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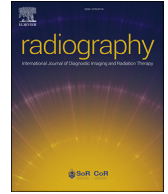
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What makes a good clinical practice experience in radiography and sonography? An exploration of qualified clinical staff and student perceptions

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ABSTRACT

Introduction: Clinical practice can be a challenging experience for some healthcare students. The quality of the clinical experience can have a profound effect on the overall student learning experience in clinical practice and attrition. The aim of the study was to explore the perceptions of an optimal clinical practice experience by radiography and sonography students and qualified clinical staff.

Methods: A qualitative research design was adopted utilising focus groups (n = 5). The study population comprised of qualified radiography/sonography staff (n = 10) from across a number of placement sites used by City, University of London and radiography and sonography students (n = 15) from the same institution. Full verbatim transcriptions were analysed thematically.

Results: Four key themes emerged: 1) favourable/unfavourable traits, 2) creating an optimal learning environment 3) challenges and 4) considerations for clinical education. Key factors for a positive learning experience included clinical supervisors being approachable, whilst encouraging and empowering students. Qualified radiography/sonography clinical staff highlighted student motivation as an important aspect for successful placement learning.

Conclusion: The study has provided an insight into a number of positive attributes that enhance student learning experiences whilst on clinical placement. Unhelpful attributes and challenges, such as student motivation and time limitations, were also revealed. It is important that supervisors within the clinical departments actively work towards the provision of a positive learning experience.

Implications for practice: This study can better inform clinical staff regarding the importance of enhancing the student learning experience and facilitating high quality learning within the clinical department. Moreover, to encourage clinical staff to ensure robust “support” is established for students on placement.

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Introduction

Seamless integration of both academic and clinical components of radiography and ultrasound education is essential to providing a successful learning environment. The quality of the teaching and learning environments in both settings will impact on the student

experience and quality of learning.¹ Working in the clinical setting may provoke stress for students. Common student concerns relate to lack of experience, preparedness for communicating with patients, making errors, not being able to work at the expected pace and feeling intimidated by staff.^{2–4} One aspect that is frequently mentioned in many health professions, including radiography, is the connection students make between a clinical supervisors' academic and clinical proficiency. Students consider that better supervisors equate to better clinical professionals and vice versa.⁵

There are workforce challenges in the diagnostic and therapeutic radiography professions and sonography^{6–8} along with high levels of attrition in diagnostic (11.93%) and therapeutic (23.21%)

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radiography undergraduate programmes.⁹ University academics and clinical supervisors can play a role in ensuring that students are supported during their course and identify issues early to put strategies in place.

Several studies have considered the skills and qualities of the clinical supervisor in other health professions. The nursing model, at least in the UK, contains several different defined roles linked with student support in the clinical environment defined by the NMC,¹⁰ whereas most allied health professions have a model using clinical supervisors to support clinical learning. Allied health students often have shorter placement patterns with lower student/clinical supervisor ratios due to the nature of the roles.¹¹

The vast majority of research on clinical supervisor roles has been conducted in the USA or Australia (~70%), most studies focussing on practice educators in physiotherapy and occupational therapy. A systematic review¹² undertaken in 2019 considering allied health subjects retrieved 42 papers reviewing clinical educator skills, the majority (n = 16) of which focused on physiotherapy and included only three papers which considered radiographers.^{13–15} The study concluded that the key skills and qualities needed to be an effective clinical educator appeared consistent across health professions.

Four papers were identified that considered the impact of the radiography practice educator on the student learning experience; two concentrated on the radiography profession (diagnostic and therapeutic respectively),^{14,16} whilst the other two included a variety of health professions which included both diagnostic radiography and therapeutic radiography.^{13,15} None were carried out in the UK.

