International Journal of Practice-based Learning in Health and Social Care

International Journal of Practice-based Learning in Health and Social Care
Vol. 10 No 1 June 2022, pages 1-10

Speaking of Online Learning: Alternative Practice-Based Learning Experiences for Speech Pathologists in Australia, Ghana and Hong Kong

*Jemma Skeat[a], Josephine Ohenewa Bampoe[b]', Susan Booth[c], Emily Brogan[c], Maya Conway[d], Rachel Davenport[e], Simone Howells[d], Peggy Kan[f], Michelle Krahe[d], Sally Hewat[g], Abigail Lewis[c], Alex Little[g], Joanne Walters[g], Gwendalyn Webb[g], Nikki Worthington[e]

a: University of Melbourne, Australia; b: University of Ghana, Ghana; c: Edith Cowan University, Australia; d: Griffith University, Australia; e: La Trobe University, Australia; f: The Chinese University of Hong Kong, Hong Kong; g: University of Newcastle, Australia

Abstract

Speech Pathology programs usually send students to workplaces to learn clinical skills necessary for practice. During COVID-19, programs needed to respond quickly to ensure that students continued to gain the necessary experiences and skills required to progress through their program and graduate as clinicians, while simultaneously complying with COVID-19 requirements. Case studies from seven different universities in Australia, Ghana and Hong Kong described the diverse ways in which placements were adapted to be COVID-safe, taking into account local needs. Some practices which had been included in placement education prior to the pandemic, such as telepractice and simulation-based learning, were extended and developed during this time. Educators, students, clinicians and clients responded to the rapidly changing needs of the time with flexibility and innovation, utilising a variety of technologies and tools to support case-based and virtual learning opportunities. Feedback from these diverse stakeholders about the experiences was positive, despite inevitable limitations and less-than-ideal circumstances. The positive findings provided insights for consideration in the future: could strategies implemented in response to the pandemic continue to be incorporated into placement experiences, enhancing current practices and maintaining student performance outcomes? Exceptional circumstances

**Corresponding author*: Dr. Jemma Skeat, Medicine, Dentistry and Health Sciences, University of Melbourne, Gratten Streeet, Parkville, Victoria, 3010, Australia. Email: jskeat@unimelb.edu.au

Journal URL: https://publications.coventry.ac.uk/index.php/pblh

Skeat, J., Bampoe, J. O., Booth, S., Brogan, E., Conway, M., Davenport, R., Howells, S., Kan, P., Krahe, M., Hewat, S., Lewis, A., Little, A., Walters, J., Webb, G., & Worthington, N. (2022). Speaking of Online Learning: Alternative Practice-Based Learning Experiences for Speech Pathologists in Australia, Ghana and Hong Kong. *International Journal of Practice-based Learning in Health and Social Care*, *Care, 10*(1), 1-10. DOI 10.18552/ijpblhsc.v10i1.735

prompted exceptional responses; flexibility and innovation were accelerated in response to the pandemic and may transform future placement-based learning opportunities.

Keywords: ***case-based learning; practice-based learning; simulation-based learning; speech pathology; telehealth***

Introduction

Practice-based learning in speech pathology (SP) is generally undertaken in clinical placements, where students directly experience client interaction and are supervised by practicing SPs, referred to as clinical educators (CEs). Placements occur in a range of workplace settings throughout SP courses, with the aim of developing student competencies in working with clients across a range of practice areas. Student learning needs vary on these placements, depending on their progress through the course and the type of course they are undertaking. For example, in early placements, students have closely supervised interactions with clients whereas towards the end of their degree, students are required to demonstrate independence in their planning and implementation of assessment and intervention, working towards the standards required for entry to the profession.

Most clinical placements take place within workplaces (Sheepway et al., 2011; Speech Pathology Australia, 2018). These may include hospitals, community health, mainstream or special school services, disability services, and private practices, as well as others. Students usually provide in-person, face-to-face services to clients. CEs support students to identify the concern of the client, to apply clinical reasoning, to implement appropriate interventions, and to undertake clinical management tasks. They also evaluate student clinical competency and determine whether they have met the required level to pass the placement.

