Research Informed Teaching Experience in Diagnostic Radiography: Perspectives of Academic Tutors and Clinical Placement Educators

Introduction: This small scale qualitative research study investigated the perceptions by both academic tutors and clinical placement educators of integrating the research-informed teaching experience (RiTe) within an undergraduate radiography curriculum to support the learning and practice of image quality and dose optimisation.

Method: A purposeful sampling approach was used to recruit participants and two asynchronous on-line focus groups (OFG) were used for data collection. An inductive thematic approach was taken to analyse both sets of OFG data.

Results and discussion: Five academic tutors and 4 clinical placement educators participated in the research. Three overarching themes common to both sets of OFG data were identified. Findings confirmed that both OFGs felt that the Research-informed Teaching experience (RiTe) supported student learning of image quality and dose optimisation as well as the development of research skills. However, the clinical placement educators did identify that students may find it difficult to transfer and apply this knowledge into practice (theory-practice gap).

Conclusion: Results from both OFGs support RiTe with regard to the teaching and practice of image quality and dose optimisation. However, greater involvement by clinical placement educators may help to overcome issues with the translation of RiTe by students into the clinical environment (theory-practice gap) and support its continued development within the curriculum. It was also identified that RiTe could be developed for qualified staff for continued professional development (CPD).

Keywords: pedagogy; radiography; theory-practice gap; continual professional development; clinical placement; skill acquisition

Introduction and background

The Research-informed Teaching experience (RiTe) was developed in 2009 and is now fully integrated within our BSc (Hons) Diagnostic Radiography programme and summative assessment scheme. RiTe uses a combination of research, simulation and inquiry led learning to support the application of theoretical knowledge, research skill development and clinical practice by our year 1 and year 2 students. The active involvement of students within subject-based research has been shown to not only enhance knowledge, but also to develop student research and communication skills (particularly when they are involved with some or all of the research stages) [1,2]. Specifically, RiTe encourages our students to undertake an inquiry led approach to learning within small groups in order to research the effects of x-ray exposure factor manipulation on image quality and dose optimisation [3]. Evaluative research of the student experience of RiTe has supported its introduction as a teaching strategy with regard to the knowledge acquisition and practical application of image quality and dose optimisation, as well as the development of research skills [4-6].

Clinical hospital placements form an essential part of the undergraduate student radiographers' education and provides opportunities to work in real life environments where theory can be integrated into practice [7]. However, a phenomenon known as the theory-practice gap has been identified across multiple health care disciplines, whereby students struggle to apply taught theory with the reality of practice. This gap may also affect professional competence and contribute to difficulties in progressing from student to novice professional [8,9]. Clinical placement educators play a vital role in supporting students so that they gain the appropriate experience and skills to bridge this gap, and help to support the continued development of the undergraduate curriculum by recognising the value of linking theory with clinical practice [9].

Although the student experience of RiTe, has previously been reported [4-6], no research has been undertaken to explore the academic or clinical placement educator point of view. The purpose of this small scale qualitative study was therefore to explore these perspectives with regard to the integration of RiTe within the curriculum and in supporting student learning and practice of image quality and dose optimisation. This would also determine opportunities for the further development of RiTe.

Method

Ethical approval

Ethical approval was granted prior to recruiting participants and good ethical practice was followed which included informed consent via an information sheet and the use of closed online focus groups (OFG). Confidentiality was emphasised to all OFG participants by the researcher and participants were asked not to share information outside each OFG. Given the professional background of the participants it was expected that this would be respected.

Data collection

A qualitative study employing purposeful sampling was used to recruit participants for 2 asynchronous OFGs; 1 for academic tutors (AT) and 1 for clinical placement educators (CPE). Purposeful sampling is a recognised technique in qualitative research as it aims to target key informants who will have a specific and unique perspective on a phenomenon [10]. For the AT OFG, a wide range of opinions from a number of different perspectives (e.g. strategic vision, resource management and pedagogical responsibilities) were sought and the following were asked to participate as they each provided a unique perspective or experience of RiTe - a Physicist who teaches on the Undergraduate Programme, a member of the academic staff who teaches imaging technique, the Research Dean, Undergraduate and Postgraduate Programme Leaders, Academic Head of Department, Clinical Learning Manager and an academic tutor with an awareness of, but no involvement with RiTe. The University currently has 12 clinical placement educators who act as the primary liaison between the University and hospital clinical placement sites and all were invited to participate.

