The Open Journal of Occupational Therapy

Volume 12
Issue 4 *Fall 2024*

Article 9

October 2024

Incorporating Real-time Simulated Patient and Instructor Feedback to Enhance Simulation Learning Experience for Occupational Therapy Students: A Mixed Methods Study

Lauren Woods
University of Tennessee Health Science Center - USA, lsneed@uthsc.edu

Pamela Lewis-Kipkulei
University of Tennessee Health Science Center - USA, plewiski@uthsc.edu

Kuan Xing
University of Iowa - USA, kuanxing83@gmail.com

Recommended Citation

Woods, L., Lewis-Kipkulei, P., & Xing, K. (2024). Incorporating Real-time Simulated Patient and Instructor Feedback to Enhance Simulation Learning Experience for Occupational Therapy Students: A Mixed Methods Study. *The Open Journal of Occupational Therapy, 12*(4), 1-13. https://doi.org/10.15453/2168-6408.2250

Incorporating Real-time Simulated Patient and Instructor Feedback to Enhance Simulation Learning Experience for Occupational Therapy Students: A Mixed Methods Study

Abstract

Health care simulation experiences should provide clear feedback that students can understand and incorporate into future practice. Based on the literature, more research is needed regarding how health professional students use various types of feedback to establish rapport with clients, increase critical thinking skills, and work collaboratively. Various types of feedback may be useful in regular simulation-based education, but there is limited research on how students integrate various feedback to enhance skill development. This study aimed to examine how occupational therapy (OT) students incorporate real-time Simulated Patient (SP) feedback, numerical feedback, and instructor-written feedback to enhance their learning from the simulation experience. This mixed methods study collected learner assessment numerical data and qualitative data (SP feedback and instructor written feedback) in first-year OT students' simulation learning sessions. The students answered six debrief questions reflecting on the simulation process, explaining how they plan to incorporate the feedback in future OT practice. Quantitative results of student performance data were reported. Seven themes emerged from the thematic analysis of the debrief reflections. These themes provided information on students' perceptions of the experience and illustrated how they plan to use the feedback. The findings of this study provide instructors strategies that can be used to enhance student learning when designing simulations. This study found that numerical and written feedback from the instructor was more meaningful when combined with real-time SP feedback. Future studies should include a comparison of cohorts as well as interprofessional education.

Comments

The authors declare that they have no competing financial, professional, or personal interest that might have influenced the performance or presentation of the work described in this manuscript.

Keywords

simulation, OT, simulated patient, reflection, group learning, experiential learning

Credentials Display

Lauren Woods, PhD, OTR/L; Pamela Lewis-Kipkulei, PhD, OTD, OTR/L; Kuan Xing, PhD

DOI: 10.15453/2168-6408.2250

When determining the effectiveness of a simulation experience on student learning, it is essential to use measures that provide accurate and relevant information regarding student learning. In the process of preparing preprofessional occupational therapy (OT) students for their eventual practice in real-world scenarios, explicit connections need to be made to illustrate how the learning activity is connected to assessment results in addition to expectations once they begin their practice out in the field (Feekery et al., 2021; Hill & Sitt-Bergh, 2021). However, in OT literature, there is limited research on how OT students incorporate assessment results and receive feedback to promote their learning (Bennett et al., 2017; Shea, 2015). Instructors in higher education must explore ways to measure the learning of students effectively while providing quality feedback (Haughney et al., 2020; Henderson et al., 2017; Young et al., 2019). Nonetheless, it is unclear how learners perceive their numerical assessment results as feedback to enhance future learning.

According to Bethea et al. (2014), there are five common modalities (types) of simulation. These include standardized/simulated patient simulation, human patient simulation, computerized software simulation, virtual immersive-reality simulation, and simulated training equipment. Approximately 75% of simulation strategies used in OT programs were human simulation using simulated patients (SPs) or students (Bethea et al., 2014). A SP is defined as "An individual who is trained to portray a real patient in order to simulate a set of symptoms or problems used for health care education, evaluation, and research" (Agency for Healthcare Research and Quality, 2016, p. 43). Preliminary results of using human simulation/SPs showed positive outcomes. Previous literature shows that when students have opportunities to reflect on the learning through feedback and other reflective practices, deeper learning is promoted by making a connection between theory and practice (Mann et al., 2009; Schoo et al., 2015; Tsingos et al., 2015; Wyllie et al., 2020). Simulations have been shown to address experiential learning and the development of entry-level practice competencies (Bethea et al., 2014; Issenberg et al., 2009; Moliter & Nissen, 2020; Ozelie, 2023). In the simulation environment, learners can receive richer feedback (e.g., feedback from SPs/instructors and numerical assessment scores as feedback); however, there is limited research on how learners perceive and incorporate this feedback (Shea, 2015; Bennett et al., 2017). This study attempts to add to the research regarding how students use various forms of feedback provided by SPs and instructors as part of the simulation experience to inform future practice. From a review of the literature, evidence showed the effectiveness of instructor feedback in the simulation (e.g., debriefing) SP feedback following the simulation. Still, it is not clear how students integrate various feedback to enhance their learning. This study examined students' experience in receiving immediate, verbal feedback from the SP in addition to feedback in numerical score form from learner assessment and written form from the instructor as part of their debrief.

