Radiography xxx (2017) 1–6

Contents lists available at ScienceDirect

Radiography

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

A review of peer-assisted learning to deliver interprofessional supplementary image interpretation skills

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ARTICLE INFO

Article history:
Received 23 February 2017
Received in revised form
24 April 2017
Accepted 11 May 2017
Available online xxx

Keywords:
Students
Radiography
Medical students
Image interpretation
Peer-assisted learning

ABSTRACT

Background: Peer-assisted learning provides a means through which individuals can learn from one another through a reciprocal process. Radiographic image interpretation skills are fundamental to both diagnostic radiography students and medical students due to their shared role in preliminary evaluation of conventional radiographic images. Medical students on graduation, may not be well prepared to carry out image interpretation, since evidence suggests that they perform less well than radiographers in e.g. Accident and Emergency situations.

Method: A review of literature was conducted exploring the application of peer-assisted learning within diagnostic radiography and health education more widely as well as the practice of initial image interpretation. An extensive and systematic search strategy was developed which provided a range of material related to the areas.

Findings: An overview was obtained of the effectiveness of peer-assisted learning and the issues associated with development of image interpretation skills and a degree of discrepancy was identified between the two cohorts regarding their interpretative competence and confidence. This inconsistency may create an opportunity to apply peer-assisted learning, better preparing both disciplines for the practical application of image interpretation skills.

Conclusion: The review identified the lack of a substantial evidence base relating to peer-assisted learning in radiography. Peer-assisted learning is not widely embraced in an interprofessional context. Multiple positive factors of such an intervention are identified which outweigh perceived negative issues. Student teacher and learner may benefit as should the clinical service from enhanced practitioner performance. The findings justify further research to develop the evidence base.

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Introduction

Within the domain of radiology, basic image interpretation includes the perception of radiographic image appearances, followed by analysis of that perception with the aim of reaching a clinical conclusion.[1] In the context of training, effective image interpretation skills could be considered paramount to two undergraduate professions in particular; diagnostic radiography students and medical students. For different though equally important reasons, such students must be equipped at entry to the profession, with the skills to provide preliminary interpretation of conventional radiographic images.[2–4]

Over the years, the role of the radiographer has evolved in the United Kingdom (UK) with many practitioners carrying out advanced practices such as musculoskeletal image reporting.[5,6] Evolution of the radiographer's role could be considered responsive to current factors impacting on the provision of radiology services, which include increased demand for radiology,[7] rising waiting times,[8] fiscal restrictions,[8] and staff-shortages.[9] These factors combined have altered the way in which undergraduate diagnostic radiography courses are delivered within the UK with more focus on technical elements such as image interpretation.[10]

Preliminary interpretation of conventional radiographic images differs significantly from a formal radiographic report which is produced by specialist clinical staff.[5–7] Formal radiographic reports serve as legal documents and are expected to be unambiguous and definitive.[11] Conversely, preliminary interpretation and comment by non-specialist diagnostic radiographers and junior doctors serve as interim guidance before a formal radiographic report is produced[2,4] providing a crucial means of informing immediate patient management in for example, the Accident and Emergency scenario. In the absence of specialised reporters therefore, basic image

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http://dx.doi.org/10.1016/j.radi.2017.05.002
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Please cite this article in press as: Bain P, et al., A review of peer-assisted learning to deliver interprofessional supplementary image interpretation skills, Radiography (2017), http://dx.doi.org/10.1016/j.radi.2017.05.002

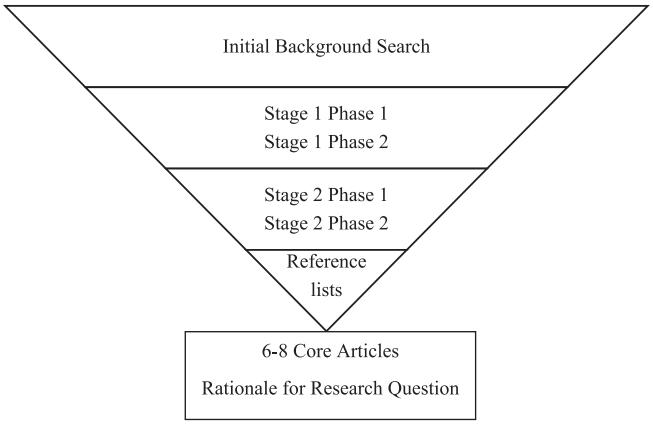

Figure 1. Diagram demonstrating an overview of the search process.

