

Virtual Service Learning: An Exploration into How Physical Therapy Students Make Meaning of Professional Skill Development Online

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ABSTRACT

This study explores the perceived effect of a virtual service-learning (SL) experience upon the development of professional skills among physical therapist students. A qualitative case study approach was used to analyze reflection papers through the lens of the constructivist learning theory. Data revealed that virtual SL strengthens communication, fosters adaptability, and cultivates leadership practices. Findings suggest that virtual SL may be less likely to enhance certain affective skills that are crucial to patient-centered care.

Keywords: physical therapy, professional skills, virtual service learning, reflection

Service learning (SL) is traditionally defined as an intentionally designed learning experience that meets identified community needs and “combines community service with explicit learning objectives, preparation, and reflection” (Seifer, 1998, p. 274). During SL, students apply curricular concepts in real-world contexts and engage in faculty-facilitated reflection that allows them to critically analyze their learning. Additionally, the SL experience allows for personal and professional growth, in part by fostering an enhanced sense of civic responsibility (Crandell et al., 2013; Palombaro et al., 2017; Stefaniak, 2020). Service learning has become an integral part of health professions education, with research revealing that this interactive experience affords students a greater sense of connection with the community, improves communication and problem-solving skills, enhances cultural awareness, and contributes to overall professional development (Brown & Bright, 2017; Gonzales et al., 2020; Haines et al., 2017). In physical therapist (PT) education,

participation in SL has promoted a greater sense of altruism, compassion, integrity, and cultural competency, and has fostered critical inquiry and higher order thinking (Anderson et al., 2014; Denton et al., 2016; Hayward & Charrette, 2012; Crandell et al., 2013; Hou et al., 2018; Reynolds, 2005; Wise & Yuen, 2013). These professional skills span different domains of learning and represent essential competencies that all new graduates must possess in order to provide effective physical therapy service, practice autonomously, and promote the health and wellbeing of individuals and the public (Coffin et al., 2021; Reynolds, 2005).

While research has supported the efficacy of traditional SL in health professions and PT education, the landscape of 21st century higher education has been impacted by a surge in online programming, an increase in technological resources, and a global pandemic that has limited in-person contact (Gagnon et al., 2020; Ng et al., 2021). Health professions education has been shifting away from traditional models of SL and adopting

virtual SL experiences (Veyvoda & Cleave, 2020). In PT education, this shift gives rise to the unique challenge of cultivating professional development skills in a discipline that is grounded in hands-on techniques and face-to-face interactions. To better understand this challenge, gain awareness into how virtual SL contributes to PT education, and generate insights that can guide pedagogy, it is worthwhile to investigate how physical therapist students reflect upon and perceive their virtual SL experiences. The purpose of this study is to explore the perceived effect of a virtual SL experience upon the development of professional skills among physical therapist students. The following research question is posed: How do physical therapist students describe the impact of a virtual service-learning experience upon professional skill development?

BACKGROUND

Throughout health professions curricula, SL activities have been integrated to promote professional development. In nursing and dental education, literature has shown that cultural competency, care, compassion, social responsibility, and accountability have been enhanced through SL experiences (Behar-Horenstein et al., 2015; Brown & Bright, 2017; Dharamsi et al., 2010). In PT education, several studies have yielded similar results. Hayward and Charrette (2012) reported student development of professional values following a weeklong international SL program with underserved populations. Outcome measures showed that students achieved greater professional awareness and emotional resilience as well as a greater sense of social responsibility and enhanced compassion. Crandell et al. (2013) later found that a community-based SL experience for PT students promoted core values of compassion/caring, accountability, professional duty, and social responsibility. Similarly, Wise and Yuen (2013), when comparing community-based health education programs with traditional classroom learning among PT

students, found that SL was associated with significantly higher change scores for altruism, compassion/caring, and integrity than those associated with classroom learning.

Further evidence of professional development in SL has been uncovered in student reflections on the topic. Qualitative analysis of student reflections has shown that attributes including altruism, compassion, cultural competency, and teamwork, were enhanced among PT students who participated in community-based SL activities (Anderson et al., 2014; Hou et al., 2018). These attributes are consistent with the core values of the American Physical Therapy Association (APTA) and World Confederation of Physical Therapy (WCPT) Guidelines for Best Practice (American Physical Therapy Association, 2019; World Confederation for Physical Therapy, 2020).

