

2022

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Nicole C. Harris
University of North Dakota

Sarah Nielsen
University of North Dakota

Marilyn G. Klug
University of North Dakota

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Recommended Citation

Harris, N. C., Nielsen, S., & Klug, M. G. (2022). Level I Fieldwork Using Simulation: Student Performance Outcomes and Perceptions. *Journal of Occupational Therapy Education*, 6 (2). <https://doi.org/10.26681/jote.2022.060216>

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Abstract

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Keywords

Simulation, Fieldwork, Outcomes, Perceptions, Simucase

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Level I Fieldwork Using Simulation: Student Performance Outcomes and Perceptions

Nicole C. Harris, EdD, OTR/L

Sarah K. Nielsen, PhD, OTR/L, FAOTA

Marilyn G. Klug, PhD

University of North Dakota

United States

ABSTRACT

The purpose of this study was to examine students' perceptions and performance outcomes of a virtual fieldwork using Simucase® in conjunction with supplemental activities and debriefing opportunities. The simulation replaced Level I clinic-based fieldwork experiences that were cancelled due to COVID-19. Quantitative and qualitative data were collected using a modified evaluation tool to assess student performance outcomes and perceptions for students in the Year one Occupational Therapy Doctorate (OTD) cohort (n=57) and the Year two Master of Occupational Therapy (MOT) cohort (n=57) enrolled in a public university in the rural Midwest. Student ratings were compared using chi-square test of independence statistics and correlations with faculty ratings were estimated using Spearman's correlation. Findings suggest that students performed high in most areas for six professional behaviors and five professional skills. Creswell and Creswell's (2018) approach was used to analyze and compare student perceptions within cohorts to establish themes. Six themes were identified in students' skill set and confidence with virtual fieldwork, and two themes were identified for ways to enhance the experience.

In occupational therapy education programs, fieldwork provides hands on opportunities to further introduce students to the profession and assess skills at various levels (Accreditation Council for Occupational Therapy Education [ACOTE], 2018). Finding enough fieldwork placements willing to accept occupational therapy students across the nation has been an ongoing issue in the field due to changes in supervision requirements, reimbursement, and patient safety guidelines (Bethea et al., 2014). In response, ACOTE updated its Level I fieldwork standards; now "simulated environments, standardized patients, faculty-practice, faculty led visits and supervision by a fieldwork educator in a practice setting" (ACOTE, 2018, p. 41) are all acceptable.

In the spring semester of 2020, as the Corona Virus (COVID -19) was rapidly spreading, the World Health Organization declared a global pandemic resulting in major disruptions including in higher education. Health sciences programs were faced with the challenge of quickly finding alternative ways to provide clinical learning experiences. Replacing clinical application experiences was a particularly challenging task, as occupational therapy program students were scheduled to complete a Level I fieldwork in just two weeks. Fortunately, there are now other options for providing similar learning experiences, such as simulation.

Simulation is used to mimic a clinical experience allowing participants the chance to interactively engage. Simulation can be used to imitate real experiences through various means such as written cases, videos of simulated or real patients, through role play, use of standardized patients, or mannequins (Bennett et al., 2017). Simulation experiences are generally categorized by high and low fidelity based on level of authenticity (Grant et al., 2021). While there are no set guidelines to define which type of simulations fall into each category, the level of reality the student perceives increases the likelihood of it being high fidelity (Grant et al., 2021). For example, case studies and role playing are often considered low fidelity simulations. Simulation labs, standardized patients, or real patient cases such as in virtual simulation programs like Simucase® are generally considered high fidelity (Mattila et al., 2020).

Though simulation has been used as an educational tool in medical health care for many years, it is still relatively new in occupational therapy education (Bethea et al., 2014; Grant et al., 2021). Benefits of simulation in health care education have been identified in many fields that include both professional skills and professional behaviors. Professional skills enhanced through participation in simulation include critical or clinical reasoning, problem solving, and decision-making (Bethea et al., 2014). Professional behaviors improved with simulation participation have been communication, self-awareness, empathy, leadership and stress management due to the level of autonomy and realism (Bethea et al., 2014; Bracq, 2019; Gibbs et al., 2017; Hedge et al., 2015). Imms et al. (2018) conducted a randomized controlled trial comparing student outcomes of a clinical Level I fieldwork with a simulated fieldwork. Findings indicated that students in the simulation group had more opportunities to demonstrate professional skills such as clinical reasoning and documentation, and demonstrated slightly higher perceived confidence than those in a traditional clinic setting (Imms et al., 2018). In contrast to the strengths of simulation, the primary challenges identified included time necessary to prepare, the number of faculty for implementation, cost, and scheduling (Bethea et al., 2014).

While the simulation experience is pivotal in practicing various skills, students reported that group processing known as debriefing at the end of the experience is more beneficial than receiving feedback in the moment, or during the simulation (Walls et al., 2019). Debriefing, also referred to as guided reflection, can be led by the instructor or peers and allows students more time to specifically assess their decisions, actions, and communication in order to improve for future interactions with actual patients (Walls et al., 2019).

In order to ensure occupational therapy students were still gaining the skills necessary to become qualified entry level practitioners, the program chose to invest in a platform that provided simulated competency-based education and virtual assessment of students' clinical capabilities. The program was already evaluating virtual simulation platforms prior to the pandemic which made the decision to select a web-based tool easier. Simucase® was chosen as it offers simulation-based learning with videos of real clients and therapists. The program allows users to observe, evaluate, collaborate, and provide interventions to virtual clients (Ondo et al., 2019). Simucase® is specifically designed to assist users in health care professions master clinical skills specific to the profession, assess clinical competencies, and engage in interprofessional collaboration (Ondo et al., 2019). While feedback is given in real time about correctness of answers, debriefing to the process through the "why" is still helpful.

During the pandemic, many occupational therapy programs developed innovative strategies to address Level I fieldwork. Deluliis (2021) and colleagues set forth a blueprint for best practices during the COVID pandemic for Level I fieldwork. Furthermore, they called for further research to better understand student satisfaction and student performance outcomes. This study describes a similar pedagogical approach and addresses the need to further understand student performance outcomes and perceptions through the following research questions.

- What is the student's perception of a virtual Level I fieldwork experience?
- How do students perform on professional behaviors outcomes using a virtual Level I fieldwork?
- How do students perform on professional skills outcomes using a virtual Level I fieldwork?