The use of asynchronous OFGs provided a convenient way for participants to engage with the research as there were no constraints with regard to arranging venues and times. Responses in the OFGs were transferred directly into an electronic document so they were accessible for analysis without the need for transcription or editing, thereby enhancing the accuracy of collected data and eliminating transcriber bias [11]. This approach also encouraged the exchange of experiences and allowed participants to comment upon each other's interpretations of RiTe [12,13].

Each OFG was conducted within the Blackboard Virtual Learning Environment (VLE) via an online Wiki and access was restricted to participants for each OFG. Seven semi-structured questions were discussed by both OFGs (Table 1) with the first author / researcher acted as moderator to ensure participants posted responses to the questions posed [14]. Both OFGs ran for 6 weeks with the moderator asking participants to visit their respective OFG at least once a week. Participants were also invited to add comments which were used by the moderator to generate further questions for exploration.

[Insert Table 1 here]

Data analysis

An inductive thematic approach was taken to analyse both sets of OFG data. This approach was selected in order to allow themes to emerge from the data and to provide a more open-ended and exploratory approach to the research. Thematic analysis also provided a flexible research tool when searching for and identifying common themes that extended across both OFGs. Codes were assigned to overarching themes by following the 6 phase process outlined by Braun and Clarke [15] (Table 2). Similarly the 15 point checklist developed by Braun and Clarke [15] was used for coding and analysing both sets of OFG data (Table 3). This ensured the credibility and dependability of the research by the adoption of a well-established analytical approach [16].

[Insert Table 2 here]

[Insert Table 3 here]

Coding was 'data-driven' in that themes were derived from the data rather than coding for specific research questions. Data was coded manually by making notes adjacent to the analysed data (Table 4). Each code was then matched up with the relevant data extract that demonstrated this code to aid with the overall conceptualisation of the data patterns and the relationships between them [15].

[Insert Table 4 here]

Once all the data for both OFGs had been coded, these were arranged into potential themes with the relevant coded data collated within each identified theme [15]. Consideration was also given as to whether the themes contained any sub-themes in order to give them a hierarchy of meaning [15]. Final refinements were made by determining what aspect of the data each theme captured and whether the themes could be triangulated between both OFGs.

Results and discussion

Five ATs and 4 CPEs participated with the research (Table 5).

[Insert Table 5 here]

Three overarching themes common to both sets of OFG data were identified. These were: *RiTe and student learning*, *RiTe and the value of research* and *Translation of RiTe into Practice*, with each also having 2 or more sub-themes (Figure 1).

[Insert Figure 1 here]

RiTe and student learning

Group working and learning

Both OFGs identified that RiTe helped students to learn and work together:

> **AT 5:** *"It builds on the PBL [Problem Based Learning] ethos of independent learning and problem solving … but emphasises team working in researching shared goals"*

> **CPE 4***: "It promotes the group working ethos that they have previously experienced through PBL, however they are encouraged to become more of a team with a common goal"*

Previous research exploring the student experience of RiTe also reported this finding with regard to collaborative learning by students via team working [5,6]. However, this approach was also seen to have some disadvantages:

> **AT 1***: "Some students can sit back and disengage from the group activities and this leads to tension with the research active students in the same group"*

One CPE asked:

> **CPE 1***: "Do all students participate? Maybe not best suited to all learning styles?"*

Students working in groups may experience interpersonal conflicts or there can be a lack of balance in the work accomplished by each student, allowing some students to disengage from the process [17]. In year 1, RiTe forms part of a summative assessment with an experiment report, but currently there is no such assessment in year 2. Anecdotal feedback has suggested that the absence of a summative assessment can led to a lack of engagement by some students during group work. One method to address this problem would be the introduction of peer assessment, whereby students rate one another with regard to group participation and team contribution [18]. This may also provide an opportunity for students to develop skills in encouraging engagement from those not actively participating with group work.

