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Enriching Pre-Clinical Education with Near-Peer Learning Experiences

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Enriching Pre-Clinical Education with Near-Peer Learning Experiences

Abstract

The purpose of this mixed methods study was to examine the outcomes of two instructional methodologies (traditional and peer-assisted learning; PAL) used in a clinical methods course for undergraduate speech-language pathology (SLP) students. The sample included 53 undergraduate SLP students (near-peer learners) as well as 27 graduate SLP students and 7 clinical fellows (near-peer tutors). Traditional instruction was used during the first half of the course and PAL was added during the second half. The undergraduate SLP students' weekly written reflections and grades (mid-term and final) were collected for analysis. Students demonstrated a preference for peer- and near-peer learning experiences and commented positively on learning via stories throughout the course. They exhibited more positive attitudes during PAL instruction. Further, students reported less clinical confidence and more confusion as the course progressed and they learned more about the demands and expectations for clinical practice. Implications and recommendations for SLP students' clinical training are discussed.

Keywords

teaching, clinical training, peer-assisted learning

Cover Page Footnote

The authors wish to acknowledge the invaluable and voluntary contributions of the near-peer leaders to the learning of their future colleagues and the success of this project.

Speech-language pathology (SLP) graduate students are intelligent and driven. They undertake a rigorous education that involves learning of both academic and clinical nature. As a profession, we have measures that allow us to predict success in academic education. However, we have fewer and less accurate ways to predict clinical success (Reisfeld & Kaplan, 2022). A significant part of this challenge may lie in the nature of clinical skill learning, because clinical practice requires an integration of knowledge, skills, and attributes that we broadly refer to as clinical decision-making. SLP faculty use a combination of didactic material and clinical guidance to help students at the undergraduate and graduate level develop effective and professional clinical decision-making.

Clinical decision-making is defined as a “contextual, continuous, and evolving process” where information is “gathered, interpreted, and evaluated” (Tiffin et al., 2014, p. 400). To learn such a complex skill can be challenging. Sprague and Stuart (2000) outlined four stages of learning for complex skills as they addressed effective speaking: unconscious incompetence, conscious incompetence, conscious competence, and unconscious competence. Using this model, the gradual change toward effortless clinical decision-making involves discovering weaknesses and practicing new ways of thinking and doing. Within the allied health fields, clinical educators may scaffold students’ development of new skills through both a continuum-based and cognitive apprenticeship model of teaching (Wolford et al., 2021).

An important goal of clinical educators is to support student’s understanding and implementation of Evidence-Based Practice (EBP). EBP is defined as an approach that integrates current trustworthy research with practitioner expertise and client preferences and values to make clinical decisions that promote high-quality care (American Speech-Language-Hearing Association [ASHA], 2005). The provision of EBP requires a multitude of advanced skills such as framing a clinical question, locating and assessing internal and external evidence relevant to that question, and integrating the evidence to arrive at the best possible decision (ASHA, n.d.). Choosing an effective method for supporting future speech-language pathologists’ development of clinical skills is a critical concern for professional programs. Two evidenced-based approaches for clinical instruction identified in the literature are peer-assisted learning and near-peer experiences. Our study focused on exploring traditional instructional practices and those supplemented with integrated near-peer experiences.

Peer-Assisted Learning. Many instructional methods have been applied to clinical training, including traditional classroom lecture, supervised practicum, and peer-assisted learning. Peer-assisted learning (PAL) is a collective term for similar instructional methods that involve students teaching students. Table 1 describes the similarities and differences of some of these methods.

Researchers (Ehrgott & Silberer, 2014; Fischer, 2011; Kimble & Turner, 2012; Rentschler & Gasior, 2011; Sevenhuysen et al., 2014) report positive outcomes from PAL, although outcome measures vary from quality of learning (Ehrgott & Silberer, 2014) to attitudes and perceptions of experiences (Kimble & Turner, 2012; Rentschler & Gasior, 2011). Recent research examining PAL has identified several variations that may be beneficial in creating positive collaborative learning experiences (Olaussen et al., 2016; Sevenhuysen et al., 2016) for SLP students. Olaussen et al. (2016) describe two dimensions of PAL variations for more structured instructor-learner relationships: (a) participant roles: peer-to-peer, with students grouped on similar academic or skill levels, or near-peer, with students at different academic or skill levels; and (b) the number of learners paired with an instructor: one to two learners is considered formal peer- or near-peer mentoring and three to five learners is considered peer- or near-peer

tutoring. Near-peer experiences have been shown to enhance clinical thinking, insight, and responsiveness (Kimble & Turner, 2012). The primary focus of this study was to explore the use of near-peer tutoring experiences to support students' development of clinical decision-making skills.

Table 1

Descriptions of Peer Learning Methods

Learning Method	Teaching Contributions	Type of Instruction	Number of Students	Participants' Level of Study
Collaborative learning	Reciprocal	Teaching or Guidance	Any	Any
Peer-assisted learning	Reciprocal	Teaching or Guidance	Any	Equal
Near-peer experiences	One-way	Teaching or Guidance	Any	Unequal
Mentoring	One-way	Guidance	1 (mentor) to 1-2 (mentees)	Equal (Peer) or Unequal (Near-peer)
Tutoring	One-way	Teaching	1 (leader) to a small group	Equal (Peer) or Unequal (Near-peer)

Near-peer Experiences. Within application studies of PAL in allied health fields, most studies pair undergraduate pre-clinical students with more advanced peers (Ehrgott & Silberer, 2014; Fischer, 2011; Kimble & Turner, 2012; Sevenhuysen et al., 2014). These pairs vary from undergraduates with peers one year advanced (Fischer, 2011; Sevenhuysen et al., 2014), to undergraduates with graduate peers (Ehrgott & Silberer, 2014; Kimble & Turner, 2012), to graduate students with more advanced graduate students (Rentschler & Gasior, 2011). Most published near-peer experiences were conducted within dyads, although Rentschler and Gasior (2011) used clinical peer small groups with six students. These published near-peer experiences ranged in both breadth and length from a single guided observation session per student (Fischer, 2011) to split observation and participation within 10 individual therapy experiences (Ehrgott & Silberer, 2014) to regular meetings and shared treatment sessions over a 15-week semester (Kimble & Turner, 2012).

Near-peer experiences often focus on collaborative learning (Sevenhuysen et al., 2016) and outline aspects of student capability, opportunity, and motivation. Several researchers reported positive feedback from participants about their near-peer experiences (Ehrgott & Silberer, 2014; Fischer, 2011; Kimble & Turner, 2012). Positive outcomes included near-peer learners' reports of increased confidence and knowledge of clinical procedures. Some learners even requested participation in future near-peer experiences. Kimble and Turner (2012) reported comments from both near-peer learners and instructors about their positive experiences, established relationships, and collaborative experiences. Further, two quasi-experimental studies comparing student learning outcomes of near-peer experiences and traditional, lecture-based teaching methods found equal learning outcomes in both student groups (Ehrgott & Silberer, 2014; Sevenhuysen et al., 2014).

