

Research-informed Teaching in Radiography Education



University of
Salford
MANCHESTER

**Tartu Healthcare College,
Estonia, 22nd November 2019**

Hello!

Tere!



Salford, UK

Hello!

Tere!

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About Me...

- Qualified Diagnostic radiographer - experience of plain radiography, CT, nuclear medicine and DXA bone densitometry.
- Lecturer at Salford since 2013. Main areas of teaching undergraduate (general radiography, patient care, research methods) and post graduate (nuclear medicine, MSc supervision).
- MSc (Science and Society) and PgDip in Nuclear Medicine and PgCert in Academic Practice.
- Publications have explored using Research-informed Teaching (RiT) within the undergraduate diagnostic radiography curriculum at the University of Salford.

Radiography at Salford

- BSc (Hons) Diagnostic Radiography.
- 55-65 students per cohort
- 3 years (6 semesters).
- 50% Academic.
- 50% Clinical.



Radiography at Salford

Facilities

- 2 DR X-ray Rooms
- CT Scanner
- Anatomage table
- Ultrasound suite
- Range of phantoms
- Dedicated Clinical Skills Teachers
- Simulation



Method of learning: Problem Based Learning (PBL)

- Student-centred learning.
- Small group work.
- Given weekly scenarios/problems.
- Students create learning objectives.
- Fixed resources (lectures and tutorials) to support each problem.



Post Graduate Programmes

- MSc Advanced Medical Imaging:
 - ❖ Mammography
 - ❖ Skeletal Reporting
 - ❖ GI Advanced Practice
- MSc Nuclear Medicine
- MSc Ultrasound

Research at Salford

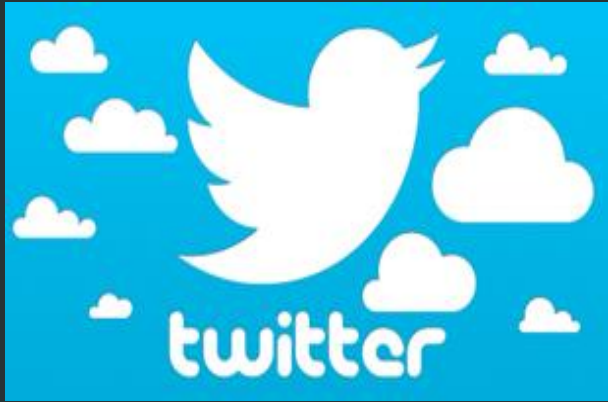
1. Optimisation of image quality and x-radiation dose and lesion detection performance.
 2. Breast Cancer Screening and Diagnosis using Full Field Digital Mammography (FFDM).
- ❖ We use established methods; we also develop new methods.
 - ❖ Growing interest in linking our research with teaching and learning.

Research at Salford

- BSc students conduct image quality and dose optimisation research projects in:
 - Year I (RiTe I)*
 - Year II (RiTe II)*
- BSc students also conduct a Year III research project (RiTe III)
- Some students decide to participate in OPTIMAX (3 week residential research summer school)*

*** More about these later!!!**

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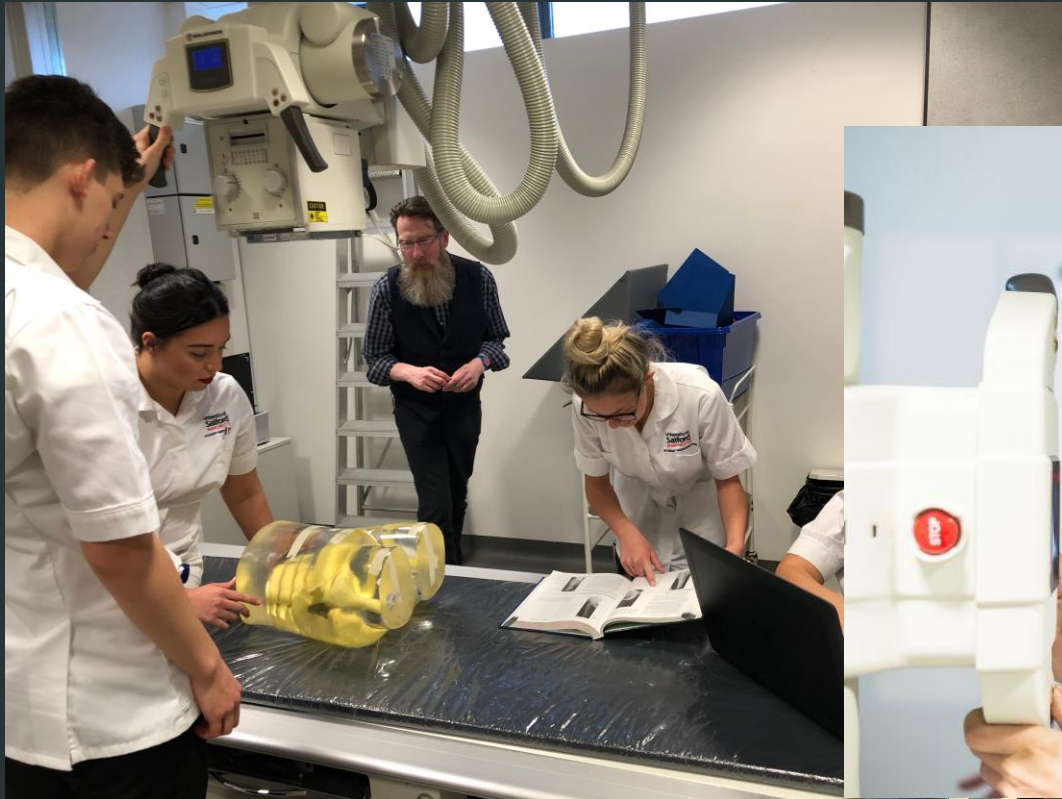
Trends for you

- #BrexItCrisis 5,219 Tweets
- #BeyondLimits The future is ours to create
- #RedDwarf 2,784 Tweets
- #Sugababes



AIM OF TODAY'S WORKSHOP


- Discuss my experiences of Research-informed Teaching (RiT) in Radiography at the University of Salford.




Topics to be covered

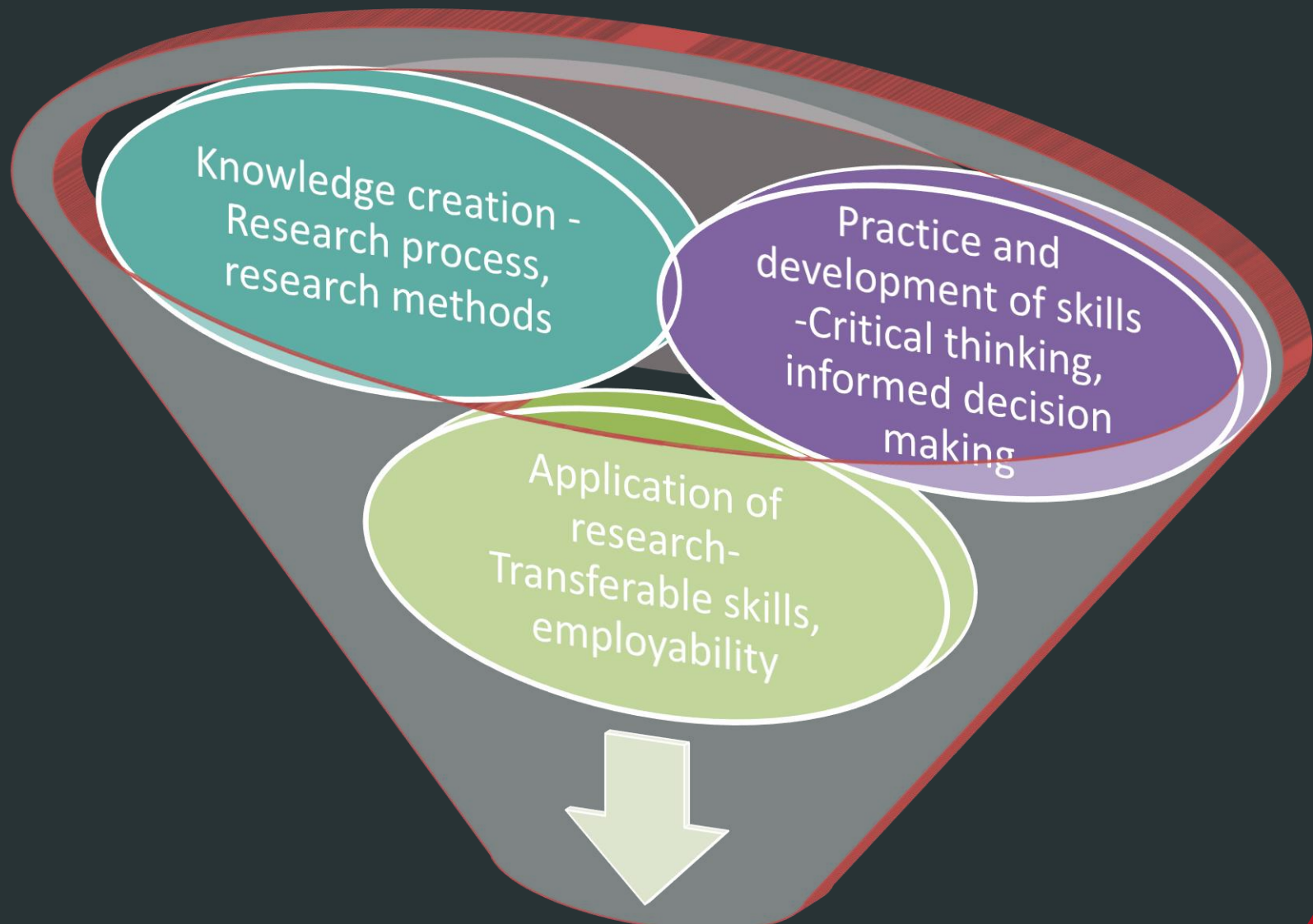
- *“Why did you use with RiT on your course?”*
- *“How did you identify this need - from the perspective of teaching needs, student performance?”*
- *“How did you initiate the RiT process, including the ideas, resources, people, etc?”*
- Outline of the Research-informed Teaching experience (RiTe).