Resource management

Both OFGs commented that RiTe as a learning activity enabled students to see the effects of changing exposure factors on image quality and dose optimisation for themselves (something they would be unable to do in clinical practice). It also allowed them to be creative with their learning. However, the AT OFG did acknowledge that a consequence of this approach was an additional demand on resources:

AT 4: *"It takes a lot of planning in terms of student allocations and staff resources and would not be as cost effective as a traditional teaching programme"*

AT 3: *"It is physically resource intensive"*

Some of the CPEs raised concerns about qualified radiographers discussing with students what they learnt during RiTe once back in clinical placement:

CPE 3: *"I don't think staff in the clinical [hospital] department realise that RiTe exists. I am not sure even if they knew that it did, that they would get into a discussion with students"*

CPE 2: *"Like CPE 3, I am also not sure how much clinical staff [radiographers] would engage with students about RiTe"*

Guidance documentation has been produced and circulated to each CPE and clinical placement to try and raise awareness of the purpose of RiTe and to encourage discussions between students and radiographers.

RiTe and radiography research

Research skill development

Both OFGs identified RiTe as a way for students to develop their research skills at an early stage in their careers:

AT 5*:* *"Students are exposed to research far earlier in their programme than was the case with our previous [BSc (Hons)] curriculum, and it is 'hands on' rather than 'dry' lectures on research methodology. They will appreciate the latter more once they have had this research experience"*

CPE 4: *"RiTe enables them to engage with the [research] process by letting them try it out for themselves as opposed to reading the research of others"*

Radiographer research / research culture

The development of a research culture within radiography and using research evidence in clinical practice was also commented upon by both OFGs:

> **AT 1**: *"… It makes them question clinical practice and to look at evidence based research – really important attributes in undergraduates"*

> **CPE 4**: *"… promotes the culture of research within the radiography profession"*

The development of a research culture was seen as being important with regard to developing an evidence base for radiographic practice as traditionally radiography has been seen as a consumer of research, rather than a producer of research [19]. The Council for Allied Health Professions Research (CAHPR) [20], has issued a position statement that aims to develop the research awareness of all allied health professions (AHP) pre-registration students and prepare them for embedding research within their practice. The Society and College of Radiographers (SCoR) [21] has also updated its research strategy for 2016-2021 which now targets all levels of the profession from pre-registration to expert practitioner in order to embed research at all levels of radiography practice and education.

Integration of teaching and research (theoretical knowledge)

Whilst the majority of ATs saw RiTe as a positive way of integrating research with teaching to build upon the theoretical knowledge and application in practice of image quality and dose optimisation, a number of the CPEs were not convinced that students were actually applying this knowledge in clinical practice:

> **CPE 2**: *"After attending one of the RiTe presentations, I was surprised by how much the student's evaluation of what they had learned identified 'soft' skills e.g. interpersonal skills, team working, public speaking or problem solving…Most of these are useful clinical skills…but not necessarily the skills that we would have expected"*

Research is a complex skill and requires a number of diverse sub-skills such as critical thinking or developing a research method. Learning how to share expertise and/or knowledge through the effective participation in a research team is just as important as undertaking the research itself and this may have been not fully appreciated by some CPEs [22].

Translation of RiTe into clinical practice

Understanding of theory behind processes / exposure factor manipulation

The AT OFG felt that RiTe helped students to develop an understanding of the manipulation of x-ray exposure factors and the effect these have on image quality and dose optimisation:

> **AT 2:** *"[RiTe] gives the students the opportunity to experiment with exposure factors so they can see the results for themselves and therefore a deeper understanding of the theory"*

> **AT 4*:*** *"They are able to put their theory into practice … and the knowledge can be transferred to clinical practice"*

Translation of theoretical knowledge into practice (theory-practice gap)

However, some CPEs did question whether these skills and knowledge were actually being applied in practice:

> **CPE 2*:*** *"Students say they have gained a better understanding of [x-ray] exposure factor manipulation, but I don't necessarily see the evidence of this in their clinical practice"*