Arguably, educators often assume that the feedback they provide to their learners will be well received to facilitate lasting learning, which may not always be the case (Glazzard & Stones, 2019; Weaver, 2006). In addition, it is not guaranteed that when multiple feedback components are available, they will automatically work in synergy because students may need guidance in understanding and interpreting the feedback (Weaver, 2006; Glazzard & Stones, 2019). The following literature review provided details regarding the use of simulation in OT to enhance student learning, the benefits of group or team-based learning, experiential learning and reflective practice, and formative assessment in OT education.

Use of Simulation in OT to Enhance Student Learning

OT programs often use simulations to provide hands-on experiences to enhance student learning in preparation for fieldwork and practice (Sibbald et al., 2023). A national study in undergraduate nursing education showed that simulation-based education replaced up to 50% of traditional clinical training and provided comparable end-of-program educational outcomes and preparation of graduates for their clinical practice (Hayden et al., 2014). SPs are an integral component to creating an authentic learning experience for students and providing valuable feedback regarding student performance (Fraser & Precin, 2022; Shea, 2015). Nestel et al. (2017) define SP methodology as "a specialized practice in healthcare simulation that has, at its core, the promotion and support of simulated participants" (p. 2). Simulations that applied SP methodology improved student motivation and learning (e.g., clinical interviewing skills) by bringing the theoretical concepts learned in the classroom to practical, clinical application (Sarikocet et al., 2017). Working with SPs provides an opportunity for students to perform OT assessments and interventions in a safe environment before going out into the field, where circumstances are often unpredictable (Issenberg et al., 2009; Nieuwoudt et al., 2021; Sakemiller & Toth-Cohen, 2020). It also prevents potential harm to the patients by fostering the development of therapeutic verbal and nonverbal communication skills (Donovan & Mullen, 2019). Grant et al. (2021) found that students' ability to carry out skills, such as taking an occupational history and interviewing to ascertain a person's valued occupations in a safe environment, combined with detailed debriefing, enables students to develop therapeutic communication skills that can be practiced and enhanced. Walls et al. (2019) discussed the importance of feedback from a variety of sources during and after a simulation because it creates a safe, realistic opportunity for students to work on their clinical reasoning and communication skills by helping the students gain insight into their strengths and areas they need to improve.

The occupational therapy program accrediting body, Accreditation Council for Occupational Therapy Education (ACOTE), mandates that the OT curriculum must meet certain standards. Simulation experiences serve to fulfill criteria of ACOTE (2018) standards, such as fostering the development of therapeutic use of self, including the student's personality, insights, perceptions, and judgments, as part of the therapeutic process in individual and group interaction; identifying occupational needs through effective communication with clients and team members; and administering assessments, considering client needs, their culture, and context.

Benefits of Group or Team-Based Learning

In the field, occupational therapists must collaborate and work with others in their own profession and other professions. Group or team-based learning (TBL) has been found effective in maximizing student learning and engagement when preparing preprofessional OT students for many years (Lexen et al., 2018). Kramer et al. (2007) identified common themes of TBL, including (a) working cooperatively with a team helps to prepare students for clinical practice, (b) interaction supports the learning process, and (c) understanding others' viewpoints helps students expand their worldview. In addition, Tan et al. (2021) found positive reactions from students in the areas of accountability, satisfaction, and preference when students were asked about their experiences with TBL in their OT program. Walls et al. (2019) found that simulations helped develop group cohesiveness and collaborative skills when students engaged in simulation experiences as a team. When simulations are conducted as a group activity, students have real-world experience and practice collaborating with team members internal and external to the profession.

Experiential Learning and Reflective Practice

Johnson et al. (2021) suggested that two of the domains included in quality feedback are analyzing performance and planning improvement, both of which involve reflecting on and developing an understanding of strengths and areas to improve on based on their performance. Transformative learning in adult learning theory involves student participation that creates long-term changes in student attitudes and behaviors (Boyd & Myers, 1988). Reflective practices that result from transformative learning experiences are core components of transformative learning and are essential for preparing students for client-centered care (Schoo et al., 2015). Experiential learning theory includes learners engaging in activities outside of their comfort zone (Kolb, 2015). Morris (2020) stated that learners need to engage in experiential learning outside of their comfort zone and be context-specific for the critical reflection needed for meaning-making. Experiential learning encourages students to actively integrate theoretical concepts into practice, which increases self-efficacy, ultimately preparing them to be empathetic, creative occupational therapists with critical thinking skills (Ghezzi et al., 2021; Issenberg et al., 2009).

In a study by Bradley et al. (2013), students reflected that the simulation experience required them to think quickly, which mimicked real-world practices in which they would have to adapt their interventions based on client reactions. Grant et al. (2021) found that SPs provide students with feedback from a client's perspective, which is valuable in the learning process. In addition, it has been found that feedback provided immediately following the simulation is beneficial (Shea, 2015; Walls et al., 2019).

Formative Assessment in OT Education

Formative assessment ("assessment for learning") has been aligned with the goal of competency-based education in OT (AOTA, 2022; Bennet, 2010). Formative assessment provides "timely and constructive feedback" to the learners and enhances their learning (Lim & Rodger, 2013). Deconstructed simulation provides an approach for learners to get timely and constructive feedback. The results (scores) of formative assessment on OT learners' competency provide a way for them to self-reflect on their learning and performance and identify learning gaps instead of ranking students or making pass/fail decisions. Arguably, formative feedback is crucial for first-year OT students to enhance their learning experience. However, to date, we have not found research on how OT students perceive their formative assessment results and what numerical feedback (i.e., scores) means to their learning and practice.