Topics to be covered

- Conclusions so far - strengths and weaknesses of RiTe (from the perspectives of teachers and students).
 - Next steps...
 - Concluding remarks
 - Questions?
- 

What is Research-informed Teaching?

- Turn to a colleague.
 - Discuss what you think RiT is about.
 - Note down 2 things that sum up your discussion.
- 



Research-informed Teaching

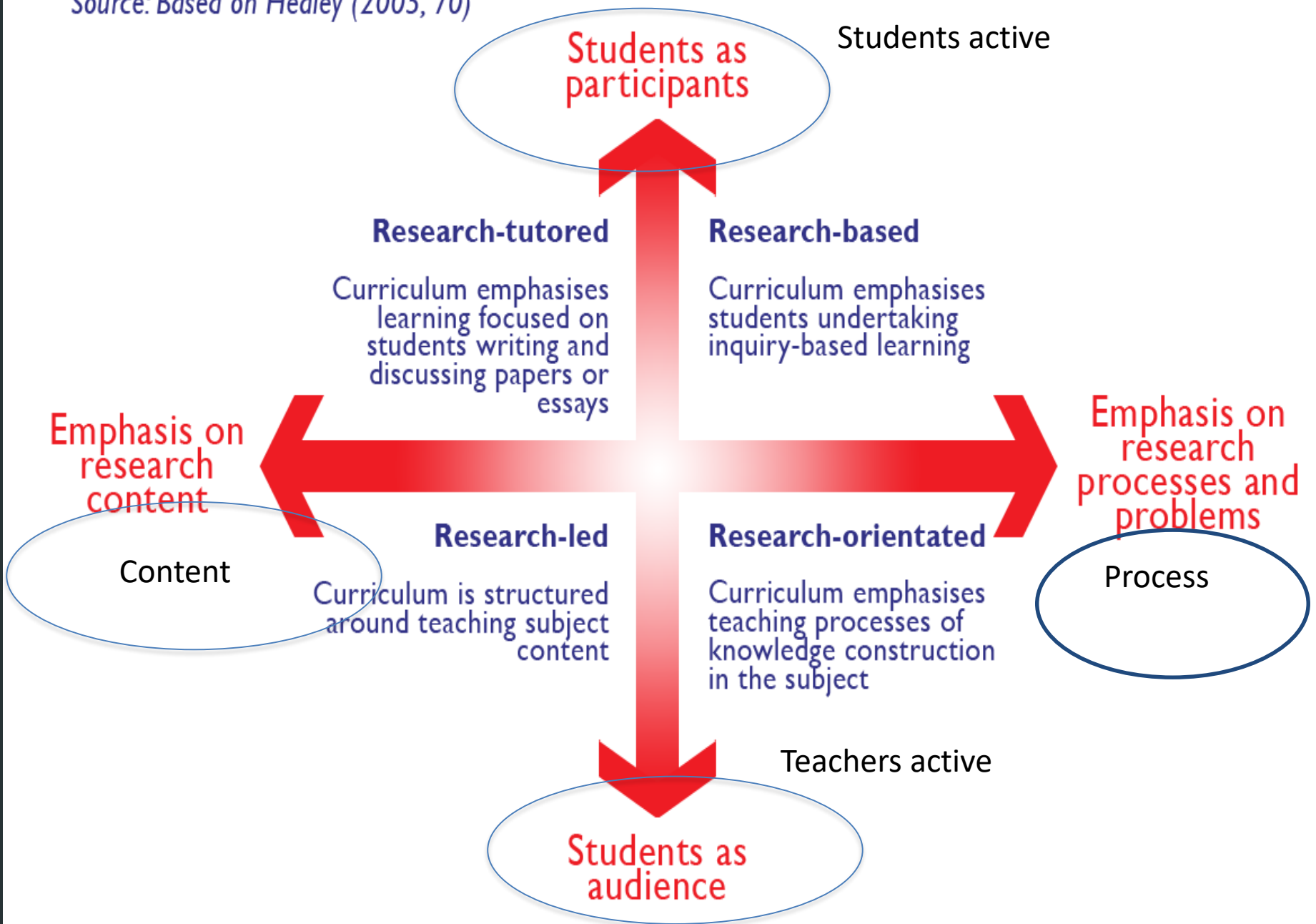
Research-informed Teaching

- **Research-informed Teaching (RiT)** refers to linking research with teaching. This is to:
 - Enhance the student learning experience.
 - Motivate teaching staff to undertake scholarly and research activity.
 - Promote the engagement of external stakeholders and researchers in the learning process.

Research-informed Teaching

- ❖ **Research-led:** where teaching is focused on imparting information to students about research findings pertinent to the discipline;
 - ❖ **Research-orientated:** which emphasises knowledge construction;
-
- ❖ **Research-based:** which focuses on enquiry-based learning;
 - ❖ **Research-tutored:** which emphasises learning focused on writing and discussing papers or essays.


Source: Based on Healey (2005, 70)



The Research-informed Teaching experience (RiTē)



What Prompted RiTe?

- We conduct *(a lot of)* radiography research.
 - A proportion of this research is directly related to BSc Diagnostic Radiography learning outcomes.
 - We proposed changing the curricula for our undergraduate Diagnostic Radiography students to expose them to more formal research, within their normal teaching and learning experience.
- 

What prompted RiTe?

- We felt that this would help to develop the research skills of our students ([link research with teaching using Research-informed Teaching](#)).
- It was envisaged that this change could facilitate the students learning and understanding of key radiographic concepts i.e. span the gap between academic knowledge and clinical practice.
- We had a number of meetings to explore what and how we would achieve this aim.

What Prompted RiTe?

- We agreed that we wanted to:
 - ❖ Integrate some of our research knowledge with teaching at UG level by giving students experience of research
 - Combine *our* research with teaching
(Image quality and dose optimisation)
 - ❖ Develop student research skills from year 1.

The Research-informed Teaching experience (Rite)


- We developed and piloted Research-informed Teaching experience (RiTe) within our UG curriculum from 2009.
- RiTe was fully integrated into our curriculum in 2013 both at year 1 and 2.




RiTe Strategy

- ❖ To link taught theory with practice:
 - Give students a clinical scenario related to their experience and vocational training.
- ❖ To integrate our research into the UG programme.
- ❖ To instil a research culture to encourage greater knowledge sharing / transfer of research into *our* teaching.
- ❖ To encourage students to become co-producers of research with academics.