> **CPE 1:** *"It has a place in developing practical skills i.e. use of [x-ray] exposure factors and methods to measure [radiation] dose…, but I am not convinced that in practice students are displaying an enhancement of their theoretical knowledge"*

One AT also questioned whether the knowledge and skills learned during RiTe influenced clinical practice and if more involvement by CPEs was needed:

AT 2: *"... [Student] presentations [at the end of each RiTe week] suggest it makes them think about clinical knowledge... I'm not sure how long this is sustained. We don't really follow this up on clinical placement to see if has influenced their practice"*

However, this lack of translation of acquired knowledge and skills into clinical practice could be due to students feeling unable to apply or discuss these when working with qualified radiographers. This was identified with previous research whereby students agreed that the research undertaken during RiTe would influence their clinical practice, but felt unable to share this knowledge with qualified radiographers [5]. Workplace culture, together with diverse unwritten rules, assumptions and expectations has a strong influence on the use of research evidence within practice [23].

Changing practice is therefore not just about translating knowledge into practice, but also training in leadership skills in order to give students the confidence to be able to use or share knowledge and skills in the clinical setting [4]:

CPE 2*: "I think they [students] need more confidence to articulate their findings in clinical practice. However, I acknowledge that this can be difficult because it can sometimes be perceived as questioning the radiographer's judgement"*

Currently the CPEs have little involvement with RiTe as part of the curriculum and findings would suggest that in order to support the development of RiTe this is an area that needs to be addressed. Further involvement by CPEs with RiTe will help to ensure that the theoretical and the simulation aspect of RiTe aligns with the student experience of clinical practice as well as fostering the translation of RiTe within the clinical setting to help bridge the theory practice gap [24]. However, one CPE did identify RiTe as having a role in developing knowledge and linking this with practice:

CPE 4: *"RiTe provides a unique opportunity not only to develop theoretical understanding, but also allows the student to see the difference that alteration of [x-ray]*

exposure factors makes to their image. This is not something they could do in clinical practice"

Continuing professional development (CPD)

Both OFGs identified that RiTe could be developed as a Continuing Professional Development (CPD) learning activity for qualified radiographers in order to develop and enhance their own knowledge and research abilities:

> **AT 4***: "I think giving qualified staff the opportunity to participate [with RiTe] would be an excellent development. There are areas of radiography where staff are trained to perform tasks without having the underlying knowledge and understanding. It would be a great way to introduce and consolidate understanding"*

However, the CPE OFG did raise the potential issue of reluctance by departments in releasing staff to attend such an activity:

> **CPE 2:** *"I think it would be a good opportunity to be available, but I'm not sure how many departments would be able to release staff for this"*

> **CPE 4***: "This is a great opportunity for CPD for staff [qualified radiographers], however departmental limitations with regards to staffing will always have a negative impact"*

The understanding of the manipulation of x-ray exposure factors on image quality and dose optimisation is an important area for development and professional autonomy. However, a number of articles have identified that there may be an over-reliance on using pre-set exposure factors resulting in a lack of consideration when optimising patient x-ray examinations. Factors that contribute most frequently to dose and image quality variation lie in decisions concerning radiographic technique (including the selection of x-ray exposure factors) made by radiographers [25,26]. Pre-registration or CPD activities such as RiTe may be one way to address this issue and to promote a research culture within the profession.

Limitations

Purposeful sampling aims to address representativeness and the inclusion of key informants rather than to eliminate bias. However, it must be recognised that when undertaking qualitative research the researcher should be reflexive in order to explain their position and influence on the data analysis [27, 28]. The main author of this research has been involved in the delivery and evaluation of RiTe since inception and brings a specific knowledge base and set of preferences that will have influenced the way the themes were derived. Having a second analyst involved in theming the data would have helped to confirm the trustworthiness of the themes, but due to resource limitations this was not undertaken. Nevertheless, the paper was authored by a team who agreed the content and all the themes (which captured all the participants' comments) provided in Figure 1.