Purpose of Study

Many simulation experiences provide students with either feedback from the SPs after the simulation, group reflection and debriefing, or assessment score-based checklists or rubrics. However, it is unclear how students perceived those scores/feedback/reflections. A paucity of literature explores how students incorporate real-time feedback, numerical assessment feedback, and debrief reflections to integrate their learning into future practice. The simulation experience in this study was unique because the student groups were provided in-person verbal feedback from the SPs immediately following the encounter. The students also received individual written feedback on their performance and a numerical score based on the assignment rubric.

After the students received their SP's verbal feedback, numerical assessment scores, and written feedback from the instructor, they were given the opportunity to reflect on the experience by writing reflections that answered questions regarding their perceptions of the entire simulation process. These written reflections detailed their perspectives regarding how they would incorporate the SP's feedback, numerical assessment feedback, and written feedback from the instructor in future client encounters. The purpose of this study was to answer the following research questions:

1. How do first-year OT students plan to incorporate feedback from the SPs and instructors, along with their numerical score from a rubric, to enhance their future practice?
2. What is the score distribution and reliability of the OT rubric for assessing first-year OT students' client interview competencies in a simulated setting? A mixed methods approach was adopted since it "focuses on combining both quantitative and qualitative research and methods" (Creswell, 2009).

Method

Research Design and Participants

This study used a convergent mixed method design to compare quantitative and qualitative data (Winston & Dirette, 2022). Thirty-nine students in the Master of Occupational Therapy program at the University of Tennessee Health Science Center participated in a course focusing on the concepts used to guide practice in community mental health and psychosocial OT settings. The University of Tennessee Health Science Center's Institutional Review Board approved this mixed methods study (IRB# 23-09241-XM). All data were collected, deidentified, and stored on a password-protected computer.

Procedures

This study used convenience sampling. A cohort of 39 students at the end of their first year of OT school were enrolled in an occupation-centered practice in community mental health course. At this point in the curriculum, the students had previous experience with SPs, but none of the previous simulation experiences included real-time, face-to-face feedback from the SPs. All data were collected as a part of the regular teaching process. A 20-min simulation activity was used to teach the students how to establish rapport, administer the Canadian Occupational Performance Measure (COPM), identify and address consumer needs and areas of strengths and weaknesses, and collaborate with the client to establish meaningful goals. The students were divided into groups of two to three for the simulation activity. Before the simulation, the students were taught how to administer the COPM and tasked with deciding how to gather the necessary information from the client. The students were provided a rubric during the simulation pre-brief session to understand the expectations of the activity.

The OT faculty scored the individual rubrics during the simulation and observed student performance. Immediately following the simulation, the SP stepped out of character for a 5-min debrief with the group regarding their perception of the students' verbal and non-verbal communication skills, including whether the SP felt the students worked to develop a rapport and whether they were comfortable providing information based on the students' approach.

In the next class period, the students were given the graded rubric with a numerical score and written feedback from the instructor. After the students received the graded rubric with the written feedback, they were asked to individually answer six debrief questions (see Table 1) regarding their experiences with the simulation process. These written reflections detailed their perspectives regarding how they would incorporate the real-time SP feedback, numerical feedback, and written feedback from the instructor in future client encounters. The researchers coded and analyzed the written reflections for emerging themes (Saldaña, 2021).

Instrument

The researchers used a locally developed assessment rubric (see Appendix) for evaluating OT students' key competencies: client interview. The original rubric was evaluated by an OT faculty (P L-K) and a psychometrician (KX). Some of the edits improved the rubric's quality. The final version of the rubric included eight items: time management, communication, behaviors, accuracy, thoroughness, organization, ethics, and wrap-up. The rubric used a 5-point behaviorally anchored scale, where 5 =

Performs well, competent without error, 4 = *Slight misstep, error is self-corrected*, 3 = *Adequate but requires more practice* (up to 1–2 errors noted), 2 = *3 errors noted, or cues required*, 1 = *>3 errors*. The course director used the rubric to score the OT students. Each student was provided with a score before their debrief session. The student score distribution and reliability of the OT competency rubric were reported.

Data analysis

Quantitative Analysis

Descriptive statistics were reported regarding the OT students' assessment scores. Item analysis and reliability results were reported for the OT competency assessment rubric.

Qualitative Analysis

Qualitative data consisted of student written responses to the debrief questions. Debrief questions are listed in Table 1. The student responses to the debrief questions were de-identified and analyzed using thematic analysis with three researchers (LW, P L-K, KX) using traditional coding methods for first and second-cycle coding (Saldaña, 2021). Then, data were analyzed using NVivo Qualitative Coding Software (released in 2020) to organize codes and themes that emerged from the analysis. All of the researchers extracted the themes independently and then together. Consensus was achieved through discussion.

Table 1

Debrief Questions

General Question	What was your general reaction to this simulation?
Question #1	How did you feel during this activity?
Question #2	How did you feel after this activity?
Question #3	What strategies did you observe from others in your group that you found useful for your future practice?
Question #4	What were some of the oral feedback comments you received from the SP? How did these comments make you feel?
Question #5	How did you use the information from the numerical score from the rubric as feedback for learning?
Question #6	How can you incorporate your score from the rubric and the SP feedback together to improve future performance?

Results

The student demographics were as follows: 37 females (32 White/Caucasian, two Asian, two Latina, and one Black/African American) and two males (Caucasian); six students self-identified as first-generation college students. All students were between 21 and 32 years of age.

Descriptive statistics on the students' performance scores are summarized in Table 2. On average, their mean score was 4.82 and there was very little variance between students (*SD* =.17).

Table 2 provides descriptive statistics on the students' responses to the rubric and total score (*N* = 39).