Methods

A mixed-methods convergent parallel design was used to gain an initial understanding of the virtual Level I fieldwork experience (Creswell, 2012). The study took place at a rural midwestern university with approximately 10,000 enrolled students. Quantitative and qualitative data were collected using the Virtual Level I Fieldwork Evaluation (see Appendix A) developed by the program to assess student performance outcomes of Level I fieldwork for Year 1 Occupational Therapy Doctorate (OTD) students and Year 2 Master of Occupational Therapy (MOT) students that were in one of two tracks of coursework. The original evaluation tool was developed by the fieldwork committee who is comprised of five occupational therapists and one administrative secretary who assists with fieldwork tasks for the OTD program. The evaluation was modified from an existing tool used in the program to reflect the virtual format. Variables measured primarily remained the same from the original evaluation tool, but the format for scoring was adjusted. The tool was modified to require the student to self-score and the faculty to score. The student's grade is based on accuracy of the self-assessment (agreement between the faculty and the student). Because we had three weeks to develop and implement the fieldwork experience, the modified tool was not piloted. Secondary research approval was granted by the Institutional Review Board retrospectively. All students participated as part of normal educational practices and data was collected

through the learning management software. Fifty-seven students from the Year 1 OTD cohort and 57 students from the Year 2 MOT cohort completed the experience and the data collection tool. Faculty led small groups comprised of 8-10 students per group and completed the faculty evaluation portion of the data collection tool on each student supervised. Level I fieldwork courses traditionally have a ratio of 1 instructor to 8-10 students. We did not modify the ratio because given the learning objectives and tasks, we felt the ratio continued to be supportive of student learning. Additionally, 8-10 students in each small group allowed for pair work as well as still being conducive to small group discussion.

Fieldwork Experience

COVID-19 required replacement of a clinic-based five-day Level I fieldwork for Year 1 OTD and Year 2 MOT students. After review of the Level I fieldwork objectives associated with each course (see Appendix B), a variety of methods were considered and Simucase® was selected as a key element of the experience. Deluliis et al. (2021) put forth a best practice blueprint for using Simucase® for Level I fieldwork. Our study took place in a similar timeframe; however, it is noted that many of the best practice features discussed by Deluliis et al. (2021) are present in the learning experience described in this study. Also, it is noted that the student reflection questions are similar. We found simulation software served as a starting point for meeting our learning objectives but did not assist students in meeting all of the fieldwork learning objectives. For example, students are not required to document in Simucase® simulations. Students can select interventions but are not required to develop their own evidence-based interventions. In addition, a key element for student learning for simulation is the opportunity to de-brief (Walls et al., 2019). Simucase® offers potential debriefing questions, which were used in addition to questions specific to documentation and developed interventions. Following each case, students prepared responses to each debriefing question and then students and their instructor met to share and discuss the experience. Next, the authors established the following elements required in each experience: a) Two to three simulation cases that the learning experiences would be built around; b) Evidence application opportunities; c) Assessment administration in and out of Simucase®; d) Planning intervention for clients in Simucase® (for two courses that had intervention objectives); and es) Documentation (see Appendix C). Each fieldwork experience also included a timed daily schedule (see Appendix C). The daily schedules required independent work, paired work, and small group class work. This was intentionally completed so that students met deadlines such as they would in the clinic and experienced the structure of Level I fieldwork. We do realize that students would see more than 2-3 clients during a week; however, typically a Level I fieldwork would not require students to complete all the tasks that were asked of them in this designed experience.

Quantitative Data Analysis

Six professional behavior questions were asked regarding safety, communication, ethics, self-assessment, professionalism, and respect for diversity. Professional skills were measured using five questions: evaluation process, client-centered goal writing, use of resources/intervention development, application of theory and evidence, and

communication. Students were asked to consider how well prepared they felt for Level II fieldwork in each of the professional behavior and professional skills areas upon completing their Level I: Yes, if you felt confident and performed well (three points); Check Somewhat, if you felt somewhat confident but would like to continue working on this (two points); Check No, if you are not at all confident in this area (one point). Based on faculty observation and grading of assignments, faculty then noted if they agreed with the student scoring. They were scored with the same three values used for the professional behavior questions, 'Yes', 'Somewhat', and 'No'. Total scores based on the summated vales were created for professional behavior and skills. Faculty were also asked to rate the students using the same scoring system for all eleven questions. Their summated scores were also estimated.

Student ratings on professionalism were described for each question and a total score for professional behavior and professional skills. Prevalence of students who rated 'Yes' from Year 1 (N=57) and Year 2 (n=57) were compared with SAS v 9.4 software (SAS Institute Inc., Cary, NC) using chi-square statistics for each question. Independent t-test were used to compare average total scores of professional behavior and skills between years. Data was deidentified and kept on a password secure computer accessed by the statistician. The prevalence of faculty rating a student 'Yes' was compared to the student prevalence of 'Yes' using chi-square statistics. The correlation between student and faculty ratings was estimated with Spearman's correlation and agreement of the distribution of total scores was measured with the Kappa statistic.

Qualitative Data Analysis

Students were asked to write a response to the following two statements: a) Tell us how this virtual fieldwork experience enhanced your skill set and confidence for Level II fieldwork. Please be specific with features of the experience that were helpful; and b) Tell us how this virtual fieldwork experience could be modified to enhance your skill set and build your confidence for Level II fieldwork. Please be specific with suggestions. The second author had 11 years of experience in qualitative design and analysis and the first author had three years of experience in qualitative design and analysis. Using Creswell and Creswell's (2018) qualitative data analysis procedure, the first two authors read through the entire response set for the Year 2 MOT students, making notes to determine potential codes. The authors then met to compare potential codes that would be used to analyze the data. The data were then reviewed again and placed into codes followed by meeting again to reach consensus and determine the main themes emerging from the codes. The same process was completed again for the Year 1 OTD students. The data were analyzed by cohort so that comparisons and contrasts could be made. The final step in the process was writing about the findings. To address trustworthiness during the process, the authors met several times to confirm emerging codes and themes to minimize bias. The analysis process was documented using a table that illustrated direct quotes for each code that emerged. Because the study was retrospective and a part of course evaluation, we did not plan for or implement member checking which is a limitation of the study.

