical methods and intervention practices can make the transition to clinical practicum challenging for students. In exploring the lived experience of graduate students, Rapillard et al. (2019) found that students perceived their undergraduate preparation as helpful training, but differences across their experiences resulted in varying levels of comfort and confidence.

Beginning the Clinical Education Process. Supervisory models indicate that clinical faculty need to adjust their teaching and supervision based on students' existing knowledge and clinical training needs (Anderson, 1988; Brasseur, 1989). As there are no strong predictors of student success in graduate school and clinical experiences, faculty may utilize a variety of methods to determine students' current abilities and knowledge, which may include asking students to present information about a client (Phillips, 2009). The majority of supervisors in the study by Phillips (2009) reported using client presentations to gauge a student's understanding of the disorder and intervention approach to be used, which then informed how they approached the supervisory process with that student (i.e., providing more support or allowing greater independence). However, preceding client presentations, students may benefit from supports that would help them identify and understand important information from a chart review and begin to understand basic treatment strategies, for example. Approaching a practicum experience with greater foundational knowledge could facilitate a student's progression through the clinical learning process and achievement of greater clinical independence. It could also ease the training process for faculty by reducing the amount of time they spend teaching foundational concepts, and instead allowing time for more in-depth teaching of specific disorders and advanced clinical concepts.

Evaluating Clinical Skills. Faculty of graduate programs are required to conduct ongoing formative and summative assessment of students (Council on Academic Accreditation in Audiology and Speech-Language Pathology, 2020). Each practicum experience typically culminates with a summative assessment, in which students' learning outcomes are comprehensively evaluated and feedback about their acquisition of knowledge and skills is provided by clinical faculty. Programs may use a variety of tools to evaluate students' clinical skills, including checklists, inventories, and observation forms. The Clinical Assessment of Learning Inventory of Performance Streamlined Office Operations (CALIPSO) is one tool used by 83% of SLP programs, including the program in this study (Hays, 2010). By default, CALIPSO is aligned with ASHA's Council for Clinical Certification standards, and aspects such as the

evaluation form, rating scale, and performance expectations can be customized by programs. Summative assessments, like CALIPSO evaluations, are considered one way to evaluate students' clinical skills overall.

Program Challenges. Within our graduate program, both faculty and students have reported challenges in clinical preparation. As part of our annual degree program assessments, clinical faculty consistently reported that students did not have the foundational knowledge that would maximize their success in clinical practicum, which often resulted in faculty spending a great deal of time teaching first-semester students foundational skills such as language sampling. This was found to be true even with students who graduated from our own undergraduate program and most likely due to the amount of time that lapsed between students taking foundational courses and having to apply that information in a clinical context.

Additionally, due to the nature of our program, students experience numerous service delivery formats and varying expectations around clinical planning, implementation, and documentation in their first year. Our Intercampus Program in Communicative Disorders is a collaborative effort between the University of Kansas (KU) and the KU Medical Center campus. Students learn from faculty on both campuses during academic and clinical instruction. The intercampus nature of the program allows us to provide a wide variety of clinical experiences, including experience in a traditional university clinic, school-based, and medical-based sites. Though the breadth of experiences adds diversity to the program, students have frequently reported that it is difficult for them to manage the differences across the two campuses (e.g., different documentation systems and styles, orientation processes).

Part of our program assessment has also revealed that students want and need more support before and during their clinical experiences. When surveying students at mid-program and the end of their program, we often receive comments that they feel challenged to provide services in disorder areas they have not yet taken classes on and want more support for getting oriented to clinic and engaging in clinical processes, especially session planning, implementation, and documentation. In addition to their coursework on specific disorders, students enroll in a clinical processes course concurrent with clinical practicum. The clinical processes course discusses therapy models and assessment and intervention procedures that apply to their clinical work, but topics are spread out over the course of the semester.

Based on these challenges, we wondered if providing more support prior to students' clinical practicum would improve their clinical success and improve the practicum experience for both students and faculty. We wanted to provide students with a set of materials focused on foundational aspects of clinical practice that they could draw from as they progressed through the program, making connections between this foundational information and the unique aspects of each clinical experience. We anticipated that such a foundation would help students see the common features across different clinical experiences, and thus also see the commonalities across our campuses. Given the characteristics of our program and diversity in students' backgrounds and previous experiences, we felt that online modules would be able to provide a foundation for students and faculty to use as a common starting point in the clinical education process.

Rationale for Online Modules. Online learning continues to become more common across higher education (Allen & Seaman, 2013). Using online learning formats, like modules, offer several benefits, including flexibility, facilitation of self-regulated learning, and serving as a resource repository. For example, students can choose when, where, and how they review module content, which may be particularly convenient to students who are transitioning to graduate school and balancing other responsibilities. There's also flexibility with the types of learning material that can be provided to students online (e.g., videos, pictures, text, images, podcasts, etc.). As students progress through content, they can self-monitor their learning and re-read, re-watch, or re-listen to portions that they did not understand. Assessment activities can be embedded into modules to help students check their comprehension of the concepts presented (though this was not a feature of the modules used in this study). Finally, because content is stored online, students can also return to the modules much later to revisit specific topics or retrieve resources. This feature was particularly appealing for the current study so that students could revisit supports as they progressed through their clinical experiences and participated in their clinical processes course.

Relatively little is known about students' perceptions of online learning activities specific to speech-language pathology. Ginsberg (2008) reported overall positive student perceptions at the undergraduate level in a hybrid format class, while Tattersall (2015) found that a sample of graduate students were less likely to enroll in online or blended courses compared to undergraduate students. Though we were not able to locate other studies focused on preparing students for their first semester of clinical practicum, there are a number of recent studies that have used an online format to teach specific skills for course- or clinical work. For example, in preparation for a speech sound disorders course, Krimm et al. (2017) used an online module focused on transcription using the International Phonetic Alphabet, which resulted in positive changes in student knowledge and skills over time and decreased discrepancies between students who had previously taken a phonetics class and students who had not. Kelley et al. (2020) found some evidence of positive effects when using online modules to teach undergraduate clinicians to implement empirically supported strategies for vocabulary instruction during shared storybook reading with preschoolers. All preservice SLPs in a study by Mandak et al. (2020) increased their use of active listening strategies in simulated role plays after an online training. These studies indicate that online training can be effective in teaching SLP students specific skills prior to a course or clinical experience. Furthermore, the students in these studies reported satisfaction with the online learning format (Kelley et al., 2020; Mandak et al., 2020).

Current Study. Graduate programs inherently consist of students with varying backgrounds and levels of preparation. Students may benefit from additional support to help them develop the knowledge and skills they need to be successful in clinical practicum. In this study we used an online teaching format to provide clinical preparation modules to teach foundational skills we believed would enhance students' clinical success. We sought to examine students' clinical skills collectively (as opposed to focusing on a single skill) after providing a review of foundational concepts relevant to their first clinical practicum experience. Additionally, we wanted to better understand students' perceptions of the use of online modules for clinical preparation. Finally, because providing clinical preparation supports prior to practicum was new to our program and implemented in response to challenges faculty reported, we wanted to gather feedback about their perceptions of the modules as well. We presumed that faculty input would be valuable in

determining how the modules supported their teaching during practicum and any aspects of the modules that could be improved.