Table 2

Descriptive Statistics on the Students' Responses

	Time Management	Communication	Behaviors	Accuracy	Thoroughness	Organization	Ethics	Wrap-Up
"3" (%)	-	-	-	10.3	7.7	2.6	-	-
"4" (%)	15.4	12.8	20.5	25.6	10.3	7.7	-	7.7
"5" (%)	84.6	87.2	79.5	64.1	82	89.7	100	92.3

	Mean	Standard Deviation	Minimum	Maximum
Ave.	4.82	.17	4.5	5.0

Item analysis results and reliability reports were summarized in Table 3. Reliability results showed poor reliability for the scale. However, since the students' assessment score was formative, the researchers were not concerned about the reliability of the scale. The researchers turned to the qualitative part of our analysis. The third author reviewed the qualitative and quantitative analysis results for data triangulation.

Table 3
Item analysis and Reliability Report

	Time Management	Communication	Behaviors	Accuracy	Thoroughness	Organization	Ethics	Wrap-Up
Item disc.	.60	-.09	.06	-.05	.07	.17	NA	.35
Rel.	Professionalism = .24			Interpersonal =. 27				
Scale	.28							

Note. Item disc. = Item discrimination; Rel. = Reliability; Scale = Scale reliability. Reliability was reported using Cronbach α. General speaking, α > = .9, excellent; .8 < = α < .9, good; < = .7 α < .8, acceptable; α < .7, unacceptable.

Emerging Themes

Seven primary themes emerged from the student reflections: (a) the simulation was perceived as a realistic experience, (b) the simulation experience affirmed the students' identity as a future OT, (c) the overall simulation experience improved the students' confidence and comfort level, (d) working in a group was beneficial for learning, (e) immediate feedback from the SP was helpful for reflecting on the process before the debrief session, (f) a combination of numerical scoring from the rubric and real-time feedback enhanced learning, and (g) transformative learning occurred because of the disorienting dilemma.

The Simulation was Perceived as a Realistic Experience

The students reported in their reflections that this simulation experience felt authentic and was "more realistic and beneficial compared to other simulations." It was "more comfortable & natural," and they "felt like (they were) actually interacting with and getting to know the client." They stated they felt "comfortable because it felt like an actual experience," and they "felt like it was a real client." This simulation "really simulated a typical community setting."

The Simulation Experience Affirmed Students' Identity as a Future OT

The students reported in their reflections that this simulation experience helped confirm that they have the characteristics central to being an occupational therapist, such as "professionalism and active listening, empathy, and sensitivity." It was a "great way to demonstrate being relational and connecting with people" and a "reminder that OTs need to adjust to what each person needs." They stated they "love simulations because they allow practice with interpersonal and professional skills- a reminder of why we do what we do in OT." They "felt refreshed and inspired" and "felt like able to make SP feel at ease, laugh, and develop a connection." They "felt able to help SP understand OT and begin guiding toward next steps." One student reported, "The feedback made me feel good and that I had potential to be a great OT practitioner." Another stated that the simulation activity "made me feel significant to the OT process." Another student stated that this experience "reassured me I am on the right path." Other students stated that they were "challenged to communicate in a way that was warm and welcoming" and that the experience was "validating because I am hard on myself."

Overall Simulation Experience Improved Students' Confidence and Comfort Level

The students reported the simulation experience helped increase their confidence in establishing rapport with clients and interviewing clients to determine strengths as areas that are clients' goals for

growth. The students "felt energized by the experience" and expressed their improvements in their "abilities as well as groups abilities to make the client feel heard and give suggestions to the (simulated) client for growth." One student stated they have "much improvement for myself in regards to confidence." Another student stated they "felt it was an effective session and that I learned and gained confidence in how to talk to others in the future." Others made statements such as they "felt a little more confident about my abilities to effectively communicate with clients" and "learned a lot about making people feel comfortable and conducting an assessment with empathy."

Working in a Group was Beneficial for Learning

The students discussed in their reflections that while working in a group they observed each other's interactions with the SPs, which eased their anxiety and cultivated a sense of pride and cohesiveness. One student stated, "I knew if I stumbled, my group would support me." Another student stated the group experience "taught me a lot about considering the other person's efforts." The students stated they "really enjoyed working as a group" because they "felt more calm compared to previous simulations and supported by (their) team." They "helped each other throughout." The students described how it was helpful to see how peers interacted with SPs as an example of how to interact during future practice. They felt it was "natural to build off each other" because "three brains are better than one." Students "enjoyed perspectives from the group," and "trust in the team made the experience amazing." After the simulation, one of the group members reported that they "debriefed when we walked out together and discussed positive aspects and praised each other for individual strengths."

Immediate Feedback from the SP was Helpful for Reflecting on the Process Before the Debrief Session

When asked about their feelings related to feedback from the SP, the students overwhelmingly expressed the benefits of immediate feedback directly after the simulation as a way to decrease their anxiety and provide information for reflection regarding their performance. They stated they had a "sense of relief" after it was over, they "loved having the real-time feedback from the SP" to "have open conversation with a client and get verbal feedback rather than reading (it later)"and "felt more relaxed hearing feedback from the SP." They said it was "good to hear how we made her feel validated and heard," and it made them feel "accomplished," "reassured," and "encouraged." The real-time feedback allowed them "to realize what we did made an impact on someone else." The "positive feedback was validating" and "positive comments made me passionate to do better."

