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The use of self-directed, group project work for teaching technical aspects of radiotherapy equipment to undergraduate therapeutic radiography students

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Background

The radiotherapy BSc course at University of Liverpool aims to progress the students through the 3 years of study at a manageable and structured rate. Our group project work forms a key element of our teaching methods for our module on radiotherapy equipment; in resonance with our philosophy of combining academic depth and rigour with highly relevant everyday clinical practice. The technical aspects of radiotherapy equipment is studied in depth in year 2 of the under graduate course. It is vital that we maintain the students engagement with this teaching and ensure the academic and clinical components of this module are relevant and integrated.

Aim/objectives

The aim of this work was to demonstrate enhancement of student learning and engagement through successful group project work for technical aspects of radiotherapy equipment, using blended learning, ideally suited for AHP students and a diverse population. Topics such as different imaging modalities were given (fig 1)

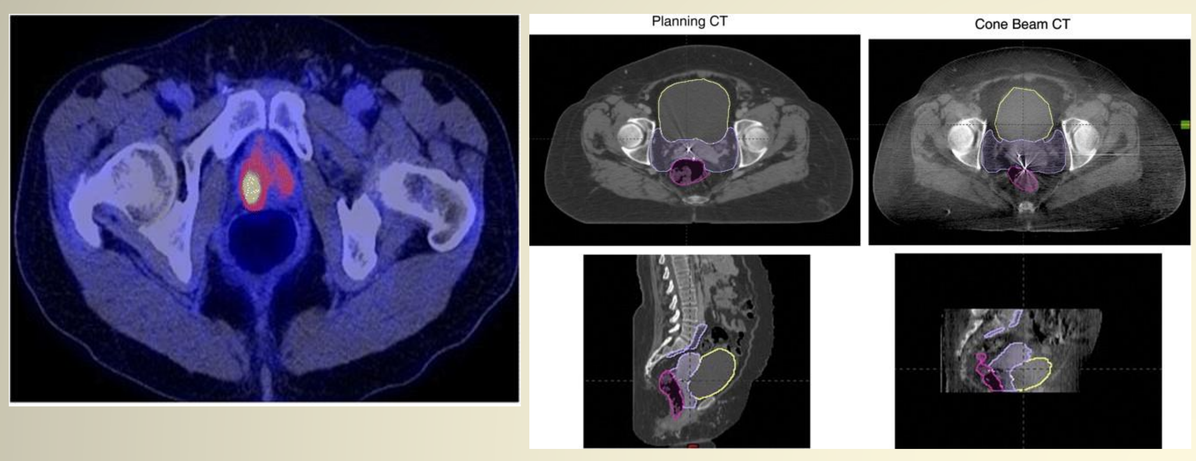


Fig 1- examples of different imaging modalities used for radiotherapy

Method

The cohort is divided into groups to independently research a key subject area, with high clinical relevance for radiotherapy equipment. In the academic setting, groups analyse the problem using PBL (short case format) methods and mind-mapping techniques (fig 2) in tutorials/seminars; objectively strategising and directing information collation for each student, especially in the clinical placement block. When completed, the final group work is presented to the whole class and presentations edited by the lecturer prior to revision for the unseen written exam; within which the group subjects form the focus of short answer questions.

Fig 2 Example of mind map used by one group

Relevance/Impact

Learning and teaching with group project work, both academically and clinically, is vital to developing deep learning experiences, tying together real, clinical scenarios with academic rigour/depth; a must for therapeutic radiographers in mirroring everyday clinical practice.

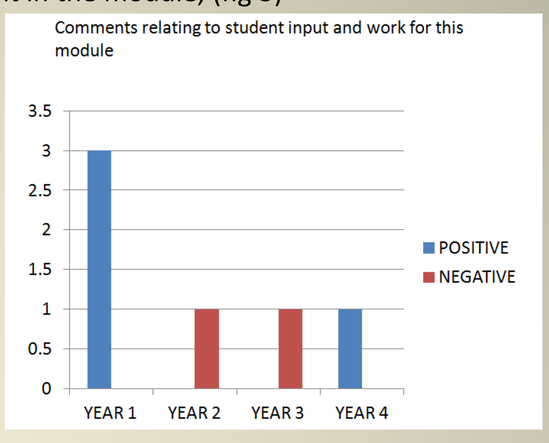
The impact the group work has on students experience of this module and also the effect of this method of study on students results awarded will be reviewed .

Results

Results for this study were gained using University of Liverpool module evaluation questionnaires, the students are very familiar with this format of evaluation and all students completed and returned forms. The results used were those that focused on the academic portion of the module and not the planning practical aspects that form a large portion of this module. The results of exam questions relating to the group work were also considered as an important element to the success of the group work given.