'Alternative' models of SP clinical learning have been reported in the literature, including simulation (Hill et al., 2020), telehealth-based clinical placements (Bradford et al., 2018) and e-supervision (Carlin et al., 2013). There are recognised benefits to these alternative models. Simulation offers the potential for exposure to areas of SP practice that may not be seen in regular placements (MacBean et al., 2013), while e-supervision (e.g., CEs utilising teleconferencing) allows students access to experienced CEs as well as clients and experiences within a real workplace (Carlin et al., 2013). However, application of these methods to replace workplace-based clinical placements has been limited (MacBean et al., 2013; Speech Pathology Australia, 2018).

During the COVID-19 pandemic, as changing restrictions and requirements came into effect locally, we needed to consider alternatives and/or additions to workplace placements, in COVID-safe ways. The response of each university was suited to local needs, restrictions, timing of placements, and student experience levels. We sought feedback from students, clients and CEs about these placements, primarily through routine quality improvement focused surveys and feedback forms, allowing us to consider some preliminary information about how they were perceived and the possibilities of taking these methods forward for future practice.

Responding to COVID-19: Case Studies

Clinical learning through in-depth case studies: University of Ghana.

In 2016, the University of Ghana commenced its first Master of Science (MSc) program in SP. In mid-March 2020, students were in their final semester, when they usually undertake weekly placements in special schools and intervention centres. As there were few SPs in Ghana (prior to the first cohort graduating there were between six and ten SPs working at any one time), students were supervised by lecturers from the University.

Due to COVID-19, the government shut down schools and banned all gatherings, meaning placements could not go ahead. In response, university lecturers developed a workbook of varied case studies for

virtual tutorials. The cases included a range of areas including hearing impairment, autism, aphasia, cerebral palsy and others, and covered other aspects of practice such as ethics and service delivery (caseload management). Students met twice a week for three weeks, working in groups of three in online tutorials with a university CE. Each tutorial lasted for a maximum of two hours. Students were encouraged to critically reflect on each case and come up with as many aspects (ranging from assessment to discharge) as possible they are likely to do if presented with the cases clinically. There was an opportunity to ask questions on cases presented. Students also completed written reflections on each tutorial.

A short quality improvement focused survey asked students about their experience of the case tutorials, with 12/12 students on the course (100%) finding the case-based tutorials useful, with all having opportunities to discuss theory and treatment rationales, multidisciplinary team work, and intervention plans. Overall, students reported that they found this approach quite useful as it gave them the opportunity to think through varied cases which is not always offered by face-to-face placements. Some students also reported that in-depth tutorial discussions made cases more practical and offered them opportunities to carefully think about clients in a holistic way.

This period has supported us at the University of Ghana to re-evaluate how assessments and interventions are done, for example, not limiting clinical assessment to face-to-face sessions; introducing relevant information technology courses in the SP program to equip students for telepractice (which may be particularly important in Ghana due to access limitations in rural areas), and focussing on research in SP provision and service delivery. We noted that there were certainly limitations to the case-based approach, for example, it was difficult to evaluate some competencies such as public health and prevention, and interpersonal skills.

Application of simulation-based learning to enable completion of final year placement at The University of Newcastle, New South Wales, Australia

In the final year of a four-year undergraduate program, students at the University of Newcastle complete block placements in both paediatric and adult settings to demonstrate entry-level competence. However, the COVID-19 pandemic impacted substantially on the availability of adult placements, with students restricted from visiting healthcare environments (including hospitals and aged care). A university-wide 'pause' on all work-based placements allowed the clinical education team to coordinate an immediate transition from traditional placements to a revised placement model. This model was based on the work of Hewat et al. (2020) and Hill et al. (2020) whereby a simulation-based learning (SBL) program replaced a proportion of workplace clinical placement time. Diverse types of simulation experiences were implemented, including role plays and prepared case studies with actors as clients and multidisciplinary team members, tailored to the workplace setting.

More than half the cohort of students allocated to placements in first semester (26/40), participated in the revised model, with some having SBL followed by workplace placements, and others having concurrent SBL and workplace experiences (Table 1).

All students achieved the required level of competency relevant to their clinical placement plan. These outcomes were comparable to findings reported by Hill et al. (2020). CEs who supervised the students in the traditional workplace setting following the SBL provided anecdotal feedback that the students were better prepared, ready to learn and came with both professional and clinical skills that allowed them to transition easily into the workplace. One clinical educator reported, "The student was very ready for placement, with less time required for going over the basics. They really hit the ground running with bedside swallowing assessments and communication screeners and were independent with some tasks from the outset".