Combination of Numerical Scoring from Rubric and Real-Time Feedback Enhanced Learning

When asked how they used the information from the numerical score from the rubric along with the feedback for learning and for future performance, the students expressed benefits, such as it "allowed me to compare and contrast what I did well and what needs to be improved upon." The numerical and real-time feedback "assured me I was on the right track" to improve "interpersonal and professional skills" and "incorporate them to become a better future practitioner by understanding how to engage and still do what I need to do." The students stated they will use the feedback to "reflect" on their experience and "identify areas" they "can improve to make changes for the future." Numerical and real-time feedback helped them "know what to work on individually." One student stated that the "written feedback was more helpful, but the numerical score laid out the information in a quantitative format," helping to increase "confidence in my ability to connect with people and make others feel comfortable." The numerical score helped "solidify my feelings about my performance," provided "feedback from different perspectives," "helps with imposter syndrome," "helped remind me that I'm on the right track," and "reflects the

improvements I thought I should make." Other comments regarding the numerical scoring included that it "gave a good idea about my performance in every aspect of the simulation and how to proceed" and the "numerical scoring was great to visually see what areas I could improve on in order to work towards being a better future OT."

Transformative Learning Occurred Due to the Disorienting Dilemma

Another theme that emerged is related to Mezirow's (2000) adult learning theory concept that argues transformative learning occurs through disorienting dilemmas. Transformative learning takes place in stages. According to Merriam and Caffarella (1999), Mezirow's theory has 10 stages that adults experience when transforming. These stages include (a) experiencing a disconcerting dilemma, (b) examining self, (c) critically assessing assumptions, (d) recognizing that others share similar experiences, (e) exploring options for action, (f) building self-confidence, (g) forming a plan of action, (h) acquiring skills and information for implementation, (i) practicing a new plan and roles, and (j) reintegrating into society with new perspectives. Consistent with Mezirow's theory, the students made statements such as they were "thankful for opportunities to be nervous and uncomfortable to grow" and "have to feel uncomfortable to be comfortable." The students stated they appreciated the simulation experience being designed to provide a "balance of being prepared and open to the unknown." Multiple students made comments in their reflections that described feelings of "anxiety," "nervousness," and "stress" at the beginning of the simulation and increased "comfort" and "enjoyment" as the activity progressed.

Discussion

The participants indicated that the realism of the simulated experience and the immediate real-time feedback provided by the SPs promoted learning and reflection. Effective feedback has been found to nurture recipient reflection-in-action (Archer, 2009; Fraser & Precin, 2022). In this study, the SP gave feedback immediately following the encounter so that students could reflect on and learn from their performance. Unique to this simulation was the feedback that the SP provided immediately following the simulation. This served the purpose of relieving anxiety regarding the grade they would receive. It also allowed for deeper reflection and the ability to process the experience before the formal debriefing session.

The students overwhelmingly expressed positive perceptions of their experience engaging in the simulation as a group, which is consistent with the literature on the benefits of group and team-based learning (Kramer et al., 2007; Lexen et al., 2018; Powers et al., 2020; Tan et al., 2021). The students reported that working in a group to learn communication skills and assessment procedures improved their confidence by making them feel safe and supported, which corresponds with Vuuren's (2016) findings that OT students reported that simulation experiences were a safe method for learning essential skills before their first clinical fieldwork placement. Group work also allowed them to practice the therapeutic process in advance. They went into the simulation with a plan for the interaction: what each would say and do and a timeline for each interaction. When it was each group member's turn to talk, the other group members served as backup if the member forgot what they were supposed to do or if they were too anxious to proceed. When they had to adapt or alter their preplanned script, the other group members could support them and serve as a safety net so that the interview continued and was completed in a timely manner. This created a natural conversation that flowed easily, making the "client" more comfortable.

The descriptive statistics of OT students' assessment scores based on the assessment rubrics demonstrated a homogeneous (little variance in their score), negatively skewed distribution (most of students' performance scores were significantly above the average and close to the maximum). This result is consistent with the purpose of formative assessment and the students' reflections (e.g., Theme 6). This

study showed that OT students found both numerical feedback and real-time feedback helpful for their learning and provided a richer experience (see Theme 7).

An unexpected concept that emerged during the analysis of the student reflections was the concept of transformative learning through disorienting dilemmas (Mezirow, 2000). During the simulation, the students were placed in an unfamiliar situation that forced them to respond using clinical reasoning and therapeutic use of self as the situation unfolded. Based on real-time verbal and non-verbal responses from the SPs, the students had to alter and adapt their approach to develop rapport and gather necessary information. This was disorienting to the students, as many reported feeling anxious and fearful about how the SP might respond. The students realized that this simulation closely mirrored client interactions, which was different from previous experiences where they had practiced on classmates who they knew and with whom they were comfortable. This disorienting dilemma facilitated the students questioning their previously held assumptions while being provided with feedback and support from their instructors (Roberts, 2013). After the encounter and debrief with the SPs, the students reported feeling that their competence as future occupational therapists was validated, and the reasoning behind the skills learned in class was more apparent and applicable to practice. Their confidence in handling future client interactions was increased.

The rubric used in the simulation encounter did not work well for the group performance. Several of the rubric items were broad and not individualized enough to score the students accurately on an individual basis. The students received credit on the rubric even if only one student performed the task. A more individualized rubric tailored to smaller, more incremental components that measure specific characteristics rather than a broad category would better capture student competencies. Differences in what is scored individually and what is scored for the group should be better delineated, so students must pass both individual and group competencies to show that they have mastered the skill. Although obtaining a good reliability on the scale is not a major goal for formative assessment purposes, we expect with rubric revision we will improve the overall reliability of the rubric.