In recent years, the surge in online education has extended, in part, into the realm of virtual SL. Virtual SL, also referred to as e-service learning, is SL in which “part or all of a course’s instruction, service component, or both are virtual” and learning can take place from anywhere, without geographical or physical access limitations (Strait & Nordyke, 2015; Veyvoda & Cleave, 2020, p. 1546). There are four types of e-service learning. Types I, II, and III are hybrid models, and respectively refer to on-site service accompanied by online teaching, online service accompanied by on-site teaching, or both service and teaching that are conducted partially online. Type IV is characterized as extreme e-service learning, and occurs when both service and teaching components are fully online (Marcus et al., 2021).

In PT education, the proliferation of online learning has sparked inquiry. A study conducted by Ward et al. (2018) investigated changes in intra- and interpersonal cultural empathy among PT students following a virtual cultural simulation experience. Authors found that this single experience led to increases in students’ intrapersonal empathy, and modest increases in interpersonal empathy. While this study is valuable and can

inform PT curriculum, it does not specifically explore or examine the contribution of SL to PT education.

With respect to student perspectives on virtual learning and online professional development in health professions and PT education, evidence is emerging. Studies done in nursing curriculums have shown that communication skills, evaluative skills, and appreciation for the psychosocial aspects of disease have all been positively impacted through virtual learning (DeLenardo et al., 2019; Pierce, 2016). In PT education, similar findings have been reported. In quantitative research designed to investigate PT students' satisfaction with a virtual simulation, results indicated that students felt an increased level of cultural competence following participation in this learning activity (Ward et al., 2018). Subsequent qualitative exploration by Bjorklund and Sielen (2021) that looked at the development of interprofessional communication while working with a virtual patient found that PT and occupational therapy students experienced an improved understanding of their own profession when engaging in shared decision-making and dialogue.

To add depth to existing evidence, this study explored PT student perspectives on the effect of virtual SL, with a focus on how professional skills develop with this approach. To guide inquiry, the constructivist learning theory was used as a framework. The constructivist learning theory posits that learning is an active process of knowledge construction that draws upon previous life experiences and perspectives in order to construct new concepts (Hunter & Krantz, 2010). Constructivism has two domains, cognitive and social, which respectively recognize that learning occurs on a personal level as well as through the social environment (Jette et al., 2020). Constructivist learning asks students to manipulate new information, restructure their thinking, and reflect and engage in metacognitive processes (Jette et al., 2020; Hunter & Krantz, 2010). It is appropriate to view this research through the lens of constructivism, in order to best understand

how students were able to make meaning of a novel self-directed active learning module that was experienced virtually.

METHODS

Study Context

Traditional service learning has been embedded within the entry-level PT curriculum at the study site, a private urban university, for over 20 years. Relationships have been built with long-standing community partners that serve local, low-income residents of varying age and ability, in neighborhoods that are racially and ethnically diverse. During the spring semester of 2021, virtual learning was prioritized for all community partners and extreme e-service learning was employed. Community partners' needs and access to technology were assessed prior to the start of the semester ([see Table 1](#)). Consistent with the results of the needs assessment, students worked in groups to plan and implement wellness initiatives in consultation with site supervisors. Students' participations were centered on improving the well-being of their target population.

Study Design

Research was conducted using a qualitative, inductive educational case study approach. An educational case study was deemed appropriate for this research as it seeks to develop an in-depth understanding of an issue, bound by time and activity, that affects one or more individuals (Creswell, 2013). Purposeful, homogeneous sampling was used to elicit participation from 40 PT students who had successfully completed and been awarded credit for one semester of virtual service learning. Students were sent an email that served as informed consent and allowed them to opt out of the study if they desired. Based upon completeness of papers, 34 reflections were ultimately included for review. All students who submitted reflections were working toward a clinical doctorate degree in physical therapy and had completed the first year of a 3-year professional program.

Table 1. *Description of Community Partners*

Site Number	Site characteristics	Population	Focus of Activity	Virtual delivery
1	After school program	Elementary school-aged children 5-12 years	Fitness and nutrition education for children	Asynchronous video series
2	Adult Day Health program for low-income Chinese elders	Chinese elders, primarily non-English speaking	Group exercise class for older adults	Weekly synchronous session via Zoom
3	Low-income housing community	Community-dwelling older adults, primarily Latinx	Group exercise class for older adults	Weekly synchronous session via Zoom
4	School for students with intensive educational and medical needs	Students ages 10-22 years; teachers and paraprofessional staff	Flexibility, posture, strength, and stress-management program for staff	Asynchronous video series
5	Free weekly play program in urban community	Children and their families	Group games and activities to promote physical activity for children and adults together	Weekly synchronous session via Zoom
6	Power wheelchair soccer team for adults with disabilities	Independent adults with variety of disabilities including spinal cord injury and cerebral palsy	Educational program focused on local and regional adapted sports programs	Presentation via Zoom

Following IRB approval, data was collected through compilation of reflection papers that were written at the completion of the students' SL experience. Students were asked to reflect upon how the SL experience impacted professional skill development and were given guiding questions that included the following: 1.) What three skills have you either developed or improved during the course of your service learning? 2.) In what ways have your professional skills changed? 3.) What fostered changes in professional skills?

