A phenomenological study investigating experiences of student learning using an online radiation therapy planning curriculum

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\textbf{ABSTRACT}

\textbf{Introduction:} Traditionally radiation therapy planning was taught on campus in planning labs, or in the case of fully online programs, during clinical placements. In 2017, an innovative online planning curriculum was developed using a structured, self-directed approach of online learning and assessment, supported by a cloud-based planning system. This study aimed to explore student experiences of learning and practising planning online, and the application of acquired knowledge and skills to clinical practice.

\textbf{Methods:} Student experiences were investigated using an interpretive phenomenological method. A purposive sample of under-graduate and graduate entry students was recruited through email and snowballing. A combination of online individual and group interviews were conducted. Two researchers analysed the data, and used reflection, discussion and note taking processes to immerse themselves in the data. Following data collection, the process of organising data for analysis, applying a coding and condensing process to reduce the data into themes and sub-themes was conducted.

\textbf{Results:} Seventeen students from three cohorts participated in the interviews. Five key themes were identified: Flexibility, Connectedness, Personal relevance, Professional Experts and Safe environment. Sub-component themes were also identified.

\textbf{Discussion:} Student engagement was based on a range of factors that influence the student experience. The planning curriculum allowed students to develop confidence and competence in pre-clinical planning skills prior to placement.

\textbf{Conclusion:} Although initial experiences were overwhelming, over time students experienced a sense of engagement with their learning when supported by clinical and academic experts. Students felt more prepared for clinical placement as a result of their experiences.

\textbf{Introduction}

Traditionally, radiation therapy (RT) students have learned to plan through on campus computer labs, however in programs where the university-based learning is delivered fully online, this was not possible and thus planning skills were developed during clinical placement. In 2017, Monash University developed an innovative RT planning curriculum (RTPC) as part of the fully online course, whereby students asynchronously learned and practised RT planning in a fully online immersive environment, free from traditional constraints and increasing the opportunity for in-depth thinking and reflection [1]. The RTPC design imperatives are shown in Fig. 1.

Students were not required to physically be on campus to learn the skills of RT planning through didactic teaching, they engaged in an active and flexible approach remotely from home and could practice, 24hrs a day, 7 days a week. This novel student-centred approach, utilising a cloud based Eclipse\textsuperscript{TM} planning system (Varian Medical Systems, Palo Alto) allowed students in this online course to remain in regional and remote areas of Australia without having to relocate to attend university.

The RTPC facilitates the inter-dependence of theory with clinical practice, allowing students to develop cognitive skills in line with expectations of their year level and required clinical skills, along the continuum from beginner to competent practitioner [2], in a safe environment. The educational foundations of the RTPC are active, experiential learning [3] and reflective practice [4], fostering a student-

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centred approach to learning (Fig. 2).

The RTPC scaffolds meaningful student learning, providing authentic interactive online materials, quizzes to assess knowledge and understanding, along with narrated video recordings curated by the radiation therapy academic team, and clinical experts. At the end of each planning activity, students completed a plan evaluation and were provided with expert plans to facilitate self-reflection. Online group support sessions structured throughout each semester allowed students to present their work, and practice reflective observation and analysis through sharing challenges and successes. Establishment of connection and trust between students has been shown to facilitate student-to-student peer support resulting in knowledge construction and growth [5]. However, trust does not occur automatically, and takes conscious effort from the academic team to nurture this through engagement [6] and ‘learning by doing’ [7]. It should be noted that in addition to the online RTPC, entry to practice students’ RTP skills were reinforced and strengthened during clinical placements throughout the program.

In order to explore how thoughts, feelings, perceptions and contexts shaped student experiences of learning, interpretive phenomenological analysis (IPA) methodology was used. IPA is a qualitative approach examining personal lived experiences that can be complex, ambiguous and emotive [8]. This approach is valuable when researching an area which has previously lacked exploration [8], and it has been used to discover unique meanings related to educational experience [9]. However, there is a paucity of research using IPA in radiation therapy (and radiography) education research, with only a small number of published studies employing it to investigate student and graduate experiences [10–12]. IPA engages the hermeneutic circle whereby “the researcher is trying to make sense of the participant making sense of what is happening to them” [13], and thus, researcher reflexivity was an integral part of the process, prior to, during and post data collection [8].

The aim of this research was to explore student experiences of:

1. Learning the principles and practice of RTP using the online simulated RTPC
2. Transitioning the acquired RT treatment planning skills and knowledge during clinical placement

Materials and methods

This qualitative study was approved by the Monash University HREC committee (approval number 23332).

Participants from three cohorts of undergraduate and graduate entry students were recruited for the study. All participants had experienced learning of the key principles and practice of RTP through the online curriculum. A purposive sampling technique enabled us to gather ‘information-rich’ data from participants [14,15].

Participants were recruited using emails to students, flyers, a message on the students learning management system and snowballing [16]. An incentive was also used, where all participants went into a draw to win an online shopping voucher [17].

An independent research assistant, not known by the students, was the primary point of contact for participants during the study, from recruitment to data collection, because some members of the research team were teaching staff and any potential power relationship, which might affect a student’s level of comfort and the responses when participating, needed to be eliminated [18]. Participants were de-identified and given a code by the research assistant. Thus, the identities of the participants were not disclosed to any of the research team who were teaching staff in the program.

All participants were provided with an explanatory statement which provided details about the student and the role of the participants.

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**Fig. 1.** RTPC design imperatives.
Consent for the study was implied if the participant logged into the zoom meeting at the required time.

Data collection

Data collection occurred between July 2020 and April 2021 using a combination of online (Zoom Video Communications©), individual interviews and focus groups which were selected according to participant preference and availability [17,19]. These interviews were conducted by the research assistant.

An Interview guide (Fig. 3) was created to ensure the same stem questions were posed in each interview. All questions were open ended to allow for discussion and elaboration [20].

The interviews were recorded using the zoom audio recording capability and the audio recordings were transcribed verbatim. The transcripts were then cleaned by the research assistant to ensure they were anonymised and uploaded to NVivo 11, qualitative research data analysis software.

Two researchers analysed the data, using reflection, discussion and note taking processes to immerse themselves in the data and to make sense of it.

Data analysis

Following data collection, the process of organising data for analysis, applying a coding and condensing process to reduce the data into themes and sub-themes was conducted. These phases of analysis are interrelated/iterative and do not follow a linear process [21].

The nature of IPA required transcripts to be analysed case by case in a three-stage process that included an initial exploration of data, a review of emergent themes and a final drawing together of themes across cases [21]. The first researcher carried out the interviews and focus groups, and conducted detailed coding and development of the themes, the second researcher contributed to the development, audit, and structure of the themes, drawing on their informed position on the research topic and the application of IPA.

IPA has the risk of researcher bias affecting the elucidation of themes from the interviews and focus groups. Reflexive journaling was undertaken to establish quality and validity, while reflectively prompting the process of learning, interpretation and bracketing of themes as they emerge.

Results and discussion

The findings of this study demonstrate that student engagement with the online Radiation Therapy Planning Curriculum (RTPC) was based on a range of factors that influence the student experience.

Seventeen students (N = 17) participated in individual or group interviews. Two students were from the Bachelor of Radiation Sciences (BRS), two students from year one of the Master of Radiation Therapy (MRT) and four students from year two of the MRT participated in group interviews, whilst nine students from year two of the MRT completed individual interviews. Students resided in both metropolitan and regional locations in Victoria and NSW.

Five key themes were identified through data analysis of these group and individual interviews (Table 1). A further 12 sub-component themes, some overlapping the key themes, were derived linking the results to how thoughts, feelings, perceptions, and contexts shaped student experiences of learning.

Flexibility

The majority of students commented on the benefits of having 24 h a day, seven days a week access to the learning packages and software, and identified this flexibility as an enabler to effective learning and self-motivation. The flexible access allowed students to manage their own time and access learning activities when it was convenient for them. A number of the participants had part-time employment and found the flexibility of the RTPC design allowed them to engage with the materials at times that best suited their schedules, thus eliminating the pressure of
attending on campus labs. Students were provided a support session timetable at the commencement of each semester and found this allowed them to plan ahead and work around the structured timetabled online sessions. Flexibility was also linked to the sub theme of self-reliance. Students found they could determine when, and where they completed their RTPC learning activities and had control to start, pause, rewind, repeat activities and learning contents as often as required. The flexibility of the RTPC was perceived largely as a positive experience and led to feedback on positive engagement with the RTPC, however self-reliance was seen as a negative for some students. A small number of students found the need to be self-directed and the pre-recorded planning demonstration videos challenging and expressed a desire to have the content delivered as live online synchronous lectures, allowing for student interaction and questioning. This feedback was more evident in students undertaking the undergraduate Bachelor of Radiation Sciences degree than the Master of Radiation Therapy. The need for synchronous directed learning from a tutor was linked to the need for reassurance that concepts had been correctly understood.

One student expressed this by stating:

“The videos were good in second year but at the start I didn’t understand all the new terms and I hadn’t really used the planning system much. I wasn’t confident that I could do what the RT in the video had planned. It was better later on, when I knew what they were talking about, I would sometimes watch a little bit and was confident to then do some planning and I would watch the rest when I wasn’t sure.” MRT2FG1P3.

Affording flexibility for students in study approaches, not only provides them with greater control over their own study involvement, but it can also assist the development of higher order thinking and reasoning [22,23]. Furthermore, despite students in remote country areas and
international students requiring greater technical support, (due to possible challenges such as internet connections and time differences) online learning provides the opportunity for study without the need for re-location or long travel distances to and from the university [24,25]. The flexibility of online learning, although largely viewed positively, may require students to develop self-reliance [26] and they may need greater levels of support initially than they would with on campus learning, to enjoy a favourable online study experience [24].

**Connectedness**

Students from all year levels reported on the structure of the online learning curriculum in that it allowed them to develop a sense of connectedness with their learning. This in turn, led to greater engagement with the RTPC activities and support sessions. Watching planning demonstration videos created by clinical experts allowed for complex problem solving to be broken down into a narrative and visual step-by-step learning process. Following this, the opportunity to undertake the planning experience for the students themselves was explained as a positive experience, which created a sense of curiosity to learn more, by planning experience for the students themselves was explained as a possible challenge. In the support sessions, students were able to review their peers attending the support sessions. In the support sessions, students were able to develop connections with their peers through support sessions was helpful. The participants in this study reported that the opportunity to be connected with their peers through support sessions was helpful. The literature suggests that often online experiences can appear to students to be disconnected and perhaps even second rate to face to face learning on campus [25,27]. This indicates the need for further research about identifying learners’ needs in order to develop more robust learning frameworks that provide students with additional regular support [25,28].

**Personal relevance**

Opportunities to self-reflect, revisit learning resources and repeat the overall experiential learning cycle was valued by the majority of students. This style of learning was considered a personal/individualised approach for students because they were able to engage with materials repeatedly when needed. Students also reported being able to re-watch the expert and having the opportunity to complete a task multiple times allowed for relevance in the learning experiences. This relevance was a key theme of positive engagement throughout all student interviews across all stages of both the courses for example, one student commented:

“I was so overwhelmed, but once I looked at each video, I found it helpful. I could think, how do I plan a prostate, oh I will watch the prostate video and then the next year was better as they made some new shorter videos, so you could just go and find what you yourself needed to know for that activity. I liked that better.” BRScIP301.

The findings of this research resonate with previous studies, indicating that online learning in the health professions should not only incorporate specific instructional design features across the broad continuum of activities that students engage in, but also focus on student preparation [27,29]. A study by O’Shea, Stone and Delahunty reported that although participants found some difficulties with adjusting to online study, they enjoyed the relaxed environment of home where they could learn at their own pace and became comfortable being able to apply themselves through their preferred way of using online materials [25].

**Experts in the field**

Clinical scenarios and linking learning activities with clinical experiences enriched the delivery of the RTPC. Clinical radiation therapists and radiation therapy academics involved in the development, delivery, and feedback stages of the RTPC are all experts within the profession of radiation therapy. This was appreciated by students and engaged students with the planning activities, the learning objectives and created links to transitioning planning skills to clinical practice. One student reported this as:

“The scenarios are real, it would be good to develop some patient histories, but I really liked that even when I was away from placement I could still log in and plan things, and get ready for my planning rotation, that is really valuable” MRT2FG2P2.

Professions that require clinical learning experiences undertaken during the degree have been seen to benefit from online learning for the transition to clinical practice [30]. As indicated by several participants in this study, there is a need for clinical experts to be involved in the online delivery of learning such as the use of both equipment and the why and how it is used. This is reflected in professions such as nursing and physiotherapy [23,29,31] and is highlighted in our current research.

**Safe environment**

The online simulated planning environment overall was seen by students as a safe learning space. The time pressures often felt by students in the clinical environment were not present and the fear of completing a poor plan was reduced because students were able to repeat the task and watch the demonstration video multiple times, accessing expert guidance without needing to ask questions of clinical or academic staff. However, although the undergraduate students initially reported a lack of interaction with others as a negative experience, they also reported the simulated online learning environment as a safe learning space, which allowed them to manage their time and to create a willingness to explore their learning:

| Key themes       | Sub-component Themes                                                                 |
|------------------|----------------------------------------------------------------------------------------|
| Flexibility      | Self-reliance                                                                          |
|                  | Time management                                                                        |
|                  | Lack of interaction with others                                                       |
|                  | Opportunity to repeat learning cycle                                                  |
| Connectedness    | Peer learning                                                                          |
|                  | Lack of interaction with others                                                       |
|                  | Assumed knowledge                                                                      |
|                  | Overwhelmed                                                                           |
|                  | Supportive teaching staff                                                             |
| Personal relevance| Opportunity to repeat learning cycle                                                  |
| Professional experts | Links to clinical practice                                                                 |
|                  | Supportive teaching staff                                                             |
|                  | Relevant feedback                                                                     |
|                  | Feeling prepared                                                                       |
| Safe environment | Willingness to explore learning                                                       |
|                  | Opportunity to repeat learning cycle                                                  |
|                  | Context-Range of anatomical sites to access                                             |
I liked that I can re-plan something, and I am not bothering staff on placement. I would often get lost with what was expected, so being able to do it at home, and then see what other students were doing was a plus for me.” MRT2FG1P5.

“The RTPC gives you the confidence when you’re in the clinical setting to approach the Radiation Therapists and show your plan and you learn how to use terminology as well. I found the clinical staff when they see that you have that background and you’re applying it, are more willing to share their knowledge and teach you and add onto that” MRT2FG1P4.

Despite online learning being embraced in higher education, there is a lack of literature investigating the impact on the student of learning in a non-threatening environment. As indicated by several students during the interviews, the online space provided the feeling that no one was being disturbed or interrupted as the student could access resources to support themselves and take their time without anyone ‘watching over them’. Whereas within a clinical setting there are often time pressures and lack of available staff to support learning which can cause feelings of inadequacy, hindering the learning experience [10–12].

This research highlights the need for a solid theoretical framework and pedagogical approach to ensure the student experience is positive, meaningful and the students are able to engage in their learning and achieve the intended learning outcomes [32,33]. The findings of this research suggest that online learning in the health professions should incorporate specific instructional design features across the broad continuum of activities that students engage in, including a focus on student preparation [31], the opportunity for repeated and/or regular participation in planning activities, providing guidance, and structuring feedback, and reflection. Furthermore, the findings provide a worked example of how integrating educational theory can improve the student experience and improve student perception of readiness for clinical practice.

Conclusion

This study reported the results of an exploration of student’s experiences of learning radiation therapy planning through an online curriculum. The RTPC allowed students to feel a sense of connectedness with one another even though the program was delivered online. The flexibility of delivery afforded students to be able to create a study-life balance that may not have been as easy if they had to study on campus and it allowed students to individualise their learning pathway. The online environment, supported by clinical experts and academics created a safe space for study and the development of pre-clinical skills, assisting in transition to clinical placement. Students were able to apply their learning from the RTPC, which gave them the confidence to engage with the clinical staff in their clinical placements.

A limitation of the study was the number of students who participated, although this is a qualitative study, gaining a larger and richer data set may have allowed for additional themes to emerge. It may be useful in the future to investigate the perspectives of recent graduates who are working in the profession, to allow for reflection on the skills, which they developed as a result of learning through the online RTPC.

This study has highlighted the improved student perception of readiness for practice, and identified an area for future research comparing student perception and clinical performance.

In terms of research informed curriculum developments, it would be beneficial for students, if a wider variety of case histories were created to contextualise planning datasets. In addition, the development of a more explicit structure to the self-directed activities may be beneficial for beginner students in the undergraduate program, to scaffold learning and enhance the student experience.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] Sendag S, Odabasi H. Effects of an online problem-based learning course on content knowledge acquisition and critical thinking skills. Comp Educ 2009;53:132–41. https://doi.org/10.1016/j.compedu.2009.01.008.
[2] Benner P. From novice to expert. Excellence and power in clinical nursing practice. Menlo Park (CA): Addison-Wesley; 1984.
[3] Kolb DA. Experiential learning: experience as the source of learning and development. Englewood Cliffs (NJ): Prentice Hall; 1984.
[4] Schön DA. The Reflective Practitioner: How Professionals Think in Action. 1st ed. London: Routledge; 2017.
[5] Cho M, Tobias S. Should instructors require discussion in online courses? Effects of online discussion on community of inquiry, learner time, satisfaction, and achievement. Int Rev Res Open Distributed Learn 2016;17:123–40. https://doi.org/10.19173/irrod.v17i2.2342.
[6] Beth AO, Jordan ME, Schaller DL, Reed JH, Kim M. Responsibility and generativity in online learning communities. Internet Lear Environ 2015;21:471–84. https://doi.org/10.1080/14431978.2015.1000390.
[7] Gibbs G. Learning by Doing: A guide to teaching and learning methods. 1st ed. Oxford: Further Education Unit. Oxford Polytechnic; 1988.
[8] Reid K, Flowers P. Larkin. Exploring lived experience. Psychologist 2005;18:20–3. https://thepsychologist.bps.org.uk/volume-18/edition-1/exploring-lived-experience.
[9] Van Manen M. Phenomenology in its original sense. Qual Heal Res 2017;27:810–25. https://doi.org/10.1177/10497323177699381.
[10] Harvey-Lloyd JM, Morris J, Siew G. Being a newly qualified diagnostic radiographer: Learning to fly in the face of reality. Radiogr 2019;25:e63–7. https://doi.org/10.1016/j.radi.2019.01.007.
[11] Nortje N, Hoffman WA. Perspectives on the development of professionalism as experienced by radiography students. Radiogr 2018;24:110–4. https://doi.org/10.1016/j.radi.2017.09.006.
[12] Naylor S, Ferris C, Burton M. Exploring the transition from student to practitioner in diagnostic radiography. Radiogr 2015;22:131–6. https://doi.org/10.1016/j.radi.2015.09.006.
[13] Smith J. Evaluating the contribution of interpretative phenomenological analysis. Health Psychol Rev 2017;11:59–17. https://doi.org/10.1080/17437199.2010.510659.
[14] Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Adm Policy Ment Health 2015;42:533–44. https://doi.org/10.1007/s10488-013-0528-y.
[15] Patton MQ. Qualitative research and evaluation methods. 3rd ed. Thousand Oaks (CA): Sage Publications; 2002.
[16] Lopez V, Whitehead D. Sampling data and data collection in qualitative research. In: Schneider Z, Whitehead D, Loßbønd Woogard, Haper J, editors. Nursing & midwifery research: Methods and appraisal for evidence-based practice. 4th ed. Marrickville (Sydney): Elsevier-Mosby; 2013. p. 123–40.
[17] Greenspan SB, Gordon KL, Whitcomb SA, Lauterbach AA. Use of video conferencing to facilitate focus groups for qualitative data collection. Am J Qual 2021;26:45–93. https://doi.org/10.29333/ajq.10813.
[18] McGrath G, Palmgren PJ, Lijfdahl M. Twelve tips for conducting qualitative research interviews. Med Teach 2019;41:1002–6. https://doi.org/10.1080/0142159X.2018.1497149.
[19] Dos Santos Marques IC, Theiss LM, Johnson CY, McLin E, Ruf BA, Vickers SM, et al. Implementation of virtual focus groups for qualitative data collection in a global pandemic. Am J Surg 2021;221(5):918–22.
[20] Weller SC, Vickers B, Bernard HR, Blackburn AM, Borgatti S, Gravelle CC, et al. Open-ended interviews questions and saturation. PLoS ONE 2018;13:e0198606. https://doi.org/10.1371/journal.pone.0198606.
[21] Shaw RL. Interpretative Phenomenological Analysis. In: Forrester M, editor. Doing qualitative research in psychology: a practical guide. Thousand Oaks (CA): Sage Publications; 2010.
[22] Wilson M, Fairchild C. Collaborative learning and the importance of the discussion board. J Diag Med Son 2011;27:45–51. https://doi.org/10.1177/8756479310389609.
[23] Elshawi W, Taha MH, Abdalla ME, Abuzaid M, Saravanan C, Al Kawas S. Factors that affect student engagement in online learning in health professions education. Nurse Educ Today 2022;110:105261.
[24] Gemmell I, Harrison R. A comparison between national and transnational students’ access of online learning support materials and experience of technical difficulties on a fully online distance learning master of public health programme. Open Learn;
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J Open, Dist e-Learn 2017;32:66–80. https://doi.org/10.1080/02680513.2016.1253463.