In contrast to these generally positive reports, two other studies found that the clinical workload associated with traditional methodology was favored by students over near-peer experiences (Kimble & Turner, 2012; Sevenhuysen et al., 2014). Therefore, while near-peer experiences may generate positive student outcomes, this finding suggests that its process may be very stressful to learners and instructors unless clear definitions and understandings of roles and responsibilities are ascertained. The current study further examines the emotional and learning impact of near-peer experiences during clinical training for SLP students.

Current Study. The purpose of this mixed methods study was to determine the impact of near-peer experiences in an undergraduate level clinical methods course for pre-service SLP students. The study originated in response to a programmatic challenge. Our first-semester graduate students struggled to apply problem-solving and decision-making skills across the full scope of their early clinical experiences. We were inspired by existing research in PAL to leverage the recent experiences of graduate clinicians to improve future graduate students' understanding and performance of generalized professional roles. We investigated two instructional methods (traditional and near-peer) within an existing undergraduate course to answer the following research questions, including an exploratory quantitative component:

1. Which instructional method do SLP students prefer? (*qualitative*)
2. What is the impact of near-peer instructional methods on students' attitudes and perceptions? (*qualitative*)
3. What cognitive and emotional processes drive students' preferences for instructional methods? (*qualitative*)
4. Does student learning appear to change when near-peer instructional methods are added to an existing class? (*quantitative*)

These questions sought to provide information on both the effectiveness and value of adding systematic near-peer experiences into an existing curriculum.

Method

Participants. Participants included 53 undergraduate students enrolled in a *Clinical Methods in Speech Language Pathology and Audiology* course, and 34 near-peer leaders that included 27 graduate Communication Sciences and Disorders (CSD) students enrolled in clinical practicum and seven Clinical Fellows. See Table 2 for demographic information. This course was required for students majoring in Speech-Language Pathology & Audiology and an elective for the single Counseling student. Before recruiting participants, this study was approved by the Institutional Review Board at a coastal university in the mid-Atlantic region of the United States.

Undergraduate Course. The undergraduate course consisted of a session-by-session overview of clinical procedures within speech-language pathology. This semester-long course was held once per week for three hours. Course content was independent and balanced between the course halves (pre-midterm and post-midterm). Assignments were also equivalent between course halves, with each half consisting of daily reading quizzes, two homework assignments, and a half-course cumulative exam. An overview of the 15-week course schedule is available in Figure 1. This course was co-instructed by two SLP instructors: a doctoral level faculty member and a clinical educator. Both instructors had been certified by the American Speech-Language-Hearing Association for nineteen years.

Table 2*Demographic Information for Student Participants (n = 87)*

	Graduate (n = 34)	Undergraduate (n = 53)
Sex		
Male	0	2
Female	34	51
Ethnicity		
Caucasian	31	33
Black or African American	1	11
Latinx	0	3
Asian or Pacific Islander	0	4
Multiracial	2	2
Near-Peer Learners		
Junior		17
Senior		36
Near-Peer Leaders		
Clinical Practicum	27	
Clinical Fellows	7	
Undergraduate Majors		
SLP & Audiology		52
Counselling		1

Pre-midterm Instruction. Pre-midterm instruction was provided in a traditional fashion with instructor lecture, small-group implementation activities, assigned readings and homework. The entire class received lectures on a series of independent course topics. Then, instructor-determined groups of four to six students participated in clinical implementation activities related to that content. Lectures set learning objectives for the week, reviewed the critical vocabulary and concepts from assigned readings, and often provided more information about SLPs' routine procedures associated with the topic. Clinical implementation activities were designed to complement and extend the knowledge of the weekly topic through performing some part of the professional actions related to it. For example, a learning objective for the week covering general principles of assessment was to compare and contrast types of testing procedures. The instructor reviewed critical definitions of interviewing, behavioural observations, dynamic assessment, norm-referenced tests, and criterion-referenced procedures during a class lecture. The subsequent hands-on clinical learning activity was to answer a series of questions using a norm-referenced test manual, then practice administering a portion of that test. Each group received a different norm-referenced test and shared the results of their activity with the whole class.

Post-midterm Instruction. Near-peer experiences were provided in the post-midterm portion of the course, which consisted of the traditional instruction features previously mentioned, as well as a 30-minute near-peer-led discussion of personal experiences within the weekly course topic. The instructors shortened the duration of lectures and small group activities during this portion of the course to allow time for near-peer learning. Groups of 6-9 undergraduate students were paired with a graduate clinician with recent experience in targeted course topics to engage

in near-peer experiences. Recent experience was defined to be within the last six months, although graduate clinicians were not prohibited from sharing earlier experiences. The near-peer leaders were provided with directions for leading discussion about a personal story related to the course topic each week to provide structure (see Appendix A). They were instructed to discuss the biggest challenge they faced, the emotions they felt, their strategies for overcoming the challenge, and a reflection on how they changed from their experience. This structure was designed to increase the attention and motivation of the undergraduate students and enrich discussion of the content. The undergraduate near-peer learners were given topic questions to guide conversation with their tutors and were free to ask other questions of interest as well. Near-peer tutor groups were held weekly for 30 minutes within the existing 3-hour course meeting time.

Data Analysis. A convergent mixed methods approach was used to expand our understanding of traditional and near-peer instructional methods (Creswell & Plano Clark, 2018). Data were collected concurrently throughout the clinical methods course. Then, qualitative and quantitative analyses were conducted. Our research questions focused on the impacts of the instructional methods on students' perceptions of the course, while an exploratory quantitative analysis examined changes in mastery of course content.