Limitations

Although the students received their scores on the rubric before writing their reflections, a limitation of this study could be that student responses were influenced by the awareness that their instructor would read their reflections. Another limitation could be the small sample size. The study used convenience sampling so only the 39 students enrolled in the class were included. The rubric used for the encounter did not adequately measure individual performance. A rubric that measures both group and individual characteristics should be developed to capture individual performance while still allowing the group experience. In addition, one of the researchers was the instructor providing the written and numerical feedback for this simulation experience. Two of the researchers developed the rubric to provide the numerical feedback. This could have potentially been a source of bias. To decrease the likelihood of bias, the researchers deidentified and analyzed the data after the conclusion of the course. One of the authors helped analyze deidentified data but was not part of the simulation experience.

Future studies should include a comparison of the results of this study with future cohorts. Future studies could also include interprofessional simulations where occupational therapists, physical therapists, and speech/language pathologists students could perform a combined evaluation that allows the students to see the differences between scopes of practice while learning to function as part of an interprofessional team. The results of this and similar studies could inform outcome measures and practices for future

simulation experiences. The studies could also help inform the design of simulations to provide real-time feedback from SPs to students in addition to numerical scores.

Conclusion and Recommendations

Simulation experiences that involve reflection, feedback, and group or team-based learning have been found to impact student learning positively. Simulations provide a safe environment for students to practice skills before entering the field. Feedback from students and SPs illuminates these benefits. Because of the positive results from these practices, simulations are becoming a standard educational practice for OT and other pre-professional health care students.

This research contributes to professional practice by detailing simulation strategies instructors can use to prepare students for clinical practice. For example, real-time feedback from the SPs mimics therapist-client interactions by preparing students to learn how to receive constructive criticism they might receive in the field. Students can use this experience to learn how to control their emotions and respond appropriately to feedback. In addition, this research also provides instructors with evidence to show how numerical scores may not always provide comprehensive information for students to use to increase their performance. This research added to the literature surrounding the importance of various forms of feedback provided in a course of simulation to foster insight into the impact of students' nonverbal and verbal communication on establishing rapport with future clients. The findings illustrate that numerical and written feedback from the instructor was more meaningful when combined with real-time SP feedback, and they can potentially work in synergy. Consistent with the literature, this study found that integrating numerical feedback and real-time SP feedback, along with reflection, enriched OT students' learning experience by providing ongoing scaffolding tools to increase self-confidence and make meaning of learning clinical reasoning skills.

References

Accreditation Council for Occupational Therapy Education. (2018). *2018 Accreditation Council for Occupational Therapy Education (ACOTE®) Standards and Interpretive Guide*. https://acoteonline.org/wp-content/uploads/2020/10/2018-ACOTE-Standards.pdf

Agency for Healthcare Research and Quality. (2016). *Healthcare Simulation Dictionary* (2nd ed.).

American Occupational Therapy Association. (2022). Occupational therapy fieldwork education: Value and purpose. *The American Journal of Occupational Therapy*, *76*(Suppl. 3), 7613410240. https://doi.org/10.5014/ajot.2022.76S3006

Archer, J. (2009). State of the science in health professional education: Effective feedback. *Medical Education*, *44*(1), 101–108. https://doi.org/10.1111/j.1365-2923.2009.03546.x

Bennet, R. E. (2010). Formative assessment: A critical review. *Assessment in Education: Principles, Policy & Practice*, *18*(1), 5–25. https://doi.org/10.1080/0969594X.2010.513678

Bennett, S., Rodger, S., Fitzgerald, C., & Gibson, L. (2017). Simulation in occupational therapy curricula: A literature review. *Australian Occupational Therapy Journal*, *64*(4), 314–327. https://doi.org/10.1111/1440-1630.12372

Bethea, D. P., Castillo, D. C., & Harvison, N. (2014). Use of simulation in occupational therapy education: Way of the future? *American Journal of Occupational Therapy*, *68*(Suppl. 2), S32–S39. https://doi.org/10.5014/ajot.2014.012716

Boyd, R., & Myers, J. (1988). Transformative education. *International Journal of Lifelong Education*, *7*(4), 261–84. https://doi.org/10.1080/0260137880070403

Bradley, G., Whittington, S., & Mottram, P. (2013). Enhancing occupational therapy education through simulation. *British Journal of Occupational Therapy*, *76*(1), 43–46. https://doi.org/10.4276/030802213X13576469254775

Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Sage.

Donovan, L., & Mullen, L. (2019). Expanding nursing simulation programs with a standardized patient protocol on therapeutic communication. *Nurse Education in Practice*, *38*, 126–131. https://pubmed.ncbi.nlm.nih.gov/31276971/

Feekery, A., Chisholm, K., Jeffrey, C., & Diesch, F. (2021). Enhancing students' professional information literacy: Collaboratively designing an online learning module and reflective assessments. *Journal of Information Literacy*, *15*(2), 150–165. http://doi.org/10.11645/15.2.2856

Fraser, M., & Precin, P. (2022). Development and content validity of the Personal-Professional Development Tool for

occupational therapy students during community-based service learning. *Journal of Occupational Therapy Education*, *6*(4). https://doi.org/10.26681/jote.2022.060406

Ghezzi, J., Higa, E., Lemes, M., & Marin, M. (2021). Strategies of active learning methodologies in nursing education: An integrative literature review. *Revista Brasileira de Enfermagem*, *74*(1), e20200130. https://doi.org/10.1590/0034-7167-2020-0130