Research Questions

1. What effect do online clinical preparation modules have on students' perceived knowledge of foundational clinical skills and their readiness to engage in clinical practicum?
2. Do clinical preparation modules improve first-year graduate students' performance in clinical practicum compared to previous cohorts who did not complete the modules?
3. What are clinical faculty and students' perceptions on the utilization and effectiveness of the online modules?

Methods

Participants. An incoming cohort of 39 graduate students participated in the study. The cohort had a mean age of 23 years and mean GPA of 3.79 (self-reported at the time of application to the program). Approximately half of the incoming students ($n=18$) had earned clinical clock hours from their undergraduate programs. The cohort included four undergraduate seniors who were accepted into the accelerated MA program, which allowed them to begin graduate work during their senior year. These students were not enrolled in clinical practicum at the time of the study but were provided access to the preparation materials and were invited to participate. One accelerated student accessed the module website, but it was not possible to confirm if they completed the survey measures, thus their response may not be included in the results.

Development and Delivery of the Modules. The clinical faculty met to identify potential topics to be included in the modules. Seven topics were selected for development in the first iteration of the modules: the therapeutic process, clinical decision making, session design, intervention strategies, developing short-term goals, documentation, and speech-language sampling. See Table 1 for an overview of the modules and Appendix A for additional details. Developing the content of each module occurred over the course of one summer and was a shared responsibility among subcommittees of faculty members and the graduate assistant (first author). Content was selected based on topics that first-semester students historically had difficulty with and/or topics that faculty considered to be foundational for clinical practicum. It was desirable for the information in the modules to be general enough to be applicable to a wide variety of settings and clinical experiences that are offered across both campuses. For example, in the documentation module, infographics identified all the names that might be used for a document across clinic experiences (e.g., a treatment plan could also be referred to as a plan of care, communication plan, or individualized education plan) and listed the purpose and common components. Once content was developed, the graduate assistant created the modules using the Blackboard course management system. It should be noted that the short-term goal module was created as a separate research project in collaboration with another university. Thus, that module included information about that research study and linked to a separate platform for completion.

Table 1

Module Descriptions

Module	Description/Aims	Number of Pages	Types of Media Included
The Therapeutic Process	Provide an overview of person- and family-centered approaches, the life-participation approach, principles of neuroplasticity, and strategies for interviewing.	19	Written Descriptions, Audio, Videos, Tables, Lists, Links to Additional Resources
Clinical Decision Making	Support students in locating resources and evidence for clinical decision making, including conducting literature searches and using ASHA resources.	23	Written Descriptions, Audio, Videos, Tables, Lists, Images, Links to Additional Resources
Session Design	Provide considerations for session planning and creating engaging and meaningful communication opportunities.	14	Written Descriptions, Audio, Lists, Images
Intervention Strategies	Define and provide examples for commonly used intervention strategies for a variety of disorders.	27	Written Descriptions, Audio, Videos, Tables, Lists, Images
Developing Short-Term Goals	In-depth training for development of short-term goals, including functionality, target behavior and verb choice, goal context, time frame, and measurability.	4 ^a	Slideshow Presentations with Audio, Tables, and Images
Documentation	Provide an overview of the purpose and content of a variety of common types of documentation and supports for clinical writing.	5	Written Descriptions, Audio, Tables, Lists, Images, Links to Additional Resources
Speech-Language Sampling	Provide an introduction to collecting optimal speech-language samples and preparing them for common analyses.	9	Written Descriptions, Audio, Lists, Links to Additional Resources

^aOne page of the module contained links to each of the six sub-modules, which contained presentations with 10-30 slides.

Module content was stored and presented in Blackboard using the “learning module” feature. When students opened the module site, the home page provided an overview with the title, brief description, and image that linked to each module (Figure 1). When students opened a module, they were presented with one page of content at a time and had access to a table of contents and navigation buttons to move between pages (Figure 2). Each module consisted of 4-27 pages of content. The amount of content on each module page ranged from a single video or paragraph of

text up to 4-5 paragraphs. In alignment with Universal Design for Learning principles (CAST, 2018), information on each page was presented in a variety of formats and included videos, images, text, audio recordings of the provided text, links to additional web resources, or any combination of these. Four of the modules included links to additional resources for students to independently explore. Two modules (session design and speech-language sampling) had links to a Padlet webpage (www.padlet.com), where students visited a virtual bulletin board to anonymously post a response to a written prompt.

Figure 1
Screenshot from Module Home Page

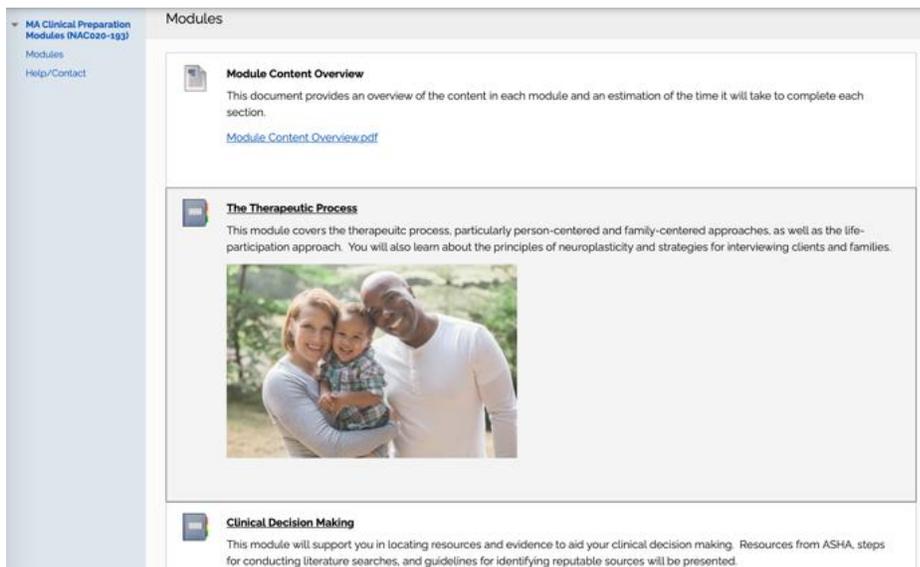
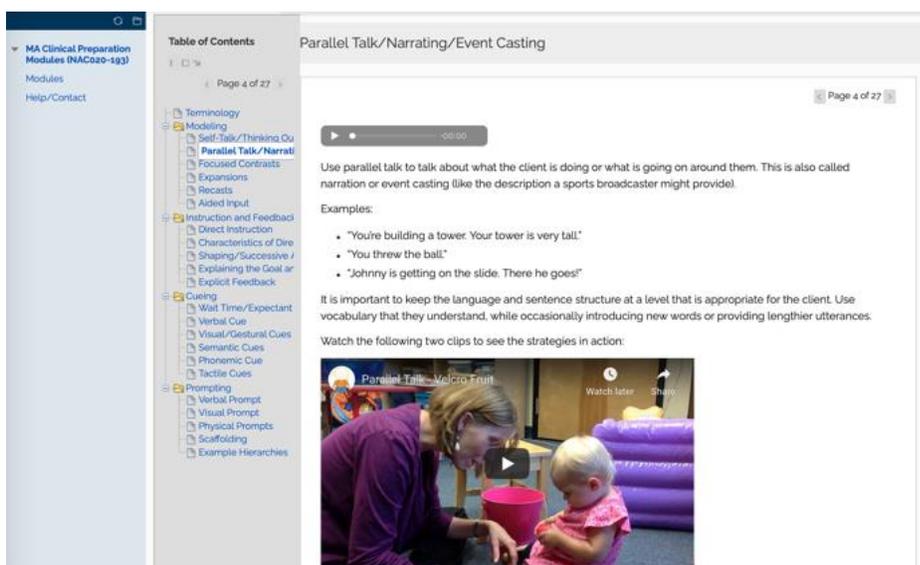