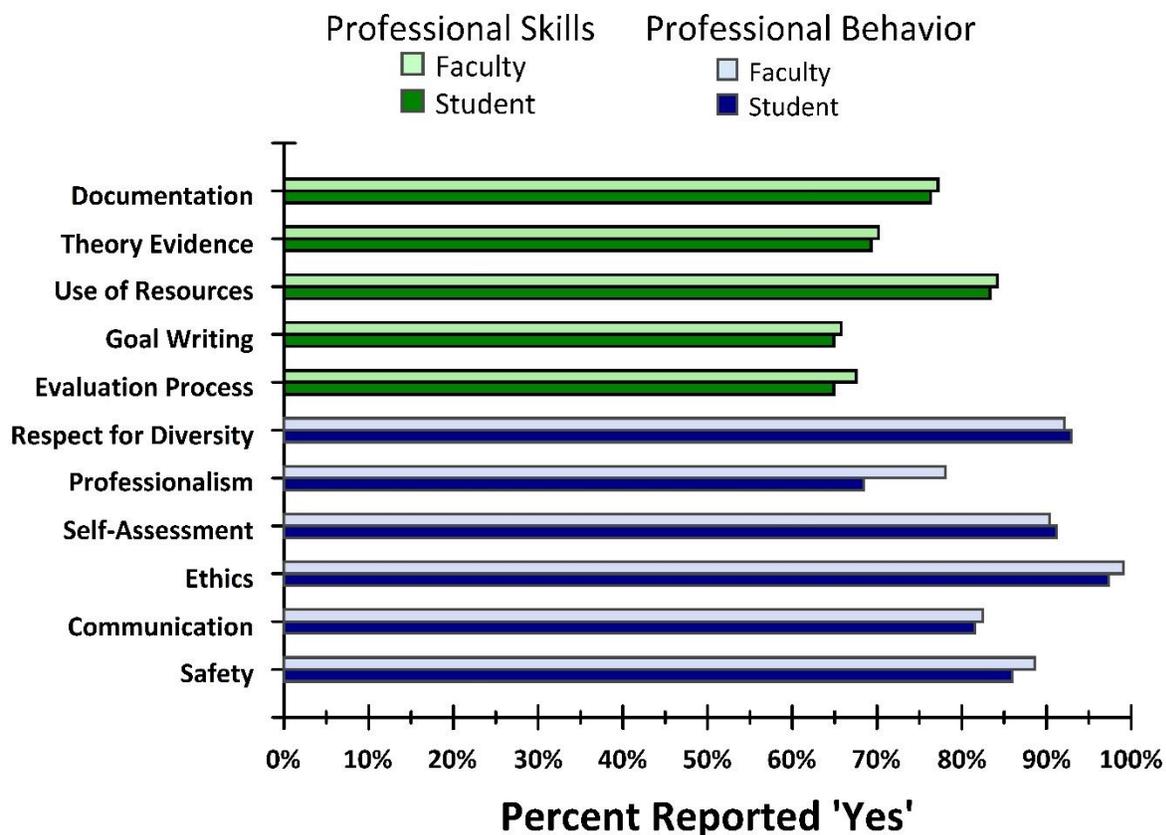
Results

Quantitative

Six questions were used to measure professional behavior, and five questions measured professional skills for 114 students on two yearly cohorts of 57 students each. Figure 1 shows the percent of students who answered 'Yes' to the questions. The highest ratings were by students in behavior measures of ethics (n=56, 98%), respect for diversity (n=53, 93%), and self-assessment (n=52, 91%). The lowest rated questions were professional skills of client-centered goal writing (n=37, 65%), evaluation process (n=37, 65%), professional behavior of professionalism (n=39, 68%), and application of theory and evidence (n=40, 69%). All but one student rated scores were 'Yes' or 'Somewhat'.

Figure 1

Prevalence of Students and Faculty who Reported 'Yes' to Professional Questions



Faculty also rated each student. Their corresponding ratings for each question are shown in Figure 1. The faculty ratings are nearly identical to the student ratings. Only the behavior professionalism shows faculty rating students much higher (a 9.7% difference) though this was not statistically significant.

Table 1 shows the change in prevalence of students who answered 'yes' to professional questions between two cohorts. All prevalences increased over time. Significant increases were found in behavioral areas of safety (21% increase, $p=.003$) and self-assessment (18% increase, $p=.003$). Skills which increased were evaluation process (39% increase, $p<.001$), goal writing (28% increase, $p=.003$), and theory evidence (19% increase, $p=.042$).

Table 1

Percent of Students Who Answered 'Yes' to Professional Questions by Year

	Year 1 (N=57)		Year 2 (N=57)		% Difference	p
	N	%	N	%		
Behavior						
Safety	43	75.44	55	96.49	21.05	.003
Communication	43	75.44	50	87.72	12.28	.147
Ethics	55	96.49	56	98.25	1.75	.999
Self-Assessment	47	82.46	57	100	17.54	.003
Professionalism	43	75.44	35	61.40	14.04	.158
Respect for Diversity	51	89.47	55	96.49	7.02	.271
Skills						
Evaluation Process	26	45.61	48	84.21	38.60	<.001
Goal Writing	29	50.88	45	78.95	28.07	.003
Use of Resources	44	77.19	51	89.47	12.28	.132
Theory Evidence	34	59.65	45	78.95	19.30	.042
Documentation	39	68.42	48	84.21	15.79	.078

Figure 2 shows box plots of average total behavior and skill scores for students each year. The average behavior scores in Year 1 were 16.95 (S.D. 1.25) and 17.40 (S.D. 0.84) for Year 2, a significant increase ($t=2.29$, $p=.024$). For average skill scores, Year 1 was 13.00 (S.D. 1.34) and Year 2 was 14.12 (S.D. 1.00), again a significant increase ($t=5.08$, $p<.001$).

Figure 2

Comparison of Mean Total Professional Behavior and Skill Scores Between Two Years