Reflective writing can be viewed as a process of self-inquiry into the unapparent details of learning, as well as an evaluative process that allows for new understanding and appreciation of an experience (Koro-Ljungberg et al., 2012). Analysis of written reflection provided insight into how constructivist principles fostered learning and professional skill development in a new environment. Reflective papers were analyzed using first and second cycle coding. First cycle analysis focused on the creation of values-

based codes, which captures participant values, attitudes, and beliefs, and is appropriate for exploring intrapersonal and interpersonal experiences in case studies (Miles et al., 2014). Second cycle codes were used to group first code segments into categories or constructs. Categories were then condensed to form major themes and subthemes that capture the overarching relationships between categories and are inclusive of all data. Data was independently analyzed by both researchers.

Qualitative researchers engage closely with the research process, which makes complete objectivity difficult (Tong et al., 2007). To promote trustworthiness, an intercoder agreement check was employed. Intercoder agreement, which focuses on reliability, establishes that there is some stability between or among interpretive insights and ensures that all insights contribute to final themes (Creswell, 2013). To ensure agreement, two researchers independently analyzed data and subsequently met on two separate occasions to compare findings, discuss perspectives, and reshape data presentation based upon shared and more sophisticated interpretations. Additionally, a peer review, which provides an external check of the research process, was performed as a measure of validity (Creswell, 2013). One peer reviewer with expertise in both the field of physical therapy and experiential learning was employed. The peer reviewer posed questions about methods, meanings, and interpretations, which prompted the researchers to consider data analysis and findings more objectively. Ultimately, all feedback from this peer review was included in the study.

FINDINGS

An analysis of papers revealed three major themes and six subthemes that were grounded in the perceived value of service learning and captured the beliefs and attitudes about how professional skills were influenced by this experience. Major themes were as follows: strengthened communication skills, fostered adaptability, and cultivated leadership qualities.

Strengthened Communication Skills

Encompassed in 24 reflective papers were perspectives about how instructional and interprofessional communication was unique in the virtual setting. Student reflections emphasized that the absence of face-to-face visual cues and lack of immersion in the in-person learning environment gave rise to more articulate written and verbal communication and more effective nonverbal demonstration. Additionally, papers expressed that the virtual environment helped to develop a more sophisticated repertoire of both verbal and nonverbal communication methods. This resulted in two subthemes: a) enhanced clarity of written and verbal communication, and b) promoted integration of communication methods.

The first subtheme was characterized by phrases that included “becoming more direct,” “being clear and concise in messaging,” “clarifying instructions and tips,” and “creating impactful and authentic connections digitally.” In some papers, this concept was broadened. One student wrote: “virtual communication has fostered a change in style... I had to be patient and listen to others so we were not speaking over one another” (Site 5). When describing interactions with clients, another stated:

We had to figure out how to tell someone to do something without teaching live... figure out how to give corrections without seeing them. It is difficult to do this using mainly your words, but it has improved my communication skills (Site 4).

Improved clarity of interdisciplinary communication was additionally captured in a passage that read:

I learned to craft well-worded e-mail to convey my thoughts and the group’s questions in a manner to get the information we needed. I had to learn to come off a little stronger in my emails in order to get responses (Site 3).

Student thoughts also centered on the importance of “being able to understand each

other without facial cues,” “being more descriptive” and learning to ask questions that focus on the most important points, or “getting to the root of the problem.” As articulated in one reflection: “Perhaps an upside to Zoom was that it pushed me to be clear and concise in my delivery” (Site 4). Passages expressed that virtual learning was more effective when words were chosen carefully to maximize comprehension. Students emphasized that the online environment helped them expand and tailor their vocabulary, appropriate to the situation, so that verbal and written communication was impactful.

The second subtheme described how the virtual space helped students develop diverse communication strategies. Reflections conveyed the challenge that was presented to students when trying to gauge participation, foster engagement, and deliver accurate information over Zoom. This subtheme was characterized by phrases that included “reliance on visual communication,” “importance of nonverbal communication through virtual platforms,” and the need to encourage “mirroring,” or the ability for learners to see and imitate instructor movements. This was further described in one paper as follows:

If we were showing them how to do a squat, we had to make sure we were giving corrections on video... we had to demonstrate modifications, which is difficult to do when you can't see participants... it is important to give both visual and auditory cues to make sure they had proper form (Site 1).

Other students described how different strategies promoted learning, by saying, “I demonstrated while talking...I even used my hands while trying to describe a calf raise...they started moving my hands the way I was,” and, “when speaking and demonstrating, I improved on explaining the purpose of each exercise, and the benefits of doing them” (Site 3). Skill development was further summarized in a passage that read, “Throughout my service-learning experience, my ability to communicate has become more multifaceted” (Site 3).

Reflections revealed how difficult it can be to effectively communicate virtually. Absence of body language and in-person affect added a layer of complexity to programming that requires proper execution of psychomotor skills. The need to refine word choices and integrate verbal and nonverbal commands simultaneously improved instructional capability.

Fostered Adaptability

The second major theme related to the way that the virtual environment encouraged flexibility of thought and approach. Twenty-three students discussed the need for “creative thought,” “out of the box” or innovative thinking, and the need for spontaneous modifications to instructional sessions. Students commented on how activities needed to be differently structured in an online setting in order to facilitate flow, comprehension, and engagement. This gave rise to two subthemes: a) strengthened problem-solving skills, and b) promoted cognitive agility.

Reflection papers described the way that the virtual environment fostered problem-solving by discussing the need for continual reassessment and redesign of teaching methods so that instructors could meet learners’ needs. This was highlighted in one paper that reflected upon working with young individuals with disabilities. “My group was under the assumption that we would be playing video games (with them) since we could not meet in person,” one student explained. “This eventually turned into doing research on adaptive sports... and evolved into each member of the group doing research on a different adaptive sport and recording a presentation on it” (Site 6). It was similarly emphasized in another paper that described working with non-English speaking older adults in the following way:

I tried learning simple and relevant phrases... this did not work very well. I adjusted course and tried something new. I e-mailed the employees at the center... we switched to playing light music and having certain equipment

ready.... they were then in a good groove.... I am so glad I was forced out of my comfort zone and could develop new skills (Site 2).

When writing about programming for children, another student expressed enthusiasm for the problem-solving process by saying:

Being separated by a computer screen required us to come up with a variety of activities or else we may lose attention. There was the brilliant idea to present exercises in the form of adventure stories, where each week we were in a different setting... coming up with new content was not easy.... It allowed the children to be engaged without realizing they were exercising (Site 5).

Improved problem-solving gave rise to cognitive agility. Students described the concept of cognitive agility when reflecting upon how online instructional adaptations needed to be made in the moment in order to promote learner engagement and produce better learning outcomes. One student stated, "I learned how to make something mundane more appealing.... meetings turned into stories... slide shows turned into an opportunity to teach someone power point [*sic*] skills" (Site 4). When describing exercise instruction, another passage stated, "I had to think about what home equipment was accessible... I ended up using chairs, benches, and cans of soup as part of strength training" (Site 4).

Two reflections were noteworthy for the way that they characterized the concept of agility as follows:

It was hard to observe each resident over camera, so recognizing which cues were necessary was a challenge. The fix was to record the session and watch it again for observation. I figured out that the camera offered an advantage as it allowed me to catch cues I may not have been able to in person (Site 1).

When describing an online session with children, another student wrote:

When a child would show up at our Zoom meeting not wanting to do anything on the days' agenda, I decided it was okay to go with the child's desire to just talk, while at the same time working to steer the conversation back to our topic. I would ask the child questions to try to keep the lesson on track (Site 5).

Additional papers highlighted the challenge associated with a "foreign technology-based model" when referring to the experience of navigating the Zoom platform. The importance of adaptability was also emphasized. One student expressed, "My versatility was definitely challenged. In the beginning, it was difficult to gauge participation through Zoom. By adapting and modifying our approaches, participant enjoyment significantly improved" (Site 2). Another student similarly commented on the value of versatility by saying, "Learning to be flexible enabled me to step back and let things unfold more organically, allowing me to enjoy the process more" (Site 5).