Students engage positively with the work on many levels; self-directed learning, resource gathering, group collation of knowledge and communication skills for peer-to-peer learning. Seen in results for the students perception of their engagement in the module, (fig 3)

fig 3, students evaluation comments regarding their level of involvement in the module



Groups were originally chosen randomly throughout the cohort (irrespective of clinical placement site) and the grouping refined so now it is focused on students at each site researching a particular topic – this has improved the response in evaluations to having no negative comments regarding the group dynamics/ work. Comments made regarding different aspects of the module and then group work only on student evaluations were collated. These show a decrease in comments relating to group work, the lack of comments made by year 4 indicate the students do not see this work differently from any other learning in the module and that the group work has become fully integrated in the module delivery (fig 4 & 5)

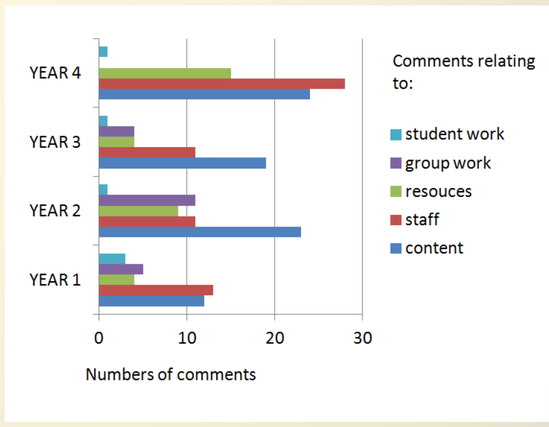


Fig 4, comments made for all aspects directly of teaching

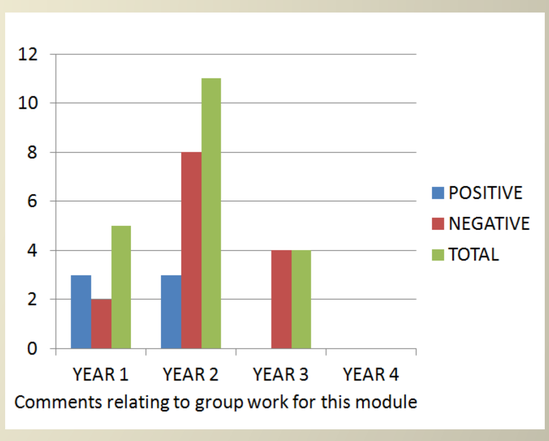
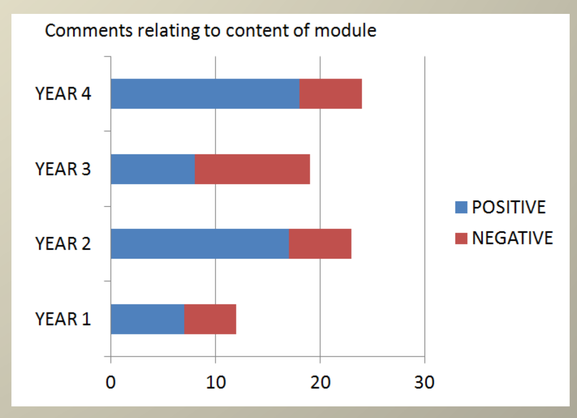


Fig 5, comments relating to group work

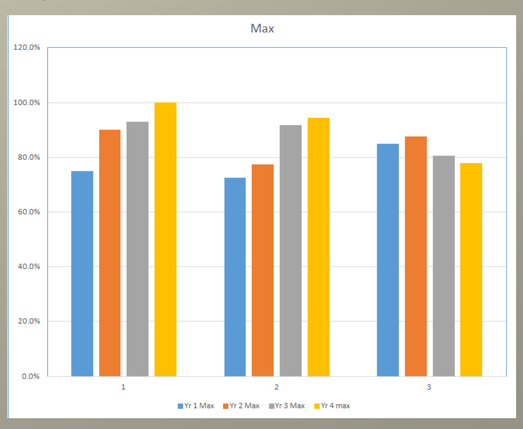
The technical focus has changed in this current iteration to being aligned with the oncology module (prostate) being studied concurrently, again resulting in positive comments relating to the overall module content, (fig 6)

Fig 6, student evaluation comments relating to the content of the module



The results for the questions relating to the work studied in the groups show a steady rise in maximum marks and a positive development for mean marks across the group work, (fig 7) These results show favourably towards the continued development of this group work.

Fig 7, maximum marks achieved for the questions relating to group work across the 4 years involved



Discussion/ conclusion

Developments made have resulted in positive changes in results and evaluations; reduction of adverse comments through a continued philosophy of changed and refinement to teaching strategies and maintenance of clinical focus on what is technically and content-wise a difficult and voluminous module.