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Boosting Confidence in Hearing Loss Services Through an Interprofessional Simulation led by Peer Instructors

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Abstract

Speech-language pathologists have an ethical responsibility to work with clients with hearing loss. Therefore, speech-language pathology (SLP) students must receive specific education and training in working with this population. SLP students may have low self-efficacy about their ability to work with clients with hearing loss if they haven't participated in specific training. Interprofessional education utilizing peer teaching by doctor of audiology (AuD) students is one method for helping SLP students learn specific skills to address hearing loss in a clinical setting. The purpose of this study was to investigate SLP graduate students' self-efficacy with working with individuals with hearing loss; SLP student perception of an interprofessional, peer-taught, experiential learning day (ELD) focused on skills related to serving individuals with hearing loss; and AuD peer teacher experiences. The ELD focused on developing skills and knowledge related to the insertion, troubleshooting, and maintenance of hearing aids. It also involved the exploration of hearing assistive technology, as well as information on hearing aids and hearing protection. The learning experience included multiple stations utilizing simulation, experiential learning, and AuD peer teaching. Results from this investigation suggest that an ELD benefits both SLP and AuD students. Specifically, SLP students reported increased self-efficacy for all tasks practiced, and AuD peer teachers reported increased confidence with teaching and a desire to teach again. Student questionnaire ratings suggested that SLP students enjoyed learning from AuD peer teachers, felt the ELD was beneficial to their learning, and thought they were gaining crucial skills for future practice. It appears that using an ELD with AuD peer teachers is a beneficial way to teach SLP students skills for working with clients with hearing loss.

Keywords

nterprofessional education, peer-teaching, self-efficacy, simulation, hearing assistive technology, audiology, speech-language pathology

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The scope of practice for speech-language pathologists includes providing aural habilitation or rehabilitation to patients with hearing loss. Specifically, the speech-language pathologist's role is to assess and treat skills impacted by deafness or hearing loss, such as listening, communication, speech, and language (American Speech-Language-Hearing Association [ASHA], 2016). To provide ethical services, the American Speech-Language-Hearing Association (ASHA) requires speech-language pathologists working with clients with hearing impairment to have specific education and training related to aural rehabilitation. Although undergraduate students in communication sciences and disorders (CSD) typically take foundational and theoretical courses in audiology and aural rehabilitation, there is often no requirement at the graduate level to extend that knowledge into experiential learning or hands-on practice. While some students may gain clinical experience in aural rehabilitation through a university clinic or community placement, it is not guaranteed that all students will have this opportunity. Beyond opportunity, students also need support in the development of self-efficacy for aural rehabilitation.

Student Self-Efficacy

A student's expectation of their ability to complete any task is known to influence their ability to accomplish the task successfully and to persevere through challenges (Bandura, 1977). Self-efficacy has been studied in speech-language pathology (SLP) students, and researchers have found that students' clinical performance has a strong relationship with their reports of confidence in completing clinical tasks (Pasupathy & Bogschutz, 2013). Generally, outcome data from studies measuring SLP student self-efficacy have demonstrated an increase in self-efficacy relative to the time in their graduate program, the number of clinical experiences, and exposure to various clinical settings/populations (McBride, 2021; Morris et al., 2023; Sheepway et al., 2014). Simulation is one way to increase SLP student exposure to clinical activities that may occur less frequently in community clinics. By allowing students to experience low-frequency clinical tasks (e.g., hearing aid insertion, changing a hearing aid battery, otoscopy) in a simulated environment, SLP students can increase their self-efficacy related to these tasks. Ultimately, increased self-efficacy is expected to relate to improved clinical performance, positively impacting patient care.

Simulation

Simulation is a pedagogical tool that is increasingly used in CSD programs to allow students to practice and demonstrate clinical skills in a safe learning environment (Alanazi & Nicholson, 2017; Dudding & Nottingham, 2018; Penman et al., 2020; Penman et al., 2021; Stead et al., 2020; Stead et al., 2023a; Stead et al., 2023b; Zraick, 2020). The field of SLP is just beginning to explore the application and pedagogical considerations of simulation. There are different categories of healthcare simulation, including (a) standardized patients, (b) part-task trainers, (c) mannequins, (d) computer-based (games), and (e) virtual/augmented reality (Dudding et al., 2019). Additionally, clinical simulations can be easily standardized to ensure consistency and equity of experience among students within and across cohorts (Dudding et al., 2019; Quail et al., 2016).