RiTe Development

- ❖ Iterative process – many meetings with academic team.
 - ❖ Resourcing and timing (how, who and when).
 - ❖ Piloting.
 - ❖ Research and evaluation of the process (we will look at this later).
- 

RiTe Development

- ❖ Uses a research-based approach.
 - ❖ Incorporates collaborative enquiry-based learning (CEBL) with student group learning – students learn in research mode.*
 - ❖ RiTe → Years 1 and 2 culminating in research dissertation (capstone project) in year 3.
 - ❖ Therefore have a research-informed Teaching approach throughout programme.
- 

The value of RiTe

- As qualified radiographers → professional requirement to have requisite knowledge and clinical decision making skills to generate radiographic images fit for purpose whilst ensuring all patient radiation doses are kept to a minimum.
- RiTe is a week long activity with 1 group per week (total of 4-5 groups/weeks) → quite resource intensive!!!

Some Reactions!



- *“You must be joking!”*
- *“UG students can’t do proper research”*
- *“Students don’t enough of the basics”*
- *“They won’t be interested”*
- *“What is the benefit to the students?”*

My Response

- Learning through research and enquiry is a an effective way of learning.
- “Students become scientists” → Personal and intellectual development.
- More confident as learners, more capable of thinking independently.
- More aware of learning as a life long process.

(Healy M. & Jenkins, A. 2009. Developing undergraduate research and inquiry. The Higher Education Academy)


The Research-Informed Teaching experience

- Following the successful integration of RiTe into our year 1 curriculum (RiTe I), we implemented RiTe II for the year 2 students (2013).
- *However*, in designing RiTe II we took a more pragmatic approach...
- Whilst we compiled a set of learning outcomes based on our own expectations of what we expected the students to achieve (no formal mapping to match learning outcomes to year 2 level descriptors).

The Research-Informed Teaching experience

- For each student RiTe week, a timetable outlines the activities to be undertaken by the students
- Formal lectures introduce learning outcomes, assessment and the concept of experimental design. Students work in two collaborative enquiry based learning (CEBL) groups (approximately 7 students per group).
- Tutor and facilitator support is provided at specific points (e.g. statistical analysis and using Excel, method design).

The Research-Informed Teaching experience

- Students acquire (under supervision) x-ray images of a phantom to simulate a patient.
 - They then calculate the patient dose received from each of these x-ray exposures and assess the subsequent image quality for each x-ray image.
 - This helps them to understand the effect of manipulating x-ray exposure factors on both image quality and patient dose, whilst undertaking research to explore this phenomenon.
- 

The Research-Informed Teaching experience

- On the final day the students give a group presentation of their research.




The Research-Informed Teaching experience

- For both year 1 and 2 students, RiTe forms part of a summative assessment.
- They are required to prepare and deliver as a group a 20 minute presentation of their research and the implications of this on their practice.
- They also peer assess one another on a number of team working skills in their groups.
- A number of students reflect on this process and this has helped them to identify areas of weakness for further learning or research they may wish to undertake for the their year 3 research project.


The Research-Informed Teaching experience

- Presentations are a good way for students to share with one another what they have learned.
- It also provides the opportunity to challenge and expand upon their own understanding of the topic they have explored by answering and asking questions.
- By being good communicators students are able to structure and express their ideas clearly which is important when working with patients or other health professionals..

The Research-Informed Teaching experience

- Within RiTe we ensure that students plan and deliver their presentations in groups rather than as individuals. We did this because:
 - Shy students may find it embarrassing or difficult to present alone.
 - Students can support each other before, during and after the presentation.
- 

The Research-Informed Teaching experience

- We have also found that it is a good idea to set clear aims or objectives for content within the presentations.
 - It is also important that some feedback is given in order to help the students build upon their experience – this might be comments on the presentation layout (font size, use of graphs or content).
- 




Research on Research-informed Teaching experience at the University of Salford



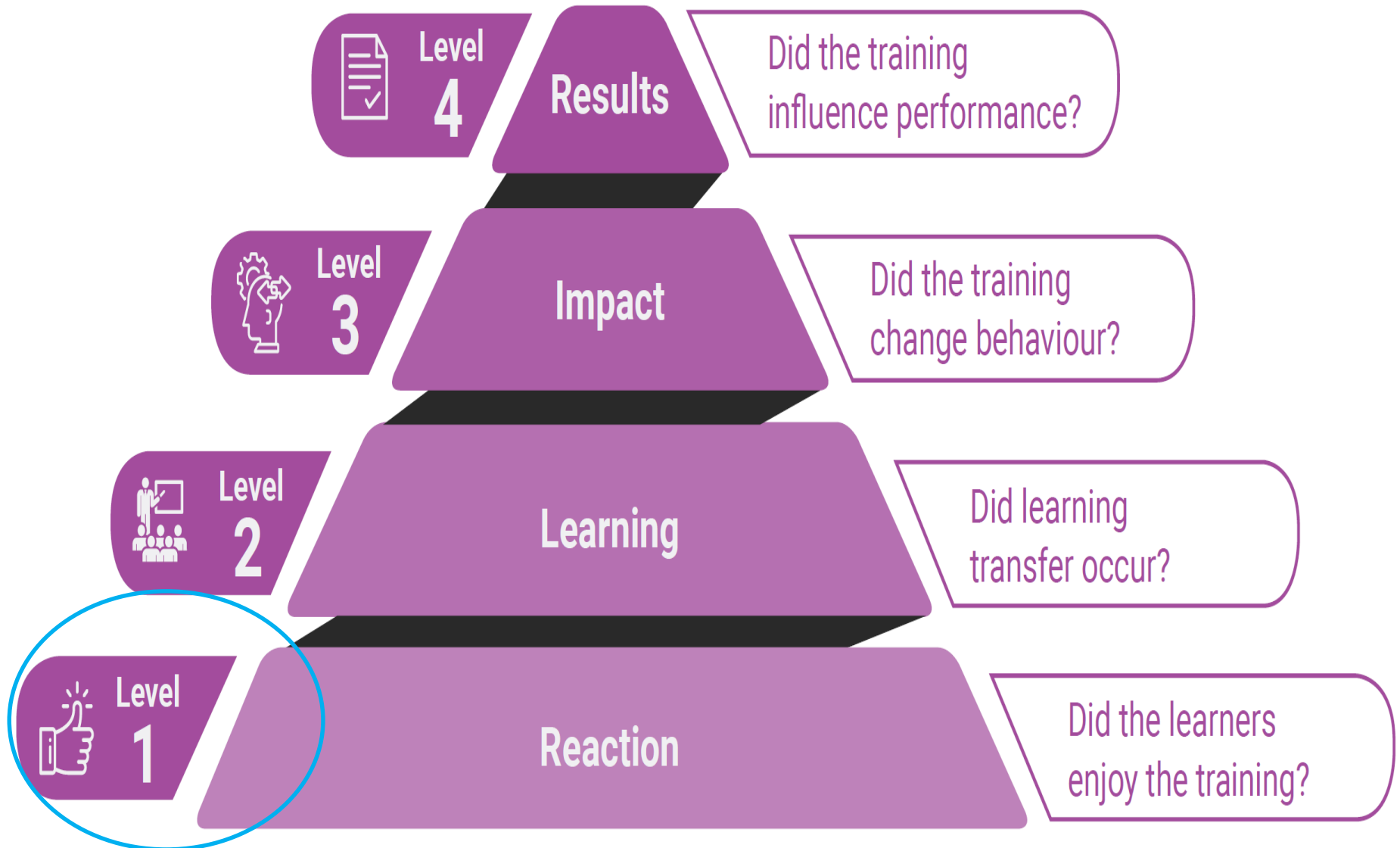
Background

- RiTe piloted with year students in 2009.
- Evaluation of this pilot was very positive and RiTe was introduced into the year 1 curriculum.
- Anecdotal feedback that students liked RiTe 😊*
- But why was this?
 - My research has looked at:
 - **Student experiences and perceptions of RiTe**
 - **Academic and clinical tutor perceptions of RiTe**

Research on Research-informed Teaching experience


- The student's perspective in how they experience learning is an important area in contemporary teaching and learning research.
 - We evaluated the student experience and learning process of RiTe in years 1 and 2.
 - Perceptions of RiTe by academic tutors and clinical placement educators also explored.
- 

Theoretical Framework - Kirkpatrick Model



- Exploring the process of learning is complex!



- Mixed methods research  Focus group & questionnaire
- Explored student perceptions of RiTe.
- Questionnaire – did FG findings reflect year 1 cohort views and experience of RiTe?