Figure 2
Screenshot from Page Within a Module



Students were provided access to the modules during program orientation held one week before classes and clinical practicum began. They were asked to complete the modules prior to beginning their clinical experiences. All students except for three who were in the accelerated program accessed the modules by the time clinical practicum started, according to logs on Blackboard. Based on the length of the videos and text recordings that were embedded into the modules, we estimated that it would take students 7.5 hours to complete all modules. Data within Blackboard indicated that students spent an average of 6.82 hours in the modules. After students completed the modules independently during orientation, the intention was for the modules to be further discussed and integrated into the clinical practicum experience throughout the semester.

Measures

Pre-Post Student Survey. A pre-module and post-module survey were used to answer the first research question, which aimed to determine the effect of the modules on students' perceived knowledge and readiness for practicum. Prior to engaging with module content, students completed a 15-item pre-module survey with Likert scales to rate their level of comfort and competency with a number of introductory clinical skills addressed in the modules (see Appendix B). The authors focused the survey items on the concepts and skills faculty members had identified as the foundation for each module. The survey contained two items that corresponded with each module, except for the documentation module, which was reflected in a single item on the survey. Thirty-six students completed the pre-module survey. Students were also asked to complete a post-module survey after they had reviewed all of the modules. The post-module survey contained the same questions as the pre-module survey and included an additional 9 items related to the module delivery (e.g., presentation, ease of navigation, etc.) and perceived effectiveness (see Appendix C). Thirty students completed the post-module survey. Each student's response to the 14-items rating their clinical knowledge and readiness were summed to create a composite score ranging from 14-98. The pre-module and post-module survey items had a high level of internal consistency, as determined by a Cronbach's alpha of 0.86 and 0.89, respectively.

Students were also invited to complete a follow-up survey at the end of the semester about their use and perceptions of the modules. This survey was used as one measure for the third research question. The survey consisted of seven items about how frequently students referred to the modules beyond orientation week, which modules they referenced during the semester, reasons why they may not have referred to the modules, and a space to provide additional feedback about how the modules or other forms of supports could better prepare them for clinical practicum (see Appendix D). Students received one follow-up email requesting their participation. Sixteen (41%) students completed the survey.

Student Clinical Evaluations. Student evaluations from their practicum experience were used to answer the second research question, which investigated the impact of the modules on students' clinical performance in practicum. As mentioned, our graduate program uses CALIPSO (Hays, 2010) to evaluate students during their clinical experiences. Final (i.e., end-of-semester) evaluations from students' first semester of graduate-level clinical practicum were used. The evaluation form contains 43 items across three main categories (evaluation; intervention; and professional practice, interaction, and personal qualities) and is aligned with ASHA's Council for Clinical Certification standards. Clinical faculty rate each item using a 1-5 scale in 0.25 increments

(see Table 2). Scored items are averaged to create an overall score. Some students participated in multiple clinics during the semester and/or had multiple clinical faculty mentors, resulting in more than one CALIPSO evaluation. In these cases, their scores were averaged across their clinical placements. The overall score was the primary variable of interest in this study. However, specific items ($n=11$) from the evaluation form were selected a priori for further analysis if results were significant (see Table 3). These items were selected based on their relevance to the content covered in the modules. While tools like CALIPSO help bring some degree of objectivity and standardization to the clinical evaluation process, it is important to note that CALIPSO remains a subjective measure of clinical performance based on faculty ratings, and because of the customizations that can be made to the scale across graduate programs, psychometric properties are not available for this tool.

Table 2
CALIPSO Performance Rating Scale

Score	Label	Description
1	Not evident	Skill not evident most of the time. Student requires direct instruction to modify behavior and is unaware of need to change. Supervisor must model behavior and implement the skill required for client to receive optimal care. Supervisor provides numerous instructions and frequent modeling (skill is present <25% of the time).
2	Emerging	Skill is emerging but is inconsistent or inadequate. Student shows awareness of need to change behavior with supervisor input. Supervisor frequently provides instructions and support for all aspects of case management and services (skill is present 26-50% of the time).
3	Present	Skill is present and needs further development, refinement or consistency. Student is aware of need to modify behavior but does not do this independently. Supervisor provides on-going monitoring and feedback; focuses on increasing student's critical thinking on how/when to improve skill (skill is present 51-75% of the time).
4	Adequate	Skill is developed/implemented most of the time and needs continued refinement or consistency. Student is aware and can modify behavior in-session and can self-evaluate. Problem-solving is independent. Supervisor acts as a collaborator to plan and suggest possible alternatives (skill is present 76-90% of the time).
5	Consistent	Skill is consistent and well developed. Student can modify own behavior as needed and is an independent problem-solver. Student can maintain skills with other clients, and in other settings, when appropriate. Supervisor serves as consultant in areas where student has less experience; Provides guidance on ideas initiated by student (skill is present >90% of the time).

Faculty Survey and Focus Group. A faculty survey and focus group were also used to answer the third research question, which examined perceptions on the utilization and effectiveness of the modules. Clinical faculty ($n=11$), including a doctoral student who worked as a clinical supervisor in the university clinic, were asked to complete a 10-item survey. The survey gathered preliminary

information about their integration of the modules into their clinical teaching throughout the semester and their perceptions of the modules. Items about module delivery (e.g., presentation, ease of navigation, etc.) mirrored items on the post-module survey for students. Nine faculty members completed the survey.

Faculty were also invited to participate in a focus group meeting to further discuss their use of the modules, effects on student's clinical performance, and share feedback on how they could be improved. A focus group allowed for social construction of key ideas and was more reflective of how faculty may typically debrief (i.e., faculty meetings) as opposed to individual interviews or the faculty survey alone (Marshall & Rossman, 2016). Ten faculty members participated via videoconferencing. The focus group was facilitated by the first author and lasted approximately 60 minutes. The facilitator posed questions to the entire group, and conversation tended to flow naturally among faculty. Follow-up questions were used as needed to elicit additional detail or clarify group ideas. The focus group was recorded and subsequently transcribed verbatim for analysis.