Researchers have also studied the benefits of interprofessional education (IPE) simulations to educate students in various healthcare professions. They have concluded that IPE simulations improve interdisciplinary understanding and socialization, awareness of the scope of practice of a discipline, participant attitudes toward patient safety measures, teamwork, and communication

(Baker et al., 2008; Fusco et al., 2022; Wong et al., 2016). Interprofessional simulations are beneficial, especially when similar healthcare disciplines are partnered (Bordurant, 2020; Eichorn et al., 2021). Therefore, it appears reasonable to pair SLP and doctor of audiology (AuD) students together in interprofessional simulation (Alanazi et al., 2022; Alanazi & Nicholson, 2019; Eichorn et al., 2021), although there doesn't seem to be evidence of audiology and SLP disciplines regularly partnering in interprofessional simulation work, specifically.

Interprofessional Peer Teaching

In addition to simulation, research has shown that students benefit from teaching their peers or near-peers (i.e., the teaching student is one or more grades ahead of learning student; Finn et al., 2023; Gottlieb et al., 2014; van Vuuren, 2017; Williams & Nguyen, 2017). The benefits of peer teaching include better retention of course material, improved class performance, increased motivation to learn, and increased acceptance of peer feedback (Rusli et al., 2021; Williams & Nguyen, 2017). Peer teaching has also proved effective in building student confidence, increasing their motivation to learn, and improving their independence, because students must take responsibility for their learning and other students' learning (Rusli et al., 2021). Peer teaching may also effectively improve student communication and relationship-building skills, given the nature of instructing and working with peers (Rusli et al., 2021).

Finn and colleagues (2023) studied interprofessional peer teaching with SLP students and student teachers. They were curious to learn about the effectiveness of SLP students educating student teachers about healthy vocal use to reduce vocational vocal injury. The researchers measured SLP and student-teacher perceptions of the SLP student-led voice clinic. Following the study, student teachers reported an increase in their knowledge of voice production, and they noted that the best part of the voice clinic was that it was student-led. The student-led voice clinic also benefited the SLP students, who reported increased confidence in delivering voice therapy services to adults (Finn et al., 2023).

Additional research supported the benefit of near-peer learning from the learners' perspectives, as learners perceive feedback from peer teachers as more helpful, honest, and realistic than feedback from course instructors (Williams & Nguyen, 2016). In 2015, Serpanos and Senzer conducted a study looking at an experiential learning opportunity for SLP students to practice outer and middle ear (OE-ME) screening with peer teaching by AuD students. This experience allowed SLP students to gain experience in screening procedures such as otoscopy and tympanometry, while AuD students gained knowledge and practical skills in the supervisory process (Serpanos & Senzer, 2015). Following the experiential learning activities, SLP students reported increased knowledge of and comfort performing OE-ME screening procedures. The AuD students reported value in participating in the peer teaching model (Serpanos & Senzer, 2015).

Purpose of Study

This experience was specifically and uniquely designed to focus on the formative evaluation of skills related to serving individuals with hearing impairments. Additionally, this experience provided the opportunity for interprofessional peer teaching. This study aimed to investigate the performance and perception of SLP students following an interprofessional, peer-taught, simulated

learning experience focused on an introduction to serving individuals with hearing loss. Investigators worked to answer three main questions including the following:

1. Did an experiential learning day (ELD) focused on hearing loss impact SLP students' self-efficacy?
2. What were SLP student perceptions of the ELD?
3. What was the overall teaching experience of AuD peer teachers?

Methods

Experiential Learning Day & Simulation Design. The standards outlined by the International Nursing Association for Clinical Simulation and Learning (INACSL) (International Nursing Association for Clinical Simulation and Learning [INACSL] Standards Committee et al., 2021) were rigorously used to design this learning experience. Each component of the experiential learning day (i.e., prebrief, simulation and experiential stations, debrief method, and student questionnaires) was selected intentionally based on these standards with the guidance of a Certified Healthcare Simulation Educator (CHSE) to ensure a foundation in evidence-based pedagogy. Peer teachers within the AuD program served as educators and simulated patients for several stations. Manikins were also utilized to support hands-on learning (e.g., CARL to support otoscopy; AHead Simulations, 2021). The AuD peer teachers utilized scripts for consistency and completed face-to-face training before the experiential day to ensure standardization across SLP student groups.

Participants. Sixty-four first-year students in the graduate SLP program participated in the ELD in their third semester during the summers of 2022 and 2023. All SLP students participated in this formative experience related to developing skills to serve those with hearing loss. Sixteen AuD peer teachers also participated in the ELD. Following approval from the Pacific University Institutional Review Board, SLP student and AuD peer teacher assessments were analyzed to examine outcomes.

Pre-Learning. Before the ELD, SLP students were provided various pre-learning materials for preparation. SLP students were enrolled in the program's Summer Simulation Program. The program's learning management system housed all learning materials and ELD preparation. One week before the ELD, SLP students were provided with the following objectives associated with the ELD and simulation:

- explore a variety of hearing aid types, charging styles, and hearing assistive technologies,
- demonstrate proper insertion of both hearing protection and hearing aids,
- experience what it is like to hear through a hearing aid to build empathy for the patient experience,
- explore different patient scenarios and identify solutions to solve hearing-related barriers, and
- increase comfort with hearing aids and assistive devices and troubleshoot patient hearing difficulties.