Glazzard, J., & Stones, S. (2019). Student perceptions of feedback in higher education. *International Journal of Learning, Teaching, and Educational Research*, *18*(11). https://doi.org/10.26803/ijlter.18.11.3

Grant, T., Thomas, Y., Gossman, P., & Berragan, E. (2021). The use of simulation in occupational therapy education: A scoping review. *Australian Occupational Therapy Journal*, *68*(4), 345–356. https://doi.org/10.1111/1440-1630.12726

Haughney, K., Wakeman, S., & Hart, L. (2020). Quality of feedback in higher education: A review of the literature. *Educational Science*, *10*(3), 60. https://doi.org/10.3390/educsci10030060

Hayden, J. K., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation*, *5*(Suppl. 2), S3–S40. https://doi.org/10.1016/S2155-8256(15)30062-4

Henderson, W., Coppard, B., & Qi, Y. (2017). Identifying instructional methods for development of clinical reasoning in entry-level occupational therapy education: A mixed methods design. *Journal of Occupational Therapy Education*, *1*(2). https://doi.org/10.5014/ajot.2018.72S1-PO7010

Hill, Y. Z., & Stitt-Bergh, M. (2021). Connecting assessment with teaching through faculty capacity building: An example of an oral communication assessment project. *Intersection: A Journal at the Intersection of Assessment and Learning*, *2*(3). https://files.eric.ed.gov/fulltext/EJ1339123.pdf

Issenberg, S., Mcgaghie, W., Petrusa, E., Gordon, D., & Scalese, R. (2009). Features and uses of high-fidelity medical simulations that lead to effective learning: A BEME systematic review. *Medical Teacher*, *27*(1), 10–28. https://www.tandfonline.com/doi/epdf/10.1080/01421590500046924?needAccess=true

Jeffries, P. R., Bushardt, R. L., DuBose-Morris, R., Hood, C., Kardong-Edgren, S., Pintz, C., Posey, L., & Sikka, N. (2022). The role of technology in health professions education during the COVID-19 pandemic. *Academic Medicine*, *97*(3), S104–S109. https://doi.org/10.1097/ACM.0000000000004523

Johnson, C., Keating, J., Leech, M., Congdon, P., Kent, F., Farlie, M., & Molloy, E. (2021). Development of the feedback quality instrument: A guide for health professional educators in fostering learner-centred discussions. *BMC Medical Education*, *21*(382). https://doi.org/10.1186/s12909-021-02722-8

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development*. Pearson.

Kramer, P., Ideishi, R. I., Kearney, P. J., Cohen, M. E., Ames, J. O. Shea, G. B., Schemm, R., & Blumberg, P. (2007). Achieving curricular themes through learner-centered teaching. *Occupational Therapy in Health Care*, *21*(1–2), 185–198. https://doi.org/10.1080/J003v21n0

Lexen, A., Hultqvist, J., & Amner, G. (2018). Occupational therapy student experiences of a university mental health course based on an integrated application of problem-based and team-based learning. *Scandinavian Journal of Occupational Therapy*, *25*(1), 70–77. https://doi.org/10.1080/11038128.2017.1367416

Lim, S. M., & Rodger, S. (2010). The use of interactive formative assessments with first-year occupational therapy students. *International Journal of Therapy and Rehabilitation*, *17*(11), 576–585. https://doi.org/10.12968/ijtr.2010.17.11.79538

Mann, K., Gordon, J., & MacLoed, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Science Education*, *14*, 595–621. https://doi.org/10.1007/s10459-007-9090-2

Merriam, S., & Caffarella, R. (1999). *Learning in adulthood: A comprehensive guide* (2nd ed.). Jossey-Bass.

Mezirow, J. (2000). Learning to think like an adult: Core concepts of transformation theory. In J. Mezirow & Associates (Eds.), *Learning as transformation* (pp. 3–34). Jossey-Bass.

Molitor, W. L., & Nissen, R. (2020). Correlation between simulation and fieldwork performance in adult physical rehabilitation. *Journal of Occupational Therapy Education*, *4*(2). https://doi.org/10.26681/jote.2020.040209

Morris, T. (2020). Experiential learning – A systematic review and revision of Kolb's model. *Interactive Learning Environments*, *28*(8), 1064–1077. https://doi.org/10.1080/10494820.2019.1570279

Nestel, D., Roche, J., & Battista, A. (2017). Creating a quality improvement culture in standardized/simulated patient methodology: The role of professional societies. *Advances in Simulation*, *2*. https://doi.org/10.1186/s41077-017-0051-4

Nieuwoudt, L., Hutchinson, A., & Nicholson, P. (2021). Pre-registration nursing and occupational therapy students' experience of interprofessional simulation training designed to develop communication and team-work skills: A mixed methods study. *Nurse Education in Practice*, *53*, 103073. https://doi.org/10.1016/j.nepr.2021.103073

Ozelie, R., Moeller, M., & Newmark, T. (2023). Impact of virtual simulation-based level I fieldwork on level II fieldwork performance. *Journal of Occupational Therapy Education*, *7*(2), 13. https://doi.org/10.26681/jote.2023.070213

Powers, K., Neustrup, W., Thomas, C., Saine, A., Sossoman, L. B., Ferrante-Fusilli, F. A., Ross, T. C., Clark, K., & Dexter, A. (2020). Baccalaureate nursing students' experiences with multi-patient, standardized patient simulations using telehealth to collaborate. *Journal of Professional Nursing*, *36*(5), 292–300. https://doi.org/10.1016/j.profnurs.2020.03.013