IRB Approval. Modules and the pre-module and post-module surveys were initially deployed for teaching purposes. The project was retroactively approved by the Human Research Protection Program at KU, at which time the project was expanded to collect additional data (follow-up survey, faculty survey and focus group) for analysis and distribution to a wider audience.

Data Analyses. An independent samples t-test was used to determine if there were differences in students' perceptions of their clinical knowledge and readiness after completing the modules, as measured by their composite score on the pre-module and post-module surveys. Due to the modules initially being deployed solely for teaching purposes and our initial interest in the general effects on the cohort as a whole, the surveys were not set up to associate a response with a specific student. Pair matching each students' responses would have required collecting some type of identifying information, which could have been deterring to students because of the nervousness associated with beginning graduate school, making an impression on the faculty about their preparedness, etc. We wanted students to feel welcome to respond to the surveys honestly. Because this data collection method prevented us from matching their pre- and post- responses, paired difference tests were ruled out, and an independent samples test was selected for analysis instead.

To determine the effects of the modules on students' clinical performance, students' CALIPSO scores from their first semester of practicum were compared to that of the previous cohort (who did not participate in clinical preparation activities during their program orientation). Data were not normally distributed, thus an alternative to the independent t-test was used for analysis. A Mann-Whitney U Test was used to determine if there were statistically significant differences in the median CALIPSO scores for each cohort.

Data collected about perceptions from the student surveys, faculty survey, and faculty focus group were analyzed using descriptive and qualitative methods. Qualitative analysis followed an inductive approach, through which research results were derived from the survey responses and transcript, rather than testing the responses and transcript against existing literature (Thomas, 2006). Transcripts were imported into Dedoose (version 8.3), a software for coding and analysis. While there was no intention to develop theory, the process of open and axial coding described in

grounded theory methodology was used during analysis (Strauss & Corbin, 1990). The final coding schemes resulted in six codes from student responses and seven codes from faculty responses. These codes were used to identify key themes in students' and the faculty's perceptions on the utilization and effectiveness of the modules.

Results

Research Question 1: Student Knowledge and Readiness. The first research question was, "What effect do online clinical preparation modules have on students' perceived knowledge of foundational clinical skills and their readiness to engage in clinical practicum?" Students' composite score from the pre-module and post-module surveys ranged from 45-89 and 70-95, respectively. Recall that possible scores ranged from 14-98. Students' perceptions of their knowledge and clinical readiness were higher after completing the modules ($M=84.63$, $SD=7.05$) than before ($M=68.89$, $SD=10.47$). The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances ($p=0.013$). A Welch t-test was used to account for unequal variances. There were statistically significant differences in mean composite scores between the pre- and post- surveys, $t(61.5)=7.26$, $p<.01$. Results indicated that the modules improved students' perceptions of their clinical knowledge and readiness for clinical practicum.

Research Question 2: Effects on Clinical Performance. The second research question was, "Do clinical preparation modules improve first-year graduate students' performance in clinical practicum compared to previous cohorts who did not complete the modules?" Student evaluation scores from CALIPSO were used to examine changes in clinical performance following completion of the modules. Final first-semester CALIPSO scores from the cohort of students participating in the study were compared to that of the previous cohort of graduate students (who did not complete the clinical modules). The comparison cohort ($n=34$) had a mean age of 23 years and mean GPA of 3.67 (self-reported at the time of application to the program); 17 students had earned clinical clock hours from their undergraduate programs.

Data were tested for normality by assessing kurtosis and skewness (Corder & Foreman, 2014). Results revealed a skewness of -1.635 ($SE=.291$) and a kurtosis of 4.419 ($SE=.574$). Dividing the skewness and kurtosis statistics by their standard error resulted in values of -5.618 and 7.698 respectively, indicating that the data were not normally distributed. As such, nonparametric methods were used. A Mann-Whitney U test was run to determine if there were differences in final CALIPSO scores between the two cohorts. Visual inspection revealed that the distributions of scores were similar for both cohorts. There was not a statistically significant difference between the CALIPSO scores for the cohort who used the modules ($Mdn=4.10$) and the cohort who did not ($Mdn=4.21$), $U=427.5$, $z=-1.85$, $p=.065$. Given that the null hypothesis was retained, further evaluation of individual items was not conducted. Descriptive statistics for CALIPSO scores are provided in Table 3. Results indicated that the modules did not improve students' clinical performance compared to the previous cohort.

Table 3

CALIPSO Scores for Cohorts Who Did and Did Not Use the Modules

CALIPSO Item	Cohort without Modules		Cohort with Modules	
	<i>Mdn</i>	Range	<i>Mdn</i>	Range
Overall Score	4.21	3.33-4.77	4.10	2.69-4.44
Collaborates with clients and relevant others in the planning process.	4.17	3.0-5.0	4.0	2.33-5
Develops setting-appropriate intervention plans with measurable and achievable goals.	4.0	3.0-5.0	3.75	2.5-4.5
Implements intervention plans (involves clients and relevant others in the intervention process).	4.0	3.0-5.0	4.0	2.5-4.5
Selects or develops and uses appropriate materials/instrumentation.	4.0	3.33-4.67	4.0	2.5-5.0
Uses appropriate strategies. Allows time for client response.	4.0	2.75-4.88	4.0	2.5-5.0
Modifies intervention plans, strategies, materials, or instrumentation to meet individual client needs.	4.0	2.67-5.0	3.75	2.5-4.5
Completes administrative and reporting functions necessary to support intervention.	4.75	4.0-5.0	4.17	2.5-5.0
Demonstrates knowledge to integrate research principles into evidence-based clinical practice.	4.0	3.0-4.5	4.0	2.0-5.0
Communicates effectively, recognizing the needs, values, preferred mode of communication, and cultural/linguistic background of the patient, family, caregiver, and relevant others.	4.25	3.5-5.0	4.0	3.0-5.0
Establishes rapport and shows sensitivity and responsiveness to the needs of the client and family.	5.0	4.0-5.0	4.75	3.0-5.0
Displays effective written communication for all professional correspondence.	4.0	3.0-5.0	4.09	2.5-5.0

Research Question 3: Perceptions of the Modules. The third research question was, “What are clinical faculty and students’ perceptions on the utilization and effectiveness of the online modules?”

Student Perceptions. Students reported their perceptions on the utilization and effectiveness of the modules through the post-module survey and an end-of-semester follow-up survey. Descriptive statistics from the post-module survey are presented in Table 4. Ninety percent of students reported that they learned “a great deal, a lot, or a moderate amount” from the modules, while the remaining 10% reported that they learned “a little.”

Table 4

Students Who Agreed or Strongly Agreed with Statements on the Post-Module Survey

Survey Item	%
The modules were easy to navigate.	100
Information in the modules was presented in a clear manner.	100
Overall quality of the modules was outstanding.	90
Completing the modules was a valuable learning experience.	83
I enjoyed completing the modules.	63
I feel more prepared to begin clinic after completing the modules.	77

Note. $n=30$

Open and axial coding of open-ended responses from students resulted in six codes (see Table 5). Two themes emerged from the post-module survey about what students liked about the modules and what could have been improved: content and presentation. The codes *topics*, *clinical relevance*, and *resources* were captured within the content theme. Nearly all students ($n=23$) commented positively on the content that was included in the modules, including the depth of information and examples provided. Seven students also made direct connections between the modules and their upcoming clinical practicum experience. For example, one student indicated they would be “valuable as I meet with new clients.” Finally, ten students highlighted how the modules were a resource “where I can look back and refer to items throughout clinic.”

