

Combining RRM with Multiple Perspectives: Practical Training in Radiology – by the Example of CT and MRI Rotations

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ABSTRACT

Medical students' practical training in radiology (PTR) takes place in clinical practice and patient management. This article proposes an approach to enhance PTR by combining the Radiology Rotation-Model-22 (RRM) with the modified didactic principle of Multiple Perspectives (MP) from Schüßler's Assisted Learning, adapted for medical education. From an adult education perspective, medical students are considered adult learners with an interest in radiological imaging. The combined approach was implemented in the computed tomography and magnetic resonance imaging departments of a teaching hospital. It promotes six didactic components: expertise, practice, reflection, interaction, responsibility, and collaboration by strengthening student engagement and practical skills in PTR. Students' engagement and reflection in radiology practice are fostered through rotations and multi-perspective observation by using the RRM-pocket card. They actively participate in radiological tasks and assignments, and collaborate in clinical work. Given time constraints in clinical routine, effective training needs a flexible didactic framework.

1. Introduction

Medical students' practical training in radiology (PTR) takes place in the context of clinical practice and patient management. Clinical learning environments are a basic element of medical education in patient management in clinical practice (Nordquist et al., 2019). PTR comprises elective clerkships or the elective rotation of the final practical year in radiology departments at teaching or university hospitals in Germany – and, where applicable, internationally. Radiology is a central and indispensable component of patient care and constitutes an essential part of clinical clerkships and rotations as a medical specialty (Grimm et al., 2022; Lynch et al., 2022; Petsch, 2022; Seng et al., 2025; Simelane et al., 2021).

PTR is dynamic, complex, and challenging, and should be structured to be interactive, hands-on, and outcome-oriented (Liu & Sullivan, 2021; McCoy et al., 2018). Practically, PTR should allow students to practice diagnostic reasoning with real patient cases and to engage in clinical decision-making aimed at progress. Both radiologists and medical students are motivated to

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achieve effective outcomes from their training rotations preparing students for clinical work, even amid rising clinical workloads. From a pedagogical perspective, a comparison between police operational training in Germany and PTR may be drawn: training, understood as a responsibility to effectively and efficiently prepare for real-life operations – whether police or medical –, must aim to be applicable, successful, and practicable for operations to be successful, with knowledge that is quickly absorbable and useful, yet it has time constraints due to parallel duties and unpredictable routines (Koerner & Staller, 2020; Petsch et al., 2021; Petsch & Buerke, 2024a, 2024b, 2024c; Staller & Koerner, 2021). A balanced, adapted approach and concepts are needed.

As in clinical training, both medical trainers – radiologists, and radiographers – and students aim to make the most of the precious time spent teaching and learning, gaining knowledge of the specialty, diagnostic exams, common indications and contraindications, image interpretation, related medical tasks, and understanding how clinical work is organized through guidance within departmental structures (Chen & Kumaran, 2023; Grimm et al., 2022; Harthoorn et al., 2024; Li & Brown, 2023; Lynch et al., 2022; Petsch et al., 2021; Petsch & Buerke, 2024a, 2024b). In practice, PTR should result in students understanding and explaining imaging modalities, strengthening their practical skills, and discussing imaging findings in case discussions. Multidisciplinary case conferences and tumor boards offer students insights into diagnoses, treatments, cancer therapies, decision-making in interdisciplinary patient management, showing radiology's essential role in patient care (Almuhanna et al., 2025; Berardi et al., 2020; Grimm et al., 2022; Harthoorn et al., 2024; Li & Brown, 2023; Liu & Sullivan, 2021; Moloney et al., 2017; Petsch et al., 2020a, 2020b; Petsch, 2022; Petsch & Buerke, 2024a, 2024b).

In this sense, PTR can benefit from pragmatic adult education concepts that allow for flexible adaptation for radiology training. We have previously developed the Radiology Rotation-Model-22 (RRM) as a structured rotation concept, along with the RRM-pocket card for medical students during clerkships. The RRM-tool can be implemented to structure student rotation settings in radiology departments, optimize educational processes in clinical routine, and foster self-active learning through participant observation (Petsch & Buerke, 2024b, 2024c).