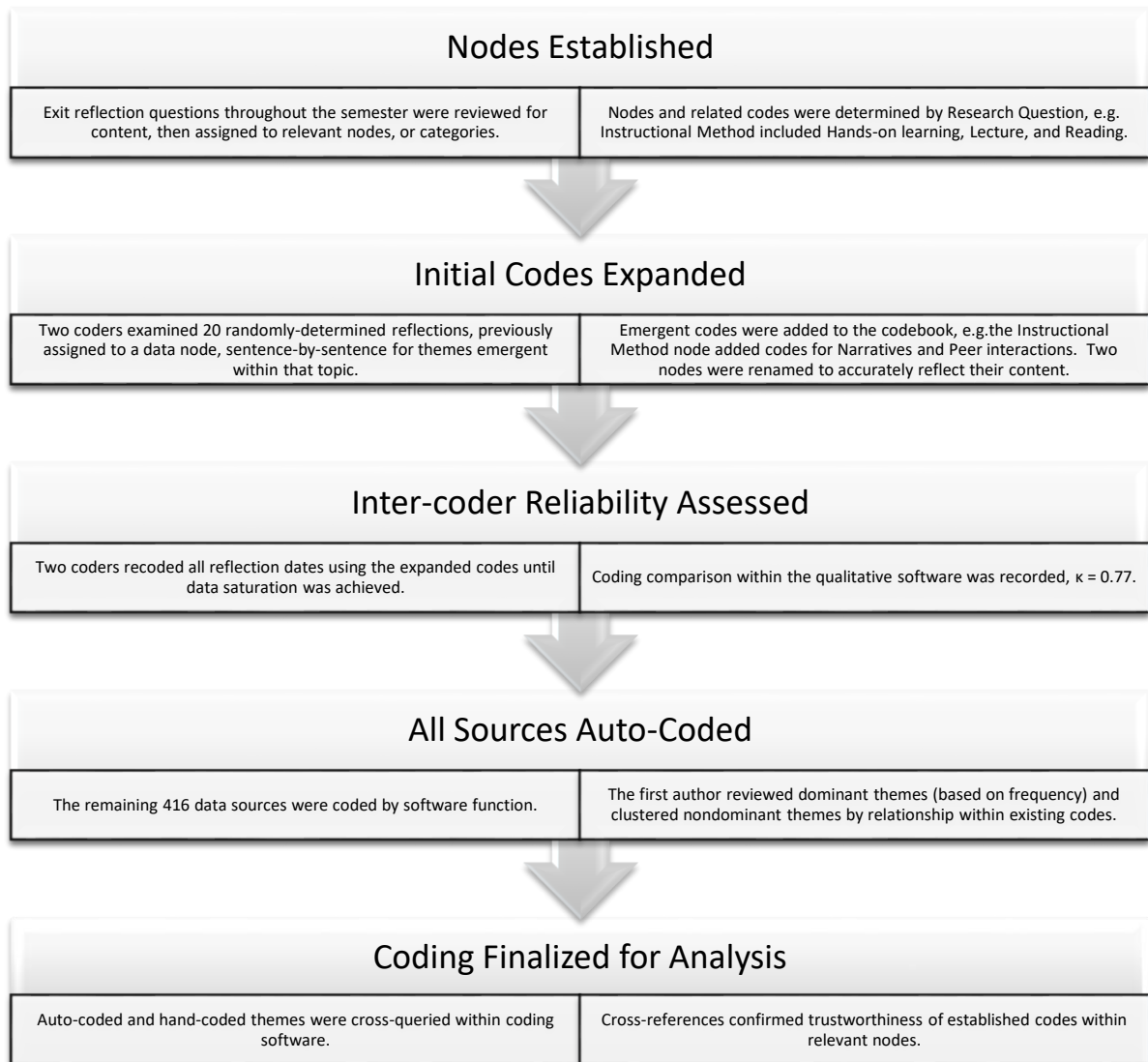
Qualitative methods. Qualitative descriptions of the undergraduate students' clinical learning experiences from both traditional and near-peer instruction were obtained from their weekly written reflections collected at the end of each class period. These reflections were written in response to open-ended prompts about their interactions with the course content and pedagogy. For example, following instruction in interviewing and counselling skills, students were asked what communication skills they would most need to practice and why. In addition, students were asked to reflect on their perceptions of the instructional methods being used at the time in the course (i.e., traditional or near-peer). SLP student reflections provided insight into their attitudes and emotions and cognitive and emotional processes during the learning process.

Qualitative data were transcribed, verbatim, into Microsoft Word by a graduate research assistant, following guided practice and accuracy review with the first author and then uploaded into NVivo 12 Plus (QSR International, 2018) for analysis. The researchers conducted a thematic analysis of the students' reflections to generate emergent themes (Braun & Clarke, 2006). Each student reflection was coded using an evolving codebook. Initial codes related to the research questions were established and revised throughout the review and analysis process (see Figure 2 for an overview of the coding procedure).

Figure 1

Weekly Course Topics, Assignments, and Data Sources

Introduction to Clinical Practice	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Principles of Assessment	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Communication Sampling Procedures	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data) • Homework #1
Issues of Cultural and Linguistic Diversity	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Evidence-Based Decision Making	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Interview, Counseling, and Clinical Communication	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data) • Homework #2
Midterm Exam	<ul style="list-style-type: none"> • Quantitative Data Point • Participant Interviews (Qualitative Data)
Ethical Practice	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Public Policies Affecting Clinical Practice	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Clinical Service Delivery and Work Settings	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data) • Homework #3
Intervention, Part I	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Intervention, Part 2	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Family-Centered Practice	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data) • Homework #4
Technology and Communication Disorders	<ul style="list-style-type: none"> • Entrance/Reading Quiz • Exit Reflection (Qualitative Data)
Final Exam	<ul style="list-style-type: none"> • Quantitative Data Point • Participant Interviews (Qualitative Data)

Figure 2*Qualitative Coding Procedure*

Before coding, each reflection was sorted by the first author to one of three organizational nodes deductively named for the research question, (i.e.,) methodology, attitudes and emotions, and cognitive and emotional processes. Then a set of 20 randomly determined sample reflections representing approximately 40% of gathered data from each week of the semester was examined sentence-by-sentence for emergent codes within them (e.g., within the methodology node, hands-on learning, peer interactions, lectures, narratives, and reading themes were developed). Data coding was discontinued when no new codes were recorded. This occurred by the 15th respondent in all but one date (the second week of the semester) of the sampled reflections. The emergent codes, such as the individually coded processes evident in near-peer experiences, were then added to the codebook. In this process, the categorization node for student attitudes and emotions was abbreviated to “Student Attitudes.” Similarly, the contents of the cognitive and emotional processes node, which primarily contained codes for positive and negative stressors, suggested a refinement of the node title to “Stressors.” Each reflection was assigned to two coders from the coding team which consisted of the two course