The second theme that emerged was presentation of the modules. The codes *format*, *organization*, and *implementation* were captured within the presentation theme. Ten students made specific mention of the media types in the modules that they liked, including text, audio, videos, and visuals. Six students commented on the organization and layout of the modules. Ten students commented on the implementation of the modules or made suggestions for changes; five of these were related to the amount of content and/or time required for completion.

At the end of the semester, students ($n=16$) reported the number of times they had referenced the modules during the semester. Seven students (43.8%) reported referring to the modules 1-2 times, 4 (25%) referred to them 3-4 times, 1 (6.3%) referred to them 5 or more times, and 4 (25%) reported that they did not refer to the modules again after orientation. Each module had been referred to at least one additional time since orientation. The three most frequently referenced modules were on intervention strategies, short-term goals, and documentation. The majority of students who responded indicated the modules prepared them moderately well or slightly well (37.5% and 31.3%, respectively) for clinical practicum, while 25% indicated the modules prepared them very well or extremely well. The four students who did not refer to the modules again after program orientation reported that they “forgot about them” or did not find them “all that useful.” They also reported using other sources of information instead, including “peers, professor or the internet.” Five students indicating they wanted more information about general clinic expectations, goals, documentation, interventions, and teletherapy as they prepared for practicum. Five students also reiterated earlier comments about the implementation of the modules, including the need to “break up” modules “over the course of the semester” and/or to allow more time to work through them.

Table 5

Codes from Student Survey Responses

Code	Definition	Example
Topics	<ul style="list-style-type: none"> • Specific topics students appreciated/learned about • Additional topics to cover • Depth of the content and examples provided in the modules • Familiar or novel content 	“It gives you a more in depth understanding of varying aspects related to clinic, but also things you didn’t even realize you should know.”
Clinical Relevance	<ul style="list-style-type: none"> • Making connections to how the modules would support them during clinical experiences 	“They showed me ways to find research that I can use to influence the therapy that I provide.”
Resources	<ul style="list-style-type: none"> • Using the resources within the modules or saving them for future reference 	“It’s nice to have a place where I can look back and refer to items.”
Format	<ul style="list-style-type: none"> • Use of audio, web links, videos, and images in the modules 	“I appreciated the option of being able to listen to the modules along with the readings.”
Organization	<ul style="list-style-type: none"> • How the modules were organized • Ease of navigation 	“You split them up nicely to avoid page fatigue.”
Implementation	<ul style="list-style-type: none"> • Amount of time given/needed for completion • Timing of access to the modules • Suggested changes to improve how the modules are used 	“Possibly shorter? Maybe assign a few chunks at a time. I felt overwhelmed when we were told about the modules and how much there were.”

Faculty Perceptions. Faculty reported their perceptions on the utilization and effectiveness of the modules through a survey and focus group discussion. Of the nine faculty who responded to the survey, three (33%) reported incorporating the modules into their teaching 1-2 times, five (56%) used them 3-4 times, and one (11%) used them 5 or more times throughout the semester. Each module had been referenced at least once during the semester. The three most frequently referenced modules were on intervention strategies, documentation, and speech-language sampling. All faculty thought the modules were “moderately effective” in preparing students for practicum. Descriptive statistics from the survey are presented in Table 6.

Open and axial coding of the focus group transcript resulted in seven codes (see Table 7). Two major themes emerged from the focus group: effects of the modules and implementation of the modules. The theme related to effects of the modules captured *desired effects* and *observed effects*. All faculty ($n=10$) had similar expectations that the modules would improve student preparation for clinical practicum by exposing them to foundational concepts and provide them with “some skills we had seen missing before.” Five faculty made specific comments about skills they observed in some students, such as “the ones who wrote stronger goals,” or who “referenced

knowing how to look up disorders.” There was a strong consensus that it was difficult to determine “if they had those [skills] from prior clinical experiences or if it’s because they took the initiative to go through the modules and others didn’t take that initiative.”

Table 6

Faculty Who Agreed or Strongly Agreed with Statements about the Modules

Survey Item	%
The modules were easy to navigate.	100
Information in the modules was presented in a clear manner.	89
Overall quality of the modules was outstanding.	100
Completing the modules was a valuable learning experience.	67
We should continue to incorporate the modules into orientation for MA SLP students.	100

Note. n=9

The theme related to the implementation of the modules captured *student accountability, actual implementation, integration into clinic, online format, and content*. Nine faculty members commented on students’ completion of the modules or the need for student accountability. All faculty shared how they did or did not use the modules during the semester and most reported that despite having the “intentions of hitting on it each week,” they ultimately felt that they “didn’t emphasize them enough.” The group discussed the need for faculty to integrate the modules more throughout the practicum experience, and commented, “If we are better at intentionally using the information, it will activate something... it won’t be the first time they’ve heard it.” Many faculty members reflected on and shared plans for how they could better incorporate the modules into their teaching in the future. They also discussed the online format, particularly regarding active learning components. Initially, the faculty had mixed perceptions regarding the use of interactive elements. Two noted that they “saw it [the modules] more as a foundation of some foundational things and then the interactive piece would come with us as they were applying that in the clinical environment that was relevant to them at that semester.” Several others desired follow-up tasks for students to complete as an accountability measure or to determine if they extracted the key ideas as intended. Through ongoing discussion, the group seemed to come to agreement that tasks that “have them apply right there on the spot” could improve the modules and what students gain from them. Finally, two faculty members suggested that a review of SLP terminology be added to the modules, but overall, the faculty felt that the content was reflective of what they wanted students to know.

Discussion

This study documents the outcomes of implementing a series of online modules intended to prepare first-semester graduate students for clinical practicum. Results revealed that students’ perceptions of their clinical readiness prior to the practicum experience increased following completion of the modules, although there were not significant changes in faculty ratings of students’ performance compared to a previous cohort using the CALIPSO evaluation tool. Faculty did not observe notable changes in students’ clinical performance during the semester the modules were implemented but believed that they should continue to be incorporated into orientation and

throughout clinical experiences. Faculty and students both provided suggestions for improving the modules.