The aim of this article is to outline suggestions for improving medical students' PTR experiences by combining the RRM concept with the modified didactic principle of Multiple Perspectives (MP), drawn from Schüßler's training approach to Assisted Learning in adult education (Petsch & Buerke, 2024c; Schüßler, 2012).

Based on Assisted Learning as adapted for PTR, we present six didactic components: expertise, practice, reflection, interaction, responsibility, and collaboration. To further elaborate on this framework, the following section describes the conceptual and didactic foundations underlying the approach.

2. Description of Conceptual and Didactic Framework

2.1. Assisted Learning – Medical Education

We follow the applied theory of Assisted Learning, coined by Rolf Arnold, which is widely used in various areas of adult education, and which we have adapted for medical education. In our understanding, medical education is adult education. This step is primarily based on theoretical concepts of adult education and pedagogical adaptation of Assisted Learning principles to medical education. In medical training practice, this adapted alignment can

support medical trainers in providing more efficient and sustainable guidance to medical students, particularly within the constraints of busy clinical routine.

Understanding Assisted Learning – in our context of PTR – as a pedagogical attitude, trainers are ideally expected to critically reflect on their didactic approach and role in teaching processes as learning facilitators, supporters, and arrangers, initiate suitable training opportunities without placing themselves at the center of attention, and provide concrete feedback on skills development, while students actively engage in learning processes and problem-solving to support productive and effective self-development (Arnold, 2010, 2018, 2023; Knowles, 1975; Ochsendorf et al., 2025b; Petsch, 2022; Schüßler, 2012, 2018; Sennekamp et al., 2025; Siebert, 2009, 2016). We refer to radiologists and radiographers as trainers in PTR, since we address training practice only en passant in the context of clinical clerkships or the practical year as the final year of clerkships.

2.2. The Radiology Rotation-Model-22 and the Didactic Principle of Multiple Perspectives

To ensure effective outcomes in PTR experiences, we combined RRM as a rotation concept by Petsch and Buerke with the modified didactic principle of MP in learning and teaching – one of eleven didactic principles from the acronym “ERMÖGLICHEN” (German for “to enable” or “enabling”) of Assisted Learning by Schüßler (Petsch & Buerke, 2024c; Schüßler, 2012); see outline of this combined approach illustrated in Figure 1. RRM, inspired by the modified methodological approach of Zierer et al., offers participant observation as a method for medical students in radiology to engage in multiple self-observed rotation rounds using the RRM-pocket card and to actively involve in their own training processes and outcomes (Döring, 2023; Jorgensen, 2020; Petsch & Buerke, 2024c; Zierer et al., 2013). The process involves implementing the RRM-pocket card in radiology practice, applying it in PTR, and encouraging students’ self-observed rotations; combined with a conceptual training approach informed by the modified principle of MP. In practice, this includes brief preparation for trainers and students on its use, its application during department rotation training moments (including guidance and feedback), thereby enabling both structure and flexibility in busy clinical routine in radiology.