Prebrief. On the ELD, SLP students arrived at the primary classroom and were led through a five-minute pre-brief with a supervising educator. This prebrief was scripted to maintain standardization. One of the purposes of the prebrief is to remind the students of the learning

objectives and to encourage them to enter "into the spirit" of the experience. Following the prebrief, the AuD peer teachers began the first component of the ELD.

ELD and Simulation. The ELD had two components. First, the AuD peer teachers shared a brief presentation with the SLP students to provide a foundation of background information with respect to the profession of audiology, hearing loss, and amplification. Second, SLP students broke into small groups of six, and an AuD peer teacher led a scripted experience at each station (see Figure 1 for an example of a station script). Each experiential station lasted approximately 20 minutes. These stations, listed below by title, type (experiential or simulation), and description, included the following:

1. Hearing assistive technology (HAT) explorations (experiential): SLP students explored different forms of HAT and learned how they could be utilized (exposure and exploration).
2. Troubleshooting and cleaning (simulation): SLP students explored different patient scenarios and demonstrated problem-solving hearing-related barriers (part task trainer, simulated cases).
3. Hearing aid insertion practice (simulation): SLP students practiced inserting a hearing aid in a fellow student and a custom hearing aid into an AuD peer teacher while troubleshooting fit issues (part task trainer, mannequin, simulated patient; see Figure 2).
4. Charging options and hearing aid styles (experiential): SLP students learned about different types of hearing aids and charging styles and demonstrated testing and changing batteries (part task trainer).
5. Hearing protection (simulation): SLP students learned and demonstrated how to insert hearing protection properly (part task trainer).
6. Listening to hearing aids (experiential): SLP students experienced what it was like to hear through a hearing aid to build patient empathy (part task trainer).

Debrief. Once all stations were completed, the SLP students moved into a structured debrief utilizing the Promoting Excellence and Reflective Learning in Simulation (PEARLS) method with a supervising educator (Eppich & Cheng, 2015). Approximately 18 SLP students were in each debriefing group. The PEARLS approach was chosen because it gives structured opportunities to reflect on clinical performance related to the stated objectives. See Table 1 for the full script utilized for the debrief.

Learning Outcomes. The SLP graduate students rated their self-efficacy before and after the ELD via survey using a 10-point Likert scale ranging from not at all confident or comfortable (1) to wholly confident or comfortable (10). The students provided an assessment of the ELD, using a 5-point Likert-type response scale ranging from strongly disagree (1) to strongly agree (5), and also ratings of the importance of certain aspects of the ELD using a 5-point Likert-type response scale ranging from important (1) to very important (5). AuD peer teachers completed a survey post-ELD to assess their overall peer teaching experience. SLP students also assessed the peer-teaching experience by providing feedback after the ELD.

Figure 1

Example Station Script for Hearing Aid Insertion Practice

"At this station, we will be practicing the insertion of different styles of hearing aids. The first style we will practice with is custom hearing aids. This is a full shell, half shell, and in the canal style. Custom hearing aids are molded to the patients; the examples we brought today are molded to our ears. "

"To insert a custom ear mold, you must look for a blue or red mark on the hearing aid to indicate right and left. Red stands for right, and blue stands for left. The next style is RIC, which stands for a *receiver in the canal*. The receiver (point to the receiver) should be aimed at the center of the ear canal opening. The rest of the hearing aid goes up and over, resting on top of the pinna. Some of the RIC hearing aids have a kickstand plastic piece that helps keep the hearing aid in place. The kickstand folds up into the concha bowl."

"Now we will practice inserting custom hearing aids. Three of you will practice on CARL, and 3 of you will practice on (Student Name). A quick tip before we begin is if you have trouble inserting the hearing aid or taking it out, pull up and back on the pinna."

"Next, we will practice with RICs. Grab a partner and take turns inserting this style of hearing aid in each other's ears."