Table 1

Format of the overall placement including number of students and proportion of simulation-based learning.

Workplace setting	No. students	SBL duration (days)	Workplace placement duration (days)	% SBL
Acute hospital	16	12	12	50%
Aged care facility	4	12	12	50%
District hospital	6	16	12	66%

These reports are consistent with previous research that suggests simulation primes students to learn (Hewat et al., 2020). All students were given the opportunity to provide feedback and 12/26 students completed a routine quality improvement survey. Feedback was positive, highlighting the unique benefits of SBL in preparing them for learning in the workplace, consistent with findings from Penman et al. (2020). This was illustrated by a comment from one student,

> I really valued this online learning as a 'stepping block' to bridge the transition from theory to practice (an area I find difficult). I feel more confident now going into the practical aspect, and believe I am much more prepared than I would've been had I not completed the online learning and begun with practical straight away. In an ideal world where it could be feasible, I would almost recommend having some sort of online learning modules prior to any practical placement, I found it that beneficial.

A mixed mode of face-to-face and telehealth at The Chinese University of Hong Kong

The Master of Science in Speech-Language Pathology of the Chinese University of Hong Kong was established in 2018. In January 2020, the first cohort began their final semester of the two-year program. Students commenced weekly placements in different workplace settings utilising face-to-face sessions with both paediatric and adult clients to demonstrate entry-level competence.

With COVID-19 restrictions coming into place, contingency plans were prepared to ensure that students could complete their placements. Telehealth was added as an option in addition to face-to-face delivery mode as there is evidence that it is an effective service delivery method in speech pathology (Coufal et al., 2018; Theodoros, 2011) and it has been shown to be useful for clinical education (Cassel & Edd, 2016). Through experiencing telehealth service provision, students can be better equipped to face future challenges. On the other hand, some workplace settings such as hospitals found it difficult to implement telehealth and needed to remain using face-to-face mode.

The following measures were taken before launching telehealth:

1. Training for students, addressing the history of telehealth, evidence for telehealth, use of the telehealth platform and experience sharing from CEs.
2. CEs were divided into two teams, based on experience with telehealth. Those without telehealth experience arranged telehealth sessions with their own clients to gain experience before supervising students.

Various services were arranged to expand students' experience in synchronous telehealth mode, including educational talks, parent training, screening and direct treatment services. The population served was diverse, including children and adults with speech and language disorders, hearing impairment, voice disorders, and fluency disorders.

We responded to changing restrictions throughout the placement. As Hong Kong moved into lockdown of workplace settings, face-to-face services were pulled out of placements altogether. Between the second and third waves of COVID-19, restrictions eased and students gained some face-to-face experience in hospital settings and some paediatric settings. All students completed their final placement requirements under this mixed mode of clinical placement.

Feedback from students was collected after the clinical placement as part of routine quality improvement; 62% of students (18/29) responded. On a Likert-scale of 1-6 (6 = strongly agree) students reported that the placement was well organised (Mean = 5.3; Median = 5), was interesting (Mean = 5.7; Median = 6), was stimulating (Mean = 5.8, Median = 6). They suggested that the content of the placement was of appropriate difficulty (Mean = 5.1; Median = 5) and that this experience enhanced their clinical skill development (Mean = 5.8; Median = 6). Student comments highlighted that they appreciated the chance to get familiar with telehealth and to work with the same clients across face-to-face and telehealth. They found the use of telehealth did not affect the interaction with clients. Students recommended that telehealth should be included in future clinical placements. They indicated that more telehealth resources were needed. We interviewed three students (sampled by convenience) to gain further insight into their feedback. One said:

> Looking back, of course the learning experience was great. Through such experience, I am more aware of how it is different to deliver face-to-face and tele-service, including the advantages, limitations, and boundaries of these service delivery modes. This experience also prepares me for work after graduation, equips me with clinical skills that were required for telepractice and being more adaptive to changes and new environments. However, the stress and demand were huge.

Replacing face-to-face placements using online simulation: Simu-placements at the University of Melbourne, Victoria, Australia

During March 2020, students in their second year of the Master of Speech Pathology at the University of Melbourne were either commencing or about to commence their third clinical placement out of five. This 'intermediate' level placement is generally 12 days in length and as for all our placements, is undertaken with students placed in a range of services to get direct clinical experience. As lockdown was implemented, services pulled out of placements and the following options were considered: to pause placements and hope to 'catch up' later in the year, or to implement an alternative approach. The clinical team evaluated the simulation resources provided by Simucase, a USA-based commercial online platform that includes in-depth SP-specific cases (Simucase, 2019). These have been used in the USA as part of SP courses and have been found to successfully support student clinically-based skills such as clinical reasoning and decision-making (Carter, 2019). Simucase resources include videos of clients, assessment and treatment information, including from other members of the multidisciplinary team. Some aspects are interactive, for example, students can attempt a 'case history' with a client by choosing questions from a list, and the client responds (via video recording).

A 'Simu-placement' experience was created for the entire cohort, with one CE (a University SP with experience in clinical supervision) supervising a group of six students, over 12 placement days with all

activities happening online via teleconference. Simu-placements mirrored face-to-face placements as closely as possible. CEs developed an initial case summary, and students worked through Simucase resources to interpret client information, form clinical hypotheses, plan assessment, interpret results, write reports, and plan intervention. Role play between peers or between students and CEs was used to simulate assessment and intervention practice.

Not all areas of competency could be demonstrated in the Simu-placement; for example, students were not assessing or implementing therapy with real clients, so this was not assessed. However, we found that many areas could be mapped against the Australian Competency Based Occupational Standards for Speech Pathologists (Speech Pathology Australia, 2011). For example, students could investigate the communication/ swallowing condition and explore the primary concerns of the client using the interactive case history information and simulations, and from this, develop hypotheses about the condition and their next steps. This meant that while the cases were simulated, student learning was examined against standard placement learning requirements.

All students were invited to complete a post-placement feedback survey about their experience of the Simu-placements as part of routine quality improvement, and 52 of 54 students (96%) completed this. On a Likert-type scale of 1-5 (5 = strongly agree; 4 = agree; 3 = neutral; 2 = disagree; 1 = strongly disagree) students reported that the experience allowed them to meet some of their clinical learning goals (Mean = 4.3; Median = 4; Mode = 5), allowed them to develop clinical competencies (Mean = 3.9; Median = 4; Mode = 4) and that they enjoyed the placement (Mean = 3.9; Median = 4; Mode = 4). Student comments highlighted that they self-identified benefits, such as low pressure problem-solving opportunities, a chance for peer learning, and in-depth case discussion, that were not usually possible on face-to-face placements.

The Simu-placement allowed the clinical team to keep pace with student placement requirements, despite the initial lockdown. It was demonstrated that this was a viable clinical learning opportunity that may be used in the future to supplement placement opportunities that are not easy to source, and/or to create additional learning opportunities for students who require extra support or practice.

Changing needs for Novice SP learners during the pandemic: the experience of La Trobe University, Victoria, Australia

Students at La Trobe University usually undertake two ‘novice-level’ (one adult and one paediatric) placements during the second semester of the third year of their combined degree. During this period in 2020, COVID-19 case numbers were declining in Victoria, so we planned a COVID-safe version of our paediatric pre-school SP clinic in the onsite university clinic. Local department of health guidelines at the time stipulated several restrictions including social distancing and use of personal protective equipment (PPE), such as gloves and face masks. Despite plans to keep the placement running, we faced a dilemma in how to accommodate 82 students over the course of two nine week blocks with constraints, particularly with respect to physical distancing in place, which impacted on the number of students able to attend in clinic rooms.

The paediatric coordinator of the SP clinic worked closely with the subject coordinator to design a model which would incorporate the stipulated restrictions but would also meet the learning objectives of the placement. As this cohort had already had their first placement of the year cancelled in Semester 1, it was felt that face-to-face client contact would be preferable to telehealth placements. We also felt that it would be less of a cognitive load for the students to focus on learning how to administer assessments or undertake therapy in person rather than having to navigate the technology at the same time. The revised placement included face-to-face client sessions with e-supervision (Carlin et al., 2013). Students and CEs observed sessions via teleconference from observation rooms.

When the second COVID-19 wave hit Melbourne, higher levels of restrictions were implemented, and there was reduced ability to provide face-to-face services. This prompted a quick transition to telehealth, with students observing their CEs enacting session plans written by the students. Supervision debrief sessions continued remotely via teleconference; this aspect of the placement was consistent throughout and worked well. It was also possible to provide students with some in-person face-to-face experiences

once COVID-19 case numbers stabilised and restrictions eased. However, the remaining requirements for PPE required students to be flexible when working with clients, for example, in modelling speech sounds to children whilst wearing a face mask. Devices such as tablets, where students could play a pre-recorded video of a model, came into their own.

Whilst this was not the start we envisaged for our novice students, we learnt that we could be flexible, and that the students were both resilient and adaptable. Feedback collected from students as part of routine quality improvement post-placement indicated an overall positive learning experience. Student comments highlighted that they valued the opportunity for translation of prior learning into clinical skills, and learned from observing telehealth in action.

Student perspectives on transitioning to paediatric telehealth service delivery: Griffith University, Queensland, Australia

At Griffith University, some placements are undertaken within a university-run allied health clinic providing paediatric SP services. In response to COVID-19 restrictions, this clinic rapidly transitioned from face-to-face to telehealth service delivery, requiring students to make this shift to their practice. SP students in their final year of study and under the supervision of CEs, delivered services via videoconference to clients aged 2-18 years. To support this, students received *Transition Training* in the use of the telehealth platform and watched video examples of paediatric SP telehealth sessions. The program was formally evaluated and had ethics approval (HREC 2020/357). Two focus groups were conducted by one researcher with a total of five students. Data were analysed by two researchers using content analysis (Elo & Kyngäs, 2008). Results revealed three broad themes:

1. Student learning experiences
2. Client reactions to telehealth
3. The limitations of telehealth.

Participants identified both losses and gains to their *student learning experiences*. They described reduced peer observation opportunities and reduced in-session support from CEs in contrast to previously attended face-to-face clinics. Participants also reported finding it difficult to focus on the client while managing technological challenges, and in acquiring core assessment and intervention skills while simultaneously learning to adapt these to telehealth. However, they also credited this experience with the development of new skills, including the ability to adapt content, develop resources, manage technological issues, and engage parents. Participants felt these skills would benefit them as future health professionals.

In terms of *client reactions,* participants described engaging clients and families in telehealth, gaining parent participation in sessions, managing parent perceptions of telehealth as a potentially inferior mode of service delivery compared to face-to-face therapy, and ensuring parent satisfaction with session outcomes. Participants reported that if families had previously received face-to-face therapy, engagement and satisfaction with telehealth was easier to attain.

Participants described *the limitations of telehealth* as a service delivery mode, both generally and specific to a paediatric population. Extensive technological challenges were identified, and participants suggested that the platform used was insufficient for client engagement due to the lack of two-way screen interaction. Internet connectivity issues also resulted in frequent disruptions. Engaging clients with comorbidities (e.g., attention deficit hyperactivity disorder) was a challenge for participants. Specific aspects of SP services (e.g., formal assessments, articulation tasks) were reported to be difficult using telehealth.

This study raises considerations for future telehealth clinical education, highlighting the importance of adequate preparation for both students and clients. Factors such as access to IT support and a two-way interactive technological platform were deemed essential in the delivery of telehealth by students servicing a paediatric population. Students also advocated for more in-session support from CEs and additional resources (such as parent training protocols and exemplars). These inclusions would enhance

student learning and client engagement alike, resulting in stronger skill development for students and improved client outcomes in paediatric SP telehealth service delivery.

Understanding what consumers and students think about student-led telehealth services: Edith Cowan University, Western Australia

At Edith Cowan University, half of the novice undergraduate third year students complete a placement with people with aphasia (PWA) in the first semester. The majority attend a university-run clinic within a hospital in groups of three to four students, with university employed CEs. Students usually attend this placement one day a week for ten weeks. However in the first week, COVID-19 closed hospitals for non-essential services. We moved the clinic to telehealth, with all students (n = 14) and PWA (n = 11) participating in this novel experience from their home.

To evaluate student-led intervention via telehealth as part of routine quality improvement, we asked PWA to complete an aphasia-friendly questionnaire, using a 5-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree). Seven of the 11 (64%) completed the questionnaire, indicating that they had attended an average of five telehealth sessions and enjoyed them (Mean = 4.6; Median = 5). Half were happy to use telehealth in the future (Mean = 3.3; Median = 3) although most would prefer face-to-face sessions (Mean = 3.1; Median = 4). Most PWA disagreed that IT issues were off-putting (Mean = 2.7; Median = 2). Although the sessions were tiring for some, they did not find it too strenuous (Mean = 2.6; Median = 3). Overall, PWA reported the telehealth sessions provided by students met their expectations (Mean = 4; Median = 4).

Ten of the 14 students (71%) completed a routine post-placement questionnaire aiming at quality improvement. This questionnaire used the same 5-point Likert scale and also allowed free text answers. Students mostly provided rehabilitation via telehealth to two PWA (range 2-4) and used a range of assessments and treatments. Students found it difficult to access assessments for telehealth (Mean = 2; Median = 2), found using telehealth tiring (Mean = 2.3; Median = 2) and found the telehealth platform ineffective for delivering assessment (Mean = 2.5; Median = 2) but effective for therapy (Mean = 3.7; Median = 4). Students reported an overall positive experience, however had a desire for telehealth friendly resources and experienced logistical issues with accessing patient notes.

Anecdotal feedback from the two CEs indicated that they found telehealth to be effective for placements although it was tiring and did not give the same experience as a face-to-face clinic. CEs noted that students were adaptable, using interesting therapy techniques (e.g., screen sharing online videos for conversational stimulus). CEs found accurately evaluating students more difficult with an online only clinic as there was less informal interaction time and ability to see interpersonal and team skills.

Discussion

Speech pathology courses are used to working with external providers to enable students' direct access to clients and SPs. During the various phases of COVID-19 restrictions experienced locally, we needed to creatively adapt these 'normal' placements in ways that continued to develop student clinical competencies. The cases described in this article illustrate how we undertook this challenge in varying ways. Through case-based work, various simulated experiences and telehealth, students were provided with clinical learning that was relevant and challenging, and which demonstrably developed their clinical practice skills. Student evaluations of these experiences were also positive.

As university professionals concerned with clinical education of our students, we have developed a more nuanced understanding of how competency develops and can be assessed in SP students. This has thrown up a challenge for the future: to go back to doing what we have always done, or to continue to develop and work towards more varied ways of teaching and assessing clinical skills in SP.

As we have noted in our cases, there are some challenges. Some areas of competency, such as interpersonal interactions or implementation of therapy, cannot be assessed in some alternative placement types, such as online simulation or case studies. We also recognise that alternative placements of all types

are limited in how they support students to develop their professional identity as a speech pathologist and to understand their roles within workplaces. Although these are not specific clinical competencies they are desirable pre-practice outcomes. Finally, while students were positive about these experiences when no 'normal' placements were available, we need further research to tell us about whether they value them if normal placements are an option.

These are questions which we hope the evaluations undertaken by universities around the world during this period, as well as future research, will answer. These answers will enable us to make use of a broad and flexible range of strategies to support SP students to become excellent clinicians.

Acknowledgements

We would like to thank and acknowledged the work of the Clinical Educators who provided these innovative learning opportunities for students within our courses. We would also like to thank and acknowledge the students and clients who were involved.

ORCID

Jemma Skeat https://orcid.org/0000-0001-9144-1562
Josephine Ohenewa Bampoe https://orcid.org/0000-0002-6979-676X
Emily Brogan https://orcid.org/0000-0001-9604-4558
Rachel Davenport https://orcid.org/0000-0001-6899-6885
Simone Howells https://orcid.org/0000-0002-5632-0850
Michelle Krahe https://orcid.org/0000-0002-3223-7825
Abigail Lewis https://orcid.org/0000-0003-4814-0558
Joanne Walters https://orcid.org/0000-0002-3051-1122
Gwendalyn Webb https://orcid.org/0000-0002-0644-4708
Nikki Worthington https://orcid.org/0000-0003-4041-9917

References

Bradford, N. K., Caffery, L. J., Taylor, M., Meiklejohn, J., Smith, A. C., & Langbecker, D. (2018). Speech-language pathology services delivered by telehealth in a rural educational setting: the school's perspective. *Journal of the International Society for Telemedicine & eHealth*, *6*, Article number: e20. https://doi.org/10.29086/JISfTeH.6.e20