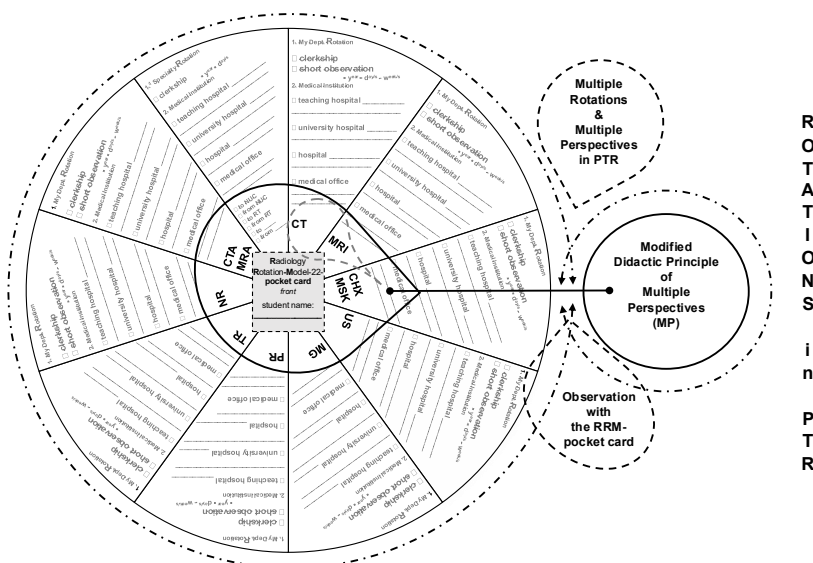


Figure 1. Illustrated outline of combined RRM with the modified didactic principle of MP
 Note. Four drop-shaped circles and one circle for MP present approach and departments. Outline of the combination of the RRM-pocket card's front side with elements of the modified didactic principle of Multiple Perspectives (MP) by Schüßler, marking the CT and MRI departments for rotations by means of observation in PTR in radiology practice (Schüßler, 2012); adapted illustration of the RRM-pocket card's front side based on the Radiology Rotation-Model-22 (Petsch & Buerke, 2024c).

2.3. Participant Observation and Reflection

Participant observation and self-observation are inherently subjective, as are rotation experiences, and may be time-intense, therefore, they must be jointly reflected on in collaboration with training radiologists (Döring, 2023; Jorgensen, 2020; Lareau, 2021; Petsch & Buerke, 2024b; Tashakkori et al., 2021). Joint reflections allow for situational feedback on observed actions, improving experiences in PTR. And, sharing reflections with trainers is essential to the RRM concept in order to achieve productive outcomes (Petsch & Buerke, 2024b). Observation thus becomes a key junction between RRM and the modified principle of MP (Petsch & Buerke, 2024b; Schüßler, 2012). Such outcomes may include more critical reflections by students, and increased interaction in real-life clinical situations (Petsch, 2022; Sennekamp et al., 2025).

Within the modified didactic principle of MP, students are expected to observe and reflect on their learning processes as they confront and experience clinical situations and problems in PTR, develop flexibility in their approach to alternative patterns of action and articulate their own perceptions or reservations (Schüßler, 2012). In practice, this can involve revising initial diagnostic reasoning, or adapting task processes based on radiologists' feedback. Reflecting on diagnostic reasoning can help students minimize mistakes in reaching diagnoses (Ochsendorf et al., 2025a). Changing perspectives implies a willingness to consider multiple viewpoints – for students and trainers alike (Schüßler, 2012). This practice-oriented combined approach can help transfer theoretical best practices to PTR in clinical routine. Trainers are encouraged to understand students' patterns of attitudes and behaviors in order to grasp their perspectives (Schüßler, 2012). This understanding enables trainers to adjust tasks, assignments, and feedback to address learning needs. Schüßler proposes guiding questions for trainers to

consider in reflecting their own didactic approaches; we selected one question and modified it for PTR: How can students be guided in viewing cases from different perspectives? (Schübler, 2012).

2.4. Implementation of RRM in CT and MRI – PTR

We applied this combined approach of RRM and MP to PTR in the computed tomography (CT) and magnetic resonance imaging (MRI) departments of diagnostic and interventional radiology at the teaching hospital Klinikum Guetersloh, Germany. These departments were selected due to their central role in diagnostic and interventional radiology training. They provide various clinical situations as training opportunities for students to observe and reflect on. The implementation supports students' active engagement and reflection in radiology practice through structured rotations and multi-perspective observation. We present our practical implications as follows.

Building on these conceptual and theoretical foundations, the subsequent discussion illustrates how RRM combined with the modified didactic principle of MP can be effectively applied in PTR settings. This includes considerations of expertise development, reflective learning, and the interactive and multidisciplinary nature of radiology clerkships.