Table 7

Codes from the Faculty Focus Group

Code	Definition	Example
Desired Effects	<ul style="list-style-type: none"> • Expectations for/desired outcomes from implementation of the modules 	“I was hoping that it would give them kind of a priming effect for some of these foundational skills so that I could give them more directed feedback and guidance.”
Observed Effects	<ul style="list-style-type: none"> • Observations of student skills • Interpretation of how effective the modules were 	“I do feel like this group was better able to describe their teaching strategies than they have in years past. . . and that was something from the beginning that I felt like they had a good handle on.”
Student Completion/ Accountability	<ul style="list-style-type: none"> • Expectations for and issues with student completion • Need for accountability measures 	“I’m pretty sure my students didn’t really look at them or commit anything to memory based on the discussions that we ended up having.”
Actual Implementation	<ul style="list-style-type: none"> • How faculty reported the modules were used/referred to during the semester • Challenges to implementation 	“We referred them at the end of the semester right before communication summaries and plans to go back and review goal writing.”
Integrating into Clinic	<ul style="list-style-type: none"> • Making connections between the modules and specific clinic experiences/clients • Using module content in clinic 	“It’s just about us guiding them either in the correct timeline or bridge that connection between this general piece of information to the direct application they need on our specific teams.”
Online Format	<ul style="list-style-type: none"> • Discussion of interactive components • Assessing student learning/application of material 	“Would it be possible to have them do the boot camp slides and then have some sort of prompt within the slides?”
Content	<ul style="list-style-type: none"> • The content of the modules, both current and desired additions 	“I think the content is good . . . it’s all what we want them to know.”

Perceptions on Module Design. Overall, students responded positively to the format of information presented in the modules, commenting that they were “organized and easy to navigate.” They liked the variety of media, including videos, audio, and images. Many students noted that the content was a review of topics they learned in their undergraduate programs, though some students also commented on novel information. Faculty agreed that the modules were

effective in presenting the information they wanted students to have when starting practicum but felt there was a need to adjust how students interacted with and applied the content. Aside from links to additional resources for students to independently explore and two response prompts, there were relatively limited opportunities for students to expressively engage with or respond to the content in most modules. This design decision was initially based on concerns for the time commitment to actively monitor and provide feedback to students on their submissions. In the focus group, faculty discussed the need for active learning components to increase engagement with and retention of content. They indicated preferences for tasks that would give immediate feedback (e.g., self-grading quizzes) or provide them with information to follow up on during clinical teaching (e.g., students submitting questions about the modules as it relates to their specific clinical placement). Adding components that require students to engage with or apply what they are learning would align with current best practices in the literature about active learning (Freeman et al., 2014). As an example in our field, Vinney et al. (2016) found that computer quiz games were one method to improve students' immediate recall of voice disorder concepts and enhanced longer-term retention. This may be a positive addition to the modules.

Implementation. Students' feedback about the implementation of the modules was largely related to the amount of content and the time needed to complete the modules. While students, on average, spent close to the amount of time we anticipated they would need to complete the modules, faculty did not observe the effects they expected. The amount of content that students were asked to review, coupled with the limited opportunities for them to recall and apply material, as described above, may have negatively impacted their retention of the material. While we envisioned the modules being a resource to be used throughout the semester, we weren't effective in fully integrating them into the practicum experience in the first deployment. Students and faculty reported that they referred to the modules minimally beyond orientation week, despite many students commenting on the post-module survey that they anticipated using the modules as a resource throughout the semester. Of the modules that were used during the clinical experience, documentation and interventions strategies were two of the most cited by faculty and students. These may be two areas where students needed the greatest level of support, or perhaps they were perceived to be the most useful. Faculty recognized that they struggled to integrate the modules and discussed how this could be improved in future semesters of practicum, such as referencing them in orientation materials and schedules specific to each clinic, utilizing tools from the modules (e.g., goal evaluation rubric), and incorporating prompts about the module content into existing reflection assignments throughout the semester. They believed that extending the modules beyond orientation week would help students make deeper connections between the content in the modules and their clinical practice. While students seemed to make initial connections in their survey responses on how the modules could help them clinically, faculty felt that students ultimately had difficulty applying the module content to clinical situations and felt they needed more support doing so. As one faculty member stated, "Their inexperience makes it more difficult for them to connect the dots a little bit because the modules were removed from their clients so they may not have necessarily been able to see how that would have benefited them." Systematically revisiting and applying the material from the modules throughout the semester would mirror a retrieval schedule, in which students are asked to repeatedly retrieve the information they've studied ultimately leading to long-term retention of the information and the ability to apply that learning to other clinical experiences in their graduate program and beyond (Roediger & Butler, 2011).

Effects on Students' Clinical Success. Students perceived their knowledge of foundational clinical skills and clinical readiness to be greater after completion of the modules. Graduate students have reported being overwhelmed and experiencing stress related to academic and clinical expectations (Rapillard et al., 2019). It is possible that students' comfort level with starting clinical practicum increased simply by providing them with an initial exposure to the expectations and philosophies of the program (e.g., person- and family-centered practices) that they may not have had previous exposure to, as well as exposure to program-specific content (e.g., documentation templates). As one student commented, "When I was presented it in the way KU/KUMC expects it, I could recognize those differences and felt more prepared on what to expect." Despite changes in their perceived knowledge and readiness, students' performance in clinical practicum did not improve following implementation of the modules, compared to the previous cohort of students. While this could be attributed to individual differences between the cohorts, it could also be an indicator that the implementation of the modules simply did not facilitate the changes we expected to see. Faculty continued to report that some students were still missing the foundational knowledge that they wanted them to gain from the modules. Changes to implementation in the future (as discussed above) may yield greater effects on students' clinical performance, and such effects may be better measured using other tools (discussed below).

Limitations. There are several limitations that must be considered when interpreting the results of this study. First, one of the key findings was that the modules improved students' perceptions about their clinical knowledge and readiness, but this must be interpreted with caution due to methodological limitations. A key assumption of the Welch t-test is independent observations, and this assumption was violated when comparing pre- and post- survey responses due to the inability to use paired sample methods. Additionally, the pre-module and post-module surveys were only an indirect measure of students' knowledge and readiness and did not assess their actual knowledge or skills, which would have better informed how effective the modules were in preparing students.

Second, while we examined the time students spent in the modules, that does not necessarily equate to completion, and there was no way for us to confirm if they completed the modules or track the content they did and did not view. Moreover, there was a high rate of attrition from initial pre-post module surveys to the follow-up survey, which may have been due to the timing of the survey at the end of the semester, students' interest in providing additional feedback about the modules, or confusion from additional language about consenting to participate in research (which was not previously present in the material we sent to students due to the original purpose being solely for teaching and learning). Considering this attrition, the results from the follow-up survey may not be a valid reflection of how the cohort utilized the modules or their perceptions of having the modules as a clinical preparation support.

Third, we did not control for or examine the potential impact of previous clinical experience. Nearly half of the incoming students had obtained at least some clinical clock hours, which could have impacted their self-perceptions and their clinical performance. Fourth, when comparing faculty ratings of students' clinical performance via CALIPSO to that of the previous cohort, we were not able to control for differences in clinical experiences across the two cohorts. The comparison cohort had "traditional" clinical experiences that the program historically used for first-semester students, while the students who used the modules had very different experiences

due to COVID-19. Their clinical learning curve was compounded by health restrictions imposed on face-to-face clinical experiences and the need to quickly learn telepractice technologies for remote experiences. Additionally, CALIPSO evaluations were the only measure of clinical performance used in the study. The CALIPSO scale may not have been sensitive enough to detect differences in clinical performance between the cohorts. Furthermore, students were only evaluated at the end of the semester and faculty were only surveyed at the end of the semester. Thus, we may have missed an opportunity to capture the effects that may have been present earlier in students' clinical experience. In other words, it is possible that the modules could have had an initial short-term effect on clinical performance, but students' skills may have leveled out by the end of the semester and were comparable to that of previous cohorts, making it difficult for both the CALIPSO scale and clinical faculty to recognize differences amongst cohorts.