Data Analysis: Focus Group

- FG data transcribed verbatim line by line for each participant.
- The transcript was coded by a particular phenomena (e.g. group working).
- Categories generated to gather related material (codes) into place so that emerging patterns or themes could be identified.

Student Focus Group




“I learnt a lot from the peers in my group ... it was great to share ideas and learning.”

“Although we are taught about it [kVp], we never really knew what difference an additional 5 [kVp] would make.”

“One thing that I did learn from the RiTe was that there is little research in radiography.”

“I have to confess I did come out of it [RiTe] feeling a load more confident”

Data Analysis: Focus Group

- Some of the emerging themes used for questionnaire items.
 - Provided an independent measurement to corroborate whether FG themes were supported by the whole cohort.
- 

Data Collection: Questionnaire

- Combination of open and close ended questions.
- For the close ended questions, a five point Likert rating scale was used to ascertain level of agreement.


Section 2. Student experience of RiTe
a. I did not learn anything during RiTe: b. I found RiTe to be an enjoyable and stimulating experience: c. I enjoyed being self-directed in my learning during RiTe: d. I found the level of supervision and tutorial support during RiTe to be just about right: e. I enjoyed working as part of a group / team during RiTe: f. I did not understand what was expected of me during RiTe:
Section 3. RiTe and curriculum
a. I can see the relevance of RiTe within the diagnostic radiography curriculum: b. I feel that RiTe has helped me to understand what I have been taught and apply this in clinical practice: c. I do not see RiTe as having any benefit as part of my teaching and learning within the curriculum: d. I feel I have gained a greater appreciation of the role of research within radiography: e. I feel that RiTe has helped me to develop my critical questioning skills: f. I feel that by participating with curriculum activities such as RiTe, my employability will be enhanced:

Student Questionnaire

- Strong agreement that RiTe was a valuable learning experience.
- Strong agreement that enquiry-based collaborative group working process helped with learning and skills development within RiTe.
- Agreed RiTe helped to link theory with practice (image quality and dose optimisation).
- Agreed RiTe raised their awareness of research and helped developed their research skills.




Further evaluation of RiTe (Year 2)

- Online survey developed to evaluate the whole year 2 cohort (RiTe II) student learning experience.
 - Analysis supported the integration of RiTe II within the curriculum in terms of learning and research skill development by students at year 2.
 - Responses were retrospectively mapped against descriptors for year 2 using constructive alignment.
- 

Further evaluation of RiTe (Year 2)

- We also reflected upon how well the learning outcomes related to the student experience at this level and whether there was a need to change or add learning outcomes.
- By retrospectively mapping the learning outcomes for RiTe II and undertaking a student evaluation we found that there was constructive alignment between the learning outcomes and year 2 level descriptors (expected academic levels of attainment).
- However, we did identify that RiTe II could incorporate more of the higher level cognitive processes within Bloom's taxonomy (Evaluating and Creating).

Discussion

- RiT actively engages our students in the process of learning linked with research.
 - Students learn in 'research mode' through collaborative group work and enquiry based activities.
 - Learning outcomes are commensurate with the expected depth and complexity of learning at each year level.
- 

Students felt that they gained a greater awareness of how research could inform their practice and developed their own research skills.

Supported the development of cognitive and psychomotor competencies through trial and error (Enquiry-based learning).

RiTe: Student Perspective

Group working via CEBL groups a key element of the learning process and experience.

Supported the cross-proliferation of ideas by students and knowledge acquisition.



- Also interested in the academic tutor and clinical placement educator perspectives of RiTe




**Asynchronous Online
focus group**




Academic tutor and clinical placement educators' perceptions of RiTe

- Student evaluation of RiTe demonstrated a positive teaching and learning experience.
- However, further research was needed to build upon the current knowledge of RiTe by exploring the perceptions of RiTe by both academic tutors (ATs) and clinical placement educators (CPEs).

AT and CPEs' perceptions of RiTe: Aims

- To explore both academic tutor and placement educator perceptions of RiTe.
 - To identify strengths and weaknesses of RiTe by academic tutors and placement educators.
 - To determine whether further opportunities existed for the continued development of RiTe.
- 

AT and CPEs' perceptions of RiTe: Method

- A qualitative research study using two on-line asynchronous focus groups (OFGs) was undertaken (one for academic tutors and one for practice educators).
 - All practice educators were invited to participate. Seven academic tutors were invited to provide opinions from a number of different perspectives (e.g. strategic and resource).
 - Both OFGs commented upon 7 semi-structured questions about their perceptions of RiTe.
- 

“... Provides a unique opportunity to develop theoretical understanding and to see the differences to their x-ray images and dose to the patient.” (Clinical Placement Educator)

“... It makes them question clinical practice and to look at evidence based research.” (Academic Tutor)

“... Promotes the culture of research within the radiography profession.” (Clinical Placement Educator)

Academic Tutor and Clinical Placement Educators Focus Group



AT and CPEs' perceptions of RiTe: Results

- Analysis identified three overarching themes common to both OFGs:

Theme 1: Teaching and Learning

Sub-themes: resource management; group working and learning

Theme 2: Research

Sub-themes: integration with teaching and learning; radiographer research; research skill development

Theme 3: Translation into practice

Sub-themes: translation of theoretical knowledge into practice; continuing professional development (CDP); understanding of theory behind processes (exposure factors)

RiTe seen as important learning activity.

Supported students into entering into discipline related research and developed their research skills.

**RiTe:
Academic
and Clinical
Perspective**

Supported student understanding of dose optimisation and image quality (linking theory with practice).

Supported the development of key employability skills (communication and team working).

AT and CPEs' perceptions of RiTe: Considerations

1. RiTe supports students as researchers, but a revised version of RiTe could also be developed to support newly qualified radiographers or retain / develop interest in research to support an evidence based culture within radiography.
2. There is a requirement for closer working by academic tutors and placement educators in order to further support the translation of RiTe into practice by students.

Conclusions So Far



Strengths of RiTe

- Students learn in 'research mode' through collaborative group work and enquiry based activities.
- The benefits of this approach include enhanced learning (linking theory with practice) and research skill development.
- Key areas in gaining employment and career development via development of communication and teamworking skills.




Rob Higgins
@Zenorobster

Second RiTe II student presentation researching image quality and dose with pelvis imaging 👍




09/06/2017, 14:22

Strengths of RiTe

- Working in small groups allowed students to embrace a range of interactive and collaborative skills to facilitate learning.
 - Group learning → learning is enhanced when learners are actively involved in the learning experience. Participation with others provides a supporting framework in which to learn.
- 

Strengths of RiTe

- Hands on experience with equipment / being able to see results.
 - Helped to shape their understanding of the interactions of x-ray exposure settings on image quality and patient dose → linking theory with practice.
 - Helped to develop research skills, but also why research is important in Radiography to improve service delivery to patients.
- 

Strengths of RiTe

- Some of our students have presented some of their learning with posters.
- Or go on to undertake further research and presented this at major conferences or publications.



Strengths of Rite

Dose creep in chest radiography the potential for over exposure

W.K. Ma^{a,*}, P. Hogg^a, J. Kelly^a, M. MacKenzie¹
¹The University of Salford, Salford, UNITED KINGDOM
²Countess of Chester Hospital, NHS Trust, UNITED KINGDOM
³Pennine Acute Hospital, NHS Trust, UNITED KINGDOM

Method:

545 radiographs were acquired of an anthropomorphic chest phantom under different acquisition parameters. Two 5mm glass nodules were inserted to mimic lung lesions (Fig 2). The image quality will be evaluated using perceptual and engineering approaches (Fig 3).