interpretation skills are of significant importance to diagnostic radiographers and junior doctors. Despite the increased role of radiology in diagnosis, the focus on this and particularly image interpretation, is not reflected within undergraduate medical training.[12–14] Consequently, many medical students lack confidence in interpreting radiographs and the basic aspects of radiology[3,12,15] which has the potential to impact negatively on patient management. Increased presence of image interpretation within undergraduate diagnostic radiography syllabi[10] and a lack of focus on image interpretation within medicine[12,14] creates opportunity for an effective, efficient and mutually beneficial method to better prepare both student cohorts for the practical application of image interpretation. The concept of peer-assisted learning offers a potential avenue to achieve this goal. This review explores the evidence and background to this topic area in order to establish the presence or absence of factors that might support an educational initiative. The following article is not intended to be a systematic review and thus does not align with the full elements set out by PRISMA. No suitable literature pertaining to the radiographer/medical student issue was discovered that would meet the criteria. This comprehensive review instead aims to provide an initial foray into the subject area.

Search strategy

A search strategy was conducted with the aim of identifying suitably robust literature relevant to the topic area. The search process involved a two stage process accompanied by search of associated reference lists (See Fig. 1).

An initial broad database search for background information about peer teaching and radiology/radiography education was carried out. This was conducted using multiple sources including only English language publications with no set time range. Information found throughout this initial search was used to provide historical, political and social impetus for the topic and to provide supporting evidence for arguments that would be developed.

Following the initial broad search, a two-stage two-phase search strategy was conducted to narrow down literature and identify core articles. Stage one phase one involved searching key words and phrases related to peer teaching and radiography education. Stage one phase two involved the use of search techniques to narrow down and specify material to the topic area (See Table 1). Stage one of the search process identified a highly relevant diagnostic radiography peer learning article[16] which highlighted a radiography specific skill (image interpretation) as a potential area for further research. This finding guided the stage two search process.

Stage 2 identified keywords and phrases from the initial search, confirming the specific importance of image interpretation to undergraduate radiographers and medical students. This understanding formed the basis of stage 2 phase 2 in which the search sought to narrow down and specify material related to this theme (See Table 2).

To ensure depth of search, reference lists from manuscripts obtained from the search were scrutinised, identifying titles with key words. Relevant articles found during this process were used as supporting evidence.

Findings

The literature search confirmed four main areas relating to the development of skills across varied student groups. The predominant feature was the use of peer-assisted learning however the efficacy and perceptions of peer-assisted learning also figured strongly, as did the issue of interpretive competence as specific to the area of consideration.

Peer-assisted learning

Peer-assisted learning was first introduced in higher education during the 1950s[17] and since then its popularity has grown particularly in health education.[18–20] The benefits of peer-assisted learning have been explored extensively in medicine and throughout many social professions where future collaborative working is considered key.[21,22] In current pedagogy, peers are often characterised into 'near-peer' and 'co-peer' subgroups,[23] however it can generally be accepted that peer teachers are students studying at an equal or similar stage of education learning from one another through a reciprocal process.[24–26]

Peer-assisted learning allows students to connect on a social and intellectual level and thus exploits learning potentially lost within traditional hierarchical (lecturer-student) teaching methods.[27,28] It also allows students to work autonomously and effectively as part of a team[16] and to gain confidence as a mentor.[16]

Student learners have also been shown to have increased understanding of course content and topic areas along with a more positive educational experience in relation to features such as teacher approachability and reduced anxiety.[29,30] Moreover, it has been shown that student teachers have the ability to educate tutees to a standard equal to if not superior to control groups of experienced faculty members and professionals.[18,31,32] There does

Table 1
Summary of stage 1 search strategy.

	Keywords and phrases	Databases searched	Year inclusion
	Peer teaching, peer tutoring, peer learning, clinical education, radiography education, diagnostic radiography education, student teachers	ScienceDirect, ERIC, CINAHL, Google Scholar, PUBMED	2006–2016 (past 10 years)
Phase 2 (S1P2)	• Peer teach* AND clinical AND technical • Peer teach* AND radiograph* • Peer teach* AND interprofessional	ScienceDirect, ERIC, CINAHL, Google Scholar, PUBMED	2006–2016 (past 10 years)

Asterisk is used as a Boolean operator as a root word/stem/truncator search.

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