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Research Article

Radiation Therapy Students as Partners in the Development of Alternative Approaches to Assessing Treatment Planning Skills

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ABSTRACT

Aim: The involvement of undergraduate students in assessment design is not a new concept. However, there is a paucity of evidence on radiation therapy students' participation in the design of teaching and learning activities. This article reports the development and initial evaluation of alternative approaches to assessing treatment planning skills and knowledge in undergraduate radiation therapy education.

Methods: A group of undergraduate radiation therapy students participated in a series of semistructured focus group meetings. The students nominated a practical examination and an oral plan critique assessment approach. The lecturers embedded two formative tasks to test the approaches in a second-year treatment planning subject. Two surveys assessed the experiences of the students, authenticity, engagement, and the practicality of the tasks in the treatment planning subject.

Results: The responses show that 92% of participants perceived the practical treatment planning examination as an authentic or real-world assessment approach. Moreover, 96% of the participants supported the notion of incorporating the tasks into the treatment planning subject. Most students (96%) perceived an oral critique of a treatment plan as an authentic approach and also supported the notion of incorporating oral critiques as an assessment task. Student engagement was high in both the practical and oral critique tasks, suggesting that lecturers could also include such tasks as formative activities to enhance learning.

Conclusion: Involving student voices in pedagogic assessment design positively influenced the development of new assessments for the treatment planning subject. The oral critiques and practical-based approaches nominated are likely to enhance authenticity to students' learning experiences and provide opportunities for students to develop desirable professional capabilities.

RÉSUMÉ

But : L'engagement des étudiants de premier cycle dans la conception de l'évaluation n'est pas une idée nouvelle. Cependant, il y a peu de données probantes sur la participation des étudiants en radiothérapie dans la conception des activités d'enseignement et d'apprentissage. Cet article fait état du développement et de l'évaluation initiale des approches non traditionnelles de l'évaluation des connaissances et des compétences en matière de planification de traitement dans l'enseignement de la radiothérapie au premier cycle.

Méthodologie : Un groupe d'étudiants de premier cycle en radiothérapie a participé à une série de groupes de discussion semi-structurés. Les étudiants ont proposé un examen pratique et une approche orale d'évaluation critique d'un plan. Les enseignants ont intégré les deux tâches formatives dans la mise à l'épreuve des approches dans un sujet de planification de traitement de deuxième année. Deux sondages ont évalué l'expérience des étudiants, l'authenticité, l'engagement et le caractère pratique de la tâche par rapport au sujet de la planification de traitement.

Résultats : Les réponses montrent que 92 % des participants voient l'examen pratique de planification de traitement comme une approche authentique d'évaluation. Par ailleurs, 96 % des participants sont favorable à l'idée d'incorporer les tâches dans le sujet de la planification de traitement. La plupart des étudiants (96 %) voient dans la critique orale d'un plan de traitement une approche authentique et appuient la notion d'incorporer les critiques orales dans les tâches d'évaluation. L'engagement des étudiants était élevé autant dans les tâches de pratique que de critique orale, donnant à penser que les chargés de cours pourraient inclure de telles tâches parmi les activités de formation afin d'améliorer l'apprentissage.

Conclusion : Engager la voix des étudiants dans la conception de l'évaluation pédagogique a une influence positive sur le développement de nouvelles évaluations pour le sujet de la

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planification du traitement. Les approches basées sur la critique orale et la pratique proposées sont susceptibles d'augmenter l'authenticité de l'expérience d'apprentissage des étudiants et de leur fournir des

occasions de développement de capacités professionnelles souhaitables.

Keywords: Treatment planning; authentic assessment; partnership; innovation; student experiences

Introduction

The inclusion of undergraduate students' voices in the pedagogic design of authentic assessment and teaching experiences to enhance student engagement is not a new concept. However, the literature suggests that students' voices are still frequently overlooked [1], despite the complex demands of higher education teaching and learning such as improving student success, employability, engagement, and assessment [2]. Research in higher education also recognizes the importance of assessment in teaching and learning [3–7]. However, assessment innovation requires a shift in thinking from traditional approaches to “authentic” assessment whereby students perform “real-world” tasks that demonstrate meaningful application of essential knowledge and skills [8]. Current pedagogic research shows that students as partners (SaPs) is one approach to rethinking academic transformations [9,10]. SaP has been defined as “staff and students working together to make things better, by sharing perspectives and jointly making decisions” [11].

In radiation therapy, the accurate and safe use of radiation to treat cancer demands high competency in computerized treatment planning. The Queensland University of Technology Bachelor of Radiation Therapy program has more computerized treatment planning subjects across the 4-year study period compared with other subjects. In these subjects, students develop a range of three-dimensional computerized treatment plans (3DCRT), intensity-modulated radiotherapy (IMRT), and volumetric-modulated arc therapy (VMAT) treatment plans. Pinnacle³ v14 (Philips Radiation Oncology Systems, Madison, WI) and Monaco v 5.10 (Elekta CMS, Maryland Heights, MO) clinical treatment planning software are currently being used in teaching. It is crucial that teaching enhancements through innovative tasks and assessments that mimic the complexity of the “real-world” treatment planning scenarios students may encounter in professional life be implemented.

When students develop treatment plans as an assessment task, they undergo rigorous checking by the lecturers using standardized treatment plan checklists and the scorecard utility on Pinnacle³ planning software. The checklists mimic the quality assurance process in the clinical environment where the plan is checked to ensure that the organ at risk structures have been accurately contoured. The students also perform quantitative plan evaluation of the treatment plan using “goal sheets” provided by the lecturers. The goal sheet lists the primary goals, secondary goals, conformity, and homogeneity indices depending on the clinical tumor site and treatment technique. This can be submitted as part of a

“written critique” assessment task. An additional assessment for the planning subjects in the form of a theory examination is also undertaken at the end of the semester.

The use of clinical treatment planning software enables an authentic learning approach in university settings but requires that the lecturers emphasize the importance of academic honesty if the treatment plans are developed over a period of days. The major limitation of using clinical software is that students can access all the treatment plans in the database. Therefore, one potential benefit of developing a range of assessments for the radiation therapy subject would be addressing academic integrity issues [12,13]. Higher education literature shows assessment innovation requires lecturers to create a diverse range of authentic assessments [7], offering students a range of experiences that can be beneficial to professional practice. SaPs have been useful in transforming or enhancing the quality and authenticity of assessment and learning in higher education [9,14–16]. However, there is a paucity of evidence on their existence or impact in radiation therapy academic programs.

The aim of the Radiation Therapy Students as Partners Project (RTSaP) was to enhance the quality of education and learning by involving students in identifying and undertaking an initial evaluation of the alternative tasks that could be used to assess treatment planning skills and knowledge.

Methods

The RTSaP project involved a series of focus group meetings to discuss the design of alternative assessments tasks. This was followed by implementation in teaching, and surveys assessed the experiences of the students who participated in the formative assessment tasks (Figure 1).

Ethics Approval

Ethical principles in terms of participation, consent, and confidentiality of data were used to underpin the design of the study. The Office of Research, Ethics, and Integrity approved the study. Approved participant information sheets for the focus groups were provided to the students and emphasized that participation would not impact their grades.

Focus Group Meetings

To include the undergraduate radiation therapy students' voices in identifying alternative assessment approaches for the treatment planning subjects, a semistructured qualitative focus group approach [17] was used. Four [4] radiation therapy students from the third-year cohort, invited via email,

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