Carlin, C. H., Boarman, K., Carlin, E., & Inselmann, K. (2013). The use of e-supervision to support speech-language pathology graduate students during student teaching practica. *International Journal of Telerehabilitation*, *5*(2), 21. https://doi.org/10.5195/ijt.2013.6128

Carter, M. D. (2019). The effects of computer-based simulations on speech-language pathology student performance. *Journal of Communication Disorders*, *77*, 44-55. https://doi.org/10.1016/j.jcomdis.2018.12.006

Cassel, S. G., & Hadley Edd, A. J. (2016). A pedagogical note: Use of telepractice to link student clinicians to diverse populations. *International Journal of Telerehabilitation*, *8*(1), 41. https://doi.org/10.5195/ijt.2016.6190

Coufal, K., Parham, D., Jakubowitz, M., Howell, C., & Reyes, J. (2018). Comparing traditional service delivery and telepractice for speech sound production using a functional outcome measure. *American Journal of Speech-Language Pathology*, *27*(1), 82-90. https://doi.org/10.1044/2017_AJSLP-16-0070

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107-115.

Hewat, S., Penman, A., Davidson, B., Baldac, S., Howells, S., Walters, J., Purcell, A., Cardell, E., McCabe, P., Caird, E., Ward, E., & Hill, A. E. (2020). A framework to support the development of quality simulation-based learning programmes in speech–language pathology. *International*

Journal of Language & Communication Disorders, *55*(2), 287-300. https://doi.org/10.1111/1460-6984.12515

Hewat, S., Walters, J., Caird, E., Aldridge, D., Penman, A., Cardell, E., Davenport, R., Davidson, B., Howells, S., McCabe, P., Purcell, P., Ward, E., & Hill, A. E. (2020). Clinical educators' perceptions of students following a simulation-based learning program. *Teaching Learning in Communication Sciences & Disorders 4*(3), 9. https://doi.org/10.30707/TLCSD4.3/JRCE8530

Hill, A. E., Ward, E., Heard, R., McAllister, S., McCabe, P., Penman, A., Caird, E., Aldridge, D., Baldac, S., Cardell, E., Davenport, R., Davidson, B., Hewat, S., Howells, S., Purcell, A., & Walters, J. (2020). Simulation can replace part of speech-language pathology placement time: A randomised controlled trial. *International Journal of Speech-Language Pathology*, 1-11. https://doi.org/10.1080/17549507.2020.1722238

MacBean, N., Theodoros, D., Davidson, B., & Hill, A. E. (2013). Simulated learning environments in speech-language pathology: An Australian response. *International Journal of Speech-Language Pathology*, *15*(3), 345-357. https://doi.org/10.3109/17549507.2013.779024

Penman, A., Hill, A. E., Hewat, S., & Scarinci, N. (2020). "I felt more prepared and ready for clinic": Connections in student and clinical educator views about simulation-based learning. *Australian Journal of Clinical Education*, *7*(1), 1-21. https://doi.org/10.53300/001c.17204

Sheepway, L., Lincoln, M., & Togher, L. (2011). An international study of clinical education practices in speech-language pathology. *International Journal of Speech-Language Pathology*, *13*(2), 174-185. https://doi.org/10.3109/17549507.2011.491129

Simucase. (2019). [Computer software]. https://simucase.com/

Speech Pathology Australia (2011). Competency-based occupational standards for speech pathologists – Entry Level. Melbourne, Victoria, Australia: Author. https://www.speechpathologyaustralia.org.au/SPAweb/SPAweb/Resources_for_Speech_Pathologists/CBOS/CBOS.aspx

Speech Pathology Australia. (2018). *Clinical Education in Australia: Building a Profession for the Future.* Melbourne, Victoria, Australia: Author https://www.speechpathologyaustralia.org.au/SPAweb/Resources_For_Speech_Pathologists/Clinical_Education/SPAweb/Resources_for_Speech_Pathologists/Clinical_Education/Clinical_Education.aspx?hkey=fbbaa348-9422-4bc4-87f1-7ebac62aba97

Theodoros, D. (2011). Telepractice in speech-language pathology: The evidence, the challenges, and the future. *Perspectives on Telepractice*, *1*(1), 10-21. https://doi.org/10.1044/tele1.1.10