Figure 2

SLP Student Practicing Hearing Aid Insertion on AuD Peer Teacher

Table 1

Debrief Script for HAT Simulation Using PEARLS Method

PEARLS Debrief Method Steps	Supervising Educator Script
Setting the Scene	"In this debriefing, we will spend 45-60 minutes discussing your simulation experience. We aim to improve how we interact with and manage hearing assistive technology. Everyone here is intelligent and wants to improve."
Reactions	"What are your initial reactions?"
	"How are you feeling?"
Description	"As a reminder, this simulation consisted of six stations, each focusing on a different aspect of hearing assistive technology. Those six stations were: Hearing assistive technology forms, troubleshooting and cleaning, charging options and hearing aid styles, listening to hearing aids, hearing protection, and insertion practice."
	"Is there anything anyone else would like to add to this?"
Analysis	"At this point, I would like us to talk about how you experienced what it is like to hear through a hearing aid."
	"Now, I want to discuss your insertion of hearing protection and hearing aids."
	"How did you feel your clinical thinking skills in exploring different patient scenarios and identifying solutions to solve hearing-related barriers?"
	"Overall, how do you feel about the number of hearing aids types, charging styles, and hearing assistive technologies and your ability to interact with them professionally?"
	"That was an excellent discussion. Is there anything any additional discussion related to ____(A gap you noticed)_____"
Application & Summary	"What are some of the takeaways from this discussion for our clinical practice?"
	"What is something you did well at today?"
	"The key learning focus of today's simulation was on your ability to understand, interact with, and problem-solve challenges around hearing loss. Thank you all for your hard work today."

Note: **PEARLS** = Promoting Excellence and Reflective Learning in Simulation

Data Analyses. Central tendency and dispersion measures were computed based on ratings of students' reports on pre- and post-surveys in each targeted domain. Paired sample t-tests were used to determine the change in self-efficacy perception as rated by students (see Table 2). Measures of central tendency and dispersion were also computed for specific items assessing the students' evaluation of the ELD from a Qualtrics survey. The analyses in the Results section focused on the specific items below. The remaining items from the Qualtrics survey are in the Appendix.

1. I am confident that I am mastering the content of the ELD/simulation activity that my instructors presented to me.
2. I am confident that this ELD/simulation covered critical content necessary for the mastery of the curriculum.
3. I am confident that I am developing the skills and obtaining the required knowledge from this ELD/simulation to perform necessary tasks in a clinical setting.

Results

Student Self-Efficacy. Student self-efficacy was measured at two intervals: 1-week before, and immediately following the ELD. The self-efficacy survey responses were analyzed using descriptive statistics and paired sample t-tests. Pre- to post-test changes in self-efficacy were statistically significant ($p = <.001$) in all seven of the evaluated skill areas (see Table 2).

Student Perception of Peer Education. The post-survey asked SLP students about their experience working with AuD peer teachers. Specifically, they were asked, "What was the best part about being taught by peers in Audiology?" Several themes emerged from analyses of these responses. Themes included the following:

- **Collaboration and Peer Learning**: The statements emphasized the value of working with audiology students, engaging in peer-to-peer learning, and sharing knowledge between disciplines.
- **Accessibility and Relatability**: The AuD peer teachers' instructional style was praised for being accessible, relatable, and less intimidating, making the learning experience more enjoyable and engaging. SLP students appreciated the AuD peer teachers' ability to explain concepts in a way that is understandable and relevant to their own student lives, making the content more engaging.
- **Mutual Learning and Exchange**: There was an appreciation for exchanging knowledge and experiences between the SLP students and AuD peer teachers, fostering collaboration and respect.
- **Professional Intersection**: SLP students valued the opportunity to explore the intersection between their professions and audiology, understanding how collaboration can benefit clients. They expressed enthusiasm for learning about the audiology profession, understanding its scope of practice, and gaining insights into audiology education programs and classes.
- **Supportive and Fun Environment**: The AuD peer teachers created a supportive and low-stakes learning environment where participants feel comfortable asking questions, seeking clarification, and sharing their experiences. The interactions AuD peer teachers were described as relaxed, cool, and enjoyable, creating a more casual and fun learning environment.

Student Perception of Peer Teaching. A survey was created to assess the AuD peer teachers' overall experience post-ELD. Student reflection was largely positive regarding teaching SLP students. AuD peer teachers indicated high levels of agreement (average 8.9 on a 10-point Likert scale). Questions were developed based on a number of peer-teaching surveys including Cofer (2020) and Al Kharusi (2016; see Table 3).

Table 2

Paired Sample t-tests Comparing Pre- and Post-Measures of Self-Efficacy of SLP Students Following an ELD

		M	*SD*	*t*	*df*	*p*
How confident are you in your ability to use hearing assistive technology?	Pre- Post-	3.31 8.12	1.78 1.07	-19.8	64	<.001*
How confident are you in your ability to properly insert hearing protection (e.g., ear plugs)?	Pre- Post-	5.09 8.68	2.71 1.34	-10.6	64	<.001*
How confident are you in your ability to properly insert a hearing aid?	Pre- Post-	3.05 8.28	1.94 11.21	-20.1	64	<.001*
How confident are you in your ability to identify solutions to solve hearing-related barriers?	Pre- Post-	3.68 7.89	1.83 1.29	-15.6	64	<.001*
How confident are you in your ability to troubleshoot patient hearing aid difficulties?	Pre- Post-	2.71 7.86	1.62 1.33	-21.0	64	<.001*
How confident are you in working with a person with a hearing impairment?	Pre- Post-	4.83 8.46	2.03 1.19	-14.2	64	<.001*
How comfortable are you in working with a person with a hearing impairment?	Pre- Post-	6.08 8.48	2.23 1.19	-8.5	64	<.001*
I enjoyed learning from peers in another allied health profession.	Post-	8.09	1.31			
I understand Audiology better as a profession after this simulation.	Post-	9.94	0.24			