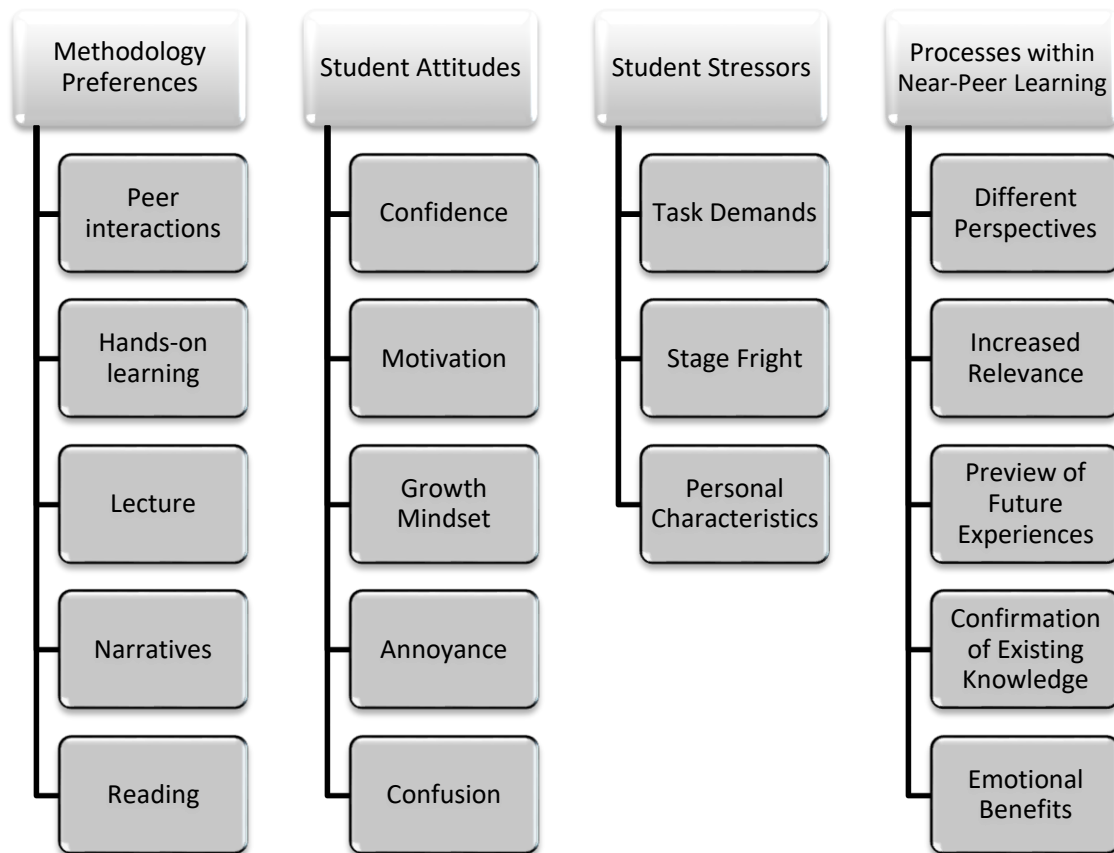
instructors and three trained research assistants. Inter-coder reliability was measured with a coding comparison within the qualitative software, $\kappa = 0.77$.

Following reliability coding, the preliminary codes were reviewed for meaning, representation, frequency, and generality (Adu, 2019). This process established themes that were hand-coded, labelled, and clustered by researcher consensus, then the auto-code function of NVivo 12 Plus (QSR International, 2018) was used to code the remaining 416 data sources. Following auto-coding, dominant themes were determined by frequency. Nondominant themes were assessed and then subsumed into existing and related dominant themes. Auto-coded and hand-coded themes were cross-queried and results were reviewed by researchers to verify trustworthiness of established themes. This process allowed inclusion of the full data set to confirm themes extracted by hand-coding. See Figure 3 for the final codebook.

The trustworthiness of the qualitative design was ensured by triangulating the multiple data sources of written reflections, focus group responses, and student interviews (Creswell, 2014). Student interviews were conducted with three undergraduate participants at mid-term and end-of-term to further triangulate data from the weekly written assignments (Creswell, 2014; Hays & Singh, 2012). The participants were randomly selected at each of the time-points. Each interview was conducted by the first author in a semi-structured method, by supplementing pre-determined questions with follow-up questions to encourage participants to elaborate or engage in further discussion (See Appendix B for example questions). Interviews were video recorded, then transcribed into Microsoft Word by either the first author or the same trained graduate research assistant assigned to reflection transcription.

Additional validation strategies included prolonged engagement and member checking of focus group transcripts by all participants (Creswell, 2014b). Focus group members were asked to review transcripts for accuracy and expand on any idea or response within the document as they desired. To address credibility of conclusions, the two investigators serving as co-instructors engaged in critical self-reflection and substantive validation (i.e., specific consideration of the relevance and impact of the study results) (Hays & Singh, 2012), throughout the course of the investigation and data analysis process. The establishment of a codebook and intercoder agreement enhanced reliability and stability of data points for analysis (Creswell, 2014b).

Quantitative methods. Quantitative data was gathered from undergraduate participants' grades on course learning assignments. Each participant's midterm and end-of-term exam grades percentages were captured for analysis to examine changes in student outcomes between the two halves of the course. Measuring student outcomes with their course grades has clear face validity which is supported mathematically across general disciplines (Canfield et al., 2015). Further, inclusion of a student outcome measure beyond self-report addresses concerns with accuracy of self-report measures and has been used as an indicator of study design quality (Wolford et al., 2021). Content learning assignments and exam items were established through use and modifications over two previous semesters of instruction (which occurred without PAL experiences). Items and student responses were assessed independently by two clinical instructors with at least five years of experience teaching course concepts. Items found to yield inconsistent responses were eliminated from assignments during the course of this study.

Figure 3*Final Code Book***Results****Qualitative Analyses.**

Preferred Method of Instruction. Five categories of instructional methods were consistently referenced by the students in pre-midterm written reflections. Therefore, our consideration of instructional methods was expanded beyond the original query into near-peer and traditional instruction. Students were asked which of these methods they preferred at mid- and end-of-term. These methods continued to be referenced in post-midterm reflections. Individual responses were not limited to only one instructional method, and students frequently identified two or even three preferred and non-preferred instructional methods. Their direct answers were triangulated with additional references to instructional method from weekly reflections to confirm the preferred instructional methods. Table 3 reports the percentage of students who directly reported a particular instructional methodology as preferred next to the frequency of positive comments related to those instructional methods broken down by time period. An overall average of 12.4 (SD = 3.28) reflections were collected from the 53 participants with a combined total of 659 data sources. These reflections were auto-searched for terms relevant to instructional methods. When examined by course half (traditional versus near-peer instruction),

there was more spontaneous comment on instructional method during the second half of the semester. This may be an artifact of the reflection questions posed within that period.

Although PAL was not specifically implemented pre-midterm, in response to an open-ended question about their preferred class components, 30 of the 52 responding students described some type of interaction with their peers. In contrast, lecture was the method that was most frequently mentioned positively within reflection comments. Participant #2 indicated that “lectures are helpful” and Participant #10 reported that “Although it was not always the most interesting, the powerpoints and lectures showed us all the information from the chapters.” Many of the students who expressed a preference for traditional lecture also positively commented on one or more of the other instructional methods within other written responses. For example, Participant #2 who noted that “lectures are helpful” continued with “Group activities are helpful. I tend to learn more in group activities because I gauge . . . what others are learning to see where I need to be at.” This student independently used her peers to help her plan and focus her learning. Spontaneous positive comments about hands-on learning, narrative experiences, peer interactions, and reading assignments were roughly equal in the pre-midterm class period, despite the much higher percentage of students describing peer interactions as a preferred instructional method.

During the second half of the course, when students engaged in near-peer experiences, preference for hands-on learning and lecture-based instruction was relatively stable, with similar percentages of students selecting each. When multiple preferences were considered, well over half of students again preferred peer interactions. In the period after midterm, participants spontaneously reported enjoying the experiences with their graduate student near-peers in very emotional terms, such as “I love talking with the graduate students” and “I really enjoy working with” them.