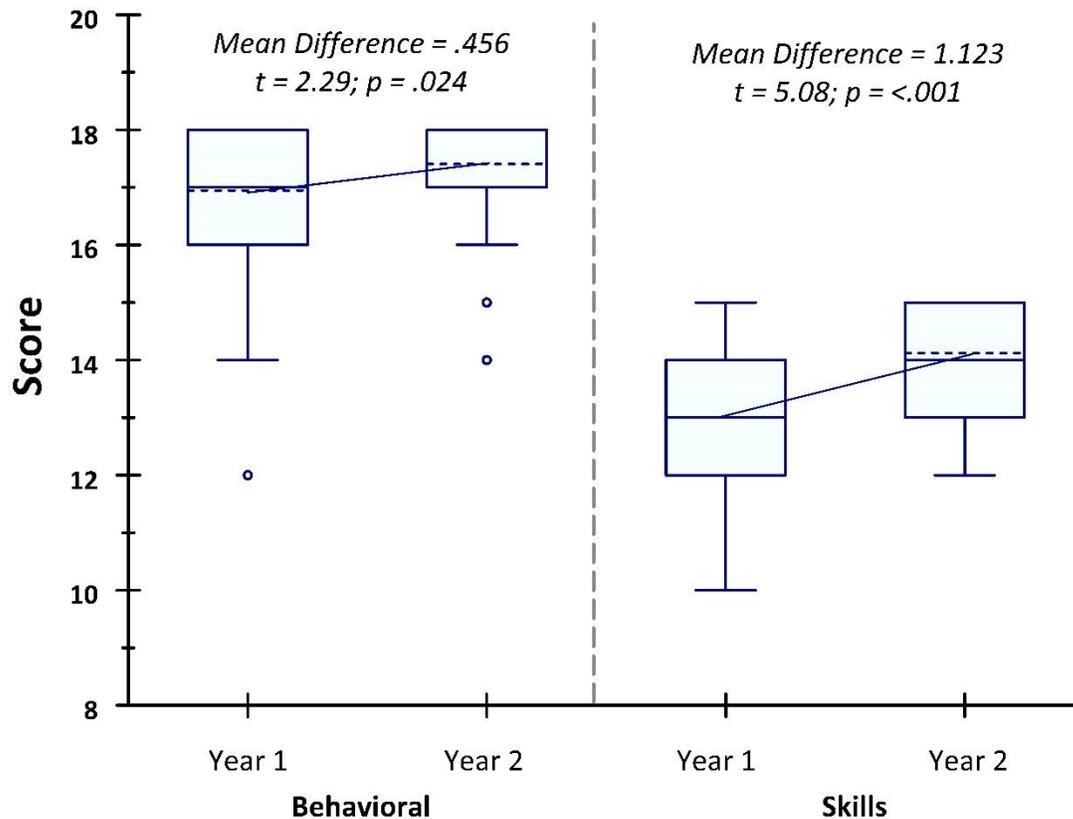
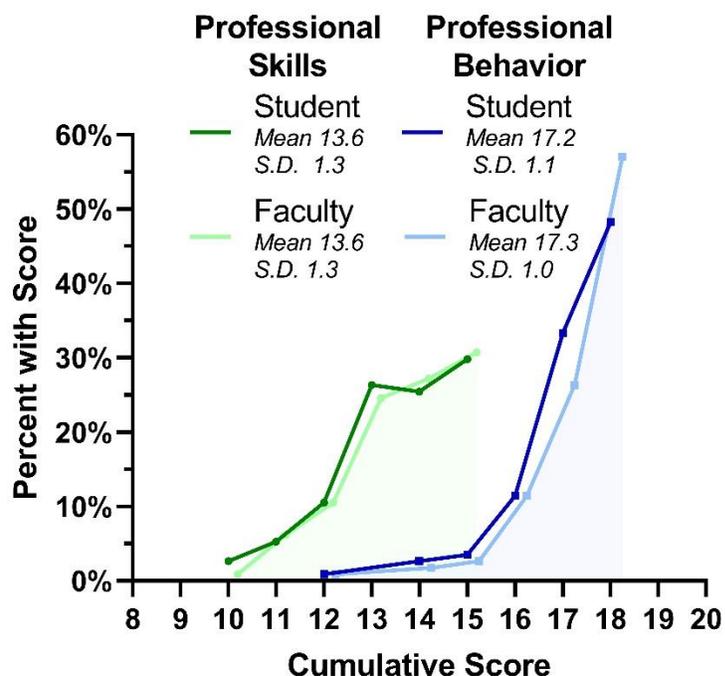


Figure 3 shows what percent of students and faculty had a total score of a specific value. Most total values were very high for both students and faculty. For professional behavior, 82% of the students had scores of 17 or 18, while 83% of the faculty rated them 17 or 18. Similarly, 82% of the students had professional skill totals of 13 to 15, while 82% of the faculty also rated students 13 to 15. The correlation between students and faculty for behavior was .844 ($p < .001$) and .987 ($p < .001$) for skills. Faculty rated students higher in professional behavior 13 times and lower twice (Kappa = .76). For professional skills, faculty rated students higher four times and never lower (Kappa = .942). When faculty and student data was compared for Year 1 and Year 2 students separately, the faculty data followed the same pattern of significance as shown in Table 1.

Figure 3

Percent of Faculty and Students Who Achieved a Specific Cumulative Score



Qualitative

Table 2 presents a summary comparison of the themes between the two cohorts and the associated codes with each of them. Six themes emerged from each cohort regarding virtual fieldwork and enhancement of student skill set and confidence. Four themes were similar and two were distinct for each cohort. Two themes emerged for ways to modify the experience to enhance skill set and confidence.

Table 2*Summary and Comparison of Qualitative Themes*

Enhancement of Skill Set and Confidence	
Year 1 OTD Theme (associated codes)	Year 2 MOT Theme (associated codes)
Collaboration (peer, faculty, debrief partners)	Collaboration (peers, faculty, other professionals)
Immediate feedback (learner mode, software features, mistakes)	Immediate Feedback (software feedback, peer feedback, instructor feedback)
Full evaluation process (profile, goals development)	Full OT process (different skill sets, evaluation, intervention, outcomes)
Reasoning (professional reasoning, clinical reasoning, Intentional Relationship Model)	Reasoning (critical thinking, clinical reasoning, processing, therapeutic reasoning)
Variety (clients, diversity of settings)	Confidence builder (safe place, test out abilities, more ready than I thought)
Structure (time schedule like a fieldwork, deadlines)	Evidence application (annotated bibs, best practice, doable in the clinic)
Modifications to Enhance Skill Set and Confidence	
Year 1 OTD Theme (associated codes)	Year 2 MOT Theme (associated codes)
Practical changes (schedule, debriefing facilitation, another case, software practice)	Practical changes (software practice, clients with behavioral difficulties, assessment of cognitive level, timing, more cases)
Simulation software recommendations (type of questions, clarity of questions, ability to type our own responses)	Simulation software recommendations (typed responses, Simucase® wasn't topdown, tech issues, accessibility, developing our own questions, student identified goals)

Similar Themes for Enhancement of Skill Set and Confidence

Collaboration was identified as an enhancing feature of the fieldwork. Students in both cohorts reflected upon the importance of collaboration with peers, faculty, and other professionals. S61 stated:

The cases also emphasized interprofessional collaboration as many of the clients also worked with a physical therapist, a speech-language pathologist, a home attendant, and/or a physician. These are all professionals that we will work with in the future so learning how to communicate and work together with them now is important.

S2 added, "my skills in developing intervention were especially enhanced by this experience because I was given many opportunities to plan, receive feedback on, and revise intervention plans." S4 identified communication skills enhanced stating "I was able to increase my communication with faculty and peers by being able to work on assignments as well as peer review information."

Immediate feedback was identified as critical to the learning experience; many students identified the learner mode feature of Simucase® as a benefit along with the immediate feedback given when selecting answers. This allowed for students to make mistakes in a safe setting to boost confidence (S10, S26, S66, S107). Students reflected both on feedback from the software as well as feedback from peers and faculty as they received feedback on documentation and intervention planning (S26, S29, S39).

Full evaluation process/Full OT process allowed for students to see what they might not in a clinic: the evaluation to the intervention process for Year 2 students and the full evaluation process for Year 1 students. S21 summarized what many students said in different ways:

This experience allowed me to practice walking through the entire therapy process. We have had a lot of practice with the assessment, intervention, and discharge processes separately on different case studies, but this was one of the first times where I actually got to connect all three processes with the same client.

S 65 added, “Being able to go through three evaluations all the way and receive feedback on how you did was very helpful.”

Reasoning development and assessment was clearly enhanced by the experience. Students remarked on the value of assignments, such as reasoning in action (S82) which allowed not only the student, but others to see their growth in reasoning over the course of a semester. Others highlighted specific types of reasoning, such as application of Taylor’s (2020) Intentional Relationship Model (S62, S82, S100, S101), whereas others spoke to critical thinking in the selection of assessments and intervention (S3, S12, S111, S116).

Unique Themes for Enhancement of Skill Set and Confidence

Variety was viewed as a unique benefit in simulation experience for Year 1 OTD students. S67 summed up the responses by many, “I am first appreciative that we were able to work with a variety of clients. I feel this is an experience I would have not necessarily received in a direct fieldwork experience.” Year 1 OTD students also appreciated that the experience had a time *structure* and felt more like a real-world setting.

In comparison, Year 2 MOT students specifically cited the experience as a *confidence builder* for Level II fieldwork. S17 stated:

This virtual fieldwork experience has enhanced my skill set and confidence for Level II Fieldwork. What I mean by this is the simulations were very nonthreatening and I was able to fully use my clinical judgement to make decisions.

Many students walked away with the sentiment that they were “more ready than they thought” (S 6, S16, S34, S35, S38, S44, S54). Students also cited *evidence application* as assisting them in “logically setting up interventions” (S14) and being able to do it in a way that was time efficient and practical in the clinic (S21).

Themes for Modifications to Enhance Skill Set and Confidence

The themes for modifications were the same in both the Year 1 OTD and Year 2 MOT students. *Practical changes* included the recommendation by nearly all students to have the opportunity to practice with the software prior to starting the experience. Many also wanted more cases throughout the week. Time changes were recommended and included both needing more time and having too much time to complete activities. Feedback regarding debriefing including breaking into smaller groups (8-10 students were in a group), having students facilitate debriefs, more focus on reflection, and adjustments to the actual questions (S38, S64, S75, S85, S87). *Simulation software recommendations* were abundant with the majority of students wanting the opportunity to type or develop their own questions versus select from a list so they could better assess their ideas. S83 added “I was surprised that the simulation supported the use of questions that start with “why” or, “do you”. The Intentional Relationship Model (Taylor, 2020) discourages those types of questions because they can trigger defensiveness.” Some felt the debriefing questions “fell short” (S79, S83, S84, S91, S103). Close captioning was not easily available which was frustrating for students. Students felt Simucase® was not focused on occupation. S11 stated, “I was surprised that the findings section didn’t utilize a more top-down approach, as it focused more on the specific diagnoses rather than occupational engagement and performance” and S23 felt more time was focused on diagnoses than understanding impact on occupation. When evaluating software to use for healthcare students, it may be useful to consider these recommendations by students.

Discussion

The intent of this study was to examine occupational therapy students’ perceptions and student performance outcomes when using alternative learning techniques in place of a traditional clinical fieldwork. Using a similar virtual fieldwork format as Delullis et al. (2021), Simucase® was used in conjunction with supplemental learning activities related to documentation and creating interventions in place of a clinical Level I fieldwork.

The findings suggest that students performed well on Level I fieldwork outcomes per self-rating and similar faculty rating. It was discovered that similar to other studies, simulation supported development of technical or professional skills (Bethea et al., 2014; Imms et al., 2018) and professional behaviors (Grant et al., 2021; Gibbs et al., 2017; Hedge et al. 2015). It is noted that professional behaviors were typically scored lower by the student than the faculty member. Review of the comments related to self-scoring on the Virtual Level I Fieldwork Evaluation revealed that students scored themselves lower because they did not wear their nametag to virtual fieldwork and faculty may not have noticed this. Additional information gleaned from the quantitative

data in this study included respect for diversity, theory evidence, and ethics. It is hypothesized and expected that Year 2 students would have higher ratings as this was the fifth Level I fieldwork experience, whereas for the Year 1 students, it was their second fieldwork experience. Of note though is that students in the Year 1 cohort performed much lower on the evaluation process and goal writing even though that is the focus of their semester.

Qualitative findings further support these benefits and offer insight into the students' perceptions. Students noted the importance of collaboration that existed between professionals using the Simucase® software as well as the collaboration with classmates and instructors. The immediate feedback allowed students the opportunity to know when they made a mistake in a safe environment and the added discussion with faculty and classmates offered an additional opportunity for reflection and to receive constructive feedback increasing overall learning. Similarly, Elliott and Brumbaugh (2020) found that students reported positive experiences with the supplemental learning tasks that were used in conjunction with the simulated evaluations used by Simucase®, particularly the debriefing. The positive impacts of the feedback and reflections support prior studies finding debriefing to be a fundamental component of simulation (Bethea et al., 2014; Walls et al., 2019). Finally, many recommendations for modifying the Simucase® software were identified by participants which has also been found in other similar studies (Elliott & Brumbaugh, 2020).

Within the study, it is noted that differences exist in student perception based on level of education. The Year 1 OTD cohort had not yet had an opportunity to go out on a clinic-based fieldwork. However, both groups did recognize that using this format allowed them to see the full occupational therapy process being carried out, which may not occur in the traditional settings.

Limitations

This study added additional information on students' perceptions of using a virtual platform in place of a traditional clinical fieldwork and examined outcomes. A primary limitation is that we did not use an already developed tool, such as the Satisfaction with Simulation Experience (SSE) scale developed by Levelt-Jones et al. (2011), for measuring outcomes of simulation. Instead, we asked students to rate their performance and confidence on the Level I fieldwork evaluation and then had a faculty member rate for comparison/contrast. A limitation in this process was that the same faculty member did not rate the performance of every student and bias may be present in the ratings. However, the scoring was set so that the student would receive points if they accurately rated their performance, not whether the student achieved competency on the rating. It was noted that students on occasion scored themselves lower than a faculty member more often than higher. Additionally, the Year one cohort measured in this study had not previously been on a traditional fieldwork leaving them nothing to compare their experience to. Although this study included score comparisons between student self-rating and faculty rating for comparison, it is recommended that additional research be carried out to examine outcomes further and compare score to a traditional fieldwork experience.