Table 3

AuD Peer Teachers' Level of Agreement Regarding Peer Teaching Following an ELD

	M	*SD*
By teaching, I became more confident about the topic.	9.08	0.76
I enjoy helping peers learn about my discipline.	9.23	1.09
I effectively taught my area of expertise today.	8.62	1.04
Teaching enhanced my learning.	9.08	0.95
I want to teach again to my fellow students.	8.92	1.32

AuD peer teachers indicated they struggled the most with answering novel questions from SLP students. AuD peer teachers also provided ELD feedback following debrief via a Qualtrics survey. See an example of student responses in Table 4.

SLP Student Evaluation of ELD. Measures of central tendency and dispersion were computed for specific items from the complete post-ELD survey to analyze the SLP students' (n = 64) evaluation of the ELD (see Table 5). The SLP students provided an assessment of the ELD using a 5-point Likert-type response scale ranging from strongly disagree (1) to strongly agree (5), in addition to ratings of the importance of certain aspects of the ELD using a 5-point Likert-type response scale ranging from not important (1) to very important (5).

Discussion

This study aimed to investigate graduate students' perceptions following an interprofessional peer-taught simulated learning experience focused on skills related to serving those with hearing loss. The discussion will be organized to address each of the study's central questions. Investigators worked to answer three main questions, including the following:

1. Did an ELD focused on hearing loss impact SLP students' self-efficacy?
2. What were SLP student perceptions of the ELD?
3. What was the overall teaching experience of AuD peer teachers?

Change in Self-Efficacy. Data from SLP student surveys demonstrated a significant increase in self-efficacy across all measured areas following the ELD. Self-efficacy is essential to clinical teaching because research has shown that higher student self-efficacy can predict clinical performance (Pasupathy & Bogschutz, 2013; Lee & Schmaman, 1987).

The lowest pre-ELD self-efficacy rating across all areas was the SLP student-perceived ability to troubleshoot challenges with hearing aids; post-ELD student ratings, however, demonstrated a significant increase of over five points in self-efficacy in this task. SLP students likely had the least experience with hearing aids, let alone troubleshooting common challenges, coming into the ELD. Therefore, it is not surprising that their self-efficacy was low initially. Knowing that a relatively brief introduction to troubleshooting hearing aid issues and hands-on learning with peer teaching can significantly increase SLP students' confidence is encouraging. SLP students will undoubtedly work with clients with hearing aids within their career, and this experience will prepare them to be supportive of their clients and possibly able to solve issues before sending them to an audiologist.

Table 4

AuD Peer Teachers' Qualitative Statements on the Experience of Peer Teaching

Peer-Teaching Post-ELD Questions	Example Student Responses
What was the best part about my experience as a teacher?	"Getting to see others enjoy what I get to do daily."
	"I loved the questions that the SLP students would ask. They could bring in a different perspective of real-world experience that was great to explore. I also enjoyed seeing where our scopes can overlap in supporting certain patient populations."
	"Seeing the excitement my peers had towards what I was teaching."
How could I have done better?	"I should have practiced more beforehand so I could better predict the issues we had."
	"I could have been more confident delivering my script."
	"Maybe been asked the students to explain to me how each device worked after letting them explore."
What challenges did you face as a peer teacher?	"Answering all of the questions with confidence, I relied on my preceptor a couple of times, but I still understood how to answer the question; I just did not execute it correctly."
	"It was difficult at times to remember which information I told to different groups. I tried my best to stay consistent, but the groups were moving quickly, and there wasn't much time to think."
What is one success you had as a peer teacher?	"Getting the students to understand how each hearing aid is for with different hearing losses."
	"I feel more confident in my knowledge of my field. This experience was a morale boost to encourage my confidence in my education thus far."
	"Having the answers to most of their questions."

Table 5

Measures of Central Tendency and Dispersion for Items Assessing SLP Student Perceptions of the ELD

Survey Item	*M*	*SD*	Mdn	Min	Max
I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	4.56	0.64	5.00	3.00	5.00
I am confident that this simulation covered critical content necessary for the mastery of the curriculum.	4.80	0.40	5.00	4.00	5.00
I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting.	4.70	0.46	5.00	4.00	5.00

Note. The survey in its entirety is in the Appendix.

