

Outcomes of Online Clinical Training Programs for Occupational, Physical, and Speech Therapy Students

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ABSTRACT

Background. Clinical training (CT) is a critical element in ensuring health science students' competence. With the increasing use of telerehabilitation and telesupervision in higher education institutions since the pandemic, locally relevant studies on online CT are valuable.

Objective. The study aimed to investigate the outcomes of online/blended CT programs for occupational, physical, and speech therapy (OT, PT, SP, respectively) students in terms of clinical competencies, self-efficacy, and overall satisfaction.

Methods. We used a descriptive cross-sectional design for this study. Thirty-three clinical educators responded to the Clinical Educator Questionnaire, rating the perceived competence of online-trained students relative to previous cohorts they had supervised in conventional on-site training. Forty (40) undergraduate students, 2 OT, 11 PT, and 27 SP, completed the Student Questionnaire on clinical self-efficacy and satisfaction levels. Clinical grades were also collected.

Results. Overall, clinical educators rated the online-trained students as comparable to those with on-site CT across competencies on interviewing, clinical reasoning, patient records, interpersonal communication, time management, professionalism, and safety based on retrospective perceptions. Informed by prior experience, majority of assessment skills were rated as comparable as well, except for confidence in conducting assessments, which was deemed weaker among those who underwent online CT. Intervention skills were reported to be comparable to recalled on-site CT experience too, although the ability to explain treatment procedures was deemed better than those trained on-site. An overall mean score of 4.031 on self-efficacy was obtained, with the highest self-efficacy rating in interview skills (4.300) and professional behaviors (4.350) and the lowest ratings on time management (3.550) and clinical reasoning (3.792). Self-efficacy was reportedly affected by the nature, amount, and variety of client interactions, among other factors. All student participants had clinical grades that were 2.0 (good) or higher, with the majority garnering at least a 1.50 (very good). The majority (53.84%) of the student participants were moderately satisfied with their online/blended CT program.

Conclusion. Online CT is a viable mode of learning for OT, PT, and SP as it yields competencies comparable to traditional on-site training. Frequent client interactions and varied caseloads may help improve clinical self-efficacy and satisfaction levels. Blended learning setups may also be beneficial in giving more opportunities to develop more specialized, discipline-specific skills.

Keywords: health sciences, education, clinical competence, telerehabilitation, pandemic, clinical training



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INTRODUCTION

Clinical Training in the Fields of Occupational Therapy, Physical Therapy, and Speech Pathology

Clinical training (CT)—also referred to as clinical education or clinical internship—encompasses the delivery, assessment, and evaluation of learning experiences in practice settings.¹ Clinical placements involving direct client care and supervision are integral components of allied health sciences education, as they play a crucial role in transforming students into qualified, safe, and ethical practitioners.²⁻⁴ These placements provide students with opportunities to apply theoretical knowledge in real-world settings, working with individuals of diverse needs and capabilities across varied contexts.^{5,6}

Participation in clinical placements has been associated with increased emotional intelligence, improved self-perception of discipline-related clinical competencies, and enhanced clinical competency development.⁷⁻¹¹

In recognition of their importance, accreditation and regulatory bodies in various countries have established minimum standards regarding the scope, duration, and quality of clinical training required for professional registration. For instance, in the Philippines, aspiring physical therapists must complete at least 1200 hours of clinical placements (with a maximum of 300 hours for non-clinical placements), while occupational therapists and speech-language pathologists must complete at least 1200 hours of practice placements as part of professional registration and certification requirements.¹²⁻¹⁴

Clinical Education during the COVID-19 Pandemic

The onset of the COVID-19 pandemic significantly disrupted clinical education, particularly in the health professions. As lockdowns and social distancing measures were implemented worldwide, face-to-face clinical training was suspended in many areas.¹⁵ This posed a major challenge for medical and allied health programs, which traditionally rely heavily on in-person clinical training.

The closure of placement sites and limited supervisory capacities prompted educational institutions to shift to remote and innovative forms of clinical education. These included telepractice, telesupervision, and the use of simulated cases or video-based learning.^{4,16-19} While this transition was particularly challenging due to the conventional emphasis on in-person client interactions, these alternative strategies allowed for the safe continuation of learning and patient care, minimized educational delays, and ensured students were still able to meet their training requirements to complete the program.^{4,15,17,20}

Online Clinical Training and Emerging Practices

Online clinical training, which involves student participation in telehealth practice under remote supervision using digital platforms, has gained traction as a mode of

experiential learning. Alongside fully online models, clinical education has also been delivered through blended clinical training, an approach that intentionally combines online or telehealth-based clinical activities with face-to-face, on-site clinical experiences. Telehealth itself has long been recognized for its cost-effectiveness and capacity to expand access to services, particularly in remote settings.²¹ Australian case studies on clinical education during the pandemic described placements where students and supervisors mainly engaged with clients and organizations virtually.⁴ Similarly, Hong et al. documented the implementation of a telehealth physical therapy clinic where students conducted assessments and interventions under remote supervision.²⁰

These online training models created unique learning opportunities, allowing students to develop professional behaviors, communication skills, and clinical reasoning through digital interactions with peers, supervisors, patients, and other stakeholders.^{4,20} However, they also presented limitations. The lack of face-to-face interaction reduced opportunities for hands-on skills practice and limited engagement with the community, staff, and patients.⁴ In the Philippines, students had to navigate personal and contextual challenges, including financial stress, increased responsibilities at home, and lockdown-related disruptions, while adapting to a new mode of learning.²² These shifts raised concerns about whether online programs could effectively achieve the same learning outcomes as traditional clinical education. Given the limited empirical data on telehealth-based clinical training, questions remain regarding its effectiveness.