Roberts, N. (2013). *Disorienting dilemmas: Their effects on learners, impact on performance, and implications for adult educators*. [Doctoral dissertation, Florida International University, USA]. FIU Digital Commons. https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=1249&context=sferc

Sakemiller, L., & Toth-Cohen, S. (2020). Standardized patient encounter: An innovative circular design to enhance fieldwork readiness. *Journal of Occupational Therapy Education*, *4*(4). https://doi.org/10.26681/jote.2020.040415

Sarikocet, G., Ozcan, C., & Elcin, M. (2017). The impact of using standardized patients in psychiatric cases on the levels of motivation and perceived learning of nursing students. *Nurse Education Today*, *51*, 15–22. https://doi.org/10.1016/j.nedt.2017.01.001

Saldaña, J. (2021). *The coding manual for qualitative researchers*. (4th ed.). Sage.

Schoo, A. M., Lawn, S., Rudnik, E., & Litt, J. C. (2015). Teaching health science students foundation motivational interviewing skills: Use of motivational interviewing treatment integrity and self-reflection to approach transformative learning. *BMC Medical Education*, *15*, 228. https://doi.org/10.1186/s12909-015-0512-1

Shea, C. (2015). High-fidelity simulation: A tool for occupational therapy education. *The Open Journal of Occupational Therapy*, *3*(4). https://doi.org/10.15453/2168-6408.1155

Sibbald, K. R., MacKenzie, D. E., & Harris, J. (2023). Occupational therapy students' perceptions of feedback during pre-fieldwork simulation debrief: Useful and why. *Journal of Occupational Therapy Education*, *7*(1). https://doi.org/10.26681/jote.2023.070113

Tan, B., Yeh, I., & Liang, P. (2021). Occupational therapy students' experiences of team-based learning: A multi-year

study. *Journal of Occupational Therapy Education*, *5*(1). https://doi.org/10.26681/jote.2021.050108

Tsingos, C., Bosnic-Anticevich, S., & Smith, L. (2015). Learning styles and approaches: Can reflective strategies encourage deep learning*? Currents in Pharmacy Teaching and Learning*, *7*(4), 492–504. https://doi.org/10.1016/j.cptl.2015.04.006

Vuuren, S. (2016). Reflections on simulated learning experiences of occupational therapy students in a clinical skills unit at an institution of higher learning. *South African Journal of Occupational Therapy*, *46*(3), 80–84. http://doi.org/10.17159/2310-3833/2016/v46n3/a13

Walls, D., Fletcher, T., & Brown, D. (2019). Occupational therapy students' perceived value of simulated learning experiences. *Journal of Allied Health*, *48*(1), e21–e25. https://core.ac.uk/reader/343745360

Weaver, M. (2006). Do students value feedback? Student perceptions of tutors' written responses. *Assessment and Evaluation in Higher Education*, *31*(3), 379–394. https://doi.org/10.1080/02602930500353061

Winston, K. A., & Dirette, D. P. (2022). Clarifying mixed methodology in occupational therapy research. *The Open Journal of Occupational Therapy*, *10*(2), 1–3. https://doi.org/10.15453/2168-6408.2042

Wyllie, G., French, E., Dodd, N., Lee, Y., & Honey, M. (2020). How to bridge the theory-to-practice gap. *Kai Tiaki: Nursing New Zealand*, *26*(1), 22–23. https://www.proquest.com/openview/8af36ca245f8d51137bb8c7ea1c4527c/1?pq-origsite=gscholar&cbl=856343

Young, K., Palmer, S., Binek, C., Tolson, M., & Campbell, M. (2019). Assessment-led reform: Creating a sustainable culture for WIL. *Journal of Teaching and Learning for Graduate Employability*, *10*(1), 73–87. https://search.informit.org/doi/epdf/10.3316/informit.580590456250840

Appendix

5 = Performs well, competent without error
4 = Slight misstep, error is self-corrected
3 = Adequate, but requires more practice (up to 1–2 errors noted)
2 = 3 errors noted, or cues required
1 = >3 errors

OT 531 Community Evaluation
Evaluation Form

Student: ----------

Description: Students will be in groups of two to three for a simulated community-based client evaluation. Students will conduct a semi-structured interview with a simulated client in a manner consistent with practice in the field. Professional dress and behavior are expected at all times.

ACOTE Standards: B.4.4, B.4.5, B.4.26

Competencies	**5**	**4**	**3**	**2**	**1**
Professionalism: **Time Management:** Arrives to the site before the scheduled start time and completes the interview in the given time frame					
Communication: Refrains from biased language or actions that may be perceived as derogatory in nature; interacts with the client professionally					
Behaviors: Dresses in appropriate clothing, refrains from cell phone use, and remains actively engaged					
Interviewing Skills: **Accuracy:** Probes the client for more information using open-ended questions; accurately describes or demonstrates the use of the assessment tool					
Thoroughness: Ensures that as much information concerning the client's background, interests, and needs is gathered by proactively					
Organization: Demonstrates organization and proper management of the materials being used					
Ethics: Considers ethics of occupational therapy when conducting interview and asking questions; demonstrates transparency by clearly introducing self and role as an occupational therapy student; accurately explains COPM, as well as reviews information with client					
Wrap–Up: The student or student group provides a conclusive wrap-up for the client and identifies what the "next steps" are in the process					
Total Score = _____/40 = _% x 25= __					

Comments and Feedback:
Instructor Feedback:
SP Feedback: