

TRAINING WITH PROKNOW

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Training to Meet Current Practice Expectations

In Australia, training medical radiation science professionals for competency in radiation dosimetry planning is governed by the Medical Radiation Practice Board. By the end of their training, students should have displayed the competency to: "Apply knowledge of tumor and target volumes, and normal tissue volumes to treatment planning", "Create clinically acceptable treatment plans" and "Evaluate treatment plans to ensure they are clinically acceptable and safe" [3] (Fig. 1). RMIT's philosophy is to create graduates that are "Work-ready". In radiation therapy we know that investing in training opportunities for learners, ensures that radiation therapy technological benefits are realised for patients. [1]

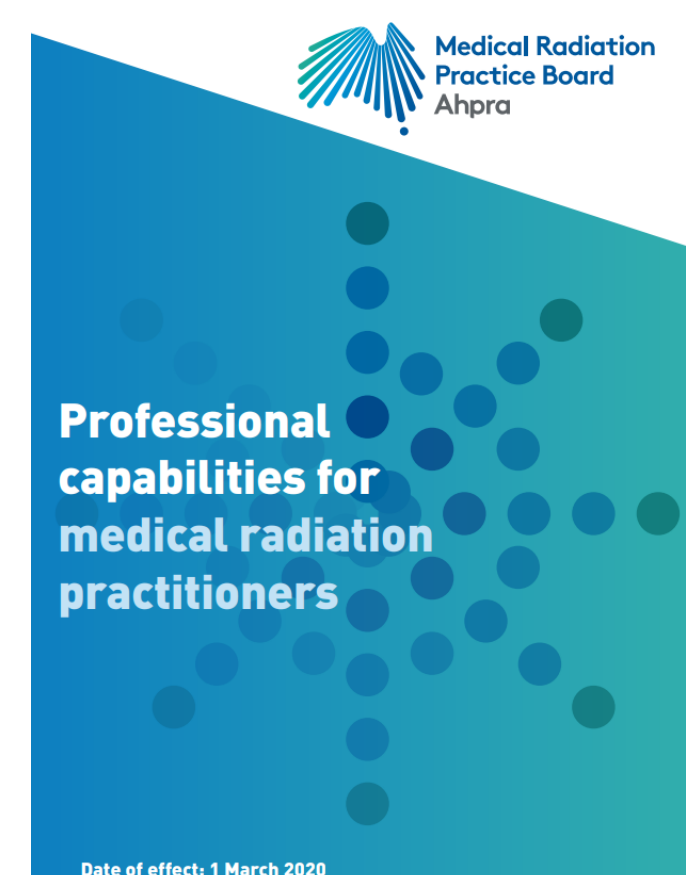


Fig. 1: Medical Radiation Practice Board

The Challenge

Creating engaging learning opportunities and providing timely feedback for student learners to cover the breadth of pertinent planning content is a hurdle. Content has to be taught in a chronological order with multiple opportunities for students to develop their capabilities from point A to Point B (Fig. 2).

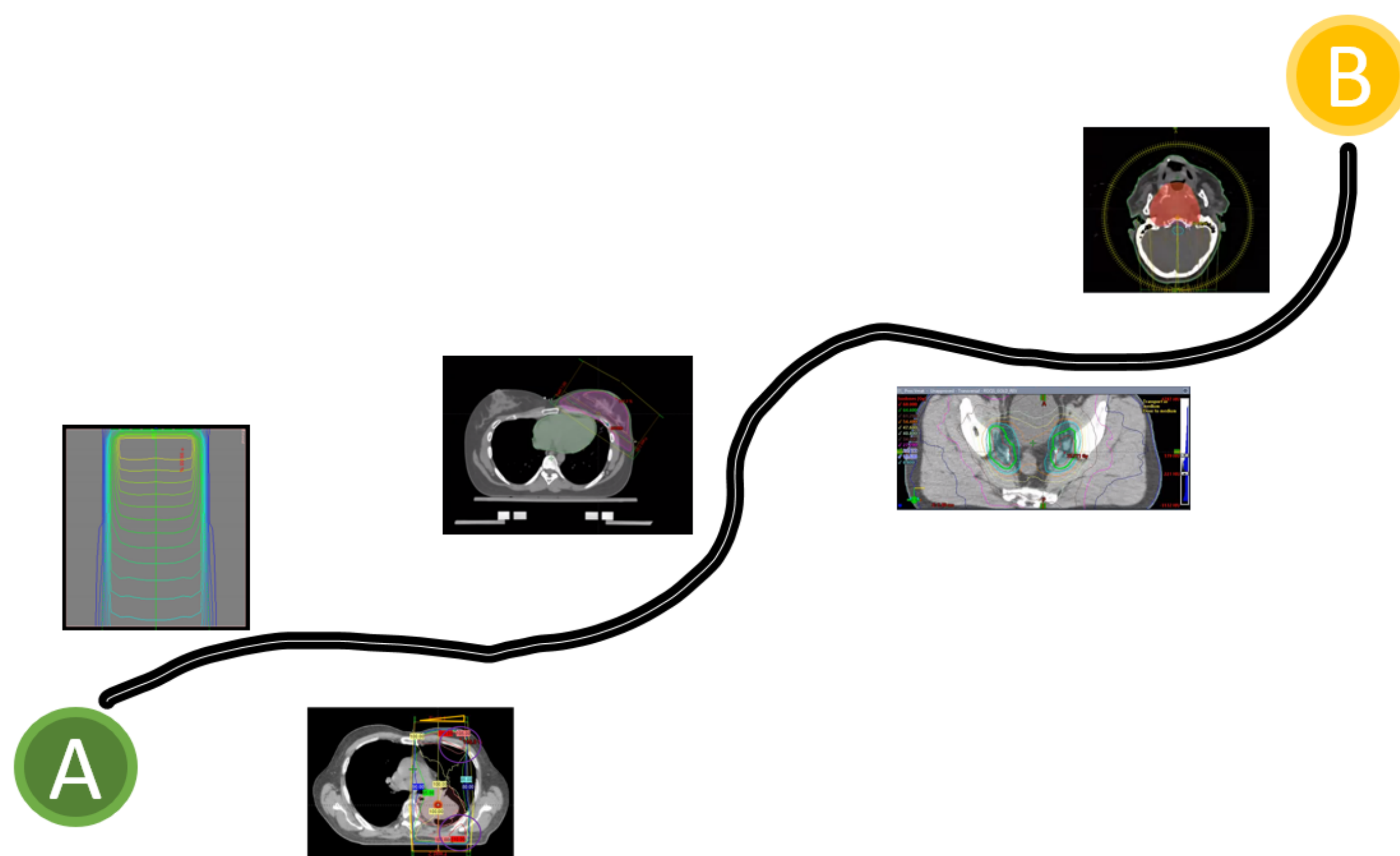


Fig. 2: Road Map of Planning Content

RMIT's Solution

To support radiation oncology theory with practical planning exercises within a closed loop system (Figure 3). Students learn site-specific radiation oncology and radiation therapy planning in tandem.

The steps involved are :

1. The student is assigned readings, theory lectures and knowledge quizzes associated with radiation oncology site.
2. The student completes contouring exercises associated with the radiation oncology site using Elekta Proknow™ [4]. Automatic feedback is then provide on contours.
3. The student is assigned a case study with associated planning exercises based on pre-contoured datasets.
4. The student anonymizes the case-study dataset and imports into the Varian Eclipse™ treatment planning system (TPS) [2].
5. The student completes planning exercises in the Varian Eclipse™ TPS and uploads completed plans to ProKnow™.
6. The student receives automatic feedback on plans completed against peers and a gold standard plan.
7. The student completes live practical assessments in a timed exam. Students submissions evaluated quantitatively in ProKnow™.