3. Discussion

3.1. Radiology Rotation and Expertise in Training

We approach this topic from the perspective of adult education, assuming that medical students – as adult learners – participating in PTR during elective clerkships or the elective rotation of their practical year demonstrate a genuine interest in, or need for, learning about radiological imaging while rotating. The modified principle of MP applies to theoretical knowledge transfer adapted for various contexts, and to practical decision-making that supports reflective application of knowledge (Schübler, 2012). Practically, this is implemented through assignments in image interpretation and case presentation, including radiologists' feedback on observed clinical reasoning. This can be implemented through an observation model in which a group of students completes assignments, while trainers observe their actions, followed by clear and concrete feedback, and brief discussion (Ochsendorf et al., 2025a; Sennekamp et al., 2025). Students seek structured guidance in acquiring knowledge of radiology as a specialty with its full range of diagnostic exams, while the individual radiology departments serve as dynamic rotation settings and knowledge pools – particularly through the essential expertise of radiologists and radiographers, who guide students through diverse approaches to image interpretation and contribute significantly to medical training (Arnold, 2010; Grimm et al., 2022; Li & Brown, 2023; Liu & Sullivan, 2021; Lynch et al., 2022; Ochsendorf et al., 2025b; Petsch, 2022; Petsch & Buerke, 2024a, 2024b; Schübler, 2012; Seng et al., 2025; Siebert, 2009; Simelane et al., 2021). This guidance can lead to increased interaction in clinical work and, ideally, more confidence in participating in case discussions.

According to the understanding of Assisted Learning, radiologists as medical trainers are encouraged to reflect on their didactic approach in training processes when offering objective and matter-of-fact guidance and feedback to help students understand radiology as a specialty; this includes students responsibly involving in clinical interaction, familiarizing themselves with imaging exams and direct patient contact, performing practical tasks, solving problems in real-life, including clinical situations, and in authentic and meaningful training opportunities as part of learning processes (Arnold, 2010, 2018; Chen & Kumaran, 2023; Gieseke, 2023;

Knowles, 1975; McCoy et al., 2018; Petsch, 2022; Schüßler, 2012, 2018; Seng et al., 2025; Sennekamp et al., 2025; Siebert, 2009, 2016, 2018, 2019; Straus et al., 2014). Students' flexible and responsible engagement in patient interaction supports skills development, problem-solving, and readiness in independent proceeding (Prescher et al., 2021). In practice, this may involve assigning students to follow cases from initial imaging requests, through exam procedures, and radiology reports with students documenting these activities in their RRM-pocket card. PTR, taking place in clinical practice, offers students real-life clinical learning in medical tasks and patient management (Nordquist et al., 2019).

3.2. Practical Learning with the RRM-Pocket Card

Using their individual RRM-pocket card during rotations, students document activities in a structured format, such as describing and interpreting CT images in the reading room, assessing and pre-measuring findings (e.g., in the liver, uterus, or the spine), refer to Figure 2 for CT rotation; or MRI images (e.g., cysts in the kidney, liver, or breast), and presenting patient cases based on radiology reports and histories, writing short imaging requests, or selecting cases from conferences or tumor boards (e.g., gastrointestinal, gynecological, prostate cancer and urogenital tumor boards, or myeloma and lymphoma conferences (Almuhanna et al., 2025; Harthoorn et al., 2024; Moloney et al., 2017; Petsch et al., 2020a; Petsch & Buerke, 2024b). The RRM-pocket card has been found to promote systematic rotations, serving PTR's practical teaching and learning experiences. Through this, students engage in diverse radiological tasks, involve in radiologists' specific assignments, and collaborate in clinical work.

Presenting cases involves answering questions and discussing interpretations with peers and radiologists. Reflecting on different perspectives, providing concrete, timely and situational feedback, and being receptive to it, encourages awareness in self-development and critical assessment of personal biases in PTR (Arnold & Schön, 2021; Bandeali et al., 2017; Burgess et al., 2015; Chatzinikolaou & Tsirides, 2020; Lareau, 2021; Liu & Sullivan, 2021; McCoy et al., 2018; Möllers, 2022; Petsch & Buerke, 2024b; Schüßler, 2012; Sennekamp et al., 2025). In radiology practice, this shows students' gradual improved diagnostic reasoning after peer or trainer input, more specific communication of imaging findings, and adaptability to various case complexities. Reflective dialogue is key preparation for clinical practice. Such dialogue fosters shared clinical reasoning and practical problem-solving between students, radiologists, and radiographers in different clinical situations.