SLP student confidence with hearing aid insertion showed the most significant increase in self-efficacy within the ELD tasks. It is unlikely that SLP students would have had any previous experience inserting hearing aids, barring any prior lived experiences related to this. As such, it is understandable that the SLP students' initial self-efficacy rating would have been low for this task. Once the SLP students learned the basics of hearing aid insertion from an AuD peer teacher and gained practical experience with insertion, their self-efficacy increased significantly. SLP students commented within the debrief about how grateful they were for this practice since many feared hurting someone by inserting the aid wrong. This finding is consistent with van Dinther and colleagues' (2011) research, which determined that higher education students benefit from hands-on learning experiences to improve self-efficacy. Once again, knowing that a relatively simple ELD experience practicing hearing aid insertion can significantly increase SLP student confidence is motivating. Following this ELD, SLP students may feel more confident in assisting clients with hearing aid removal and insertion as needed within clinical practice.

The use of HAT showed the second-largest increase in perceived SLP student self-efficacy following the ELD. In this section, SLP students were introduced to various assistive devices (e.g., Pocket Talkers, caption telephones, remote microphone pen, and vibrating alarm clocks) for clients who are d/Deaf and hard of hearing. This increase in self-efficacy is likely explained by an initial lack of exposure to HAT, followed by an intensive focus on assistive technology and its benefit to d/Deaf or hard of hearing clients. This finding is substantiated by research on self-efficacy among SLP students, which revealed a notable increase in their self-efficacy after engaging in a concentrated practicum with a distinct emphasis (e.g., cleft lip and palate; Baigorri et al., 2021).

SLP student self-efficacy for comfort in serving clients with hearing impairment had the highest pre-ELD rating. Despite this initially high rating, SLP students still demonstrated a significant increase in self-efficacy post-ELD. This result may be due to the person-centered care focus of our graduate program, which allows SLP students to see patients as whole persons who may need their support. Hence, the data above might indicate that although SLP students experience uncertainty regarding their proficiency in executing specific technical skills they may still find greater ease in recognizing the humanity in working with all individuals, including those who are d/Deaf or hard of hearing.

Ultimately, this ELD revealed that exposure to tasks within the SLP scope of practice related to hearing and its impact on communication could increase SLP student self-efficacy. Data showed that on average students with low self-efficacy for the technical tasks, such as troubleshooting common hearing aid issues, hearing aid insertion, use of HAT, showed a significant increase in self-efficacy post-participation in an ELD with AuD peer teachers.

SLP Student Feedback & Evaluation of the Experience

In this study, one of the driving questions was SLP students' assessment of hearing loss ELD and its perceived influence on their learning. Immediately following the debriefing session, SLP students were asked to participate in a comprehensive survey about the ELD. The survey sought feedback on various aspects of the ELD and simulation design and execution, including its structure, the availability of guidance and feedback, collaboration with peers, and the effectiveness of the learning debrief. Average student ratings for all these areas were positive, between four and five, on a five-point Likert scale (Strongly Disagree [1] to Strongly Agree [5]). Furthermore, SLP students provided additional feedback about the ELD during the debriefing sessions.

In the feedback survey, SLP students assessed their perceptions of learning from the experience. On average, they strongly believed in their mastery of the content covered in the ELD. Moreover, they showed confidence in the ELD's ability to address essential aspects of their field and felt capable of applying these newly acquired skills in a natural clinical setting. The present study's findings align with previous research by Mills and colleagues (2020), indicating a post-ELD enhancement in self-efficacy among speech-language pathologists. According to SLP student perceptions, engaging in the ELD was beneficial for their skill and knowledge development, preparing them for tasks in a clinical environment. Research suggests incorporating experiential learning and simulations in instruction can significantly contribute to students' skill development, boosting their confidence, comfort level, and preparedness for clinical practice (Stead et al., 2023b; Penman et al., 2020; Ward et al., 2014).

Furthermore, Penman and colleagues (2020) noted that while coursework might improve students' theoretical knowledge and confidence in clinical topics, genuine comfort and confidence often come after experiencing simulated clinical practice. The qualitative feedback from SLP students following the ELD supports this finding, revealing that it prompted them to reflect on their clinical communication skills, exposed them to new material, and fully immersed them in the clinical experience. This feedback aligns with existing literature demonstrating the high-value students place on clinical simulation environments, that students find simulations beneficial to their

learning, and that they appreciate the valuable experiences simulations provide (Penman et al., 2020; Zraick, 2020).

Finally, SLP students provided feedback on the experience of being taught by peers from a related profession. Feedback themes revolve around experiential learning, collaboration, accessibility, mutual learning, and creating a supportive and enjoyable learning environment. Interacting with AuD peer teachers allows participants to reflect on their learning and recognize their knowledge and progress, which builds confidence in their abilities. Research shows that students view feedback from peer teachers as more beneficial, candid, and realistic than feedback from course instructors (Williams & Nguyen, 2017).

