

Trainee perceptions of the Radiology-Integrated Training Initiative (R-ITI) programme: what are the lessons for improving e-Learning in the COVID-19 era

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Background

- Diagnostic radiology has a potentially stronger relationship with e-learning than other medical specialties as imaging studies can be effectively reproduced using online platforms
- Introduced in the United Kingdom by the Royal College of Radiologists and the Department of Health in 2005, the Radiology-Integrated Training Initiative (R-ITI) is an e-learning resource which covers the core radiology curriculum.
- During the COVID-19 pandemic, the importance of e-learning and online delivery of resources has become more pertinent than ever.
- There is limited information in the radiology literature on how trainees learn during their training, and how they engage with e-learning.

Methods

A series of semi-structured interviews were conducted, each lasting 45 minutes, with interviewees from conventional UK-based radiology training programmes:

- Two junior trainees
 - Three senior trainees
 - Three consultant trainers
- Purposive sampling was performed, so that both junior and senior trainees were represented.
- Analysis was also performed on the feedback left by trainees for online R-ITI e-learning modules which cover the core radiology curriculum.
- Sixty reviews completed by trainees on the e-learning platform were analysed.

Results

Three broad themes emerged from the interviews:

- 'Learning the subject matter'
- 'Learning the role'
- 'Approaches to e-learning'

Learning the Subject Matter:

- Large volume of material needed to pass initial exams in first 3 years of training
 - Superficial learning methods dominated
 - The importance of learning lists of differentials was highlighted
 - E-learning resources lend themselves to this superficial learning and were used to reinforce factual knowledge
- Deeper learning strategies were employed in later stages of training in preparation for consultant posts

Learning the Role:

- There was a clear difference between trainees' approach to written exams and learning at the workplace
 - The majority of learning the role of a radiologist was performed at the workplace
 - Often involved attitudes towards uncertainty and the protecting patients from radiation exposure
 - E-learning modules were found to be ineffective at conveying the nuances of discussions around uncertainty, as well as concepts with inherent subjectivity

Results (cont.)

Approaches to e-Learning:

- Numerous examples of advantageous aspects of online learning modules:
 - Consultant trainers could direct trainees to modules to mitigate issues with time constraints and service provision pressures
 - Ability to demonstrate complex anatomy in great detail
 - Dissemination of material widely
 - No requirement to travel to specific sites for experience
 - No requirement to gather groups of people in one site; of significance in the COVID-19 era
- Positive aspects of online e-learning modules:
 - e-learning resources which had a lot of imaging cases, colour coding and layer annotation, were valued by trainees over text based modules
 - Modules that focused on the differentials for imaging findings, rather than the details of the specific diagnoses were preferred by trainees
 - Opportunities for self-assessment
 - Ability to manipulate images
 - Clinical relevance of the content of modules
- Negative aspects of online e-learning modules:
 - Technical difficulties in using the materials
 - Nuanced discussions around topics with inherent subjectivity or a potential plurality of viewpoints
 - Issues around module design: some modules took too much time to complete, or containing too much material

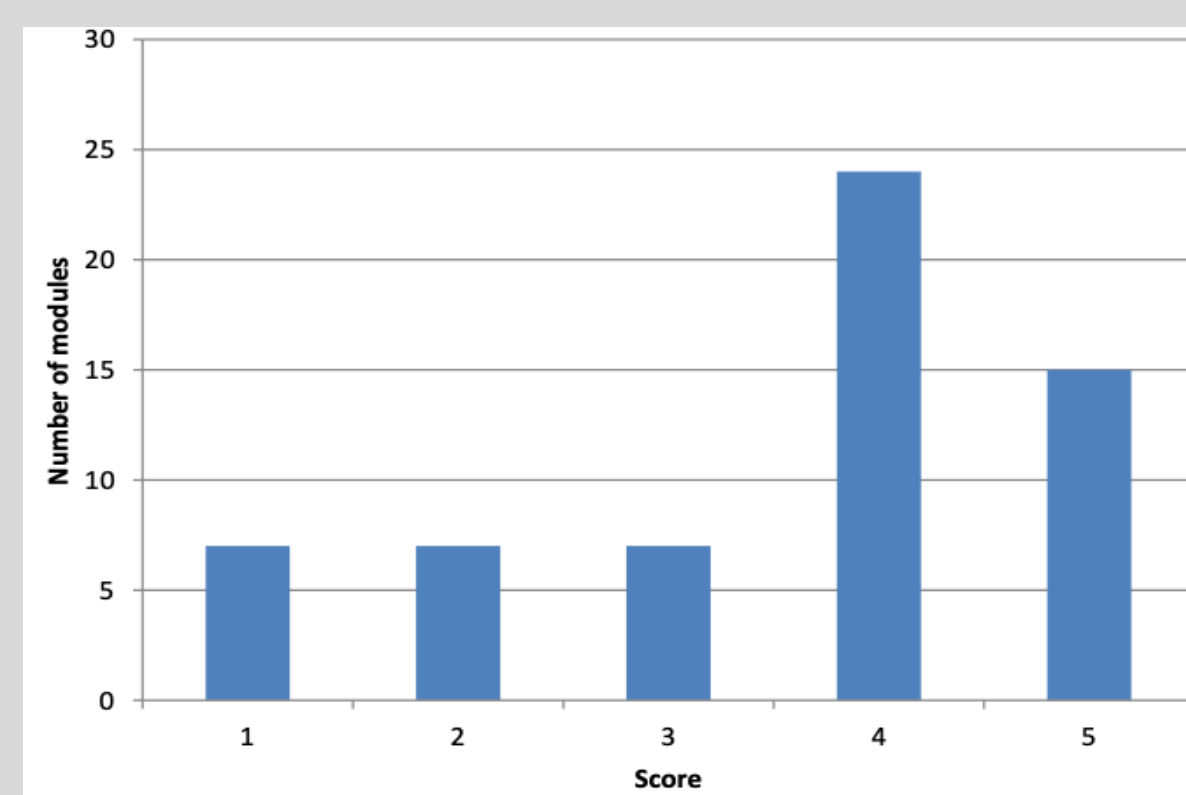


Figure 1 – R-ITI Module Scores rated by participants (out of a maximum score of 5)

Discussion and Conclusions

- E-learning offers a potentially effective platform to train radiologists and is particularly relevant during the COVID-19 pandemic, when opportunities for face-to-face teaching may be limited
- The results from this study have demonstrated that trainee learning in radiology is strongly influenced by context:
 - Superficial, fact-based learning which was described by trainees as a requirement for the earlier written examinations, was well represented in the e-learning modules
 - Deeper learning could also be replicated with R-ITI e-learning resources for later image interpretation examinations providing there were adequate images with layer-annotation and self-assessment.
- Learning the role of the radiologist and topics requiring the discussion of opinions were difficult to translate into e-learning modules.