Conclusion

Results from both OFGs agreed that RiTe supports student understanding of the theory behind x-ray exposure factor manipulation and the effects of this on image quality and dose optimisation. Both OFGs also agreed that RiTe develops and supports student research skills, which is important in working towards a research culture in line with the aims set out by the CAHPR and SCoR [20,21]. However, the CPE OFG did feel that students were demonstrating 'soft' clinical skills and raised concerns that students were not necessarily applying all the knowledge gained from RiTe in clinical practice (theory-practice gap). This could be due to a lack of student confidence in articulating what they had learnt during RiTe when in clinical practice or full appreciation by CPEs of the objectives of RiTe. The further involvement of CPEs with RiTe could help to support its development within the curriculum and thereby help students to applying RiTe in practice; this is a key action point for the researchers and programme team.

Whilst RiTe supports students as researchers and encourages their involvement with research at undergraduate level, as a newly qualified radiographer it may be difficult to retain interest with research once in the workplace. In order to encourage a culture of research post qualification, CPD activities such as a revised version of RiTe could help to support this. However, consideration would need to be given to workplace pressures in releasing staff to attend – for example RiTe could be shortened to a 2 day workshop instead of weeklong activity.

References

1. Healy, M. (2005). Linking research and teaching to benefit student learning. J*ournal of Geography in Higher Education*, 29 (2):183-201.

2. University Alliance and Higher Education Academy. (2016) *What does research-informed teaching look like?* The Higher Education Academy. York.

3. Higgins R, Hogg P, Robinson, L. (2015) Guest editorial: Unlocking student research potential: Toward a research culture in radiography undergraduate learning curricular. *Journal of Medical Imaging and Radiation Sciences*, 46, S6-S9.

4. Higgins R, Hogg P, Robinson, L. (2013a) Integrating Research-informed Teaching within an Undergraduate Level 4 (year 1) Diagnostic Radiography Curriculum: A Pilot Study. *Journal of Vocational Education and Training*, 65(3):351-368.

5. Higgins R, Hogg, P and Robinson, L. (2013b) Towards a research informed teaching experience within a diagnostic radiography curriculum: the level 4 (year 1) student holistic experience. *Radiography*, 19:62–6.

6. Higgins, R., Robinson, L. and Hogg, P. (2014) Integrating research-informed teaching within an undergraduate diagnostic radiography curriculum: Results from a level 4 (year 1) student cohort. *Radiography*, 20(2) 100-106.

7. Mifsud, C. P., Castilio, J. and Portelli, J. L (2015) Radiography students' clinical placement experiences in MRI: A phenomenological study. *Radiography*, 21(1): 17-20.

8. Michau, R., Roberts, S., Williams, B. and Boyle, M. (2009) An investigation of theory-practice gap in undergraduate paramedic education. *BMC Medical Education*, 9:23.

9. Billings, D. M and Kowalski, K. (2006) Bridging the theory–practice gap with evidence-based practice. *The Journal of Continuing Education in Nursing*, 37(6): 248-249.

10. Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N. and Hoagwood, K. 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5):533-544.

11. Tates, K., Zwaanswik, M., Otten, R., van Dulmen, S., Hoogerbrugge, P. M., Kamps, W. A., and Bensing, J. M. (2009) Online focus groups as a tool to collect data in hard-to-include populations: examples from paediatric oncology. *BMC Medical Research Methodology,* 9:15.

12. Adams, J. and Smith T. (2003) Qualitative methods in radiography research: a proposed framework. *Radiography* 9: 193-199.

13. Edmunds, H. (1999) The focus group research handbook. Lincolnwood, IL: NTC Business Books/Contemporary Publishing.

14. Williams, S., Clausen, M. G., Robertson, A., Peacock, S. and McPherson, K. (2012) Methodological Reflections on the Use of Asynchronous Online Focus Groups in Health Research. *International Journal of Qualitative Methods*. 11(4): 368-383.

15. Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*. 3: 77–101.

16. Shenton, A .K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22: 63–75.

17. Yazici, H. J. (2005) A study of collaborative learning style and team learning performance. *Education + Training*, 47(3):16 – 229.

18. Freeman, M., & McKenzie, J. (2002) SPARK, a confidential web-based template for self and peer assessment of student teamwork: benefits of evaluating across different subjects. *British Journal of Educational Technology*, 33(5): 551-569.