Evaluating the outcomes of online or blended clinical training programs in developing entry-level clinical competencies, self-efficacy, and overall student satisfaction is therefore essential, particularly in the context of health science education in the Philippines. In this study, clinical competence is defined as the integration of knowledge, skills, and attitudes necessary to perform patient care duties to professional standards in a specific context, while clinical self-efficacy refers to one's confidence in their ability to take appropriate and efficient actions in varying clinical situations.^{23,24}

This study aimed to evaluate the outcomes of online and blended clinical training programs implemented by a university in the Philippines for occupational therapy, physical therapy, and speech pathology students. Specifically, the study sought to assess students' clinical competencies based on their clinical grades and clinical supervisors' perceptions of their performance; determine students' levels of clinical self-efficacy following participation in the online and blended clinical training programs, including the clinical tasks in which they were most and least confident and the factors perceived to influence their self-efficacy; and evaluate students' overall satisfaction with the online and blended clinical training programs, including the aspects of the programs they perceived positively and those they considered to have room for improvement.

The findings of this study can inform the improvement of OT, PT, and SP programs, ensuring transformative education given rapidly changing practice contexts. Study results may guide administrators in re-evaluating teaching-learning strategies and approaches employed in this changed learning environment. It can also aid in identifying additional support needed by students in order to more effectively develop clinical self-efficacy and competence. This study can lead to the improvement or development of actual protocols for online clinical training programs that can be instituted even after the pandemic, marking a pedagogical shift from traditional, face-to-face education to remote and blended learning.

MATERIALS AND METHODS

Study Design

This study employed a descriptive cross-sectional design using a survey to determine the outcomes of online/blended clinical training. Quantitative information, in the form of Likert-scale responses, measured the clinical competence, clinical self-efficacy, and overall satisfaction of student and clinical educator (CE) respondents. Qualitative information, in the form of textual survey responses, was also gathered to provide insight into the factors relevant to the students' clinical self-efficacy and satisfaction. Furthermore, clinical grades of students were collected as one measure of clinical competence. Ethical approval for this study was sought and granted by the University of the Philippines Manila Research Ethics Board.

Study Participants

There were two sets of participants for this study: students and clinical educators. For both sets, a total enumeration sampling approach was used. All OT, PT, and SP students and clinical educators who participated in the first online/blended clinical training program of a university in the Philippines in the academic year 2020-2021 were invited to participate in this study. Fifty-one (51) students and 46 clinical educators fit the inclusion criteria and were recruited based on the provided lists of their respective departments and clinical training coordinators.

All undergraduate OT, PT, and SP students from the university who met the following inclusion criteria were invited to participate: (1) completion of their online/blended clinical training programs in the academic year 2020-2021; and (2) being at least 18 years of age to ensure that all participants are legally able to provide informed consent. In addition to the students, all clinical educators involved in virtual/blended clinical placement sites were invited to participate in the study, provided they met these inclusion criteria: (1) having performed clinical supervision of OT, PT, and SP interns until the final round of online/blended learning-based placements for the academic year

2020-2021; and (2) having at least 2 years of experience in clinical teaching.

Online/Blended Clinical Training Programs

Occupational Therapy Training Program (online)

The OT training program lasted for around 32 weeks, with each placement lasting for four (4) to eight (8) weeks. Placements included a variety of practice settings and clientele, such as pediatric, geriatric, mental health, adult and adolescent, administrative, community-based rehabilitation, and a college-based enrichment program. Learning activities included telerehabilitation and telesupervision, journal reports, reflection journals, didactics, case presentations, group analysis, and projects.

Physical Therapy Training Program (blended)

The PT internship took around a total of 34 weeks with each placement lasting four (4) to eight (8) weeks. It included exposure to pediatric care, adult and adolescent care, community-based rehabilitation, sports and wellness, inpatient and outpatient hospital care, an enrichment rotation, and online consultancy. They primarily engaged in telerehabilitation services, with intensive in-person simulation-based training sessions towards the end of their clinical training program. The in-person training sessions focused on building the competencies in performing manual handling and safety techniques, and correct use of select assessment and treatment equipment.

Speech Pathology Training Program (online)

The SP training program lasted for about 35 weeks, with 5 placements, each lasting for seven (7) weeks. Placements included the college-based pediatric charity clinic, community-based rehabilitation, pediatric population at a private center, geriatric population, and two specialty centers (e.g., center for cleft care, aural rehabilitation, etc.). They mainly engaged in telerehabilitation and telesupervision as the mode of training delivery, with additional learning activities such as journal reports, case presentations, advocacy activities, and didactics.

Although all three disciplines employed telerehabilitation and telesupervision approaches, the structure and implementation of the training programs varied considerably. Each program was designed in alignment with the discipline-specific learning outcomes of the respective degrees. Consequently, teaching methods, client load, learning activities, and institutional policies differed not only across disciplines but also among placement sites. Despite these differences, the data were analyzed collectively across disciplines for several reasons. Although the PT cohort included a brief blended component, the majority of their clinical training was conducted remotely, with the in-person portion limited to simulation-based activities rather than direct patient care. As such, all three groups can be consi-

dered to have primarily engaged in online clinical training. Given the study's focus on experiences and outcomes of predominantly remote clinical education, a combined analysis allowed for the identification of cross-disciplinary patterns.

Research Instrument

The questionnaires described below obtained quantitative and qualitative data from the participants.

Clinical Educator Questionnaire (CEQ)

This is an adapted version of the *Clinical Educator Questionnaire on Simulated Learning Environment (SLE) Student Groups* (Clinical Educator Questionnaire) by Blackstock and colleagues.²⁵ This questionnaire was originally developed to evaluate physiotherapy students who underwent simulated learning experiences during cardiorespiratory training.

Three (3) members of the current research team reviewed the original tool. Minor revisions were made to better reflect the objectives of the study, as well as the context of the current OT, PT, and SP clinical training programs of the University. The current version is a 30-item questionnaire measuring clinical educators' perceptions of the performance of students engaging in clinical practice. Elements assessed were the following: communication, assessment skills, clinical reasoning skills, management, patient records, professionalism, time management, and safety. A five-point Likert scale is utilized, with a score of "1" equivalent to "Much weaker" and a score of "5" equivalent to "Much better". Clinical educators' perceptions were based on comparing the performance of the current group of online/blended-trained student clinicians being assessed and that of previous groups of student clinicians, trained in traditional face-to-face methods (i.e., graduates from academic year 2019-2020 and earlier). Ratings reflected perceptions of performance at the group or cohort level rather than individual or objective performance measures. No true comparison group was included to allow for direct score-based comparisons.