Table 3

Student Instructional Method Preferences by Time Period

	Pre-Midterm (<i>n</i> = 52)	Pre-Midterm Spontaneous Positive Comments	Post-Midterm (<i>n</i> = 53)	Post-Midterm Spontaneous Positive References
Hands-on learning	29%	7	26%	21
Lecture	19%	11	26%	23
Narratives	15%	5	68%	21
Peer or Near-peer interactions	58%	4	64%	55
Reading	6%	6	-	9

Narrative learning experiences were also reported with emotional terminology, including Participant #ED, who had enthused before the midterm break, “I love hearing stories. I love hearing how you guys handle different situations. Like I love hearing how, you know, . . . what you do when a kid won’t take your test.” Participant #12 agreed in her end-of-term reflection, “I like hearing and learning from your [the instructor’s] experiences.” The overarching preference for narrative instruction reported in response to an end-of-term question was further confirmed through triangulation of participant interviews pre- and post-midterm. Within

Participant #9's interview, they stated, "I want to be able to, like, listen to you talk about a particular test or a particular time you had in the clinic."

Student Attitudes and Perceptions. To examine the impact of instructional method on students' attitudes and perceptions, the most common student attitudes were determined during emergent coding, then cross-referenced with statements referencing lecture, reading, near-peer experiences, or other specific instructional methods. Confidence, hope, growth mindset, annoyance, and confusion emerged within student comments about instructional methods. Following completion of data coding, auto-coded sentiment codes were reviewed for descriptions of attitude within the original sources. References to confidence, hope, and evidence of growth mindset were confirmed within auto-coded positive sentiments, while annoyance and confusion were confirmed within negative sentiments. Further reflection on the data determined that hope was infrequently identified without relation to a growth mindset, and those codes were merged as a result. The frequency of final coded attitudes within the data pre- and post-midterm are provided in Table 4. Examples of these attitudes are provided in Table 5.

Table 4

Frequency of Student-evidenced Attitudes within Cross-referenced Data Extracts across Time Periods

	Pre-Midterm (100 positive reflections)	Post-Midterm (75 positive reflections)
Confidence	16	0
Motivation	15	2
Growth Mind-set	22	17
Annoyance	3	0
Confusion	5	0

Student expressions of confidence were associated with different aspects of SLP practice, including choice of profession, professional knowledge, and skill use. For example, Participant #9 was enthused about becoming an SLP with "100% excitement. I know this is the field I want to be in and I know I can make a difference in the life of a child or adult." Post-midterm, Participant #5 wrote "My attitude has changed because I know [now] feel more confident going into graduate school," and Participant #16 wrote that she was "more confident that I will know what to do." Growth mindset and motivation were also recorded in general terms, such as Participant #1 who told us simply "I'm learning a lot", as well as more specific comments, such as Participant #41's comment that they are "really excited for what's to come. I didn't realize . . . how often we collaborate with other professionals." Expressions of confusion and annoyance were often linked to the process of learning itself. For example, Participant #4 let us know during our time discussing assessment procedures that "The scoring, in specific was so confusing!" while Participant #9 reflected on a professional counselling exercise that "It became frustrating on my end because . . . she leaves without knowing what she needs to know."

Table 5*Examples of Codes and Theme Clusters*

A Priori Research Question Codes	Emergent Themes	Pre-Midterm Examples	Post-Midterm Examples
Methodology Preferences	Peer interactions	<ul style="list-style-type: none"> • I also do well in group review. I'll probably get with other people in the class to study everything. Participant 9 • It's just really hard to get a discussion going because there are so many people. Interview 3 	<ul style="list-style-type: none"> • They didn't have as much experience as a true professional. Participant 29 • In peer groups, having examples from the grad students helps me to connect and remember the information better. Participant 51
	Hands-on learning	<ul style="list-style-type: none"> • The group activities have helped me apply the material SO MUCH! I've <u>loved</u> the group activities. Participant 4 • I kind wish there was more instruction for those. So like, . . . when we did the like Peabody and graded it or whatever I had no idea what I was doing and I felt like very lost. Because this is like my first methods class, and I just felt very confused and overwhelmed. I was like, 'Oh no, I'm gonna be the worst SLP ever'. Interview 1 	<ul style="list-style-type: none"> • The doing helps me best. I can listen all day but having me experience it will help me grasp the concept best. Participant 42
	Lecture	<ul style="list-style-type: none"> • By hearing stories and lecture I am able to retain the information better. Participant 1 • Lecture is my least favorite. . . . I don't feel that the powerpoints match with the book 	<ul style="list-style-type: none"> • I think lectures are the most helpful because they drill information into my hear (head) and help solidify the material. Participant 12

A Priori Research Question Codes	Emergent Themes	Pre-Midterm Examples	Post-Midterm Examples
	Narratives	<p>very well and it has been kind of confusing. Participant 5</p> <ul style="list-style-type: none"> Hearing examples from <the instructors’> personal experiences in conjunction with lecture materials helped me learn. Participant 22 I liked the real life examples you include in the lectures bc it helps me understand except more clearly. Participant 20 	<ul style="list-style-type: none"> In our near peer groups we talked about her past clients and difficulties she had in therapy sessions and how she overcame them related to what we talked about in lecture. Participant 43 Today’s peer group speaker told us about a client she is working with and what she did/does to plan an intervention with him . . . the goals/steps are similar to what we are being taught. Participant 29
	Reading	<ul style="list-style-type: none"> I don’t always retain information fully by solely reading. Participant 1 Independently reading sets up the feel for the classes lecture and group activities. Participant 34 	<ul style="list-style-type: none"> The reading, lectures and near peer groups all give the same information but in different ways. Participant 36
Student Attitudes	Confidence	<ul style="list-style-type: none"> I know this is the field I want to be in and I know I can make a difference in the life of a child or adult. Participant 9 I possess the personal (professional) traits that SLPs are expected to have. Participant 25 	<ul style="list-style-type: none"> Now I feel more confident in applying my skill set to therapy as I start to become a part of clinical experiences. Participant 16
	Motivation	<ul style="list-style-type: none"> This makes me look forward to being able to observe and learn more. Participant 5 I can’t wait to be working in this field and helping people. Participant 26 	<ul style="list-style-type: none"> This class motivated me to be even more excited to progress onto graduate school. Participant 13

A Priori Research Question Codes	Emergent Themes	Pre-Midterm Examples	Post-Midterm Examples
	Growth Mindset	<ul style="list-style-type: none"> I was passionate before but I like to think this course has increased my motivation in becoming an SLP. Participant 50 I am learning a lot of information regardless of what my grades reflect. Participant 1 Trial-and-error and learning from mistakes, as well as getting constructive criticism pushes me to become a better student. Participant 6 	<ul style="list-style-type: none"> I will need to fine-tune my patience, work on giving CONSTRUCTIVE criticism. Participant 12 It also shows that it is possible to succeed, it just might take a couple of tries. Participant 34
	Annoyance	<ul style="list-style-type: none"> I am excited for those obstacles, as obstacles will make me a better therapist. Participant 4 Because I'm an older student, so I feel like . . . I'm surrounded by children, which is like completely ridiculous, you know? Midterm Interview 3 	<ul style="list-style-type: none"> I often felt that the class/group activities were rushed, or that the level of participation between members was not evenly distributed. Participant 30
	Confusion	<ul style="list-style-type: none"> I feel confused sometimes, or am unsure what I retained. Participant 24 When I have no idea what questions will be asked, I am stressed. Participant 31 	<ul style="list-style-type: none"> I still feel pretty overwhelmed. Participant 11
Student Stressors	Task Demands	<ul style="list-style-type: none"> I am anxious about not knowing how to handle a specific situation. Participant 4 	<ul style="list-style-type: none"> It's one thing to understand the disorders you're looking at . . . It's another to try and create a plan to treat said disorder. Participant 4 There are a lot of obstacles to jump through and implement. Participant 26