Of the four studies that included radiography two^{13,15} used almost identical methodologies. Both utilised a modified survey first developed by Buchel and Edwards (2005)¹⁶ looking at residency training in physicians. Respondents were asked to indicate the three most important and three least important attributes from a pre-prepared list of only 15 attributes. The two studies appear to have been conducted at the same time by the same institution, one study focussing on undergraduate students' perspectives of an ideal clinical educator, the other on the opinion of the clinical educators themselves. From both the student perspective¹² and clinical educator perspective¹³ the characteristics identified by respondents were common to all six professions considered by the study, although there were significant differences between some of the scores for each profession. Differences were also observed when reviewing the student perspective between year sets for nine of the scores, although most of the differences occurred in characteristics outside of the top 5 which for Diagnostic (D score) and Therapeutic (T score) are shown in Table 1.

The third study¹⁴ surveyed second-year radiography students and practice educators instructing them to rank characteristics under four different headings. Good agreement was reported between the ranking by students and practice educators for the behavioural characteristics deemed most appropriate “demonstrates knowledge and clinical skills”; “explains concepts and

decisions clearly/clear communication”; “demonstrates objectivity and fairness when evaluating”; and “is approachable and accessible in clinical hours”. The study utilised a survey based on literature from nursing and physical therapy and was limited in that it only solicited opinions from second year students. Another limitation identified by the authors was that the “clinical instructors” questioned were all employees of education establishments and that clinical instructors employed by the clinical sites may have different opinions.

Finally, Bridge¹⁷ utilised Likert scales to investigate the importance of support mechanisms during clinical placements. Students focused their feedback on equity of performance and assessment standard. Clinical educator availability, teaching, regular formative feedback and provision of a named mentor were all considered important by students.

The findings of these four studies show many areas of agreement and are largely in keeping with the findings of studies in other professions. It was considered important to further review this topic in radiography in a more open manner as all the survey instruments utilised were based directly on materials from other professions. Also, to look at the UK specifically given that the existing radiography research were all from overseas.

This study aimed to define an optimal clinical practice experience through qualitative exploration of the perceptions of radiography and sonography students and qualified clinical staff affiliated with an English Higher Education Institution(HEI).

Method

Study design

A qualitative descriptive approach¹⁸ was adopted using focus groups to capture the perceptions of the participants. Focus groups provide large amounts of qualitative data and maximize face to face participant – researcher contact.¹⁹ The design enables participants to describe their experiences and feelings.²⁰ It was crucial to use this method to allow a flexible approach encouraging fluid responses²¹; unlike the previous four radiography studies^{12–15} which limited respondents to specific predetermined items through surveys.

To understand the findings, a theoretical framework was utilised. Underpinning this research is *Invitational Theory*; an education theory which contends that learning is enhanced when learners are “invited” into the educational experience and obstacles to engagement are removed. There are five domains where this invitation can be developed, referred to as the 5 “Ps” (people, places, policies, programmes and processes).^{22,23} The theory recognises four levels of human behaviour(see Table 2).

Ethical considerations

Ethical approval was obtained from the University Ethics Panel (reference Staff/17-18/19). Participants were provided with a

Table 1
Comparison of Perram et al. and Francis et al.'s study scores.

Students	Mean Score	D score	T score	Clinical Educators	Mean Score (all professions)	D score	T score
Non-Judgemental	1.33	1.26	1.30	Feedback skills	1.31	1.34	1.49
Clarity	1.37	1.38	1.34	Non-Judgemental	1.32	1.38	1.42
Feedback skills	1.44	1.44	1.50	Professionalism	1.42	1.45	1.42
Awareness	1.47	1.55	1.43	Clarity	1.51	1.46	1.64
Professionalism	1.52	1.49	1.45	Listening skills	1.55	1.53	1.59

Note: The lower number the more the characteristic is preferred.

Table 2
Four levels of human behaviour.