Student Questionnaire (SQ)

This is a two-part questionnaire. The first section, entitled *Evaluation of Confidence* was an adapted version of the *Student Questionnaire* by Watson and colleagues.²⁶ Watson et al.'s *Student Questionnaire* was originally developed for and used with Australian physiotherapy students undergoing clinical training using simulation strategies. It has been likewise used to evaluate the simulation-based learning experiences of Australian Master of Speech Pathology students undergoing training in augmentative and alternative communication via telepractice.²⁷ Three members of the research team reviewed the original tool and made minor revisions to fit the current study. This section of the questionnaire included 22 items measuring the clinical self-efficacy of student clinicians after completing their clinical practicum. Participants were asked to rate their confidence in performing certain clinical

skills related to client interaction, assessment, intervention, professionalism, and communication. Self-efficacy was rated using a five-point Likert Scale, indicating "SD" or "Strongly Disagree" up to "SA" or "Strongly Agree".

The research team added two open-ended questions at the end of this section to identify factors that the participants perceived to have affected their confidence. Qualitative data in the form of textual responses were obtained from these items.

The second section of this questionnaire, entitled *Evaluation of Satisfaction*, focused on measuring the satisfaction of students towards the online/blended clinical training program they participated in. All items in this section were created by the investigators specifically for this study. The first item asked the participants to rate their overall satisfaction level through a seven-point Likert scale with "1" being "Extremely dissatisfied" and "7" being "Extremely satisfied". The next three items were open-ended questions asking the participants to specifically identify aspects of the program they like and dislike, along with suggestions for improvement. These yielded qualitative data in the form of textual responses.

Appendices A and B show the final versions of the CEQ and the SQ, respectively. Content validation with three experts and pilot testing with 5 clinical educators (CEQ) and 10 OT, PT, and SP graduates (SQ) were employed to further enhance the tools' sufficiency and appropriateness to the study's aims, participants, and overall context. Changes were applied to the instruments after the content validation and pilot-testing processes. All versions of this questionnaire were transformed into an online questionnaire using the Qualtrics software for implementation.

Clinical Grades

Final clinical grades were obtained from the records of the clinical training coordinators of each department. These values were derived by averaging all individual numerical clinical placement grades as rated by the placement's clinical education team. Each clinical placement site employs its own grading system (i.e., rubrics, weight distribution, etc.) that is based on key learning outcomes of the respective programs. Final numerical grades are then transmuted and evaluated using the university's institutional grading system (Table 1).

Data Collection

Students who have completed all their clinical placements in the academic year 2020-2021 received a letter of invitation, informed consent form, and a link to the questionnaire approximately three (3) months after the Academic Year 2020-2021 ended. It was explicitly stated that participation was voluntary and that consent to participate meant willingness to answer the survey and have their clinical grades (average final numerical grade in all clinical placements) extracted and included in the study. Clinical educators likewise received a letter of invitation, informed

consent form, and a link to the questionnaire three (3) months after the clinical year ended. All participants were sent weekly follow-ups via email. Data collection lasted approximately 2 months from the time the invites were sent until the last follow-up email.

Consenting participants responded to online questionnaires provided. All responses were automatically recorded in a password-protected drive. Participants received a confirmation of receipt of their responses. Data from both students and clinical educators were extracted, organized, and prepared for data analysis.

Data Analysis

Descriptive statistics, including frequencies, measures of central tendency, and percentages, were used to interpret responses on Likert items measuring perceived clinical competence, self-efficacy, and satisfaction. Due to the nature of the scale used in the CEQ (i.e., much weaker, weaker, comparable, stronger, and much stronger), data obtained were interpreted as ordinal. Findings were presented in frequencies, percentages, and medians. On the other hand, Likert means were emphasized in the analysis of quantitative data from the SQ, as the scales used in this questionnaire (i.e., levels of agreement and satisfaction) are more conventionally treated as interval data.

Individually extracted student clinical grades were analyzed and presented in the form of frequencies and percentages. These values were further interpreted using university and college-set standards and criteria, providing a systematic measure of students' academic performance and competence.

Responses to each open-ended question in the questionnaires were extracted and organized for thematic analysis. Specifically, it went through the process of data familiarization (reading and rereading), generating codes, creating themes, reviewing themes, naming, and defining themes.²⁸ To increase trustworthiness, generation of initial codes and themes was done separately by at least two researchers. These researchers then came together to compare and develop final themes for naming and defining.

Microsoft Excel, IBM Statistical Package for the Social Sciences (SPSS), and NVivo 12 qualitative data analysis software were utilized during the whole data analysis process.

RESULTS

Participant Characteristics

Student Participants

A total of 40 out of 51 students completed the survey: 2 in Occupational Therapy (OT), 11 in Physical Therapy (PT), and 27 in Speech Pathology (SP). The average age was 22 years (SD = 0.86), with 77.5% female and 22.5% male.

Clinical Educators

Thirty-three out of 46 clinical educators responded, some assessing multiple disciplines. Sixteen supervised PT students, 12 supervised SP, and 7 supervised OT. Most had 2–5 years of supervisory experience (62.86%), with others having 6–8 years (28.57%) or more than 9 years (11.43%).

Clinical Competencies

Grades

All 40 student participants passed their clinical placements for both semesters in Academic Year 2020–2021, indicating competence. Nearly half (47.5%) received a final grade of 1.50 (Very Good). The lowest grade was 2.00, well above the passing mark of 3.00, and the highest was 1.25 (Excellent). No student received a grade below 2.00, reflecting strong academic performance across the board (Table 1).

Perceptions of Clinical Supervisors

Clinical educators rated students' competencies from online/blended training as generally comparable to those trained on-site. They were asked to compare specific skills of student clinicians during the online/blended mode of delivery in comparison to how previous students they had handled generally performed. Skills in interviewing, clinical reasoning, documentation, communication, time management, professionalism, and safety were viewed favorably.

Assessment skills were mostly rated as comparable, except for confidence in conducting assessments, which the majority perceived as weaker. For management competencies, most items were rated as comparable. Interestingly, the ability to explain treatment procedures was rated more favorably in online-trained students compared to their on-site counterparts. Table 2 summarizes the participants' responses. Items are grouped together according to skill area.

Table 1. Clinical Grades of Student Participants

Clinical Grade	Grading System	OT (2)	PT (11)	SP (27)	Overall (40)
1.0	Excellent				
1.25			27.27% (3)		7.5%
1.5	Very good		63.64% (7)	44.44% (12)	47.5%
1.75		50% (1)	9.09% (1)	33.33% (9)	27.5%
2.0	Good	50% (1)		22.22% (6)	17.5%

Self-efficacy

Students' Clinical Self-efficacy

The overall mean self-efficacy score was 4.031 out of 5, with students expressing highest confidence in interview skills (4.30) and professional behaviors (4.35). Lowest, but still favorable ratings were seen in time management (3.55) and clinical reasoning (3.79). More than half of the students agreed or strongly agreed with statements across all skill areas.

Most students reported confidence in key clinical areas such as assessment, management, documentation, inter-

viewing, and safety. Responses on time-management and interpersonal communication, especially maintaining eye contact, were largely positive.

However, some remained undecided on several skills: 22.5% were unsure about the appropriateness of their assessments, and 32.5% expressed uncertainty regarding treatment technique selection. A small portion disagreed with self-efficacy statements in clinical reasoning and time management, though no student strongly disagreed with any item.

Table 2. Results of the Clinical Educator Questionnaire

Item	Mdn	Frequency (%), n = 35 responses					
		Much Weaker (1)	Weaker (2)	Comparable (3)	Better (4)	Much Better (5)	Not Observed (6)
Interviewing							
1	3	0 (0.00)	2 (5.71)	26 (74.29)	6 (17.14)	0 (0.00)	1 (2.86)
2	3	0 (0.00)	3 (8.57)	26 (74.29)	3 (8.57)	1 (2.86)	2 (5.71)
3	3	0 (0.00)	9 (25.71)	17 (48.57)	8 (22.87)	0 (0.00)	1 (2.86)
Assessment skills							
4	3	0 (0.00)	11 (31.43)	22 (62.86)	2 (5.71)	0 (0.00)	0 (0.00)
5	3	1 (2.86)	5 (14.29)	23 (65.71)	4 (11.43)	0 (0.00)	2 (5.71)
6	3	1 (2.86)	16 (45.71)	15 (42.86)	3 (8.57)	0 (0.00)	0 (0.00)
7	3	2 (5.71)	12 (34.29)	18 (51.43)	3 (8.57)	0 (0.00)	0 (0.00)
Clinical reasoning skills							
8	3	0 (0.00)	5 (14.29)	24 (68.57)	4 (11.43)	0 (0.00)	2 (5.71)
9	3	0 (0.00)	4 (11.43)	20 (57.14)	9 (25.71)	0 (0.00)	2 (5.71)
Management							
10	3	1 (2.86)	6 (17.14)	23 (65.71)	3 (8.57)	0 (0.00)	2 (5.71)
11	3	1 (2.86)	7 (20.00)	17 (48.57)	8 (22.86)	0 (0.00)	2 (5.71)
12	3	1 (2.86)	9 (25.71)	15 (42.86)	6 (17.14)	2 (5.71)	2 (5.71)
13	3	1 (2.86)	5 (14.29)	26 (74.29)	2 (5.71)	0 (0.00)	1 (2.86)
14	3	1 (2.86)	12 (34.29)	18 (51.43)	4 (11.43)	0 (0.00)	0 (0.00)
15	3	1 (2.86)	6 (17.14)	12 (34.29)	14 (40.00)	1 (2.86)	1 (2.86)
16	3	0 (0.00)	2 (5.71)	19 (54.29)	12 (34.29)	1 (2.86)	1 (2.86)
25	3	0 (0.00)	2 (5.71)	26 (74.29)	7 (20.00)	0 (0.00)	0 (0.00)
Patient records							
17	3	0 (0.00)	4 (11.43)	24 (68.57)	3 (8.57)	0 (0.00)	4 (11.43)
18	3	0 (0.00)	2 (5.71)	22 (62.86)	8 (22.86)	1 (2.86)	2 (5.71)
Interpersonal communication							
19	3	0 (0.00)	3 (8.57)	15 (42.86)	6 (17.14)	0 (0.00)	11 (31.43)
20	3	0 (0.00)	4 (11.43)	17 (48.57)	6 (17.14)	0 (0.00)	8 (22.86)
21	3	0 (0.00)	2 (5.71)	16 (45.71)	8 (22.86)	1 (2.86)	8 (22.86)
28	3	0 (0.00)	4 (11.43)	16 (45.71)	10 (28.57)	2 (5.71)	3 (8.57)
29	3	0 (0.00)	4 (11.43)	16 (45.71)	11 (31.43)	2 (5.71)	2 (5.71)
30	3	1 (2.86)	4 (11.43)	16 (45.71)	9 (25.71)	2 (5.71)	3 (8.57)
Time management							
22	3	2 (5.71)	6 (17.14)	17 (48.57)	7 (20.00)	3 (8.57)	0 (0.00)
23	3	2 (5.71)	4 (11.43)	17 (48.57)	10 (28.57)	1 (2.86)	1 (2.86)
Professionalism							
24	3	0 (0.00)	2 (5.71)	27 (77.14)	6 (17.14)	0 (0.00)	0 (0.00)
26	3	0 (0.00)	1 (2.86)	25 (71.43)	8 (22.86)	1 (2.86)	0 (0.00)
Safety							
27	3	0 (0.00)	10 (28.57)	16 (45.71)	8 (22.86)	1 (2.86)	0 (0.00)

Means, frequency counts, and percentages for all items, grouped according to skill areas, are presented in Table 3.

Perceived Factors Affecting Clinical Self-efficacy

Seven (7) themes emerged when participants were asked to identify aspects of their clinical training program that helped increase or decrease their confidence in clinical practice. These themes are listed and briefly defined in Table 4.