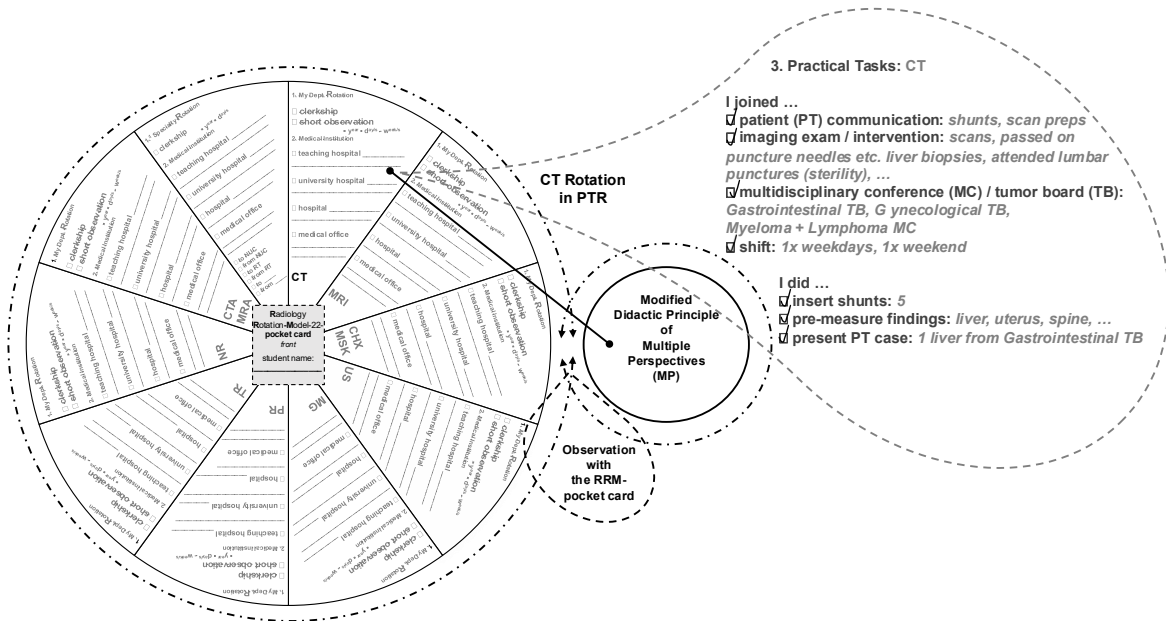


Figure 2. Illustrated outline of combined RRM with the modified didactic MP in CT rotation
 Note. Drop-shaped dashed circle presents practical tasks in the CT department. Outline of the combination of the RRM-pocket card's front and back sides with elements of the modified didactic principle of Multiple Perspectives (MP) by Schüßler, marking possible practical tasks performed by students in the CT department as a rotation setting in PTR in clinical practice (Schüßler, 2012); adapted illustration of the RRM-pocket card's front and back sides based on the Radiology Rotation-Model-22 (Petsch & Buerke, 2024b, 2024c).

3.3. Reflective Learning in Radiology Training

Experiencing active training moments in the reading room enables students to engage in radiologists' decision-making on detecting diseases, identifying or ruling out malignancies, and discussing diagnostic and therapeutic options in invasive imaging procedures; this supports understanding of CT and MRI as key imaging modalities (Almuhanha et al., 2025; Horvat et al., 2023; McCoy et al., 2018; Petsch, 2022; Petsch & Buerke, 2024b; Schüßler, 2012; Straus et al., 2014). Such active participation in PTR contributes to gaining knowledge of these imaging modalities, and to developing adaptability in understanding the handling of complex cases. Students use the RRM-pocket card to document, self-observe, and reflect on their training experiences and processes in CT and MRI rotations (Arnold, 2010; Petsch & Buerke, 2024a, 2024b; Schüßler, 2012); refer to Figure 3 for MRI rotation.