Intentionally disinviting:	Conscious behaviour that demotivates learners, focusing on the negatives which discourages educational outcomes being met and undermines learners.
Unintentionally disinviting:	Accidental or unplanned behaviour that hinders positive educational outcomes stopping the student reaching their potential.
Unintentionally inviting:	Accidental or unplanned behaviour that facilitates positive educational outcomes by allowing the student to reach their potential.
Intentionally inviting:	Conscious behaviour that empowers learners and facilitates positive educational outcomes by allowing the student to reach their potential.

participant information sheet in advance. Written consent was obtained prior to conducting each focus group. All data was anonymised to ensure confidentiality and stored securely on password protected cloud servers within the University.

Recruitment

Non-probability purposive sampling was used. Participants were recruited from one HEI in the South East of England. An inclusion criteria was established:

- Radiography students (diagnostic or therapeutic) studying on the pre-registration programme and across any of the three years.
- Sonography students studying on the postgraduate ultrasound programme.
- Qualified clinical staff (diagnostic, therapeutic and sonography) working within any of the university's placement partner sites.

Students were emailed with an invite to participate in the study. Qualified clinical staff were informed of the study during the university's clinical liaison committee. Interested staff made direct contact with the lead researcher via email. Respondents were sent a participant information sheet and details of the study.

The final sample consisted of n = 15 radiography and sonography students and n = 10 qualified radiography and sonography staff.

Data collection

Five focus groups (n = 5) were organised. Two (groups (g) 1, 2) consisted of radiography students, one was of sonography students (g3), one consisted of qualified radiographers (g4) and one qualified sonographers (g5). Focus groups were kept to five participants to encourage better engagement and discussion. Literature highlights the challenges of assessing optimal focus group numbers to provide meaningful data.²³ Standardised questions were used for consistency and to draw out participants opinions. This also allowed follow-up questions to be asked upon their responses (See electronic supplementary material 1 for focus group guides).

Three focus groups (g1,3,5) were organised at the university and two focus groups (g2,4) were held in the participants clinical department as numbers permitted this. Focus group lasted approximately 45 mins, were audio-recorded with the participants' permission and then transcribed.

Data analysis

Transcriptions were reviewed by the research team to check for accuracy. Thematic analysis was used to inductively analyse the data using Braun and Clarke's approach.²⁴ Each transcript was coded independently, collective themes were discussed and agreed (See electronic supplemental material 2 for thematic analysis).

Results

Radiography students were representative across year 1, 2 and 3 of the pre-registration programme (n = 10) and across seven key clinical placement sites used by the University. Sonography students (n = 5) were from year 1 of the postgraduate programme and represented five separate clinical sites where they were employed.

Qualified clinical staff included n = 5 radiographers and n = 5 sonographers. Demographic details, including experience were not determined in this study.

Four themes emerged *“favourable and unfavourable traits”, “creating an optimal learning environment”, “challenges” and “considerations for clinical education”*.

Direct quotes used were not separated into radiographer/sonographer as this would compromise anonymity. Abbreviations STFG = Student Focus Group and CSFG = Clinical Staff Focus Group were used. Responses and themes were similar across all student/staff groups, despite being in different educational levels.

Favourable and unfavourable traits

Several students highlighted specific traits of clinical staff who had made a positive impact on their learning. A number of positive qualities were identified as essential for clinical staff involved with supervising students, including being approachable, encouraging, friendly, patient and caring:

“... one of the most important things is for them to be approachable We want to feel comfortable and confident asking them for help ...”
(STFG1)

“... she was really kind, encouraging. She wanted to help. She is just focussed that way, She's incredibly good at training She really cares about you, that's one of the main things.”
(STFG2)

Qualified clinical staff acknowledged the importance of enthusiasm and passion for the role in supporting students:

“You've got to love what you do really and got to make the students feel involved in that process”
(CSFG2)

Conversely, students recognised unprofessional behaviours exhibited by clinical staff that demotivated them. Students acknowledged a number of examples evidencing improper behaviours displayed, in particular citing instances of negative workplace conduct and lack of positive role modelling:

“Some staff exhibit unprofessional behaviour, yet there is such a big emphasis put on us when we start to be very professional all the time ... ?”
(STFG3)

“Staff shouting at you, I have been shouted at before and in front of people and if we were to do that we would be in trouble. Yet if they do it it's okay?”