Results and Discussion

The following results were measured and modeled (R²=0.9554), as shown it was therefore used for all

Digital radiography (CR and CR) and compared with conventional film-based radiography that it has a much wider characteristic curve which allows for a wider range of exposure latitude (Fig 1)

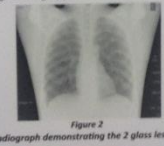
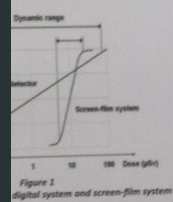
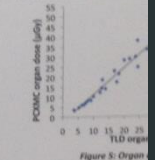
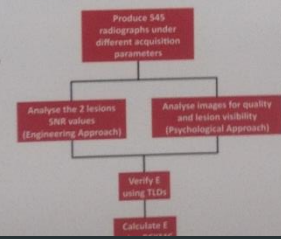
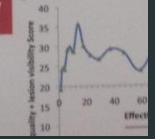


Figure 2: Radiograph demonstrating the 2 glass lesions



The 'window width' of acquires with SID and kVp parameters, minimum an radiograph varies from 1.1 overexposure factor



Radiography 19 (2013) 207–211

Contents lists available at SciVerse ScienceDirect

Radiography

Journal homepage: www.elsevier.com/locate/radi

Anthropomorphic chest phantom imaging – The potential for dose creep in computed radiography

W.K. Ma^{a,*}, P. Hogg^a, A. Tootell^a, D. Manning^b, N. Thomas^c, T. Kane^d, J. Kelly^c, M. McKenzie¹, J. Kitching⁵

^a Directorate of Radiography, University of Salford, Salford M6 6PU, United Kingdom
^b Faculty of Health and Medicine, Lancaster University, Bailrigg, Lancaster LA1 4YB, United Kingdom



Peer Review

Effects of Kilovoltage, Milliampere Seconds, and Focal Spot Size on Image Quality

Wang Kei Ma, MSc
 Peter Hogg, FCR

Sue Norton, MSc

THE RESEARCH INFORMED TEACHING EXPERIENCE (RITE) PROJECT

INTRODUCTION:
 During 2010 the University of Salford Radiography department invited students to take part in a pilot study. The research project was designed to explore the relationship between the use of kilovoltage (kVp), milliampere seconds (mAs) and focal spot size (FSS) on image quality. The aim of the project was to provide information and technical expertise to the radiography profession to support their study.

Method:
 The project was designed to explore the relationship between the use of kVp, mAs and FSS on image quality. The aim of the project was to provide information and technical expertise to the radiography profession to support their study.

Results:
 The results of the project showed that image quality was significantly affected by kVp, mAs and FSS. The study found that higher kVp values resulted in higher contrast images, while higher mAs values resulted in higher exposure. Larger FSS values resulted in larger focal spots, which can affect image sharpness.

Conclusion:
 The project demonstrated the importance of understanding the relationship between kVp, mAs and FSS on image quality. This information can be used to improve the quality of radiographic images and reduce the risk of overexposure.

Fact or fiction: an analysis of the 10 kVp 'rule' in computed radiography

Allen E. Hogg^a, Ma WK and Saccopara K
 The University of Salford

Introduction:
 A long-standing 'rule of thumb' suggests that increasing kVp by 10 while halving the time gives similar perceptual image quality when compared to the original exposure factors. The 'rule' has tended to be applied in situations where the radiographer needs to make an instant clinical decision because of a potential patient. In these circumstances the radiographer would reduce the time by 50% and increase the kVp by 10. To illustrate, if the radiographer set an exposure with 70 kVp and 40ms then after the 'rule' had been applied these acquisition factors would change to 80kVp and 20ms, which the time would have halved. If mA and s were not independently then the radiographer would simply half s when increasing kVp by 10. In spite of an intensive literature search, no which suggests it has never been tested formally, furthermore it covered some 30-40 years ago in the era of film. Nonetheless, it is still relevant to ensure that all S1 short scale patients, much worse than, slightly worse than, equal to, image quality scoring criteria were adopted from the European guidelines. Inter-rater agreement coefficient). The image quality scale ranged from 6 to 10.


Method:
 To determine the effect of the 10kVp 'rule' on perceptual image quality and a series of x-ray anthropomorphic chest phantom (Figure 1) images were produced by varying kVp, mAs and FSS. Images were produced by varying kVp, mAs and FSS. Images were produced by varying kVp, mAs and FSS. Images were produced by varying kVp, mAs and FSS.

Results and discussion:
 For each paired data set, the change in perceptual image quality was calculated. This is illustrated in table 1 where for an SID of 100 cm, results show that kVp and SID control results show there is a significant effective dose for all kVp and SID values.

Weaknesses of RiTe

- A large amount of time and resource was required to develop, evaluate and run RiTe.
- We adopted an inclusive approach to include lecturing staff, the BSc (Hons) diagnostic radiography programme leader, clinical learning manager, medical physics lecturer, BSc and PhD students and a technician.

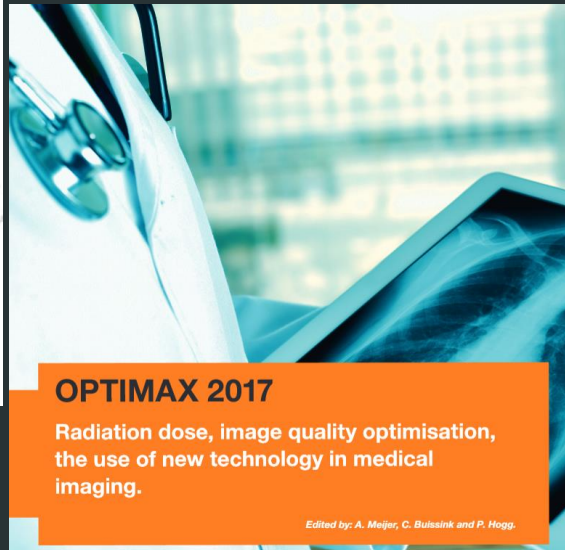
Weaknesses of RiTe

- We did encounter a few problems along the way...
 - For example, we found that encouraging some students to fully engage in the process does require particular attention.
 - Using a peer-review / marking system towards to group activities has helped with this.
 - Overall the strengths outweigh these weaknesses.
- 




OPTIMAX*

- Development of RiTe also led to the development of a multi-cultural and multi-professional residential 3-week summer school (OPTIMAX).
- This has run since 2013.



OPTIMAX 2019
3-week Radiography Research Summer School
UNIVERSITY OF SALFORD



University of
Salford
MANCHESTER

Book published following OPTIMAX 2017, Oslo:
<http://usir.salford.ac.uk/46104/7/OPTIMAX%202017%20ed.pdf>



Save the dates
5th August- 23rd August

Registration Deadline **28th February 2019**
Email: Jo Coward; J.Coward@salford.ac.uk

Cost of lunches and social
programme ~ £150 for 3 wks

Accommodation at UOS from
£25.80/night

Evaluation of OPTIMAX summer school: Student and tutor experience




Background

In 2012 we were awarded an Erasmus Intensive Programme grant to facilitate OPTIMAX 2013, a three week duration residential summer school held within the UK during August 2013.

Built on knowledge gained from RiTe.

Brought together students and staff from higher education institutions from participating countries.




Aims and Objectives

- Unique event involving tutors and students from a number different European countries / professional backgrounds.
- Opportunity to explore the multi-cultural and multi-professional experiences and perceptions of OPTIMAX (medical imaging research).
- Identify recommendations to optimise preparation and support of future similar events.

Research Method

- As with RiTe research:
 - Qualitative - student and tutor experience and perception of OPTIMAX.
 - Semi-structured questions used to explore experiences of OPTIMAX.
 - 2 x Focus groups:
 - 1x Student FG
 - 1x Tutor FG

Data Collection

- Participants:
 - Student FG = 7 students
 - Tutor FG = 5 tutors
 - Each focus group lasted 60 minutes, was audio recorded plus field notes taken.
- 

Data Analysis

- Both FG audio transcribed verbatim and coded
- Thematic analysis used to identify key themes.
- These were then triangulated to identify common categories for both FGs:
 - OPTIMAX event experience
 - Group working
 - Challenges
 - Multi-cultural issues
 - Multi-professional issues
 - OPTIMAX event structure


Results

- Tutor: New horizons were opened up that may generate a new approach [to existing problems].
- Student: Working in a group was a great experience in which to learn. I learnt a lot from the other students.
- Student: I learnt a lot from peers in my group, because we are all at different [academic] levels, so it was great to meet with all of them and share ideas and ways of learning.
- Tutor: You gain some new knowledge especially from your colleagues and from the students also.

Discussion

- OPTIMAX seen to be a valuable learning experience by both students and tutor focus groups.
- Provided students and tutors with the opportunity to interact with peers from different cultures and professions.
- Students (and tutors) cited the importance of group working in helping them to learn – identified in previous work with RiTe.