The most frequently cited factor is *client interaction*. Students highlighted the limited nature, amount, and variety of client interactions as a barrier to confidence, particularly due to the lack of face-to-face experiences. This restricted their development in hands-on procedures, behavior management, and non-verbal communication. However, some students acknowledged that telehealth enhanced skills like caregiver coaching and rapport building.

The second theme is *feedback*. Participants reported that timely, specific, and constructive feedback from supervisors and clients strengthened confidence. Conversely,

vague or delayed feedback undermined it. The third major theme relates to *supervision*. Supportive and approachable supervisors who provided a balance of guidance and autonomy positively influenced students' confidence. In contrast, experiences that undermined confidence were associated with supervisors who were unapproachable, impatient, or vague in their feedback.

The fourth generated theme is *program structure*. Confidence improved with clear learning phases, observation periods, and access to supplemental activities (e.g., lectures, case conferences). Disorganized scheduling, however, reduced preparedness and, in turn, confidence. The fifth theme is *collaboration*. Opportunities to collaborate with supervisors and interdisciplinary peers enhanced clinical confidence.

The last two themes involve factors that are not elements of the training program. They are aspects that relate to the specific individuals involved in the clinical interaction, the student and the client. Participants reported that *student factors*, such as positive traits like communication skills,

Table 3. Results of the Student Questionnaire

Item	Mean	Frequency (%), *n = 40 student participants				
		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Interview skill ($\bar{x}$ = 4.300)						
1	4.375	0	1 (2.5)	1 (2.5)	20 (50)	18 (45)
2	4.275	0	0 (0)	2 (5)	25 (62.5)	13 (32.5)
3	4.250	0	1 (2.5)	2 (5)	23 (57.5)	14 (35)
Assessment skills ($\bar{x}$ = 3.850)						
6	3.675	0	3 (7.5)	9 (22.5)	26 (65)	2 (5)
7	4.025	0	3 (7.5)	3 (7.5)	24 (60)	10 (25)
Management skills ($\bar{x}$ = 3.900)						
8	4.200	0	0 (0)	4 (10)	24 (60)	12 (30)
10	3.625	0	2 (5)	13 (32.5)	23 (57.5)	2 (5)
11	3.875	0	2 (5)	6 (15)	27 (67.5)	5 (12.5)
Clinical reasoning ($\bar{x}$ = 3.792)						
5	3.850	0	1 (2.5)	8 (20)	27 (67.5)	4 (10)
9	3.575	0	6 (15)	9 (22.5)	21 (52.5)	4 (10)
13	3.950	0	2 (5)	6 (15)	24 (60)	8 (20)
Time management ($\bar{x}$ = 3.550)						
15	3.550	0	9 (22.5)	8 (20)	15 (37.5)	8 (20)
Interpersonal communication ($\bar{x}$ = 4.121)						
4a	4.150	0	2 (5)	6 (15)	16 (40)	16 (40)
4b	4.125	0	2 (5)	4 (10)	21 (52.5)	13 (32.5)
4c	4.100	0	3 (7.5)	3 (7.5)	21 (52.5)	13 (32.5)
4d	4.150	0	2 (5)	1 (2.5)	26 (65)	11 (27.5)
4e	4.100	0	2 (5)	5 (12.5)	20 (50)	13 (32.5)
4f	4.175	0	2 (5)	1 (2.5)	25 (62.5)	12 (30)
4g	4.050	0	2 (5)	6 (15)	20 (50)	12 (30)
Safety ($\bar{x}$ = 4.150)						
14	4.150	0	2 (5)	5 (12.5)	18 (45)	15 (37.5)
Documentation ($\bar{x}$ = 4.100)						
12	4.100	0	0 (0)	6 (15)	24 (60)	10 (25)
Professional behavior ($\bar{x}$ = 4.350)						
16	4.350	0	1 (2.5)	0 (0)	23 (57.5)	16 (40)

adaptability, and resourcefulness, helped boost confidence, while gaps in knowledge, anxiety, and unmet expectations posed challenges. Some *client factors* also had an impact on their confidence. Specifically, students felt more confident when clients were engaged and responsive. Poor therapeutic compliance or communication difficulties, especially due to internet issues, negatively affected confidence.

Overall Satisfaction

Student Satisfaction

Of the 40 student respondents, 39 answered the item on overall satisfaction. Slightly more than half (53.84%) of students reported being moderately satisfied with their online/blended clinical training. Others reported being slightly satisfied (28.20%), extremely satisfied (5.12%), neutral (7.69%), or slightly dissatisfied (5.12%). No students reported being moderately or extremely dissatisfied. Table 5 summarizes responses to this item in the survey.

Qualitative Findings: Training/Program Preferences

Five (5) themes reflecting participants' likes and dislikes about their clinical training programs were identified and are presented in Table 6.

Client interaction emerged as the most common theme, encompassing its nature, amount, and variety. Participants reported that interactions were predominantly virtual, with limited to no in-person exposure and no opportunities for manual skills practice or direct client handling. While they recognized the importance of direct client care for skill development and future practice, they acknowledged this

limitation in the context of the pandemic and valued being able to engage with clients in their natural settings. Client interaction was generally lower than pre-pandemic levels, limiting exposure to cases, which some attributed to restricted access in the online setup. However, some participants found their caseloads manageable given the duration of each rotation. Participants appreciated exposure to various clinical settings, populations, and specialties, but noted limited diversity in cases, particularly within specialized fields, and limited exposure to certain service delivery types such as interdisciplinary care and group therapy.

The second theme focuses on the *learning environment*, reflecting sociocultural factors influencing students' adaptation to their clinical training. Participants generally valued the supportive culture of their clinical supervisors, who were described as empathetic, approachable, flexible, and accommodating to the online setup and students' health-related and personal challenges. This support was reinforced by peers, as well as by clients and their families. Participants also recognized the nurturing environment fostered by supervisors and program departments, particularly in prioritizing student safety and addressing learning disruptions caused by a shortened academic year. Preparatory and concurrent learning activities helped students adjust to and maximize learning during clinical training. However, some participants reported inconsistencies in supervisors' interactions and treatment of students.