Implications For Occupational Therapy Education

Both the pandemic and already existing fieldwork shortages resulted in programs looking at alternative fieldwork instructional methods. As simulation methods are implemented, it is essential to study and document effective methods for Level I fieldwork (American Occupational Therapy Association [AOTA], 2018). Virtual platforms, such as Simucase® offer an alternative learning experience allowing students to gain the skills they would on a traditional fieldwork. Findings from this study support when Simucase® is used with supplemental activities and debriefing, students can demonstrate desired professional skills and behaviors previously gained through traditional fieldwork experiences. Additionally, this study provides insight into recommended changes for simulation software and student preferences for virtual fieldwork. Finally, the use of simulation software with supplemental activities and debriefing allows academic programs more control over consistency of the type of fieldwork experiences provided. This allows for more consistent evaluation of students' skills during the didactic experience prior to Level II fieldwork; however, it does not allow students to experience the true clinical experience that includes unpredictability, variability, and true interaction.

Conclusion

This study aimed to examine occupational therapy students' perceptions and performance outcomes when using alternative learning techniques in a virtual simulation fieldwork format. It was found that simulation supported students in developing and refining professional behaviors and professional skills needed for future Level II fieldworks and practice. While differences were found between cohorts of students dependent on where they were at in their didactic coursework, students' scores and feedback indicated a positive learning experience related to documentation and interventions.

References

- Accreditation Council for Occupational Therapy Education. (2018). 2018 Standards and Interpretive Guide (effective July 31, 2020). *American Journal of Occupational Therapy*, 72.7212410005. <https://doi.org/10.5014/ajot.2018.72S217>
- American Occupational Therapy Association (2018). Occupational therapy education research agenda—revised. *American Journal of Occupational*, 72(2), 7212420070p1–7212420070p5. <https://doi.org/10.5014/ajot.2018.72S218>
- 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, S32-239. <https://doi.org/10.5014/ajot.2014.012716>
- Bracq, M., Michinov, E., & Jannin, P. (2019). Virtual reality simulation in nontechnical skills training for healthcare professionals: A systematic review. *Simulation in Healthcare*, 14 (3), 188-194. <https://doi.org/10.1097/SIH.0000000000000347>

- Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson Education.
- Creswell, J.W., & Creswell, J.D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.
- Elliott, H., & Brumbaugh, K. (2021). Student perceptions of a simulated clinical experience: A pilot study. *Teaching and Learning in Communication Sciences & Disorders*, 5 (1), Article 7.
<https://doi.org/10.30707/TLCSD5.1.1624982519.538001>
- Deluliis, E.D., Martin, R., & Matilla, A. (2021). Level I fieldwork in a simulated environment: A blue print on how to use Simucase. *Journal of Occupational Therapy Education*, 5(2). <https://doi.org/10.26681/jote.2021.050215>
- Gibbs, D.M., & Dietrich, M. (2017). Using high fidelity simulation to impact occupational therapy student knowledge, comfort and confidence in acute care. *Open Journal of Occupational Therapy*, 5(1), 1-18. <https://doi.org/10.15453/2168-6408.1225>
- Grant, T., Thomas, Y., Gossman, P., & Berragan, L. (2021). The use of simulation in occupational therapy: A scoping review. *Australian Occupational Therapy Journal*, 68, 345-356. <https://doi.org/10.1111/1440-1630.12726>
- Hedge, N., Pickens, N., & Neville, M. (2015). A model of clinical reasoning: What students learn from patient educators. *American Journal of Occupational Therapy*, 69. <https://doi.org/10.5014/ajot.2015.69S1-PO4082>
- Imms, A., Froude, E., Mang Ye Chu, E. Sheppard, L., Dazins, S., Guinea, S., Gospodarevskaya, E., Carter, R., Symmons, M.A., Penman, M., Nicola Richmond, K., Gilbert, S.H., Gribble, N., Ashby, S., & Mathieu, E. (2018). Simulated versus traditional occupational therapy placements: A randomized controlled trial. *Australian Occupational Therapy Journal*, 65(6), 556-564.
<https://doi.org/10.1111/1440-1630.12513>
- Levett-Jones, T., McCoy, M., Lapkin, S., Noble, D., Hoffman, K., Roche, J., Arthur, C., & Dempsey, J. (2011). The development and psychometric testing of the Satisfaction with Simulation Experience Scale. *Nurse Education Today*, 31(7), 705-710. <https://doi.org/10.1016/j.nedt.2011.01.004>
- Mattila, A., Martin, R.M., & Delulius, E.D. (2020). Simulated fieldwork: A virtual approach to clinical education. *Education Sciences*, 10(10), 272.
<https://doi.org/10.3390/educsci10100272>
- Ondo, K., Johnson, C. Jansen, L.J., Williams, S.L., & Pantalone, B. (2019). *Simucase User Guide 4.0*.
https://d1e47q7vecbcl4.cloudfront.net/pdf/SC_1117_UserGuide_April_2020.pdf
- Taylor, R. R. (2020). *The intentional relationship: Occupational therapy and use of self* (2nd ed). F.A. Davis CO.
- Walls, D., Fletcher, T.S., & Brown, D.P. (2019). Occupational therapy students' perceived value of simulated learning experiences. *Journal of Allied Health*, 48 (1), e21-e25.

Appendix A

Sample Level I Virtual Fieldwork Evaluation

Each student will complete the Level I fieldwork evaluation at the conclusion of the experience. The 15 points will be awarded based on the accuracy of your evaluation of self when compared to your faculty's evaluation of you. Therefore, you will see that numerical values are not given. Instead, rate yourself as you really felt you performed and if this is accurate you will still receive all 11 points. Although this fieldwork was not completed as we intended, we still want to learn about what worked in this experience and what did not. Please carefully respond to the reflective questions posed at the bottom of the evaluation. You will submit your final reflection to your faculty and also have it available during your processing session in your individual sections. Thank you.

Part 1: Professional Behaviors (6 points). Please score yourself asking yourself- how well prepared do I feel for level II fieldwork, not that you have mastered all content. Check Yes, if you felt confident and performed well. Check Somewhat, if you felt somewhat confident but would like continue working on this. Check No, if you are not at all confident in this area.