By adapting approaches from police operational training for PTR, both trainers and students should be aware of limited time in training practice due to parallel duties, yet recognize their responsibilities and decisions in training settings, and reflect on these by considering other responsibilities in daily practice and routine (Petsch et al., 2021; Petsch & Buerke, 2024b, 2024c; Staller & Koerner, 2021). This awareness helps prioritize training moments that directly impact clinical effectiveness, such as procedures, acute clinical situations, or case triage. The RRM-pocket card thus serves as a useful tool to document and structure assigned tasks, support reflection on these activities, and enable discussion within a clear framework when time allows for trainers and students (Petsch & Buerke, 2024a, 2024b). In RRM, subjective participant observation and reflection should be shared with, and if needed, discussed with trainers responsible for each rotation setting to make use of guidance, and actively contribute to

improving PTR outcomes (Döring, 2023; Jorgensen, 2020; Lareau, 2021; Petsch & Buerke, 2024b; Sennekamp et al., 2025). Despite time constraints, students should be encouraged to articulate concerns or insights (Schübler, 2012), which contributes to trainers' and students' responsibilities, as well as the further development of PTR. Documented reflections from practice can later inform PTR or clerkships in general, ensuring that training remains efficient and practice-oriented.

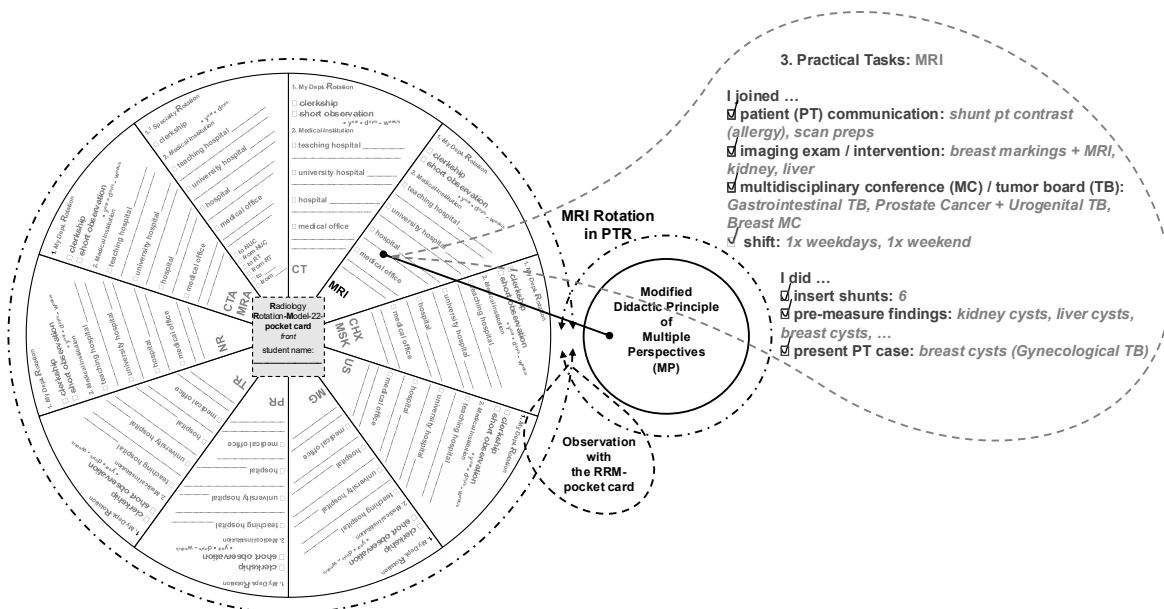


Figure 3. Illustrated outline of combined RRM with the modified didactic MP in MRI rotation Note. Drop-shaped dashed circle presents practical tasks in the MRI department. Outline of the combination of the RRM-pocket card's front and back sides with elements of the modified didactic principle of Multiple Perspectives (MP) by Schübler, marking possible practical tasks performed by students in the MRI department as a rotation setting in PTR in clinical practice (Schübler, 2012); adapted illustration of the RRM-pocket card's front and back sides based on the Radiology Rotation-Model-22 (Petsch & Buerke, 2024b, 2024c).