A Priori Research Question Codes	Emergent Themes	Pre-Midterm Examples	Post-Midterm Examples
	<p>Stage Fright</p> <p>Personal Characteristics</p>	<ul style="list-style-type: none"> • I know that when I begin my first clinical experience I won't be perfect, and that scares me. Participant 37 • I am just not preparing myself for the class. Participant 14 • I personally am a terrible test taker. Participant 44 	<ul style="list-style-type: none"> • After the class lectures and meeting with the near peers I would say my attitude is maybe fearful or anxious of actually having to do it. Participant 25 • This class was way over my head. I need more classes under my belt! I've only had SPED 402, so I'm terrified. Participant 1
Processes within Near-Peer Learning	Different Perspectives		<ul style="list-style-type: none"> • It is important to hear the different perspectives in the different settings. It is interesting to hear their point of view to gain perspective but also help me keep an open mind. Participant 1 • It's 'different' to hear what near-peers think of intervention techniques they've used & don't agree with, etc. Participant 4
	Increased Relevance		<ul style="list-style-type: none"> • It makes things feel more real to me positively. They tell us real stories, what they experience, what they go through. Participant 29 • I enjoy hearing the real world applications of the intervention concepts presented in the book. Participant 36
	Preview of Future Experiences		<ul style="list-style-type: none"> • <I like to> . . . see things through the eyes of someone who is above me in experience. Participant 1 • I also learned more about graduate school through the near peer. Participant 8

A Priori Research Question Codes	Emergent Themes	Pre-Midterm Examples	Post-Midterm Examples
	Confirmation of Existing Knowledge		<ul style="list-style-type: none"> • These sessions have strengthened my knowledge of the topics covered in class. Participant 40
	Emotional Benefits		<ul style="list-style-type: none"> • The near peers talked about goals and client needs similar to the way we are learning about them in class. Participant 26 • It makes me feel a little more prepared to begin grad school in the fall it's nice to hear opinion & experiences from someone who is similar in age to me, too. Participant 4 • I enjoy the personal experiences that they have in clinical settings. Participant 53

Student expressions of confidence were associated with different aspects of SLP practice, including choice of profession, professional knowledge, and skill use. For example, Participant #9 was enthused about becoming an SLP with “100% excitement. I know this is the field I want to be in and I know I can make a difference in the life of a child or adult.” Post-midterm, Participant #5 wrote “My attitude has changed because I know [now] feel more confident going into graduate school,” and Participant #16 wrote that she was “more confident that I will know what to do.” Growth mindset and motivation were also recorded in general terms, such as Participant #1 who told us simply “I’m learning a lot”, as well as more specific comments, such as Participant #41’s comment that they are “really excited for what’s to come. I didn’t realize . . . how often we collaborate with other professionals.” Expressions of confusion and annoyance were often linked to the process of learning itself. For example, Participant #4 let us know during our time discussing assessment procedures that “The scoring, in specific was so confusing!” while Participant #9 reflected on a professional counselling exercise that “It became frustrating on my end because . . . she leaves without knowing what she needs to know.”

To further document potential causes of negative sentiment, the same procedures were followed for common stressors. That is, the most commonly coded stressors were determined during emergent coding, then cross-referenced with methodology codes. References to task demands, stage fright, personal characteristics, and peers emerged within student comments about methodology. Following completion of data coding, auto-coded sentiment codes were reviewed for descriptions of attitude within the original sources. References to task demands (e.g., “being able to play with children . . . without feeling foolish” Participant 25), stage fright (e.g., “I am nervous and scared of falling [failing] and not doing everything correctly” Participant #32), and personal characteristics (e.g., “I personally am a terrible test taker” Participant #44) were confirmed, while the initial peer coding appeared to be an artifact of question wording, as none were associated with a sentiment. Although coded stressors were primarily associated with negative sentiments (68%), 29% of sentiments associated with task demands, 16% associated with stage fright, and 53% associated with personal characteristics were positive in nature. For example, Participant #4 noted that “I’m excited for those obstacles, as obstacles will make me a better therapist and will lay the foundation for the way that I think & work.” The frequency of coded stressors within the data pre- and post-midterm are provided in Table 6. Examples of these attitudes were included in Table 5.

Table 6

Frequency of Stressors within Cross-referenced Data Extracts across Time Periods

	Pre-Midterm (100 negative reflections)	Post-Midterm (75 negative reflections)
High task demands	9	1
Stage fright	19	1
Personal Characteristics	28	0
Peers	0	0

Note. The vast majority of negative reflections centered on topics irrelevant to the current study, such as exam timing or length and time-of-day for course meetings.

Overall, student clinicians expressed their confidence and motivation to master material through a growth mindset. These positive emotions were expressed more often than any expected negative emotions associated with clinical learning, such as confusion. However, several students expressed that clinical task demands and the potential for poor performance upon demand were a source of stress. Pre-midterm, Participant #37 wrote “I know that when I begin my first clinical experience I won’t be perfect, and that scares me because I want to help a patient in every way possible.” However, even negative reactions to task demands were often paired with evidence of a growth mindset, such as the comment from Participant # 34 in a post-midterm reflection “I don’t have much experience with children . . .” which was immediately followed by “so I hope to develop skills in talking/initiating conversation with them.” The undergraduate students generally continued to indicate a growth mindset during the second half of the course, while evidence of negative attitudes decreased abruptly. Deep review of the original reflections revealed that the number of references to clinical confidence decreased while clinical confusion increased throughout the course. Clinical task demands remained a source of potential stress, although worry over inability to perform clinical skills on demand was not expressed as often as during the traditional instruction period.

Processes Within Near-Peer Learning. When they had experienced both traditional and near-peer experiences, more than half of students expressed a preference for near-peer experiences. To examine the processes that drove students’ instructional preference for near-peer experiences, student comments on the process of learning were analyzed using pattern identification within the text of coded references. Within those for near-peer methodology, 29% referenced a general increase in reflection on content material. For example, Participant #21 stated that “It made me think further on whether or not I would be interested in the diagnosing or the treatment process. I think that I will find the treatment process to be rewarding.” Several participants noted their increased learning through reflective terms, such as “led,” “insight,” “linked,” and Participant #ED stated outright that the near-peer experiences “deepened my knowledge of the field.” This increase in thinking about how they learned is consistent with the findings of Flagge and Estis (2022), whose undergraduate students reflected their near-peer mentors in audiology were helpful in explaining course concepts.