	YES	SOMEWHAT	NO	FACULTY RATING
Safety – I considered safety through each step of the OT process.				
Communication – I used assertive and respectful communication with my peers, faculty, and when I communicated with clients in simulation (selecting responses).				
Ethics – I adhered to the Code of Ethics when engaged in simulation, working with my peers, doing individual work and while using resources.				
Self – Assessment & Feedback- I reflected on my skills, abilities, and sought feedback as needed. I used feedback provided by my peers, faculty and from simulation.				
Professionalism – I kept the fieldwork schedule, met deadlines, met with my peers on time, dressed professionally and wore my name tag during meetings with my class/faculty.				
Respect for Diversity – I demonstrated respect for clients, peers, and faculty through the entire OT process and learning experience. I challenged my own beliefs and tried to learn about others.				

Sources: Data are from the most recent examination in each respective area.

Summary statement (2 points): In one paragraph (less than 300 words) summarize your performance, justifying your own rankings.

Part 2: Professional Skills (5 points). Please score yourself asking yourself- how well prepared do I feel for level II fieldwork, not that you have mastered all content. Check Yes, if you felt confident and performed well. Check Somewhat, if you felt somewhat confident but would like continue working on this. Check No, if you are not at all confident in this area.

	YES	SOMEWHAT	NO	FACULTY RATING
Evaluation Process – I was able to select, administer and interpret assessments adhering to the Code of Ethics.				
Client-Centered Goal Writing – In each opportunity given, I was able to set realistic client-centered goals, report progress on goals, and update goals.				
Year 1: Year 1 Students: Use of Resources – I was able to use resources to answer questions and support use of assessments				
Year 2: Intervention Process – I was able to develop client-centered, occupation-focused interventions and anticipate client responses.				
Application of Theory and Evidence – Throughout the OT process, I was able to use theory and evidence to guide my reasoning and planning.				
Documentation – I was able to document using non-judgmental, third person, grammatically correct and in the format instructed by my faculty member.				

Summary statement (2 points): In one paragraph (less than 300 words) summarize your performance, justifying your own rankings.

General Reflection on the Experience: (10 points)

1. Tell us how this virtual fieldwork experience enhanced your skill set and confidence for Level II fieldwork. Please be specific with features of the experience that were helpful.
2. Tell us how this virtual fieldwork experience could be modified to enhance your skill set and build your confidence for Level II fieldwork. Please be specific with suggestions.

Deluliis et al. (2021) and this study were occurring simultaneously and while we did not collaborate, it was an interesting finding that both studies used the same student reflection questions.

Appendix B

OT 463 Level I Fieldwork Objectives (Year 2, MOT)

1. Demonstrate understanding the value of therapeutic use of self through: self-assessment, reflection identification of strengths/limitations and the use of eliciting for and providing quality feedback (B.5.7, B.9.4, B.9.6)
2. Demonstrate professional behavior in accordance with the policies of the student manual as well as AOTA professional standards and Code of Ethics. (B.2.8; B.9.1; B.9.4)
3. Utilize the information from participation in self-disclosure and exploration activities to plan appropriate learning contracts for self and others that are geared toward professional development. (B.5.7, B.9.1, B.9.4, B.9.6)
4. Demonstrate ability to assess group dynamics and utilize self effectively within the constraints of these group dynamics. (B.5.7, B.9.4, B.9.6)
5. Express & demonstrate support for the quality of life, well-being, and occupation of the individual, group, or population to promote physical and mental health and prevention of injury and disease considering the context (e.g., cultural, physical, social, personal, spiritual, temporal, virtual) and environment. (B.1.2-1.5; B.2.4; B.2.5; B.2.9; B.5.17)
6. Understand how theories, models of practice, and frames of reference are used in O.T. evaluation and intervention. (B.3.1-3.3; B.3.5)
7. Select appropriate screening and assessment tools, accurately summarize assets and limitations of patients and interpret evaluation data in relation to culture, context and relevant theoretical frameworks. (B.2.6; B.4.1-4.10; B.5.8-B.5.9)
8. Develop occupationally based intervention plans and strategies based on evaluation data, stated needs of the client, and research evidence. (B.2.4 – B.2.7; B.4.7; B.5.1-5.8; B.5.17; B.5.23 - 5.24)
9. Provide interventions and procedures as designed by the therapists at the Level I facility working to gain an understanding of the rational and relevance to the client. (B.5.1-5.8; B.5.23-5.24)
10. Demonstrate the ability to analyze, grade, and adapt tasks for therapeutic intervention and to teach compensatory strategies when indicated. (B.5.1-5.8; B.5.23-5.24)
11. Observe and participate responsibly as directed by supervisor in patient and family interaction, team meetings, and other treatment functions. (B.5.1-5.7; B.5.23-5.24)

12. Document the outcomes of occupational therapy services provided, effectively communicating the rationale for continuation or termination of services appropriate to the service delivery system. (B.1.8; B.2.2-2.5; B.4.8; B.4.10; 5.20; 5.31- B.5.32)
13. Explore his/her interest and potential for practice in the psychosocial area of occupational therapy.

OT 462 Level I Fieldwork Objectives (Year 2, MOT)

1. Identify the essential components and reasoning of documentation of occupational performance for evaluation, intervention, progress notes, and discharge plans to meet facility, local, and state and federal standards for reimbursement. (B.1.2; B.4.10; B.5.28)
2. Describe how OT frames of reference are used in physical disabilities and settings and their relevance to the documentation and OT processes. (B.1.1; B.2.11.; B.3.3.; B.3.5.; B.4.8.; B.5.1.)
3. Be familiar with CPT and ICD-9 coding and the relationship to OT documentation (B.4.10; B.5.28)
4. Identify multiple considerations for discharge planning, including: referral, home or functional maintenance programs, follow-up, and summary of progress. (B.5.15; B.5.17; B.5.23, B.5.25, B.5.27)
5. Apply the AOTA Code of Ethics and AOTA Standards of Practice to guide ethical decision making and professional interactions.
6. Demonstrate the ability to accurately identify personal strengths and challenges and both solicit and respond to feedback appropriately.
7. Consistently demonstrate professional conduct and behaviors as defined by the UND OT Department Student Manual and by the policy and procedure manual of the fieldwork site.
8. Demonstrates respect for diversity factors of others including, but not limited to, sociocultural, socioeconomic, spiritual and lifestyle choices.
9. Recognize the importance of addressing the psychosocial aspects of persons with physical disability (B.2.6; B.2.9; B.5.6)
10. Be familiar with equipment, materials and infection control policies and procedures common to various medical settings (B.2.8)
11. Understand indications, precautions, contraindications, and basic techniques for physical agent modalities to support occupational performance (B.5.13; B.5.14)
12. Understand basic indications, contraindications, and precautions of cardiac rehabilitation and lymphedema interventions (B.5.3; B.5.5)