Discussion

- Both students and tutors saw the OPTIMAX as a positive experience, especially with regards to collaborative learning.
 - It was also seen as an opportunity to not only undertake research, but to also share knowledge with peers.
 - Opportunity to develop collaborative radiography research working with international higher education institutes (HEIs) or with other professionals.
- 

Discussion


- A number of recommendations for similar future events:
 - Both tutors and students should have clarity about the primary objectives or tasks assigned to them.
 - Acknowledge that tasks may take longer than expected with multi-cultural and multi-professional group working.
 - Allow extra time where possible to ensure that tasks completed on time.
 - The size of a group is important and should ideally be no more than 10 students, with at least two tutors per group to facilitate activities*

*Changing characteristics of groups with increase in membership

	Number of members	Changing characteristics	
↑ M o r e c o h e s i o n	2-6	Little structure or organisation required; leadership fluid	↓ M o r e t e n s i o n
	7-12	Structure and differentiation of roles begins; face-to-face interaction less frequent	
	13-25	Structure and role differentiation vital; sub-groups emerge; face-to-face interaction more difficult	
	26-?	Positive leadership vital to success; sub-groups form; greater anonymity; stereotyping, projections and 'flight/fight' occur	

(*Taken from Jaques & Salmon ,2007)

Outcomes of OPTIMAX


- Peer reviewed conference papers by both tutors and students (co-production of research).
 - Also book with research articles.
 - OPTIMAX has run for the past seven years in different countries – next year it is in .
 - Massive European presence as a result of publications.
- 





Concluding Remarks



“We do not
learn from
experience...we
learn from
reflecting on
experience.”
–John Dewey

- Traditionally, radiography in UK has been a consumer of research rather than a producer of research.
 - Viewed by its practitioners as not requiring investigation, with practice generally being a reliance on tradition and experience.
 - Unfortunately, this predisposition has resulted in a poor track record for radiography research in the UK.
- 


- Recognition of inadequacies or imperfections—no matter how slight—in one’s current work situation or practice is essential for professional development.
 - Dissatisfaction prompts the quest for improvement, whereas satisfaction fosters complacency.
 - Only by recognizing the inadequacies in our current practice will we appreciate the need to improve by determining what is best practice.
- 

- Herein lies the challenge to develop a more proactive research culture within radiography.
 - Higher education has a fundamental role in influencing the advancement of both theoretical and applied knowledge.
 - As a profession, and indeed as radiography academics, there is a need for us to be seen as credible and research active.
- 

ANSWER



- RiTe as a model has built research into the core curriculum for the BSc (Hons) Diagnostic Radiography programme at Salford.
 - Provides opportunities for students to be engaged with research in years 1 and year 2.
 - This culminates in a research dissertation in year 3 which acts as a capstone project to ensure that they can demonstrate the research skills and knowledge gained.
- 

- Provides a useful stepping stone for novice researchers undertaking their first steps into an area of practice which may previously been inaccessible.
 - Encourages students to become co-producers of research.
 - Potential in overcoming barriers to participating in radiography research and to work toward a research minded culture.
- 


- Not only concerned with exposing students to research, but also plays a wider role within the development of the student (e.g. employability) and bridging the theory-practice gap as a high impact learning experience.



Student: *"I learnt a lot from the peers in my group ... it was great to share ideas and learning."*

Student: *"Unlike some of the other group members, I don't have a science background. I have learnt a lot..."*


Student: *"One thing learnt from the RiTe was that there is no research in radiography. It's going to make things better for the patients. So I thought it was a good idea and I enjoyed it!"*




Academic Tutor: “... It makes them question clinical practice and to look at evidence based research – really important attributes in undergraduates.”

Placement Educator: “... Provides a unique opportunity to develop theoretical understanding and to see the differences to their x-ray images and dose to the patient.”


Academic Tutor: “... It makes them question clinical practice and to look at evidence based research—really important attributes in undergraduates.”



My recommendations for developing RiT activities

- Link with students area of practice or discipline – needs to be seen to have value / relevance to career aspirations (e.g. image quality and dose).
 - Involve practitioners and academic staff in development and alignment with learning outcomes. This helps to raise awareness of (and brings) research into teaching and practice.
- 

My recommendations for developing RiT activities

- Encourage collaborative learning in small groups with peers - promotes critical thinking and problem solving.
 - Constructively align RiT activities with learning outcomes - students can demonstrate research skills and learning (link theory with practice).
- 

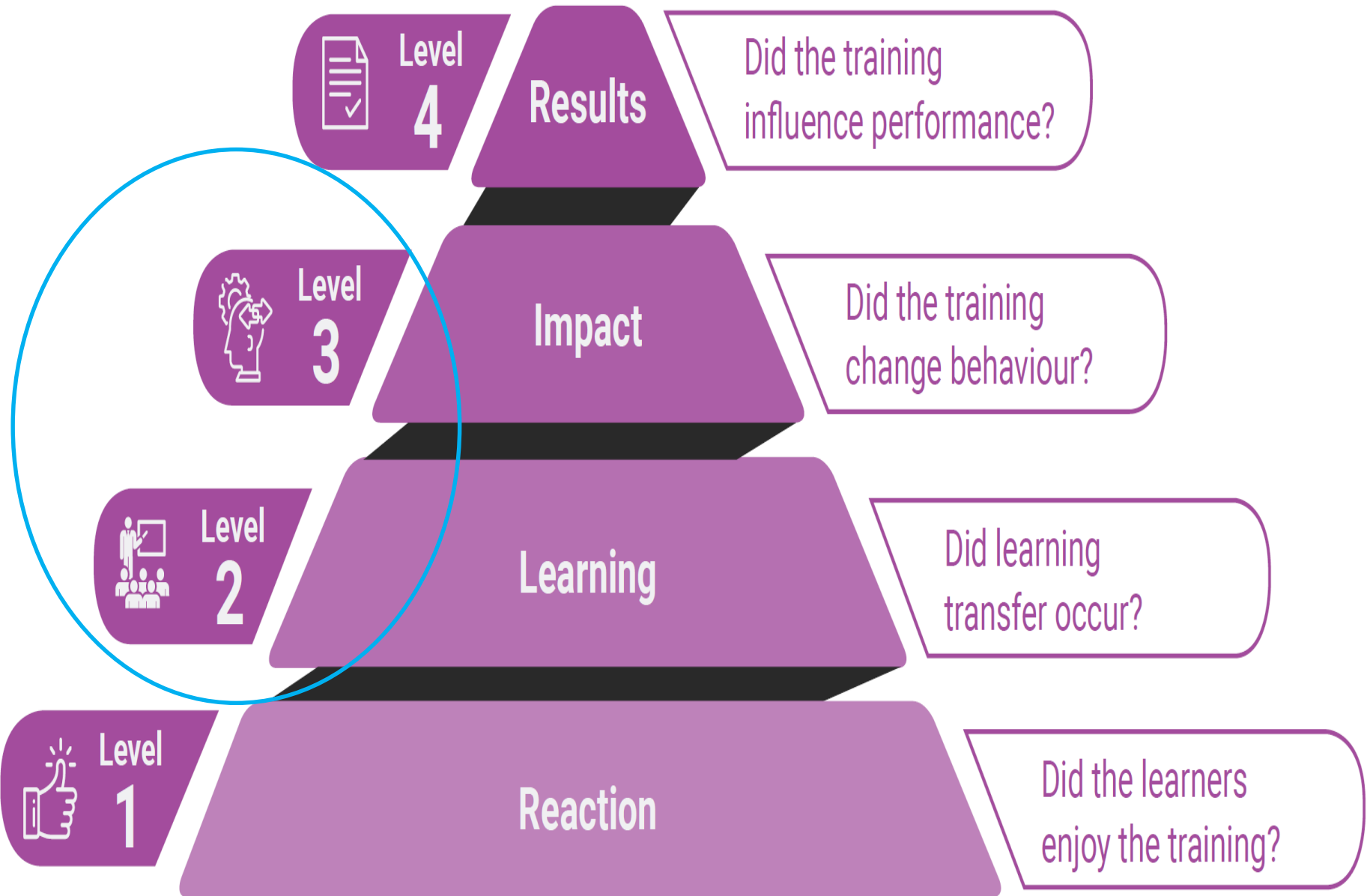
Next Steps




Ongoing research with RiTe

- Currently developing and validating a psychometric scale for task value and student self-efficacy following RiTe in years 1 and 2.
- This is to investigate whether students value RiTe as a learning activity and their confidence in being able to perform actions or demonstrate knowledge following RiTe (research skills).