3.4. Imaging and Interaction in Practical Training

Engagement in patient communication, understanding the imaging modalities CT and MRI, including contrast use and its indications and contraindications, and participation in procedures, such as shunts – whether during early clerkships or the practical year –, provide clinically relevant tasks for students to experience (Arnold, 2010; Chen & Kumaran, 2023; Harthoorn et al., 2024; Petsch & Buerke, 2024a, 2024b; Schübler, 2012). Such activities with direct patient contact not only enhance practical skills performance but develop essential social skills, such as empathy – even benevolence, humanism and respect (Petsch, 2011) –interprofessional and interdisciplinary communication, and patient education. Prescher et al. combine, e.g., communication speed, conflict-handling, empathy, and patient orientation into social skills in rescue science education (Prescher et al., 2021). Assisting in CT-guided liver biopsies or attending lumbar punctures while maintaining sterility are examples of authentic clinical and interprofessional interaction ideally paired with feedback (Petsch & Buerke, 2024a, 2024b). PTR efficiency may be challenged by departmental workload, rotating specialists, and complexity and challenging encounters in patient care, but its effectiveness must remain a priority (Chen & Kumaran, 2023; Clements et al., 2022; Naeger et al., 2013; Petsch et al.,

2020b; Petsch & Buerke, 2024b; Rizvi & Borges, 2020). Time pressure from parallel clinical duties, staff shortages, or sick leave impacts teaching availability (Petsch et al., 2021). Radiologists' flexible scheduling of teaching and learning opportunities during less busy periods can mitigate some of these challenges.

In police operational training, time constraints favor scientific knowledge that is quickly absorbable and applicable without major resistance, that is simplified in content and wording, aiming to be accurate, useful and free from uncertainties (Koerner & Staller, 2020). There are time constraints in relation to scientific knowledge in PTR, too. Extensive pedagogical theories or in-depth didactic concepts may not be accepted by busy medical trainers or students focused on imaging in PTR. For that reason, theoretical approaches from adult education should be adapted and modified for clinical teaching and learning in order to be efficient, practice-oriented and clinically relevant, and authentic for clinical practice in radiology (Petsch, 2022). For example, PTR checklists or mini-scripts can offer basic knowledge as an overview in daily practice and routine while maintaining clinical focus and accuracy. Just like police officers, medical doctors as trainers work under time constraints in training environments, and face unpredictable routines, with the next operation or case – whether police or medical – always imminent, and the next practical training – in police or medical settings – in line (Koerner & Staller, 2020; Petsch et al., 2021; Petsch & Buerke, 2024b, 2024c). Thus, a balanced approach in time and theory transfer is needed. Practically this balance must ensure that both immediate operational demands and skills development are addressed.

3.5. Adaptation and Responsible Action in Practical Training

Attending breast MRI from the control room can be combined with actively assisting in preparatory steps (e.g., breast markings) and subsequently presenting imaging findings such as cysts. The modified didactic principle of MP encourages students to take responsibility, actively perform tasks, find alternative options of action, observe their performance, and reflect on their learning from different angles; this supports experience, adaptability, practical skills development, and self-development (Almuhanna et al., 2025; Arnold & Schön, 2021; Gieseke, 2023; McCoy et al., 2018; Petsch, 2022; Schüßler, 2012). This responsibility fosters readiness for independent practical tasks, and develops situational decision-making in various clinical situations. In clinical practice, which is dynamic and unpredictable, this principle is particularly useful (Liu & Sullivan, 2021; McCoy et al., 2018).