Another major theme is clinical *program structure*, encompassing teaching-learning activities, strategies, and implementation. Participants appreciated the variety of learning activities—such as lectures, discussions, workshops,

Table 4. Themes on Factors Affecting Confidence in Clinical Practice

Theme	Subtheme	Description	No. of References
<i>Client interaction</i>	Nature Amount Variety	Nature, amount, and variety of direct clinical interactions with clients	47
<i>Feedback</i>		Useful information from supervisors and clients regarding the student's performance	32
<i>Supervision</i>		Characteristics of clinical supervision provided	13
<i>Program structure</i>		Clinical training programs' teaching-learning activities and strategies, and implementation	10
<i>Collaboration</i>		Opportunities to work collaboratively with clinical instructors and peers	8
<i>Student factors</i>		Student characteristics such as knowledge, skills, attitudes, and emotional state	9
<i>Client factors</i>		Factors relating to the client that impact therapy	4

Table 5. Summary of Quantitative Findings on Overall Satisfaction

Mean	Frequency, *n = 39 student participants						
	Extremely dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither satisfied nor dissatisfied	Slightly satisfied	Moderately satisfied	Extremely satisfied
5.462	0	0	2	3	11	21	2

Table 6. Themes on Training or Program Preferences

Theme	Subthemes	Description	No. of References
Client interaction	Nature Amount Variety	Amount, variety and nature of direct clinical interactions with clients	32
Learning environment		Sociocultural factors influencing adaptation to the clinical training programs	27
Program structure		Clinical training programs' teaching-learning activities and strategies, and implementation	26
Nature of teletherapy		Opportunities and challenges arising from the remote and online nature of teletherapy	22
Feedback		Useful information from supervisors and clients regarding the intern's performance	12

and projects—which supported skill and knowledge development in assessment, intervention, documentation, and evidence-based practice, particularly during periods without client care. These activities, combined with manageable caseloads, supported collaboration with peers, including those from other disciplines. Some participants likewise viewed smaller caseloads as an opportunity to focus on quality of care.

Those who had brief face-to-face experiences valued hands-on client handling, direct feedback, and the gradual reduction of supervision. Students also appreciated program modifications to adapt to the largely online setup, including flexible schedules and asynchronous tasks. However, others reported that asynchronous requirements combined with other learning activities resulted in a more overwhelming workload and extended work hours. Some also question the relevance of certain activities that limited time for client care. Issues with scheduling, unclear deadlines, accumulated backlogs, and insufficient breaks between rotations further challenged students' adjustment.

Another theme highlighted the opportunities and challenges associated with the *nature of teletherapy*. Participants appreciated program adjustments that maximized learning in a remote context and recognized the value of acquiring telehealth-specific skills. The remote setup also supported work-life balance for some students. However, limited face-to-face experience was perceived to restrict skill development and negatively affect motivation, attention, confidence, and competence. Communication challenges were also reported, including miscommunication due to the lack of social cues online, internet connectivity issues, limited alternatives for poor connections, and anxiety related to disrupted sessions.

The final theme focused on *feedback*. Most participants valued the timely, accessible, and constructive feedback provided by supervisors, facilitated through online communication platforms. However, some reported instances of inconsistent, vague, unconstructive, or insufficient feedback across certain rotations.

DISCUSSION

The findings of this study suggest that online clinical training could be a viable approach for supporting the development of clinical competence in health professions education students. Both students and clinical educators in OT, PT, and SP recognized remote clinical training as a feasible approach for acquiring essential practice skills. Overall, the grades of OT, PT, and SP students who participated in online clinical training fell within the 'good' to above 'very good' range based on university grading standards, suggesting students were able to achieve satisfactory to high levels of academic performance.

These findings imply that remote clinical training may be providing students with the same rich experiences and opportunities traditional clinical education contexts give, thereby successfully building important clinical skills such as client interviewing, assessment, management, clinical reasoning, clinical documentation, communication, time management, professionalism, and even ensuring patient safety. Many studies have similarly found that remote clinical training is a practical approach for developing higher order thinking skills such as abstract thinking, critical thinking, and decision-making skills, and molding soft skills such as professional behavior, interpersonal relationship-building, and communication—all essential skills in the context of OT, PT, and SP clinical practice.²⁹⁻³²

One particular skill that clinical supervisors rated as weaker among online-trained students when compared to recalled on-site CT experience is confidence in conducting assessment procedures. This is reinforced by the fact that many students likewise reported feeling unsure about the appropriateness of their assessment strategies. These findings resonate with the concerns expressed by participants in Ross et al.'s study on telerehabilitation clinical placements during the COVID-19 pandemic.³² Clinical students found performing assessments in supervised telerehabilitation contexts especially challenging due to various factors, including difficulty performing or modifying assessment procedures to fit online interactions, limitations brought about by observing

through a camera, inability to do manual tests themselves, not having the correct resources and equipment, audio quality issues, difficulty manipulating the assessment environment, among others. Some of these are also elements of online clinical training that participants of the current study claimed to have affected their self-efficacy and satisfaction.

Findings on clinical self-efficacy further support the notion that remote clinical education is a feasible approach for OT, PT, and SP training. Participants in this study generally rated their clinical self-efficacy positively after undergoing online clinical training. This aligns with recent studies suggesting that online or simulation-based clinical training effectively enhances clinical self-efficacy among health professions education students.³²⁻³⁵ Online clinical training leads to increased confidence in demonstrating a wide variety of clinical competencies, which includes important skills specifically needed in telerehabilitation (e.g., use of online platforms, positioning of camera, etc.) and relevant skills that are transferable to onsite clinical practice.^{32,35}

Among the participants in this study, self-rated efficacy in demonstrating clinical competencies showed generally positive ratings, although confidence levels varied across different skill categories. Specifically, the development of self-efficacy was domain-specific, aligning with findings from previous studies.^{32,36,37} The highest ratings of self-efficacy were on more general, non-specialized skills such as demonstrating professional behavior, interviewing, ensuring client safety, and using effective interpersonal communication. These skills are commonly practiced, innately integrated, and all-encompassing regardless of therapist-client telerehabilitation context and thus can be perceived as easy to learn and consequently boost confidence in action.³⁶