19. Malamateniou, C. (2009) Radiography and research: A United Kingdom perspective. *Radiography* 1: 2-6.

20. Council for Allied Health Professions Research. (2016) *Council for Allied Health Professions Research position statement: Developing research skills within AHP pre-registration education*. Retrieved from: http://www.csp.org.uk/documents/cahpr-position-statement. Accessed 10th November 2016

21. Society and College of Radiographers. (2016) *Society and College of Radiographers Research Strategy [2016-2021]*. Society and College of Radiographers. London.

22. Garland, D. R., O'Connor, M. K., Wolfer, T. A, and Netting, F .E. (2006) Team Based Research: Notes from the Field. *Qualitative Social Work*, 5(1): 94-107.

23. Ahonen, S. and Liikanen, E. (2010) Radiographers' preconditions for evidence-based radiography. *Radiography* 16(3): 217-22.

24. Jeffries. P. R. (2005) A framework for designing, implementing, and evaluating: Simulations used as teaching strategies in nursing. *Nursing Education Perspectives*, 26(2): 99-103.

25. Hayre, C. M. (2016) Cranking up, whacking up and bumping up: X-ray exposures in contemporary radiographic practice. *Radiography*, 22 (2) 194-198.

26. Matthews, K. and Brennan, P. C. (2008) "Optimisation of x-ray examinations: General principles and an Irish perspective". *Radiography*, 15(3) 262-268.

27. Research Design Review (2012) *Interviewer bias, reflexivity in qualitative research*. Available from: https://researchdesignreview.com/2012/11/14/interviewer-bias-reflexivity-in-qualitative-research/. Accessed 10th April 2017.

28. Gilgun, J. F. (2010) *Reflexivity and Qualitative Research*. Current Issues in Qualitative Research, 1(2) [Kindle version]. Retrieved from Amazon.co.uk.

Q1. To begin the discussion let us consider your understanding or perception of RiTe with regards to student teaching and learning. What are these?
Q2. What strengths or opportunities did you feel RiTe offers our students?
Q3. What weakness (if any) are there with RiTe? What changes you make?
Q4. Would you agree that RiTe has a role in developing theoretical and clinical knowledge of our students? If yes then what is this role?
Q5. Do you think we need to provide guidance material or information about RiTe to those clinical and academic tutors not involved with RiTe? If so what should be included?
Q6. Do you have any recommendations regarding the further development of RiTe? For example do think there are opportunities to involve qualified staff to participate with this?
Q7. The learning outcomes for RiTe are currently linking theory with practice (image quality, patient radiation dose optimisation and exposure factor manipulation) sharing knowledge with others and the development of research skills. Do you agree with these? If not what do you think they should be?

Table 1. Semi-structured questions used in both OFGs.

Phase	Description of process
1. Familiarisation with data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each code
4. Reviewing themes:	Checking themes work in relation to coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of the selected extracts, relating back of the analysis to the research question and literature.

Table 2. Six phases of thematic analysis [15]

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for “accuracy"
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed – interpreted, made sense of - rather than just paraphrased or described.
	8	Analysis and data match each other – the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organised story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done – i.e., described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as active in the research process; themes do not just “emerge"

Table 3. Fifteen Point Checklist of Criteria [15]

Data extract	Initial codes
Yes, if the research problem is selected carefully (1) to match their required learning at the point in their curriculum (2). Sometimes students may need a little help to see the links with clinical practice – involvement of placement in this process would really help here (3). (*Academic Tutor 5 (AT 5) 5:25:15/9/2015*)	1. Research 2 Teaching and learning 3. Practice / placement

Table 4. Example of data extract with code applied for academic tutor (AT) OFG

Role	Level of involvement with RiTe
Senior Lecturer (AT 1)	None
Senior Lecturer (AT 2)	Involved with development of RiTe and integration into undergraduate curriculum
Research Dean (AT 3)	Involved with development and teaching of RiTe
Lecturer (AT 4)	None
Academic Head of Department (AT 5)	None

Role	Level of involvement with RiTe
Clinical Placement Educator (CPE 1)	None
Clinical Placement Educator (CPE 2)	None
Clinical Placement Educator (CPE 3)	None
Clinical Placement Educator and Lecturer (CPE 4)	Involved with teaching of RiTe