Fifth, because the graduate student who facilitated the faculty focus group and solicited their participation in the survey also created the modules, it may have influenced the degree to which faculty provided honest feedback about the modules. A discussion facilitated by a neutral party may have yielded different results. Finally, this iteration of the study only examined implementation of the modules for a single semester with a cohort of graduate students from a single graduate program. It may take several semesters to refine implementation and see the full effect that the modules could have on students' preparedness. Replicating the study across cohorts or across graduate programs would strengthen the results.

Implications for Clinical Education. This study offers a first attempt at documenting a program used to prepare incoming graduate students for clinical practicum. Anecdotally, some graduate programs provide "bootcamps" to review essential concepts prior to students engaging in graduate work (Tessel & Grover, 2020), but what this programming consists of and the outcomes of such preparation are not widely available in the literature. For programs that engage in similar practices, it is worthwhile for them to know what content, presentation style, and implementation procedures positively affect their students to determine if the investment of resources in a preparation program is worthwhile. The use of online modules may provide a low-cost and efficient method for preparing graduate students, but additional evidence is needed on their effectiveness. Faculty may also benefit from additional support in integrating preparation material into their clinical teaching. More broadly, there continues to be a need to document what clinical readiness looks like in pre-service SLPs and how undergraduate programs prepare students for clinical practicum in graduate school.

On a final note, our program experienced the benefit of clinical faculty on both campuses working together to provide more unity across clinical experiences. The development of the modules helped faculty recognize differences across the campuses and work together to create learning materials that were representative of and applicable to the variety of clinical experiences we offer. While we only have anecdotal evidence that suggests this positive outcome at this time, we hope that future iterations the modules may be one way of resolving the challenges that students have reported with navigating the differences across campuses.

Conclusion

This study documented the use of online modules to prepare graduate students for clinical practicum. The findings suggest that modules on foundational clinical skills may increase their perceived clinical knowledge and readiness. Further investigation is needed to determine the actual effects on clinical performance, but this initial study has implications for how graduate programs prepare and support students in their clinical experiences. The findings also indicated that faculty perceived integration of the modules into the practicum experience as a necessary component of facilitating students' clinical application of the material, but they were challenged in remembering to integrate them, which resulted in minimal use of the modules beyond their initial deployment during orientation week. Overall, students perceived the modules to be helpful. Their positive response to the modules adds to the existing literature about SLP students' perceptions of online learning.

Disclosures

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References

- Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Babson Survey Research Group.
- American Speech-Language-Hearing Association. (n.d.). *Clinical Education and Supervision*. <https://www.asha.org/Practice-Portal/Professional-Issues/Clinical-Education-and-Supervision/>
- Anderson, J. L. (1988). *The supervisory process in speech-language pathology and audiology*. College Hill.
- Brasseur, J. (1989). The supervisory process. *Language, Speech, and Hearing Services in Schools*, 20(3), 274-295. <https://doi.org/10.1044/0161-1461.2003.274>
- CAST. (2018). *Universal Design for Learning Guidelines version 2.2*. <http://udlguidelines.cast.org>
- Corder, G. W., & Foreman, D. I. (2014). *Nonparametric statistics: A step-by-step approach* (2nd ed.). John Wiley & Sons.
- Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association. (2018). *2020 Standards for the Certificate of Clinical Competence in Speech-Language Pathology*. <https://www.asha.org/certification/2020-slp-certification-standards/>
- Council on Academic Accreditation in Audiology and Speech-Language Pathology. (2020). *Standards for accreditation of graduate education programs in audiology and speech-language pathology (2017)*. <http://caa.asha.org/wp-content/uploads/Accreditation-Standards-for-Graduate-Programs.pdf>
- Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences*, 111(23), 8410-8415. <https://doi.org/10.1073/pnas.1319030111>
- Ginsberg, S. M. (2008). Student anticipations and reactions to hybrid format education. *Perspectives on Issues in Higher Education*, 11(2), 76-82. <https://doi.org/10.1044/ihe11.2.76>
- Guilford, A. M., Graham, S. V., & Scheuerle, J. (2007). *The speech-language pathologist: From novice to expert*. Pearson.
- Hays, L. (2010). *Clinical Assessment of Learning Inventory of Performance Streamlined Office Operations (CALIPSO)*. <https://www.calipsoclient.com>
- Kelley, E. S., Hull, G., Eubank, A., & Roettgen, G. (2020). Teaching undergraduate clinicians empirically supported practices for preschool vocabulary instruction. *Language, Speech, and Hearing Services in Schools*, 51(2), 353-370. https://doi.org/10.1044/2019_LSHSS-19-00061
- Krimm, H., Schuele, M. C., & Brame, C. (2017). Viability of online learning for ensuring basic skills in speech-language pathology. *Perspectives of the ASHA Special Interest Groups*, 2(10), 49-58. <https://doi.org/10.1044/persp2.SIG10.49>
- Mandak, K., Light, J., & McNaughton, D. (2020). The effects of an online training on preservice speech-language pathologists' use of family-centered skills. *American Journal of Speech-Language Pathology*, 29(3), 1489-1504. https://doi.org/10.1044/2020_AJSLP-19-00057
- Marshall, C., & Rossman, G. B. (2016). *Designing qualitative research* (6th ed.). Sage Publications.

- Phillips, D. E. (2009). Supervisory practices in speech-language pathology: Pre-practicum assessment of student clinicians in graduate training programs. *Perspectives on Administration and Supervision*, 19(3), 107-113. <https://doi.org/doi:10.1044/aas19.3.107>
- Rapillard, S., Plexico, L. W., & Plumb, A. M. (2019). Influence of graduate speech language pathology student's learning style and coping strategies on training and development. *Teaching and Learning in Communication Sciences & Disorders*, 3(1), 1-23. <https://doi.org/10.30707/TLCS3.1Rapillard>
- Richardson, L., Roberts, E., & Victor, S. (2020). Predicting clinical success in speech-language pathology graduate students. *Perspectives of the ASHA Special Interest Groups*, 5(2), 479-488. https://doi.org/10.1044/2020_PERSP-19-00075
- Roediger, H. L., & Butler, A. C. (2011). The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences*, 15(1), 20-27. <https://doi.org/10.1016/j.tics.2010.09.003>
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. SAGE Publications.
- Sylvan, L., Brock, K. L., Perkins, A., & Garrett, J. (2020). Building blocks of knowledge: A close look at prerequisite coursework for graduate programs in speech-language pathology. *Perspectives of the ASHA Special Interest Groups*, 5(5), 1262-1271. https://doi.org/10.1044/2020_PERSP-20-00042
- Tattersall, P. J. (2015). "Flipped" classroom: Benefits versus challenges for communicative sciences and disorders faculty and students. *Perspectives on Issues in Higher Education*, 18(1), 4-15. <https://doi.org/10.1044/ihe18.1.4>
- Tessel, C. A., & Grover, V. (2020). Graduate student retention of prerequisite course content. *Teaching and Learning in Communication Sciences & Disorders*, 4(1), 1-33. <https://doi.org/10.30707/TLCS4.1/ULMQ3912>
- Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246. <https://doi.org/10.1177/1098214005283748>
- Vinney, L. A., Howles, L., Levenson, G., & Connor, N. P. (2016). Augmenting college students' study of speech-language pathology using computer-based mini quiz games. *American Journal of Speech-Language Pathology*, 25(3), 416-425. https://doi.org/10.1044/2015_AJSLP-14-0125