AuD Peer Teacher Experience

This study's final driving question investigated AuD peer teachers' teaching experience within the ELD. Following the ELD, AuD peer teachers indicated they felt more confident, enjoyed the teaching experience, taught effectively, believed teaching enhanced their learning, and welcomed the opportunity to teach peers again. In responding to open-ended questions about peer teaching, AuD peer teachers remarked that they felt more confident about their field after the ELD. This is consistent with research indicating that when students teach others, they enhance their information retention, improve class performance, gain a deeper understanding of the material, and teach more accurately (Rusli et al., 2021; Finn et al., 2023; van Vuuren, 2017; Gottlieb et al., 2014; Williams & Nguyen, 2017). Rusli and colleagues (2021) found that peer teaching increases academic performance and content knowledge, given peer teachers' increased drive to learn to teach effectively. See Figure 3 for an example of an AuD peer teacher leading a station.

AuD peer teachers remarked that a few of the more challenging aspects of being a peer teacher included answering questions accurately and consistently, demonstrating confidence in their presentation, and individual communication skills. In professions such as AuD and SLP that are dependent on successful clinical communication (e.g., instructing patients and families on procedures, and answering difficult clinical questions), opportunities to engage in low-stakes peer teaching assist in developing these crucial skills. Interprofessional peer review offers further benefits in developing student awareness of modifying communication styles based on their audience. It also nurtures essential social skills, such as giving and receiving constructive criticism, defending one's viewpoints, and tactfully declining unproductive suggestions (Topping, 2009).

Limitations and Future Directions

One limitation of the current investigation is that SLP student-reported self-efficacy may not directly reflect the SLP student's actual clinical abilities. SLP student clinical skills may be better or worse than they perceive when working with a d/Deaf or hard of hearing client. Future research could investigate SLP student performance using these learned skills with clients following this ELD and determine if there is a relationship between SLP student self-efficacy and SLP student clinical performance. Additionally, a limitation of this study is that the question posed to SLP students to gather feedback about working with peer teachers was posed in a strictly positive format. This may have inadvertently discouraged SLP students from discussing the challenges they faced related to learning from peer teachers. In the future, SLP students could be asked to reflect

on both the benefits and challenges related to learning from interprofessional peer teachers. Similarly, the AuD peer teacher feedback survey (see Table 3) did not include any level of agreement questions leaning toward a negative outcome, which could have biased participant feedback in a positive direction. Future replications of this study could add more questions to the AuD peer teacher survey to reduce bias.

Figure 3

AuD Peer Teacher Leading a Part Task Trainer on Hearing Aid Batteries

Another potential limitation of this study is that the AuD peer teachers had just completed their first year of graduate school, meaning they have less knowledge and experience compared to faculty or students further along in the AuD program. This fact may have contributed to their reported difficulty answering novel SLP student questions, and confidence in communicating information about audiology. A future direction for this project is to complete a reciprocal experience, where SLP students are peer teachers for the AuD students, and compare outcomes. Furthermore, future iterations of this experience should include increased pre-ELD preparation for AuD peer teachers.

There could also be value to future studies focusing on cultural considerations and considerations for working with different age groups (e.g., infants, children, adolescents, geriatrics). Additionally, this study may serve as a model for other allied health services (e.g., physical therapy and occupational therapy) to utilize a peer teaching model to educate health professions students regarding hearing assistive devices as all people working in health professions will interact with clients with hearing loss at one time or another.

Conclusions

This study sought to combine the evidenced-based pedagogies of peer teaching and simulation through an interprofessional approach. Results from this experience indicate that SLP students demonstrated increased self-efficacy following an interprofessional, AuD peer-taught ELD with simulations. SLP student feedback was resoundingly positive and discussed how this simulation helped to increase their confidence through exposure to aural rehabilitation skills and knowledge, in addition to learning from AuD peer teachers. To illustrate this point, months after the initial experiential day was implemented, one of the supervising educators received the following email, *"I wanted to let you know I was thinking of you during my externship. I got to work with a few kids with bilateral hearing aids and cochlear implants, and the hearing assistive technology simulation we did truly was a HUGE help."*

Furthermore, peer teachers from the AuD program indicated that they benefited from the experience of instructing SLP students. They reported that teaching SLP students benefited their solidification of content knowledge and that they welcomed the opportunity to participate in a peer teaching experience again. This study utilized interprofessional peer teachers to share knowledge and teach practical skills and has implications for allied health professions who may consider using this model to increase student understanding of interprofessional issues and overlapping scopes of practice. It is important to note that this experiential learning combining interprofessional education, simulation, and peer teaching benefited both student groups, which in turn adds value to each clinical program.

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Appendix

The following directions were provided for the survey. Two side-by-side columns were presented, representing the assessment of educational practices and importance.