Though learning how to effectively work in the virtual environment was described as "challenging," "difficult," and "uncomfortable," reflections also indicated that the rewards of teaching in this setting eclipsed the challenges. Students expressed that in becoming more adaptable, they also became more passionate about the work they were doing.

Cultivated Leadership Practices

In 21 papers, students discussed how the success in the virtual setting was contingent upon teamwork, preparedness, and learning how to prioritize requests and activities. Phrases including "leaning into classmates for support," "trusting the process," "practicing patience," and "becoming more efficient" gave rise to two subthemes, namely, a) reinforced the value of collaboration, and b) developed organizational skills.

Collaborative work allowed students to view leadership through new and different lenses. Students who perceived themselves as “go-getters,” or individuals willing to take initiative in many different situations, talked about how valuable it was to step back, listen, observe, and support fellow group members in their endeavors. As stated in one reflection: “I put forth the effort to actively listen to my group mates while keeping us on task. Increased patience and understanding were required” (Site 4). As expressed in another: “I found it challenging to trust because I like to be in control. I realized that I could let go of that need... be supportive... trust the process” (Site 4). Yet another student spoke about the need for active listening by saying:

I think my leadership stance has changed...at times I need to address concerns to supervisor but at other times I needed to be the person someone could talk to. Hearing other people and figuring out ways I can help allowed me to get a better understanding of the group and how to get the best out of everyone (Site 5).

Students who perceived themselves as reluctant participants described leadership development differently. “This (experience) made me more prepared to take initiative,” commented one student, “it gave me more confidence in my own abilities” (Site 6). Another student remarked, “It bolstered my public speaking ability,” while still another stated that “group work improved the (service learning) experience and helped me to see how ideas align” (Site 6).

Service learning in a virtual setting additionally influenced organizational skills, with a positive impact upon time management and productivity. When discussing program design, one reflection stated, “My time management skills changed. I could prioritize what I believed was most helpful.” A different reflection commented, “I had to learn to time manage everything appropriately.... This allowed me to focus and become more efficient” (Site 1). One student offered a broader perspective in writing the following:

Service learning presented many challenges that required my organizational skills to be superior. I wanted to be sure I was prepared for every session.... I organized a document to include date of service and what exercises were included for that day. I wanted to organize the document to be sure the community members were targeting all of their major muscle groups throughout the week (Site 3).

Across reflection papers, there was a perception that in order to benefit all types of learners, instruction in the virtual environment required extensive preparation and a robust repertoire of activities. Students expressed that while they felt a heightened sense of individual responsibility and accountability as virtual instructors, they simultaneously became more equipped to assess situations and make decisions when working with a committed group of participants.

DISCUSSION

This study was guided by the following research question: How do physical therapist students describe the impact of a virtual service-learning experience upon professional skill development? Analysis of reflection papers using values-based coding uncovered student perspectives regarding the importance of developing multiple communication strategies, the positive effect of adaptability upon personal growth and cognitive development, and the multifaceted nature of effective leadership. From a theoretical standpoint, constructivist learning guided knowledge construction in the virtual environment and helped to create a rich educational platform that built meaningfully on students’ individual experiences. Findings show that the second theme and associated subthemes in this study underscored how cognitive processes were restructured to meet the challenge of teaching psychomotor skills in a virtual space. Students discussed how they experienced cognitive growth when assuming

a role that demanded keen attention to feedback as well as manipulation of different social and structural variables. Additionally, students expressed that the collaborative nature of their tasks and the iterative process of restructuring learning sessions led them to build upon previously acquired skills and personal attributes. The ability of virtual SL to advance constructivist principles suggests that this educational approach be further developed in its own right and not merely used as a substitute for in-person experiences that cannot take place.

To some degree, the major themes from this study align with existing research on virtual classroom learning. The concept of strengthened communication was highlighted in a study by Bjorklund and Silen (2021) who, through qualitative content analysis, found that different verbal and nonverbal communication strategies facilitated knowledge and exchange of ideas in the virtual setting. The value of collaboration was highlighted by Cantey et al. (2021), who found problem solving to be effective in the virtual learning community. In a mixed methods investigation centered on ability acquisition in a virtual leadership program, Fernandez et al. (2021) found that online participants experienced rich group discussions that enhanced their learning. These findings parallel those of the current study and lend support to the idea that virtual learning platforms can contribute to professional development. However, the overarching theme of adaptability and subtheme of cognitive agility presented in this research represents a unique perspective on virtual learning and captures a facet of professional skill development that has not been highlighted in previous literature.