(STFG2)

Creating an optimal learning environment

Students highlighted that some clinical staff promoted an environment conducive to learning. This was seen as highly valuable, meaningful and positive for learning and enhancing their clinical experience. Continuity of learning was also seen as important:

“He takes out the time from his day just that he'll sit down and will go over everything, he goes beyond that so if there's something I don't understand he'll explain and then he'll be like you need to go home, revise, go over this topic and then come back to me tomorrow.”

(STFG1)

Equally, qualified clinical staff agreed that fostering a favourable learning environment was deemed essential to aid student clinical learning. The approach and manner was vital to ensure learning was effective, whilst creating a supportive and encouraging environment:

“Question their understanding but in a relaxed way, and not putting them on the spot but just every now and again trying to reinforce understanding.”

(CSFG1)

“I always try and encourage the most junior staff to buddy up with the students. They should just be a friendly face and makes sure that they feel part of the team. A student that feels part of the team learns so much more”

(CSFG2)

Students also recognised the importance of the clinical setting, acknowledging that the majority of learning took place there:

“This is where we are taught and no disrespect to the academic staff, but everything is done here”

(STFG2)

Unfavourable learning environments were also identified and experienced by the students. Students reported unenthusiastic attitudes towards teaching which created a highly ineffective learning environment and led to an absence of a sense of belonging, which was deemed frustrating:

“Sometimes it's like you're just seen as a nuisance, oh I don't want them. Some of them wouldn't even want students in the room with them. They would actually call other rooms and try and place you somewhere else even if you're rota' d to be there.”

(STFG1)

“Not all radiographers are willing to teach, their body language tells you they don't want to teach you”

(STFG3)

Challenges

Qualified clinical staff acknowledged that work related factors, particularly pressures and lack of time were one of the main challenges to providing effective clinical support for learners:

“Workload and time and clinical demand is going to hamper people's ability to be an educator. We'd all like to spend hours with new staff or new students but the workload and time just isn't there.”

(CSFG1)

This notion was equally reinforced by the students who highlighted that from their perspective, work-related factors were prevalent, seen as a major challenge for clinical staff and negatively impacted on their learning experience:

“Having an opportunity to have some time with them so that you can let them know what you expect from them and vice versa, what they expect. You want to ask questions but they're busy. They are always busy. It's almost impossible even to sit down at the end of the three weeks”

(STFG2)

“I think they're so much more focussed on all the other things that are involved in running a machine. When I just think of them constantly looking at the time planner They don't have the time”

(STFG2)

Qualified clinical staff recognised the added responsibility of being a supervisor and additional personal issues that can impact their ability to provide a positive supervisory experience, negatively impacting on student learning.

“Being aware that not only the student can have a personal issue, sometimes the mentors can as well, and we've had it in the past where the mentors have been going through difficult situations and they probably should have said a lot sooner that they needed to take a step back”

(CSFG1)

Qualified clinical staff also reported a further challenge, acknowledging that student motivation was sometimes a concern that was evident amongst student learners, as such, creating additional strain on the supervisors' experience of clinical teaching:

“We have trying ones. We can put so much effort in but again if you haven't got the will from the student it does put the staff on a bit of a backburner.”

(CSFG1)

“Students who aren't engaging. I've had students verbalise to me that they don't want to be radiographers they're going through the course as a steppingstone into further education”

(CSFG2)

Considerations for clinical education

Students agreed that prioritisation of training for clinical supervisors was important for a successful learning experience. Students described shortcomings such as low priority or complete lack of supervisor training provision, and alluded to supervisors not understanding the clinical practice document:

"I don't think anything's been put in place. I feel there should be stuff to put in place, train the staff members for different students."