Appendix A: Overview of Module Content

Module	Contents	Total Time to Complete
The Therapeutic Process	<p><u>Part 1: What is a person- and family-centered approach?</u> <u>Part 2: Foundational Concepts</u> <i>Neural Plasticity, Vygotsky's Theory of Cognitive Development, Vygotsky's Zone of Proximal Development, Play and Relationships, Therapeutic Relationship, Individualized Therapy</i> <u>Part 3: Client-Centered Approaches</u> <i>Life Participation Approach to Aphasia, LPAA: Adjusting Your Talking, Pediatric Language Development</i> <u>Part 4: Interviewing Strategies</u> <i>Motivational Interviewing, Motivational Interviewing Strategies Video, Ethnographic Interviewing</i></p>	~ 1 hr, 26 min
Clinical Decision Making	<p><u>Part 1: ASHA Practice Portal and Evidence Maps</u> <i>Practice Portal Overview, Client & Patient Handouts, Evidence Maps</i> <u>Part 2: Gathering Evidence for Clinical Decision Making</u> <i>Developing a PICO Question, Gathering Relevant Evidence, Favorite Sites, Information on Related Disciplines, Patient-Friendly Education</i> <u>Part 3: Conducting a Literature Search</u> <i>Libraries, Search Terms, Boolean Operators, Organizing Search Terms, Where to Search, Synthesized Evidence</i></p>	~58 min
Session Design	<p><u>Part 1: Activities and Session Planning</u> <i>Developing Activities, Order of Activities, Arranging the Environment, Supports for the Client to Participate, Visual Supports</i> <u>Part 2: Engagement</u> <i>Engagement and Outcomes, Types of Engagement, Reflection Prompt</i> <u>Part 3: Feedback and Feedback on Engagement</u></p>	~19 min
Intervention Strategies	<p><u>Part 1: Modeling</u> <i>Self-Talk/Thinking Out Loud, Parallel Talk/Narrating/Event Casting, Focused Contrasts, Expansions, Recasts, Aided Input</i> <u>Part 2: Instruction and Feedback</u> <i>Direct Instruction, Characteristics of Direct Instruction, Shaping/Successive Approximations, Explaining the Goal and Purpose, Explicit Feedback</i> <u>Part 3: Cueing</u> <i>Wait Time/Expectant Pause, Verbal Cue, Visual/Gestural Cues, Semantic Cues, Phonemic Cues, Tactile Cue</i> <u>Part 4: Prompting</u> <i>Verbal Prompt, Visual Prompt, Physical Prompts, Scaffolding, Example Hierarchies</i></p>	~41 min
Developing Short-Term Goals	<p><i>Pre-Assessment, Module 1: Introduction to Short-Term Goals, Module 2: Functionality and the Short-Term Goal, Module 3: Target Behavior and Verb Choice, Module 4: Context of Short-Term Goals, Module 5: Timeframe and Criterion of Short-Term Goals, Module 6: Examination of Goals, Post-Assessment</i></p>	~2 hr, 15 min
Documentation	<p><i>Assessment Documentation, Treatment Documentation, Clinical Writing, Clinical Writing Word Banks, Example Templates</i></p>	~26 min
Speech-Language Sampling	<p><i>Speech-Language Samples, Speech Skills, Language Skills, An Optimal Sample, Considerations for an Optimal Sample, Examples, Next Steps, Analysis, Handouts and Resources</i></p>	~1 hr, 16 min
	TOTAL TIME:	~7 hr, 21 min

Appendix B: Pre-Post Clinical Competency Survey Questions

1. On a scale of 1-7, rate your level of readiness if you were to begin clinic tomorrow.
(1 = not ready at all, 7 = extremely ready)

Rate your level of agreement with the following statements:
(1 = strongly disagree, 7 = strongly agree)

2. I can define person- and family-centered care.
3. I know what should be included in a short-term goal.
4. I know how to develop activities that are based on a client's goals.
5. I know what information should be included in clinical documentation.
6. I know at least two places I might look for evidence to support my clinical decision making.
7. I can explain language intervention strategies, such as self-talk, parallel talk, expansions, and recasts.
8. I can explain common types of intervention strategies, like prompting and cueing.
9. I can explain the difference between a speech sample and a language sample.
10. I can describe factors that might impact my ability to build a therapeutic relationship.
11. I can write short-term goals for a client.
12. I can conduct a literature review to find evidence related to a specific intervention for a specific population.
13. I know how to facilitate client engagement in speech-language services.
14. I can name at least one consideration for eliciting a speech-language sample.

Appendix C: Post-Module Student Perceptions Survey Questions

Note: These items were presented in conjunction with items in Appendix A on the post-module survey.

1. Rate your level of agreement with the following statements:
(1 = *strongly disagree*, 7 = *strongly agree*)
 - The modules were easy to navigate.
 - Information in the modules was presented in a clear manner.
 - Overall quality of the modules was outstanding.
 - Completing the modules was a valuable learning experience.
 - I enjoyed completing the modules.
 - I feel more prepared to begin clinic after completing the modules.

2. How much do you feel like you learned from the modules?
 - None at all
 - A little
 - A moderate amount
 - A lot
 - A great deal

3. What did you like most about the clinical preparation modules?

4. What would have made the modules more useful to you? / What could we do to improve the modules?

Appendix D: Student Follow-Up Survey

1. How well did the clinical modules prepare you for your practicum experience?
 - Not well at all
 - Slightly well
 - Moderately well
 - Very well
 - Extremely well

2. How many times have you referred to the modules or materials from the modules since Orientation Week?
 - 0
 - 1-2
 - 3-4
 - 5+ times
 - i. If 0: Please describe any reasons why you did not refer to the modules.

 - ii. If 1-5+: Which modules did you refer to during the semester? Check all that apply. Please use the text boxes to provide examples of how you and/or your faculty member used the modules to support your clinical experience.
 - The Therapeutic Process: _____
 - Clinical Decision Making: _____
 - Session Design: _____
 - Intervention Strategies: _____
 - Developing Short-Term Goals: _____
 - Documentation: _____
 - Speech-Language Sampling: _____

3. How could the modules have better prepared you for your practicum experience?

4. Is there anything else that you think could have helped prepare you for beginning your first graduate clinical practicum?