Conversely, the current study found that students felt least confident in discipline-specific skills relating to time management, clinical reasoning, assessment, and intervention. A proportion of students even reported feeling uncertain about their ability to select the best assessment and intervention strategies. These profession-specific competencies are novel to the students yet critical in the performance of their clinical roles. They, thus, can be perceived as high-stakes learning endeavors, inevitably making them more difficult to develop and feel confident in doing.^{36,37} Challenges related to these more specialized skills may have also been brought about by the lack of opportunities to model and train discipline-specific manual techniques essential for OT, PT, and SP assessment and management or the lack of immediate clinical supervisor feedback while conducting manual procedures and techniques, which is deemed essential in skill acquisition.^{31,32}

It is striking that the most prominently reported factors affecting clinical self-efficacy and satisfaction are related to aspects of client interaction (i.e., nature, amount, and variety). The exposure of students to different contexts of therapist-client interactions and high amounts of actual clinical or patient-contact hours were found to have a

positive association with level of confidence.³⁵⁻³⁷ Similarly, expanding the experience of students through caring for diverse clients can enhance the self-confidence of students-in-training. Unfortunately, the nature, amount, and variety of direct patient care were limited for these clinical trainees because of a number of uncontrollable external factors such as discontinuation of training by numerous clinical placement sites, hesitation to receive any onsite treatment by big numbers of clientele, technological barriers, and even pedagogical and administrative adjustment difficulties compounded by an emergency shift to virtual or blended clinical training due to the restrictions posed by the COVID-19 pandemic. The resulting impact of these deterrents could likewise be another explanation for lower clinical self-efficacy ratings for skills that are uniquely dependent on actual patient interactions.

Within this group of participants, students reported relatively lower confidence in managing their time during training. The challenges in time management may have sprung from the context of emergency remote education or online/blended learning brought by the pandemic. It may likewise be a more universal experience among university students. The sudden shift to online/blended learning caught students off-guard and led to difficulties in learning self-regulation, including time management. Taking into consideration the unpredictable context amid a pandemic, managing how they spend time to accomplish schoolwork efficiently became more challenging and resulted in decreased self-efficacy on this particular skill.³⁸⁻⁴⁰ This highlights a potential area for further instructional support.

Students were generally satisfied with the virtual/blended clinical training program they participated in. Positive experiences included manageable caseloads, a supportive and nurturing learning environment, exposure to a variety of professional specialties and responsibilities, engagement in non-clinical activities (e.g., lectures, case analysis, EBP), and close, constructive supervision. As for areas of improvement, the students expressed their desire for a more varied caseload, increased frequency of individual patient care, hybrid intervention set-up (e.g., teletherapy and face-to-face sessions for physical handling techniques), longer observation time during the first weeks of the rotation, and more specific supervisor feedback. Both the positive and negative points of the online clinical training program reflected the sentiments of the students on clinical self-efficacy. The components of the program identified as facilitators of student confidence were also considered to be the positive aspects of the training program. Likewise, the components of the program that decreased student confidence were also reported to be areas of improvement. Hence, strengthening the program components that support student confidence—and improving those that diminish it—may be key strategies in enhancing clinical self-efficacy and the overall effectiveness of online and blended clinical training programs.

The findings of this study should be interpreted in the context of variability in clinical training experiences across

disciplines and placement settings. Differences in clinical placement structures may have influenced both student performance and perceived self-efficacy. In addition, variability in clinical educators' own experiences and expectations, supervisory styles, and feedback approaches may have contributed to differences in how student competencies were developed and evaluated. Differences in client exposure within and across disciplines, including caseload volume and case complexity, may have further shaped students' learning experiences and confidence across specific skill areas.

Strengths, Limitations, and Recommendations

Several steps were taken to reduce potential sources of bias in this study. Data were collected from multiple sources, including CEs, student self-reports, and objective clinical grades, allowing triangulation of findings. Clinical educators who had experience supervising both online/blended and conventionally trained cohorts provided comparative evaluations, which helped maintain consistency in judgment despite the perception-based and retrospective nature of the comparisons. The use of validated questionnaires and consultations with experts likewise enhanced the rigor of this study and strengthened the validity of findings.

These findings should be interpreted in light of the study's limitations, including the relatively small sample size, unequal representation across disciplines, and reliance on self-reported measures, which limit the generalizability of results beyond the current group of participants. In addition, most data obtained in this study are perceptions and self-reports. CEs were asked to compare their current students with previously handled cohorts based on their perceptions. As such, no actual comparison group was included in the statistical analysis, which may limit the objectivity of the findings.

Several sources of bias inherent in the study design may have contributed to the results. First, recall bias could have influenced student responses, as participants were asked to reflect on their experiences after completing their clinical training. Second, response bias, including the possibility that students with more favorable experiences were more likely to participate, may have affected the overall findings. The possibility of underrepresentation of students with poorer performance cannot be ruled out given the voluntary nature of participation, as well. Third, self-report bias is a consideration in the measurement of self-efficacy and satisfaction, as responses may have been influenced by social desirability as opposed to objective performance.

To mitigate these potential biases, the study ensured anonymity in the self-administered questionnaires to encourage honest responses and reduce social desirability effects. Additionally, objective indicators of performance, such as clinical grades, were included to complement self-reported data. However, these measures do not fully eliminate the influence of bias, and the findings should therefore be interpreted with appropriate caution.

Future research may benefit from involving a broader range of participants from diverse disciplines and institutions, as well as in-depth qualitative approaches to further examine the factors highlighted in this study.

CONCLUSION

Findings from this study suggest that online clinical training supported the development of clinical competencies among participating OT, PT, and SP students, with generally favorable academic performance and self-reported efficacy within this sample. Clinical educators also perceived student performance during online clinical training to be comparable to traditional face-to-face training. These findings highlight the potential of online clinical training as an alternative or complementary modality. Frequent client interactions and continuous immersion in diverse therapist-client interactions are fundamental to the development of clinical competencies and self-efficacy in online and blended learning contexts. Strengthened efforts to increase the confidence of students when engaging in clinical reasoning, performing assessment procedures and therapeutic interventions, and managing their time are recommended. These may be better achieved by integrating onsite or face-to-face clinical education into programs to better develop more specialized, discipline-specific, and hands-on skills. Future studies may focus on having larger and more representative samples and on investigating the long-term outcomes of online clinical training.