Kirkpatrick Model



Future Development of RiTe

- RiTe is quantitative based.
 - Could RiTe be developed to include qualitative research?
 - Could develop skills in reflexivity or qualitative analysis.
 - Currently we ask them to critique a qualitative research paper.
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Further Work



- Evaluate the resulting increase in knowledge and capability before and after RiTe.

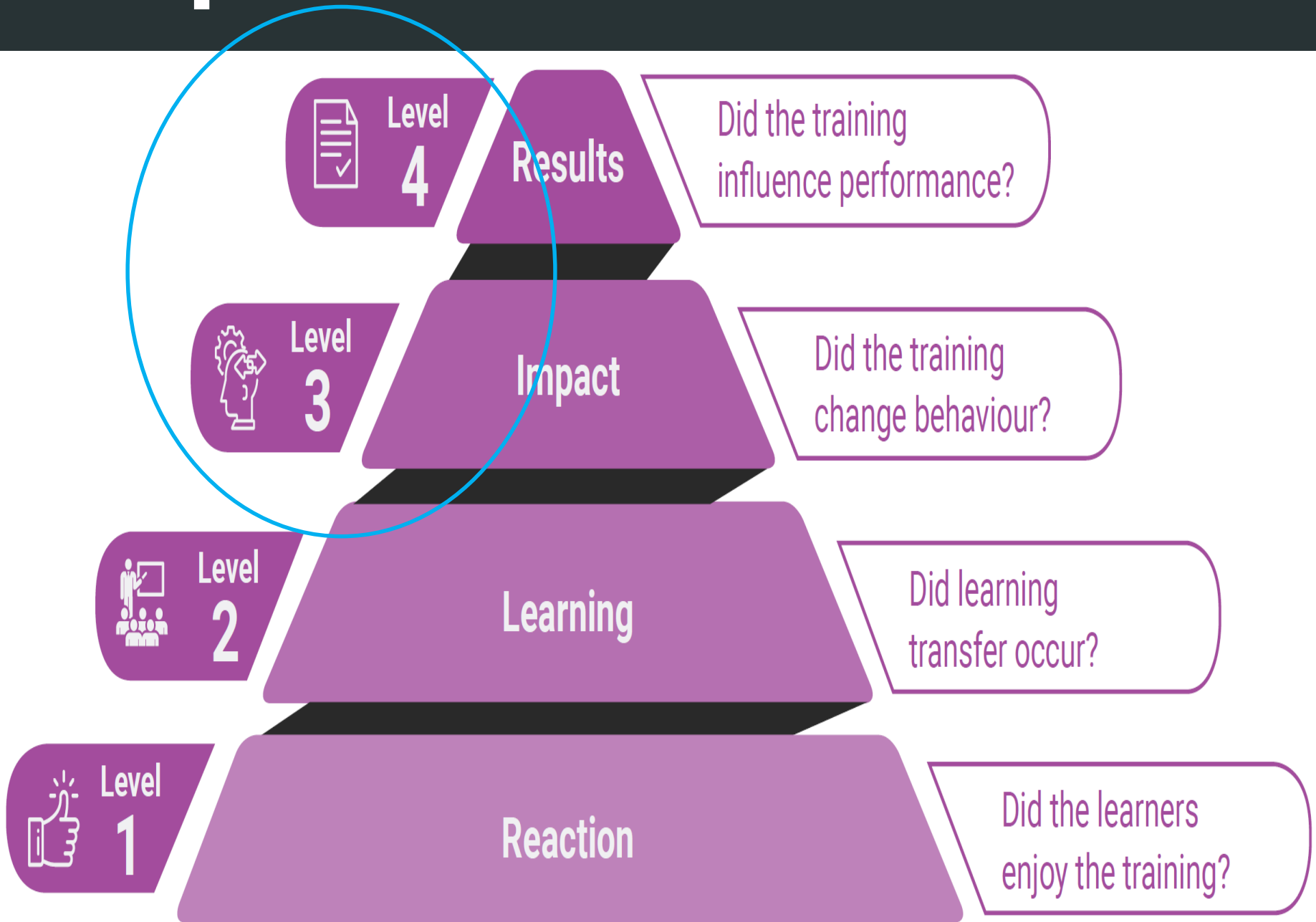
(Learning Evaluation)

- Is the knowledge and research skills development from RiTe maintained following qualification in practice?


(Behaviour Evaluation)



Kirkpatrick Model

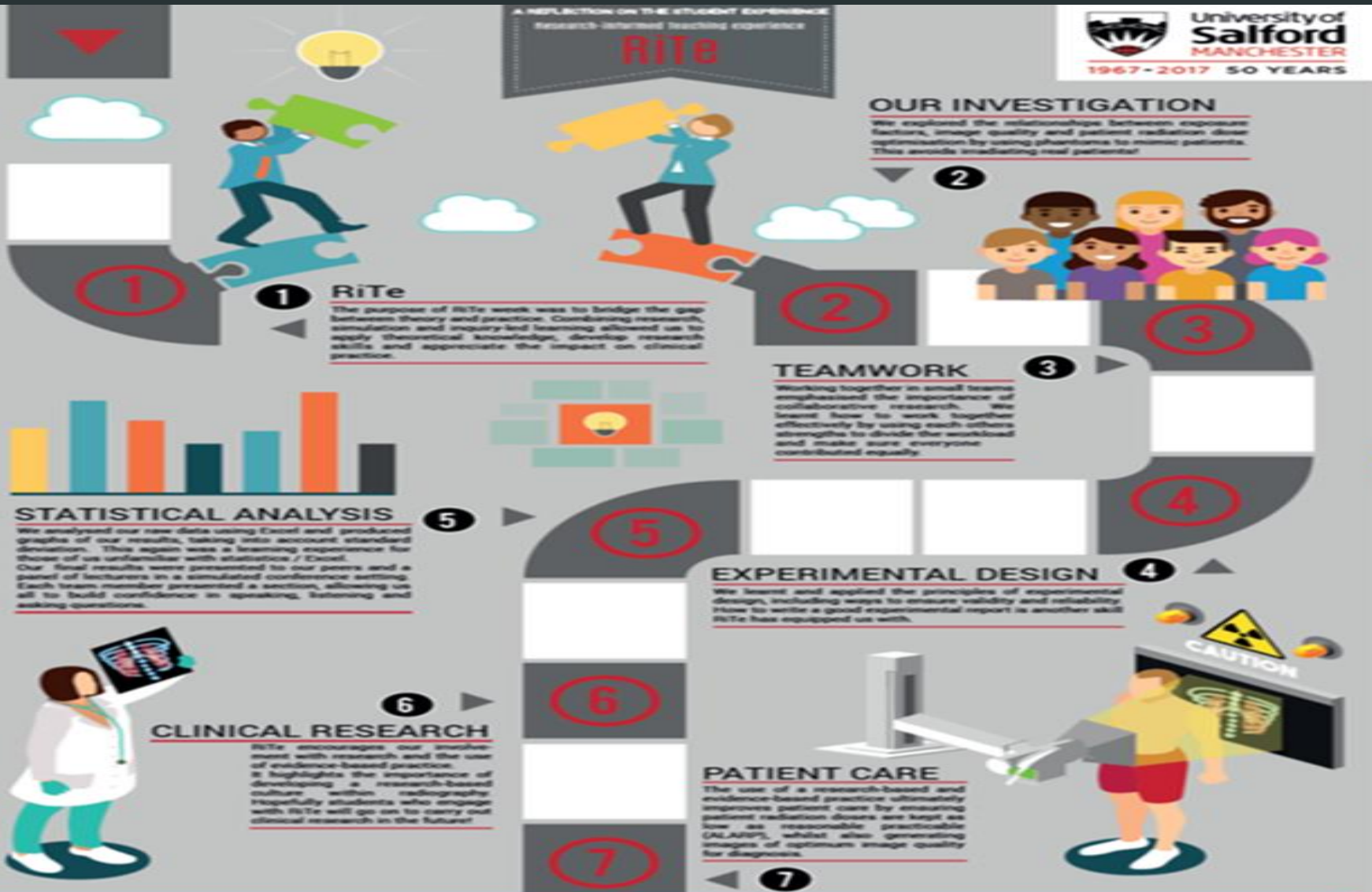


Further Work

- Findings suggest that despite students developing confidence and knowledge of research, they may feel disempowered in translating these skills in their placements.
 - Need to develop leadership skills at UG level?
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Summary

A REFLECTION ON B.Sc STUDENT EXPERIENCE Research-Informed Teaching Experience **RiTe**



- In summary, the introduction of educational initiatives that combine research and teaching can have a positive impact on undergraduate student learning.