(STFG2)

"A lack of understanding of what's expected of a student during an observation assessment. I don't think some radiographers understand the portfolios"

(STFG1)

Students also highlighted the expectations of clinical staff supervising their training. Consensus was reached by all students that teaching was a fundamental and formal requirement as part of professional registration:

"It's the HCPC rules, I'm sorry but it is part of their remit to teach us and I want to keep saying to them you are registered, and this is one of your standards"

(STFG1)

"There are things that they have to teach us. They can't expect us to know them and if you're going to ask us a question make sure that the students know the answer."

(STFG3)

Qualified clinical staff also acknowledged the importance of maintaining a strong link with the HEI to ensure a consistent collaborative relationship.

"From other sites that I've spoken to there is a bit of a separation between the university and the clinical site and the students notice it and how we join that back up is something for the future."

(CSFG1)

Discussion

The perceptions of an optimal clinical practice experience can be explored under the five "P" domains of the *invitational theory*:

People

Students in this study identified a range of traits they had observed which were exhibited by qualified staff who were supervising them. Favourable traits positively impacted on their learning experience to provide an effective learning environment were acknowledged. Conversely, unfavourable traits were also reported, which were deemed to create an adverse learning experience. Such traits are reflective of the *Invitational theory*, where all four levels of human behaviour were observed in this study. Both undergraduate and sonography students described *intentionally and unintentionally inviting* behaviours of clinical staff such as a professional attitude and attributes including being approachable, kind and fair, bringing the student into the team and including them and empowering them to learn within the team. *Unintentionally and intentionally disinventing* behaviours were also evident and reported by the students referring to discouraging behaviours and perceived negativity such as "being scary" and demeaning behaviour in front of other staff.

Such findings are consistent with two radiography studies, which reported that students wanted staff to be non-judgemental in their engagement with them¹⁵ and to be approachable, accessible and avoid open criticism in front of others.¹⁴ Studies of other professions supported this, reporting communication and interpersonal

relationships between the mentor and student as being one of the most important factors for a successful learning environment^{25–28} The importance of communication to enhance learning opportunities was also supported by Rodger et al.,²⁹ who highlighted the need for open communication between educators to ensure consistent expectations of students, as poor communication can have a negative effect on student learning.²⁸

Places

The clinical learning environment was considered critical to the promotion or hindering of effective learning. A safe and welcome space is required to foster learning.^{30,31} Moreover, a supportive, open and inclusive working environment can foster a positive placement experience for students.³² Recognition of a students' need for inclusion must be appreciated. Whilst students considered an experienced radiographer with current knowledge and excellent clinical skills to be a good educator,³⁴ they indicated that "caring" was more important to them, consistent with other research in this areas.^{5,15,33} This reinforces the notion that a positive clinical placement experience for students often depends on the extent to which they feel cared and valued.³⁴ The HCPC standards of education and training stipulate that the environment must be "safe and supportive for learners and service users" and supported by staff with appropriate knowledge, skills and experience to support safe and effective learning."³⁵

Processes

Promoting a high-quality learning environment within an ever-changing clinical environment can be challenging. The pressures of maintaining a safe, efficient service and providing exceptional patient care, whilst ensuring a positive student learning experience was described as equally challenging. The effects of increasing work-related pressures is often associated with inadequacies in clinical teaching³⁶ and can compromise learning opportunities. Supervisors in any clinical setting are faced with the challenge of how to teach effectively while still providing high-quality care in a busy clinical environment.³⁷ Clinical supervisors are pivotal to the student experience, yet as reported, embracing the role can itself present numerous challenges which have the potential to impact on the supervisory experience. Examples such as insufficient time and unpreparedness for clinical supervision have been identified in previous studies.^{38,39} Time has been emphasised as a factor inhibiting good clinical learning in several studies.^{40,41} Student motivation and lack of interest in a clinical setting is often a challenging issue.^{42,43} The findings have highlighted how this issue can be perceived as a barrier. Encouraging students to be responsible for and actively participate in their own learning and integration into the team is key and can result in enhanced motivation.²⁹ Whilst clinical placements that provide high quality learning opportunities, and effective feedback can encourage the development of intrinsic motivation for students^{44–46}