With respect to SL, findings of this study are equally unique. While the themes uncovered in this study add depth to existing literature, they differ from those in previous studies on traditional SL that underscore the development of compassion and caring, integrity, and social responsibility. This is noteworthy, as care and compassion are important aspects of patient-centered care and

lead to improved patient outcomes and patient satisfaction (Lown et al., 2011; Peters, 2017). It is additionally significant in that it raises the issue of whether certain affective domain skills, integral to professional practice and embedded in PT core values, can be effectively developed in a virtual environment. Contemporary research suggests that critical to the development of compassion and empathy in virtual SL is direct engagement of and with the community via technology and that successful virtual sessions require attention and intention to engagement and interaction (Veyvoda & Cleave, 2020; Fernandez, 2021). It is therefore imperative to consider the importance of customized technology-based course design when working to foster affective competencies during a virtual SL activity.

In an additional departure from literature on traditional SL, the impact of culture upon teaching and learning was not emphasized in student reflections. This is significant, as an understanding of culture can be essential to effective care, works toward minimizing health disparities, and is central to the ethical foundation of PT practice (APTA, 2019; Chang et al., 2012). However, it is not a surprising revelation. In the virtual environment, students were unable to engage directly and in person with the larger communities in which their participants lived. Consequently, they may have been less attuned to the influence of cultural factors that might have impacted community partners' learning and participation. It is possible that the lack of in-person interaction posed a significant challenge to understanding the broader context of participants' lives, including culture.

Though not a major theme, it is important to recognize that some participants identified how skills that were enhanced through virtual SL, such as communication, will prepare them to deliver physical therapy via telehealth. During the past decade, telehealth practices have been growing, with more than 60% of healthcare institutions in the United States engaging in this practice prior to the COVID-19 pandemic (Tuckson et al.,

2017). In PT practice, telehealth visits were initiated in response to pandemic-related stay-at-home mandates and found to be beneficial in several ways. Literature has suggested that in PT practice, telehealth has enabled quicker access to care with similar satisfaction to in-person visits (Grundstein et al., 2021). Furthermore, it has offered healthcare practitioners a way to address health disparities, with evidence that telehealth increases outreach and enables “equity of access independent of geography” (Grundstein et al., 2021; WCPT, 2020, p. 6). Given the importance of advancing health equity (Braaten et al., 2021) and the efficacy of telehealth in providing access to healthcare, continued development of online communication strategies and engagement through technology in health professions education is warranted. It is additionally warranted that innovation be coupled with public health initiatives that improve Internet access to lower socioeconomic regions. The COVID-19 pandemic illuminated the opportunity gaps that exist in society with respect to learning through technology. In fact, the virtual SL activities that formed the foundation for this study may have faced termination if community partners had not been technologically supported. To that end, federal and state governments must ensure that all Americans have access to high-speed Internet and affordable smart phones and consider ways that community centers can be technology hubs so that online platforms can be used universally (Grundstein et al., 2021).

Findings of this study suggest several avenues for future research. Further exploration into how these characteristics can be cultivated in a virtual learning environment would be worthwhile. Similarly, research centered on strategies that build affective competencies in an online setting could help to ensure that important concepts such as cultural awareness are captured in virtual learning modules. To help strengthen virtual SL and expand qualitative data on the topic, the perspectives of community partner organi-

zations and community participants about the value of online learning and engagement would also be valuable.

LIMITATIONS

While the themes presented in this study offer important contributions to the literature, limitations must be acknowledged. It is important to note that all reflection papers analyzed were representative of students from the same PT cohort who completed virtual SL during the same semester. Therefore, student perspectives may have been more limited in scope. Additionally, community-based service, crafted to be delivered in person, needed to be spontaneously reshaped in response to ongoing COVID-19 restrictions. As a result, students had little time to design SL experiences and develop specific skills for online teaching and learning. It is possible that student perspectives about virtual teaching and learning would have been different had their knowledge and preparation for the SL experience been more extensive.

CONCLUSION

An exploration into the perceived effect of a virtual SL experience upon the development of professional skills among PT students revealed novel insights. Qualitative data captured the way in which the absence of in-person interaction shaped communication skills, allowed for the development of high-level cognitive competencies, and reframed the meaning and value of leadership characteristics. Importantly, data did not highlight the development of affective domain skills such as compassion and cultural awareness in the virtual setting, and future research on this topic is warranted. Findings of this study illuminate the advantages of continuing service learning in a virtual setting while also underscoring the need for continued development of online learning to promote participant engagement and acquisition of core values of physical therapy practice.

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