Table 5. Participants for academic tutor (AT) and clinical placement educator (CPE) OFGs

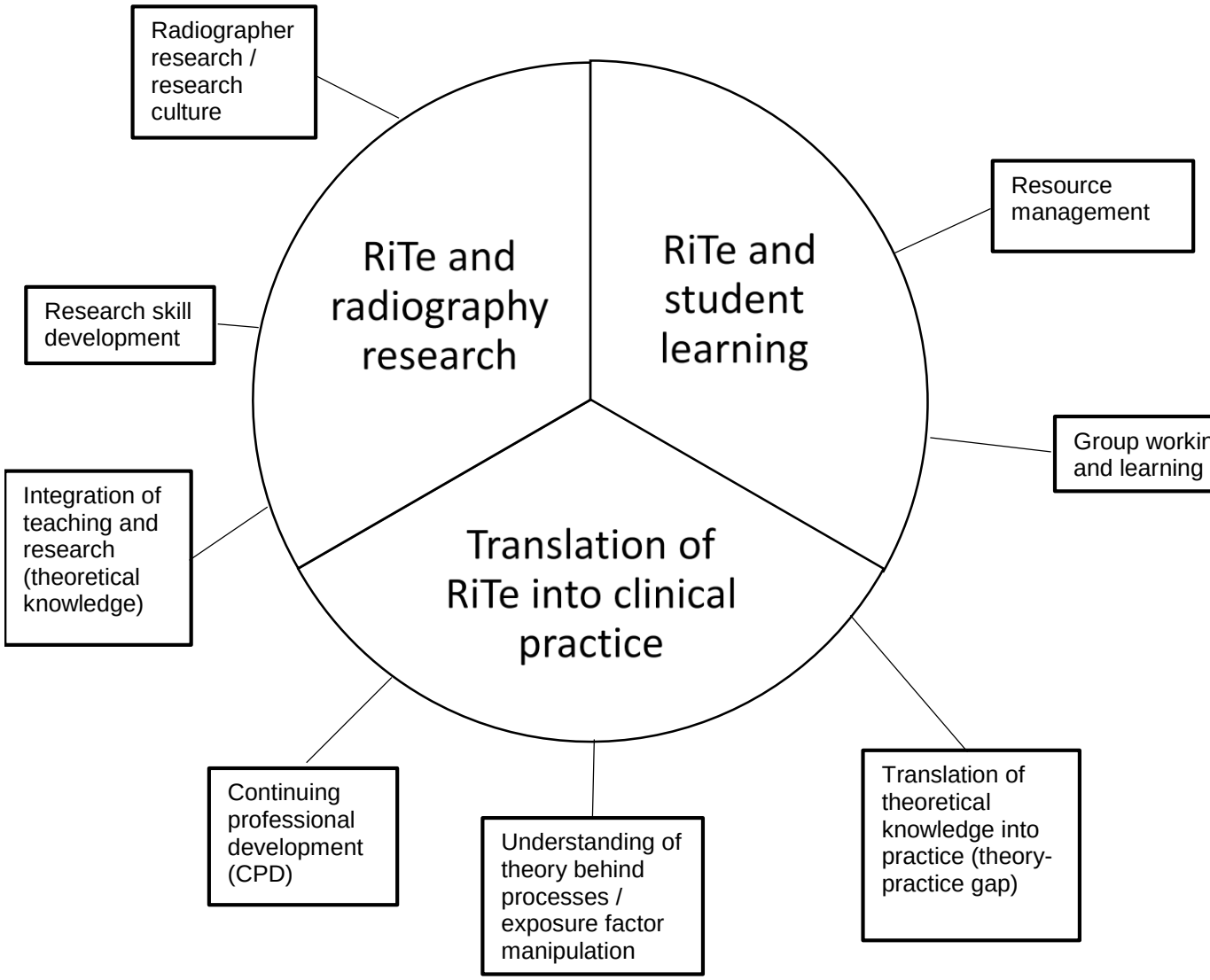

Figure 1. Final thematic map, showing three main themes