13. Evaluate occupational performance in activities of daily living (ADL), instrumental activities of daily living (IADL), education, work, play, leisure, and social participation to develop an occupational profile. (B.4.4)
14. Use evaluation findings to construct occupation-based intervention plans that address occupational profile, client factors, performance patterns, context, and performance skills to support occupational performance. (B.5.1)
15. Demonstrate effective oral, written, and nonverbal communication with clients, family, significant others, colleagues, other health providers, and the public. (B.5.18)
16. Understand the role of OT in various practice settings. (B.7.1)

OT 442 Level I Fieldwork Objectives (Year 1, OTD)

1. Understand the purpose and requirements of Level I Fieldwork this semester.
2. Demonstrate understanding of confidentiality and adhere to confidentiality guidelines during fieldwork experiences. (B.7.1)
3. Adherence to safety policies and procedures during the course and fieldwork experience. (transfers, vital signs, medical equipment). (B.3.5, B.3.7, B.7.1)
4. Demonstrate understanding of infection control procedures. (B.5.2)
5. Utilize the philosophy, core value, & ethics during interactions to class activities and level I fieldwork experience. (B.5.2)
6. Understand aspects of etiology, symptomology, and precautions of a variety of medical conditions across the lifespan and its influence on the evaluation process. (B.1.1)
7. Use occupation-based theories to guide the evaluation process. (B.2.1, B.2.2, B.4.4)
8. Develop an occupational profile to inform further evaluation. (B.3.2, B.2.2, B.4.4.)
9. Select, administer, and interpret assessment results. (B.4.4, B.4.7)
10. Use occupation-based analysis to evaluate occupational performance. (B.3.2, B.4.2, B.4.8, B.4.5)
11. Consider factors that might bias assessment results including culture, disability status, and context and apply to the evaluation process. (B.1.2)
12. Collaborate with occupational therapy assistants in the evaluation being able to compare and contrast roles in the evaluation process. (B.4.24, B.5.8)
13. Evaluate the need for referring clients for further evaluation both internal and external to profession. (B.3.2, B.4.26)

14. Document the evaluation process. (B.4.6)
15. Students will apply the Intentional Relationship Model in their fieldwork experience (B.7.4)
 - Impact of self in the IRM
 - Navigating difficult situations
 - Mode shifting
 - Recognizing inevitable interpersonal events
 - Influence of culture on IRM
16. Analyze methods of professional reasoning utilized during the fieldwork experience. (B.4.2)
17. Interpret research outcomes to make clinical decisions in the evaluation process. (B.2.1, B.6.1)
18. Evaluate evaluations for potential use in research process. (B.6.1)
19. Analyze and identify leadership skills, application of theories, and models of a leader on level I fieldwork. (B.6.3)
20. Identify strengths and areas of growth gleaned through the level I fieldwork experience that would be appropriate for their professional development. (B.7.4)

Appendix C

Overview of Level 5 day Level I Virtual Fieldwork Experience

Three courses utilized a virtual 5 day fieldwork experience. OT 463 Psychosocial Practicum Integration and Integration, OT 462 Physical Disabilities Practicum Integration, and OT 442 Integration and Fieldwork 2 (focused on evaluation). The experience was structured so that students engaged with their Simucase® simulation client and engaged in collaborative work. Each course faculty developed additional assignments outside of Simucase® that either built on the client in Simucase® or asked the client to complete an additional task.

GRADED LEARNING ACTIVITIES ACROSS THREE FIELDWORK COURSES

- 2-3 Simucase® Case Simulations
- Evidence application in each course
- Assessment administration through Simucase® and outside of Simucase®
- Planning intervention for clients in Simucase® (2 courses)
- Documentation- evaluation reports and contact notes
- Fieldwork evaluation form- self and faculty rating

Sample Graded Activity-Evidence application

1. Clinical question formed from the assigned goal and clinical information.
 - a. Article 1 citation
 - i. 300 words or less background, method, findings.
 - ii. How would you apply this to intervention planning for Ray?
 - b. Article 2 citation
 - i. 300 words or less background, methods, findings
 - ii. How would you apply this to intervention planning for Ray?

ELEMENT	SCORE AND FEEDBACK
Clinical question <ul style="list-style-type: none"> • Included and accurate (2) 	
Citation <ul style="list-style-type: none"> • Included and APA correct (3) 	
Article 1 <ul style="list-style-type: none"> • 300 words or less and includes background, methods, findings (7) • Intervention application (3) 	
Article 1 <ul style="list-style-type: none"> • 300 words or less and includes background, methods, findings (7) • Intervention application (3) 	

SAMPLE DAILY SCHEDULE: DAY 1

8:00 a.m. – 12:00 p.m.	<p>Complete Simucase® of Frank – Select Learning Mode</p> <ul style="list-style-type: none"> • Student repeats case until competencies is established at 80%. (If you have time keep trying for a higher score) • Have your case report available along with established 2 goals by noon (system will prompt you to write goals). 	Individual learning through Simucase® Platform – link on Blackboard
1:00 – 4:30 p.m.	<ul style="list-style-type: none"> • Peer review of goals (work with assigned partners). • Debriefing questions • Evidence gathering 	<p>Materials will be available in Blackboard beginning at 12:00.</p> <p>Join assigned peer via zoom</p>

SAMPLE DAILY SCHEDULE: DAY 2

8:00 a.m. – 10:00 a.m.	<p>Report out</p> <ul style="list-style-type: none"> • Hour 1: Students will report on goals and debriefing questions. • Hour 2: Students will finalize evidence that needs to be gathered to develop interventions. (use zoom breakout if necessary) rooms 	Zoom link posted in Blackboard
10:00 a.m. – 12:00 p.m.	<p>Evidence Review:</p> <ul style="list-style-type: none"> • Each student group will identify two pieces of evidence, write an annotated bibliography 	Pairs should meet via zoom to determine their question, find the article, and write the annotated bibliography. The annotated bibliography should be posted in Wiki table on Blackboard
1:00 – 4:30 p.m.	<p>Intervention Planning</p> <ul style="list-style-type: none"> • Pairs will meet, compile the evidence • Each pair will plan one intervention and be prepared to present (use 463 Community Placement format) 	<p>Student pair work via Zoom – Review annotated bibliography and discuss how additional evidence from other groups may be helpful. Plan intervention (see folder on Blackboard)</p>