- Students benefit from being immersed in a culture of research but there will also be a positive impact on patient service delivery.



- However, RiTe is not only concerned with exposing students to research as part of their teaching and learning curriculum, but also plays a wider role within the development of the student (e.g. employability).



Aitäh!

**THANK
YOU!**



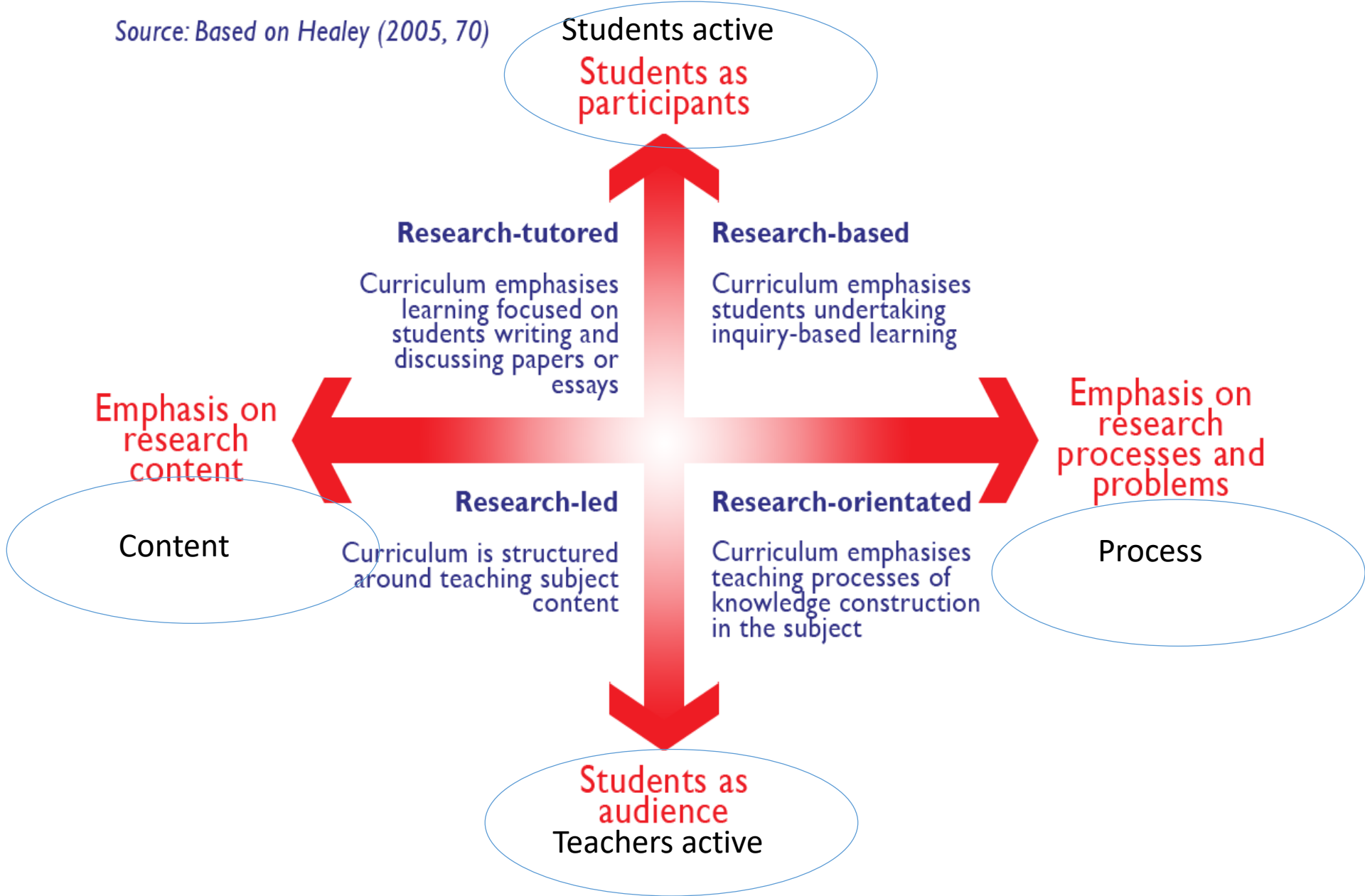




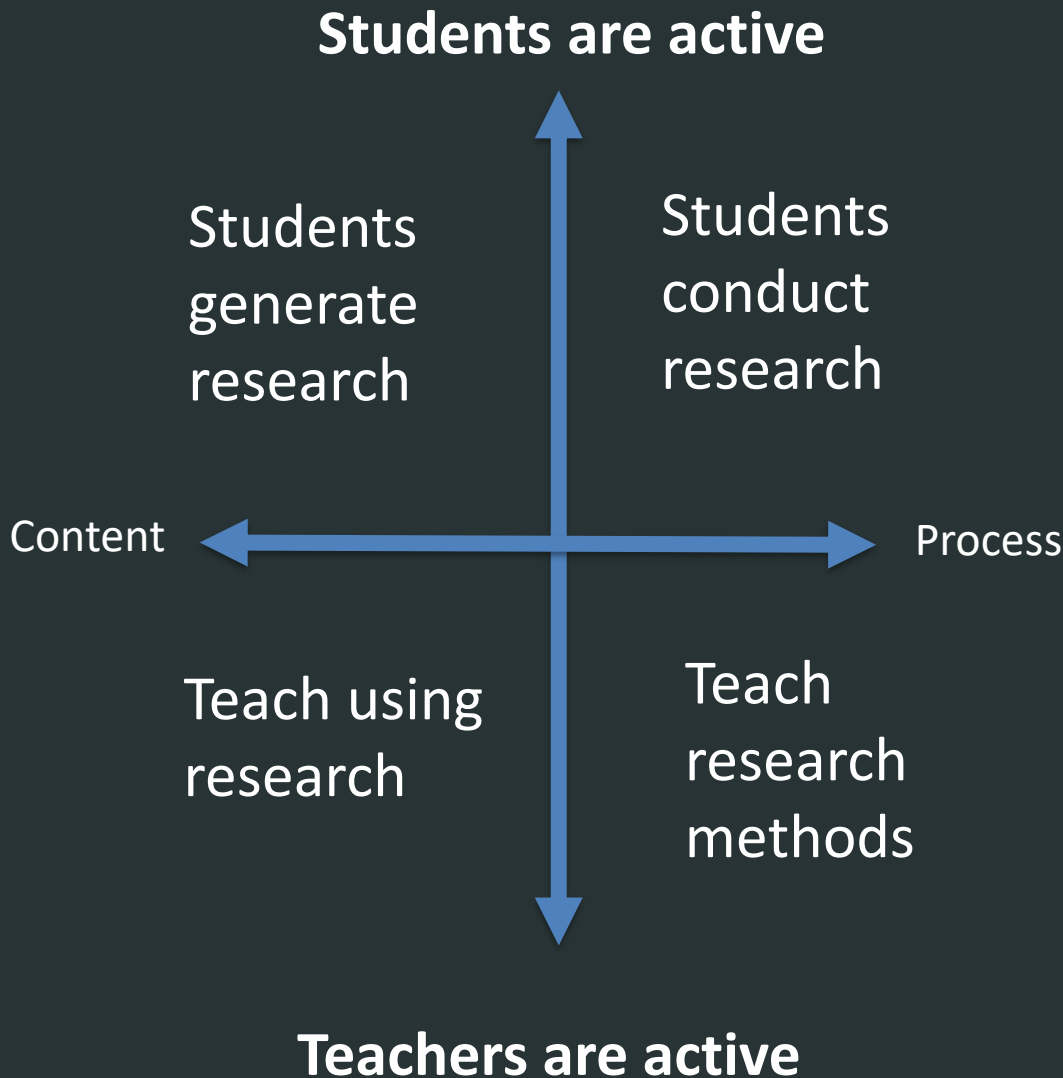
University of
Salford
MANCHESTER

Curriculum design and the research-teaching nexus

Source: Based on Healey (2005, 70)



RiT as practised in our dept (my view)



- RiTe in years 1-2.
- Students also conduct a Year 3 research project (RiTe III).
- OPTIMAX.
- Books / book chapters.
- Using research in teaching and curriculum.
- Pedagogical research.