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Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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APPENDICES

Appendix A. Clinical Educator Questionnaire

Name of participant (optional):

Email address:

Date of consent:

We are interested in your overall impression of the performance of the current Occupational Therapy (OT)/ Physical Therapy (PT)/ and Speech Therapy (SP) batches you have supervised in the clinical training program of Academic Year 2020-2021. The survey below asks for your general opinion about this batch of clinical interns compared with batches you have seen graduate in previous years.

Please provide the following information related to your clinical supervision experience.

Demographics
How long have you been a clinical supervisor? (In cumulative years)
<ul style="list-style-type: none"> • <2 • 2 – 5 • 6 – 8 • >9
Which clinical placement/s are you currently involved in? _____
Which cohort are you assessing in this form? If you are a clinical educator in more than one discipline, please fill out separate survey forms per discipline.
<ul style="list-style-type: none"> • OT • PT • SP

This is not a formal assessment of individual students. Rather, it is your impression of the current OT/PT/SP batch compared with other students you have educated towards the end of their clinical training program.

Rate each of the areas for these students **as a group**. Use the following scale.

1 = Much weaker	2 = Weaker	3 = Comparable	4 = Better	5 = Much better	NO = Not Observed
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Compared with your experiences with students who went through traditional clinical training, **rate the level of this student group in the following areas. Keep in mind that you are looking at the skills of students at the culmination of their clinical training year.**

This is a **30-item questionnaire**. Please rate the main attribute (in bold) as well as the qualifying items for that attribute. Select the Not Observed option if you did not have an opportunity to observe a particular skill. Do not leave any item blank.

	Much weaker	Weaker	Comparable	Better	Much better	Not Observed
1. Competence in interviewing						
2. Confidence in undertaking an interview						
3. Use of appropriate communication skills (open questions, active listening, eye contact, nonverbal responses, etc.) to establish rapport and obtain pertinent data						
4. Competence in assessment						
5. Constructing an appropriate, evidence-based assessment plan						
6. Confidence in conducting assessments						
7. Ability to conduct tests appropriately to assess patients						
8. Competence in clinical reasoning						
9. Ability to make sense of information from the history and assessment to formulate the clinical problem/diagnosis.						

	Much weaker	Weaker	Comparable	Better	Much better	Not Observed
10. Competence in developing a management program						
11. Constructing an appropriate, evidence-based management plan						
12. Explaining the problem and its management to a patient/caregiver						
13. Competence in implementing a management program						
14. Conducting treatment procedures appropriately						
15. Ability to explain to patient/caregiver while performing/applying the treatment procedures						
16. Adequately preparing for the conduct of the treatment session						
17. Competence in interpreting patient charts/records						
18. Competence in writing appropriate clinical documents						
19. Competence in interacting with other stakeholders (e.g., other health professionals, administrators)						
20. Showing confidence during interactions						
21. Having a professional approach to interactions						
22. Demonstrating effective time management skills (within and outside clinical sessions)						
23. Efficiency in managing workload						
24. Showing professionalism						
25. Instilling confidence in the patient						
26. Always maintaining professional behaviors						
27. Ensuring client safety during client care						
28. Ability to interact with peers						
29. Ability to work in a team						
30. Ability to give useful feedback to peers						

– END OF FORM –

Appendix B. Student Questionnaire

Student number:

Email address:

Date of consent:

Sex:

Age:

Degree program:

The purpose of this questionnaire is to determine the clinical self-efficacy levels of students and overall satisfaction after going through the online/blended clinical training program for Occupational Therapy (OT)/ Physical Therapy (PT)/ Speech Pathology (SP) for the Academic Year 2020-2021.

A. Evaluation of Confidence

We are interested to know your level of confidence in performing the clinical tasks listed below. Please tick the appropriate box.

To what extent do you agree with the following statements about your confidence in interacting with patients at this stage of your training?

SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree

I feel confident in my ability to:

	SD	D	U	A	SA
1. Establish rapport with a patient					
2. Explain professional role to a patient					
3. Conduct an effective patient interview					
4. Use interpersonal skills appropriately with respect to a. maintaining appropriate eye contact b. verbal speed, tone, and volume c. language d. active listening, including paraphrasing, reflection of feelings e. asking a mix of open, closed, and focused questions f. summarizing/confirming understanding g. non-verbal communication like gestures, facial expressions, posture, etc.					
5. Identify and interpret clinical information to make a primary hypothesis about the underlying problem					
6. Conduct an assessment appropriate to the problem					
7. Explain the problem to a patient					
8. Discuss management plan with a patient					
9. Select the most appropriate treatment techniques					
10. Apply the most appropriate treatment techniques					
11. Evaluate treatment effectiveness					
12. Write appropriate clinical documents					
13. Progress a patient's treatment toward a positive outcome					
14. Ensure patient safety during client care					
15. Manage workload efficiently					
16. Interact as a professional					

What aspects of the clinical training program helped **increase** your confidence in clinical practice?

What aspects of the clinical training program **decreased** your confidence in clinical practice?

B. Evaluation of Satisfaction

In this segment, we would like to evaluate your satisfaction with the online/blended Occupational Therapy (OT)/ Physical Therapy (PT)/ and Speech Therapy (SP) clinical training program you underwent during the Academic Year 2020-2021.

For the first question, using the 7-point scale, please tick the box that best describes your rating of the following statement.

Overall Satisfaction	Extremely dissatisfied	Moderately dissatisfied	Slightly dissatisfied	Neither satisfied nor dissatisfied	Slightly satisfied	Moderately satisfied	Extremely satisfied
	1	2	3	4	5	6	7
Overall, how would you rate your satisfaction with your experience of the online/blended BSPT/BSOT/BSSP clinical training program?							
For the questions below, please list factors that affected your level of satisfaction with the clinical training program.							
• What did you like about the clinical training program? _____							
• What did you dislike about the clinical training program? _____							
What are your suggestions to improve the online/blended BSOT/BSPT/BSSP clinical training program? _____							

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