[25] O’Shea S, Stone C, Delahunty J. ‘I feel like I am at university even though I am online’. Exploring how students narrate their engagement with higher education institutions in an online learning environment. Dist Ed 2015;36:41–58. https://doi.org/10.1080/01587919.2015.1019970.

[26] Landrum B. Examining students’ confidence to learn online, self-regulation skills and perceptions of satisfaction and usefulness of online classes. Online Learn 2020;24:128–46. https://doi.org/10.24059/olj.v24i3.2066.

[27] Dumford AD, Miller AL. Online learning in higher education: exploring advantages and disadvantages for engagement. J Comp High Ed 2018;30:452–65. https://doi.org/10.1007/s12528-018-9179-z.

[28] Martin F, Stamper B, Flowers C. Examining student perception of their readiness for online learning: Importance and confidence. Online Learn 2020;24:38–58. https://doi.org/10.24059/olj.v24i2.2053.

[29] Gardner P, Slater H, Jordan JE, Fary RÉ, Chuah J, Briggs AM. Physiotherapy students’ perspectives of online e-learning for interdisciplinary management of chronic health conditions: a qualitative study. BMC Med Ed 2016;15. https://doi.org/10.1186/s12909-016-0593-5.

[30] Gormley GJ, Collins K, Boohan M, Bickle IÇ, Stevenson M. Is there a place for e-learning in clinical skills? A survey of undergraduate medical students’ experiences and attitudes. Med Teach 2009;31:e6–12. https://doi.org/10.1080/01421590802334517.

[31] McCutcheon K, Lohan M, Traynor M, Martin D. A systematic review evaluating the impact of online and blended learning vs face to face learning of clinical skills in undergraduate nurse education. J Adv Nurs 2014;71:255–70. https://doi.org/10.1111/jan.12509.

[32] Redmon P, Abawi LA, Brown A, Henderson R. An online engagement framework for higher education. Online Learn 2018;22:183–204. https://doi.org/10.24059/olj.v22i1.1175.

[33] Pittaway SM. Student and Staff Engagement: Developing an Engagement Framework in a Faculty of Education. Aus J Teach Edu 2012;37. https://doi.org/10.14221/ajte.2012v37n4.8.