Use the following rating system when assessing the educational practices:

1 - Strongly Disagree with the statement

2 - Disagree with the statement

3- Undecided - you neither agree or disagree with the statement

4 - Agree with the statement

5 - Strongly Agree with the statement

NA - Not Applicable; the statement does not pertain to the simulation activity performed.*

In the column to the right, please rate each item based upon how important that item is to you.

1 - Not Important

2 - Somewhat Important

3 - Neutral

4 - Important

5 - Very Important

Table A1

Measures of Central Tendency and Dispersion for Remaining Survey Items Assessing Student Perceptions of the Simulation

Survey Item	*M*	*SD*	*Mdn*	Min	Max
Q1#1_2 Assessment I actively participated in the debriefing sessions after the simulation.	4.92	0.32	5.00	3	5
Q1#1_3 Assessment I had the opportunity to put more thought into my comments during the debriefing session.	4.91	0.29	5.00	4	5

Table A1 (continued)

Q1#1_4 Assessment There were enough opportunities in the simulation to find out if I clearly understand the material.	4.24	1.023	5.00	1	5
Q1#1_5 Assessment I learned from the comments made by the teacher before, during, or after the simulation.	4.74	0.48	5.00	3	5
Q1#2_1 Importance I had the opportunity during simulation activity to discuss the ideas and concepts taught in the course with the teacher and other students.	4.76	0.50	5.00	3	5
Q1#2_2 Importance I actively participated in the debriefing sessions after the simulation.	4.66	0.57	5.00	3	5
Q1#2_3 Importance I had the opportunity to put more thought into my comments during the debriefing session.	4.64	0.58	5.00	3	5
Q1#2_5 Importance I learned from the comments made by the teacher before, during, or after the simulation.	4.86	0.43	5.00	3	5
Q2#1_2 Assessment I had the chance to discuss the simulation objectives with my teacher.	4.67	0.62	5.00	3	5
Q2#1_3 Assessment I had the opportunity to discuss ideas and concepts taught in the simulation with my instructor.	4.82	0.43	5.00	3	5
Q2#1_5 Assessment Using simulation activities made my learning time more productive.	4.95	0.21	5.00	4	5
Q2#2_2 Importance I had the chance to discuss the simulation objectives with my teacher.	4.72	0.55	5.00	3	5

Table A1 (continued)

Q2#2_5 Importance Using simulation activities made my learning time more productive.	4.89	0.32	5.00	4	5
Q3#1_1 Assessment I had the chance to work with my peers during the simulation.	4.97	0.17	5.00	4	5
Q3#1_2 Assessment During the simulation, my peers and I had to work on the clinical situation together.	4.89	0.40	5.00	3	5
Q3#1_3 Assessment The simulation offered a variety of ways in which to learn the material.	4.91	0.34	5.00	3	5
Q3#1_4 Assessment This simulation offered a variety of ways to assess my learning.	4.77	0.50	5.00	3	5
Q3#1_5 Assessment The objectives for the simulation experience were clear and easy to understand.	4.83	0.41	5.00	3	5
Q3#1_6 Assessment My instructor communicated the goals and expectations to accomplish during the simulation.	4.80	0.47	5.00	3	5
Q3#2_1 Importance I had the chance to work with my peers during the simulation.	4.80	0.47	5.00	3	5
Q3#2_2 Importance During the simulation, my peers and I had to work on the clinical situation together.	4.70	0.59	5.00	2	5
Q3#2_3 Importance The simulation offered a variety of ways in which to learn the material.	4.78	0.46	5.00	3	5
Q3#2_4 Importance This simulation offered a variety of ways to assess my learning.	4.71	0.46	5.00	4	5

Table A1 (continued)

Q3#2_5 Importance The objectives for the simulation experience were clear and easy to understand.	4.78	0.49	5.00	3	5
Q3#2_6 Importance My instructor communicated the goals and expectations to accomplish during the simulation.	4.78	0.49	5.00	3	5
Q4_1 The teaching methods used in this simulation were helpful and effective.	4.91	0.29	5.00	4	5
Q4_2 The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	4.88	0.37	5.00	3	5
Q4_3 I enjoyed how my instructor taught the simulation.	4.92	0.27	5.00	4	5
Q4_4 The teaching materials used in this simulation were motivating and helped me to learn.	4.95	0.21	5.00	4	5
Q4_5 The way my instructor(s) taught the simulation was suitable to the way I learn.	4.94	0.24	5.00	4	5
Q5_4 My instructors used helpful resources to teach the simulation.	4.79	0.48	5.00	3	5
Q5_5 It is my responsibility as the student to learn what I need to know from this simulation activity.	4.65	0.64	5.00	2	5
Q5_6 I know how to get help when I do not understand the concepts covered in the simulation.	4.88	0.33	5.00	4	5
Q5_7 I know how to use simulation activities to learn critical aspects of these skills.	4.35	0.86	5.00	2	5

Note. * No N/A responses were recorded by students in this survey