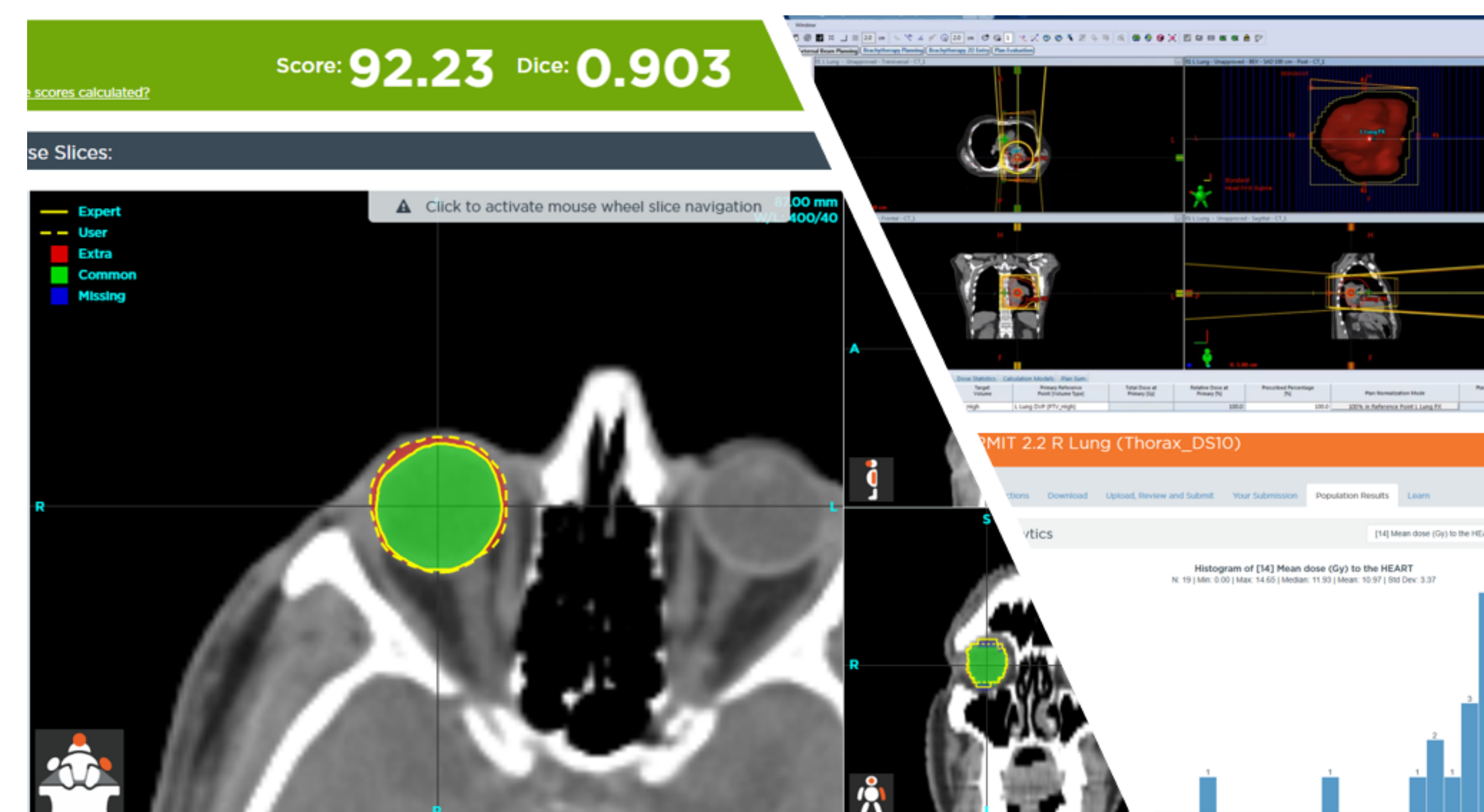


Fig. 3: Radiation Therapy Planning Training with ProKnow

The Background of ProKnow at RMIT

- Since March 2019, ProKnow™ has been embedded in all medical radiation courses that teach radiation therapy planning.
- A custom contouring and planning library to suit the needs of the RMIT student has been created.

How has ProKnow Effected Teaching and Learning?

1. Anatomy segmentation has pivoted from live tutorials to mostly self-directed learning.
2. Students now complete a more extensive list of anatomy segmentation training.
3. Students get quantitative feedback about anatomy segmentations and case study treatment plans in a quick turnaround.
4. Students get the opportunity to plan and receive feedback on a greater breadth of patient cases.
5. Students get a greater opportunity to be self-directed and experiment with planning techniques.

Feedback

"Using ProKnow software significantly increased my confidence and knowledge contouring structures and thus greatly assisted me prior to attending placement" (1st Year Radiation Therapy Undergraduate Student)

"Would be good to have ongoing contours to complete, like a weekly reading" (3rd Year Radiation Therapy Undergraduate Student)

"I think it is a great inclusion for the course" (3rd Year Radiation Therapy Undergraduate Student)

"Customizing the content to the syllabus is essential" (RMIT Academic)

Acknowledgments

RMIT staff have received no financial support and hold no affiliation with any organization that would jeopardize the academic integrity of this poster.

References

- [1] Linda J Bell. "Increasing Consistency and Accuracy in Radiation Therapy via Educational Interventions Is Not Just Limited to Radiation Oncologists". In: *Journal of medical radiation sciences* 63 (2016), pp. 145–147.
- [2] *Eclipse V15*, Varian Medical Systems, Palo Alto, CA, America.
- [3] Medical Radiation Practice Board Australia. *Professional Capabilities for Medical Radiation Practitioners*. Tech. rep. Canberra: Australian Government, 2020. URL: <https://www.medicalradiationpracticeboard.gov.au/registration/professional-capabilities.aspx>.
- [4] *ProKnow*, Elekta AB, Stockholm, Sweden.