Policies

Training and supervision for radiographers and sonographers involved in clinical teaching are essential for clinical supervision to succeed⁴⁷ however, there was a sense from the students that the overall clinical supervision provision was not fully embedded. Several students perceived that staff were not prepared for the role, and it was unclear whether supervisors had any training. The HCPC Standards of Education and Training³⁵ acknowledge that clinical supervisors must undertake regular training which is appropriate to their role, learners' needs and the delivery of the learning outcomes

of the programme. This is also acknowledged within the professional codes of conduct.^{47–49} Moreover, the College of Radiographers Education and Career Framework⁵⁰ highlights the clinical supervisor's role (referred to as a practice educator) in supporting those who supervise learners within clinical practice and of gaining accreditation to demonstrate the skills and training to undertake the role.

Of most concern was staff not understanding the clinical paperwork to support learning. Jokelainen et al.⁵¹ acknowledged in their study of student mentorship that mentor preparation programmes were essential for developing the skills of mentors, to keep well-informed with changes in educational matters and importantly they should be given adequate time and preparation to complete the paperwork associated with students' placement learning. Young et al.⁴¹, highlighted in their study that radiographers lacked guidance for the clinical supervisor role. The role of the clinical supervisor is to also ensure students receive high-quality learning, support and supervision during their clinical placements. Students highlighted that this was an expectation and standard for all clinical radiographers; a notion clearly evident in the Society and College of Radiographers Code of Conduct & Ethics⁴⁸ acknowledging that members of the radiography profession should be willing to engage in the supervision, teaching, training, appraising and assessing of learners.

Programmes

An assumption of the invitational theory is the programme should be designed to help students reach their maximum potential. Most participants did not remark on the differences between academic and clinical setting and the potential impact this could have on their success; however, the clinical setting was recognised as being important, as the majority of learning takes place here. Some participants described deficiencies around supervisor training and lack of understanding regarding the clinical practice document. As mentioned earlier, the potential causes were being overburdened with other tasks, lack of programme clarity in terms of the stage of learning the student is at, and inefficient support programmes for clinical staff. This was also recognised by the clinical supervisors who noticed a separation between clinical and education provider. Addressing these could provide a more *intentionally inviting* curriculum for both students and clinical supervisors.

Study limitations

The insights provided by participants are specific to one UK university and the placements sites it uses, therefore generalisation of findings to other populations/sites is uncertain. The study also utilised a small sample size which limited representation of the different student groups and further research is needed to compare the experience of different student years and level of degree.

Conclusion

The overarching findings from this study are largely consistent with those from previous research in other areas of healthcare, in that supporting learning and creating an optimal learning environment is important for a positive clinical experience. The results were considered within the five domains of the invitational theory. For both students and clinical supervisors, trust, meaningful engagement, collaboration and respect are important in order to actively work towards the provision of a positive learning experience. Students indicated they valued a supportive non-judgemental relationship with clinical supervisors yet recognised that work-related pressures could interfere with this.

Overall, the study provides a powerful reminder that effective teaching and learning within the clinical environment is crucial as it can empower and enable all learners to acquire and develop the required knowledge, skills and confidence, which in turn can improve retention of the workforce.

The implications of our study can inform clinical staff regarding the importance of enhancing the student learning experience and motivating and facilitating high quality learning within the clinical department. Measures can include making students feel part of the team, to ensure robust support is established and strengthening the partnership with HEIs. Finally, there is a need for larger scale research to capture more perspectives on the clinical learning experience.

Conflict of interest statement

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radi.2023.09.013>.

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