A secondary factor identified through student data is the idea that near-peer experiences provided confirmation of the student’s existing thoughts about course information. Participant #7 explained that the time with her near-peer made her “decision stronger” while Participants #9 and #10 used the terms “reinforced” and “reaffirmed” to discuss their time with their near-peer leaders. Conversely, the undergraduate participants also noted the value of different perspectives as Participant #38 wrote that the near-peer experiences were “definitely impacting me positively because I get to hear a perspective from someone other than a teacher/professor.” Participant #36 elaborated that “The reading, lectures and near peer groups all give the same information but in different ways.”

Quantitative Analyses

Student Learning of Course Material. Mid-term and final grades were calculated and compared to assess any potential change in students’ learning of course material following implementation of PAL experiences. The mid-term exam scores ($n = 53$) averaged 80.11% ($SD = 10.10\%$). The end-of-term exam scores ($n = 53$) averaged 89.40% ($SD = 5.42\%$). A repeated measures t -test for significance, with $\alpha = 0.05$, and $\beta = 0.80$ was performed on the undergraduate students’ midterm and end-of-term grades. The relationship between student outcomes and instructional method was statistically significant at $t(52) = -7.59, p < 0.001$. This

represents a large effect size ($d = -1.14$), indicating a positive correlation between the near-peer experience portion of the course and higher exam scores.

Discussion

This study examined the impact of near-peer experiences during an undergraduate level clinical methods course for SLP students. Students' thoughts and feelings when traditional instructional methods were used were compared to those when near-peer experiences were added. Over half (64%) of SLP students reported a preference for near-peer experiences, and nearly half (43%) of SLP students reflected positively on near-peer experiences as compared to lecture (18%), hands-on learning (16%), and readings (7%). During the course, students demonstrated positive attitudes of confidence, hope, and a growth mindset as well as negative emotions such as annoyance and confusion. Stressors such as task demands, stage fright, and student personal characteristics were consistent across pre- and post-midterm reflections and were associated with both positive and negative emotions. There were two cognitive and emotional reactions that drove learning within the students' preferred near-peer experiences: increased reflection on content and leader confirmation of students' existing knowledge. Findings are detailed around the main themes of students' preference for instructor and near-peer use of narratives, near-peer activities as an instructional method, and the interaction of learning on perceived competence.

The Power of Stories. Throughout the entirety of data collection, the course instructors shared personal stories to demonstrate application of the course material to real-world scenarios. While it was not the researchers' intention to examine the impact of their use of personal stories during instruction, students consistently reported these as beneficial and enjoyable in both pre- and post-midterm reflections. Pre-midterm, these references were entirely unsolicited, and included Participant #22's comment that "Hearing examples from [Instructor]'s personal experiences in conjunction with the lecture material helped me learn" and Participant #35's reflection "I enjoy . . . how we are given personal experiences with the PowerPoint information." Post-midterm, 16% of students chose narrative teaching as at least a portion of their answer to the question "Which teaching method used this semester do you prefer?" Participant #1 summarized this by stating "Personal stories from the instructor has always helped me remember the material better." Participant #2 highlighted greater engagement with the comment "I like personal stories during class because they are more interesting to me" Students were clear in their enjoyment of personal stories from both near-peer leaders and course instructors.

Narrative pedagogy is an enduring approach to teaching that uses personal stories as vehicles for analysis and reflection. It has been shown to be effective at increasing students' ability to see multiple perspectives and sense of interconnectedness, and empowering students (Brady & Asselin, 2016). Within allied health professions, the development and review of personal stories has been used to scaffold support for at-risk students (Crow & Bailey, 2015), foster the inclusion of diverse students (Adler, 2011; Burgess, 2016), and develop specific skill areas within a profession (Gazarian et al., 2016; Gilkison et al., 2016; Laver & Croxon, 2015; McConnell et al., 2015; Vandermause & Townsend, 2010). Within speech-language pathology, narrative pedagogy has been used to teach attitudes of empathy and advocacy (Sylvan, 2019). The narratives and presentation used to teach have varied from shared personal experiences of instructors (Crow & Bailey, 2015; Vandermause & Townsend, 2010) to student-created responses, self-reflections, and personal stories (Adler, 2011; Gazarian et al., 2016; Vandermause & Townsend, 2010) to reading and reflecting on nonfiction stories or interacting

with written case studies (Burgess, 2016; Laver & Croxon, 2015; Sylvan, 2019). Within this study, students referenced learning about clinical skills, such as data collection and organization, determining intervention goals, adapting to client behaviors, and differing expectations among clinical work settings, from personal experiences shared by their near-peer leaders. Like Coulter et al. (2007), narrative pedagogy was not an intended instructional method within this study, but the effectiveness of using stories to develop skills broadly within the field of speech-language pathology was clearly demonstrated.

Impact of Instructional Method. In the current study, there was a clear positive correlation between the portion of the course that included near-peer experiences and higher student exam grades. This correlation happened in concurrence with a decreased frequency of negative reflections. While it could be that students simply became used to the course expectations, that hypothesis seems unlikely to completely explain the correlation, given that most negative reflections across both time periods related to concerns outside of course control despite the systematic instructional methodology change at midterm. Near-peer experiences within the current study were designed to increase motivation and collaborative learning time for the students, both of which are components of active learning. A recent investigation of active learning in speech-language pathology also documented a positive relationship with improved performance on course assignments (Affoo et al., 2020).

Regardless of why students demonstrated higher grades in the second half of the course, our findings offer additional support to the impressions of the students in studies by Kimble and Turner (2012) in speech-language pathology, Flagge and Estis (2022) in audiology, and Zentz et al. (2014) in nursing, where students identified their varied PAL experiences as good learning opportunities. Ehr Gott and Silberer (2014) found no clear difference in the learning outcomes for students who participated in a clinical experience with near-peer support in comparison to clinical observation only. However, their outcome measures were self-report and expert judgment of observed maturity, organization, and communication skills. In contrast, the current study asked students to justify application choices based on knowledge of clinical content, such which strategies might improve clinical communication and how the practical day-to-day task of school-based caseload management can be impacted by educational law. Thus, the near-peer experience appeared more successful than traditional instructional methods in moving students through the process of clinical skill acquisition described by Miller (1990) from a novice's focus on knowing facts to the more advanced level of knowing how to use those facts. This improvement in clinical decision-making can serve as a foundation for evidence-based practice.

From the instructor's perspective, the logistics and coordination of the near-peer learning experiences for the students are significant. However, it is well documented that implementation of new pedagogy is challenging for both instructors and programs (for examples, see Briggs & Doubleday, 2016; Leiba & Gafni, 2021; Remington et al., 2015). In our own experience, the first semester a new pedagogy is developed and applied requires a great deal more time and effort to successfully execute. While we were fortunate to solicit volunteer peer leaders relatively easily from our graduate student cohort, it was time consuming to answer their questions on format, preparation, and particularly to send reminders of the date and time for their individual near-peer sessions. This initial implementation allowed us to create the structure and plan for greater efficiency in the future, reducing the time needed for coordination and logistics. It was our hope that applying PAL in a systematic way across courses and potentially on-campus clinical experiences would help create a seamless

integration of the pedagogy. In an integrated paradigm, participation in PAL could simply be a requirement of coursework and the program.

Consciousness and Competence. Kimble and Turner (2012) noted a qualitative dichotomy within SLP student outcomes, as peer learners wanted to act independently but demonstrated dependence on their peer leaders. The results of the current study demonstrate this in peer learners' attitudes toward clinical learning and their confidence in their clinical skills. The stages of development outlined by Sprague and Stuart (2000) help clarify these changes. In this model, the first stage of skill development is unconscious incompetence. In our study, the content and skills of this first pre-clinical class were completely new to students. In the pre-midterm period, students frequently reported both confidence in their ability to master content and motivation to learn new clinical skills. Thus, they didn't know what they didn't know; they were unconsciously incompetent. The second stage of skill development described by Sprague and Stuart (2000) is conscious incompetence. By the post-midterm period, students were beginning to recognize how much they didn't know. Thus, expressions of confidence and motivation decreased. However, students also reported fears of high professional task demands significantly less often during this time period. Motivation has positive effects on student cognitive, academic, and behavioural outcomes in health professions (Orsini et al., 2016). Why then, did we see improved learning as motivation decreased? Critically, expressions of a growth mindset continued throughout the post-midterm learning period.

Growth mindset encompasses a belief that intelligence can be developed and that challenges should be embraced to meet the goal of learning (Wolcott et al., 2021). Having a growth mindset can increase perseverance and resiliency in health profession students (Wolcott et al., 2021). Although our peer learners demonstrated decreasing motivation, their perseverance and focus on mastering new skills may have driven the continued learning evidenced. This theory is supported by the corresponding decrease in evidenced stressors throughout the term. Those stressors that were noted in post-midterm reflections were increasingly likely to be a positively perceived stressor. For example, Participant #11 noted in their post-midterm reflection on that "sometimes things do not go as planned and adjustments are not a bad thing."

Limitations

The results of this study rely on a series of very brief qualitative data extracts from a single CSD undergraduate program. This clearly limits the generalizability of any findings. While the undergraduate student participants may not reflect those students who complete an SLP graduate course of study, an argument may be made that undergraduate learning is essential to the decision and ability to continue in CSD, and that excluding those students who do not go on might bias any reported results. Additional limitations to external validity originate in the acknowledged liberal, multi-cultural student population associated with the study university and the specific presentation style of course instructors. Both factors would require study replication to adequately assess. The researchers also acknowledge that an imprecise balance of course content and instructional methodology questions within the written reflection prompts may have impacted the quantity of available data, particularly in the pre-midterm period. Further, the first and third authors acknowledge their position as both instructors and researchers, which could have influenced the students' written reflections.

In addition, the pre-clinical nature of the course limited the assessment of clinical outcomes to primarily cognitive application, rather than observed behaviors. The length of the semester (12 weeks) creates predictable limitations to internal validity. Maturation changes were likely to

be minimal, as the population was limited to undergraduate students enrolled in an upper-level major-specific course. Other participant characteristics may challenge validity as well. For example, graduate participants were subject to self-selection bias as they volunteered for study inclusion; hence, their attitudes and perceptions may not be typical of all SLP graduate students. This limitation was addressed with multiple data points, including survey data and focus group results, to triangulate responses.

The remaining threat to generalization of results from this study is over-interpretation. This study was planned to examine near-peer learning in a context relevant to the present setting and investigators, for purposes of program development. This focus is on the qualitative experiences of the students, with only a brief evaluation of correlational relationships between teaching methodology and student grades as a proxy measure for learning outcomes. While the assignment of students as their own controls allows exploration across two separate portions of a course, it also presents a significant limitation, as no true control group was present. As a quasi-experimental study, it will not support any causal inferences.

Directions for the Future

This study adds to the evidence that PAL is an effective and appropriate instructional method within speech-language pathology. The use of near-peer graduate and Clinical Fellow leaders to provide instruction can support learning in undergraduate students. Faculty wishing to specifically reinforce prior knowledge and increase reflection in learning should consider PAL methodology in their courses. The growth in online and hybrid coursework may ease the provision of PAL experiences, as teleconferencing will alleviate the need for peer leaders to rearrange their personal schedules to travel to and from campus locations.

Further investigation may provide insight into the possible contributions of PAL strategies to effective and efficient clinical learning. Continued refinement of measurement tools for clinical outcomes is imperative, as it could add validation to Sprague & Stuart's (2000) stages of clinical development as well allow meaningful comparison between studies. Although our student outcomes demonstrated a large relationship with learning, longitudinal and comparison data is necessary before causality can be determined. Such data would allow programs to strategically balance instructional methods within and across courses. Additionally, direct comparison of the direction of teaching contributions, number of learners, and participants' relative level of study would be valuable. More information on differential impact of these PAL variations would enable planning for maximal student outcomes.

Contributions of this Study

This manuscript contributes to the knowledge of PAL effectiveness and process specific to speech-language pathology education with implications across allied health fields. Our findings suggest that students strongly prefer peer and near-peer experiences as an instructional methodology, particularly when those activities include the use of personal stories to illustrate concepts. No negative impact on content mastery seems to result from integrating such experiences across existing curriculum and doing so may support students' growth mindset through periods of low motivation and confidence.

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Appendix A

Instructions for Near-Peer Leaders

Your weekly topic is:

Developing Your Narrative

Reflect on the topic you are given. Focus on the emotions you experienced within that topic. Plan a story that:

1. Begins with your purpose within the topic.
2. Describes your experience in real and understandable terms.
3. Explicitly lists the most difficult part of the experience.
 - a. References your emotions.
 - b. Explains your strategies for overcoming the challenge.
4. Describe what you learned or how you changed.
5. Ends with the outcome relative to your purpose.

It may help to answer the following questions:

1. What was my professional goal when I had my first experience with _____?
2. What happened during my experience with _____?
3. The hardest part of the whole _____ time was?
 - a. How did I feel at that time?
 - b. How did I work through the problems?
4. What did I do differently as a professional from then on? What did I learn?
5. Did I accomplish my professional purpose?

Appendix B

Semi-structured interview question examples

1	With the method of instruction in CSD 459, we have been attempting to provide pre-reading, lecture, and then hands-on application experience for most topics. How has the method of instruction in CSD 459 impacted your learning this semester?
2	Do you feel that you are learning what you need to begin a clinical experience?
3	Can you explain what more or what less you think you would need?
4	Part of learning for clinical application is learning how to do things. Do you feel that the course is adequately addressing how to do some of these topics too?