Hence, flexibility is essential for both trainers and students. As in police operational training, PTR requires responsibility to effectively and efficiently prepare for real-life situations – police or medical operations –, and responsibility to achieve an effective training in itself, thus training refers to success, application and use to be successful, applicable, and useful in order for operations to be successful (Koerner & Staller, 2020; Petsch et al., 2021; Petsch & Buerke, 2024a, 2024b, 2024c; Staller & Koerner, 2021). Concrete outcomes may include more efficient PTR procedures, improved teamwork and interprofessional work under pressure, and adherence to medical and safety protocols. Expectations of effective and efficient training, and successful outcomes apply equally to trainers and students in PTR. A shared sense of meeting these expectations strengthens educational and professional trust, and supports efficient and sustainable training in radiology departments.

3.6. Multidisciplinary Case Discussions and Collaboration in Radiology Training

Students should attend multidisciplinary conferences involving cases they have worked on to observe clinical decision-making and interdisciplinary collaboration (Petsch et al., 2020a; Petsch, 2022; Petsch & Buerke, 2024b). Attending such settings has shown benefits in interdisciplinary collaboration, allowing students to learn to communicate radiological findings more effectively to non-radiologist clinicians. They should take part in weekday and weekend shifts during various rotations. They should join daily case conferences or tumor boards at any stage of PTR, which offer insights into interdisciplinary collaboration in patient management and differential diagnoses, treatments, complex decision-making, and dynamic interaction between radiologists and non-radiologist clinicians (Grimm et al., 2022; Li & Brown, 2023; Liu & Sullivan, 2021; Mattes et al., 2017; Petsch et al., 2020a, 2020b; Petsch, 2022; Petsch & Buerke, 2024a, 2024b). These settings demonstrate the essential role of radiology in patient management, e.g., in cancer diagnoses and therapies, where students can observe that non-radiologist clinicians rely on radiological imaging for diagnosis and treatment (Almuhanna et al., 2025; Berardi et al., 2020; Chen & Kumaran, 2023; Harthoorn et al., 2024; Moloney et al., 2017; Neri et al., 2021; Petsch, 2022). Students have a broad selection of these educational settings in radiology, while radiologists hold central roles in these conferences and boards (Petsch et al., 2020a; Petsch, 2022; Petsch & Buerke, 2024b). Clinical reasoning involves combining knowledge and experiences to reach decisions on diagnoses and treatments (Kollewe et al., 2025). Active practical participation, such as assisting radiologists during conferences, can strengthen students' clinical reasoning and foster interdisciplinary communication skills.

Combining RRM with the modified didactic principle of MP promotes clinical expertise, structured practice, guided reflection, interactive learning, responsible action, and interdisciplinary collaboration – strengthening student engagement and practical skills in PTR. These observations indicate that integrating RRM with the modified didactic principle of MP can strengthen practice-oriented teaching and learning in PTR. Further studies in different clinical settings can substantiate these observations. In the long term, this combined didactic approach may contribute to smoother transition to residency in radiology, and more consistent diagnostic quality in radiology practice.

4. Limitations

There are some limitations. Our account is primarily conceptual and based on theory, and should be treated as such. This study outlines an approach combining the RRM-model with the modified didactic principle of MP to enhance PTR at teaching hospitals and university hospitals as state medical institutions in Germany. While this combination offers a flexible framework, it may not capture all the complexities and challenges of radiology clerkships in Germany and worldwide. PTR experiences are inherently subjective and may vary depending on individual contexts, teaching styles, local clinical routines, institutional curricula, clerkship regulations, and available resources. The compact format of the RRM-pocket card limits extensive note-taking, and the small font size may pose readability issues for some users. Enlarged versions can be provided to improve accessibility. Overall, the application of adult education principles in clinical work shows promise, but depends on trainers' ability – and willingness – to adapt pedagogical concepts within the constraints of busy clinical routine. Observed benefits indicate potential, yet further studies can provide more insights into different contexts to confirm broader use.

5. Conclusions

This article outlines an approach that combines the RRM-model with the modified didactic principle of MP to support medical students' PTR. Based on the understanding of PTR as adult education in clinical routine in radiology, this approach emphasizes expertise, practice, reflection, interaction, responsibility, and collaboration as useful didactic components for clinical practice. Trainers and students are encouraged to engage with clinical situations from multiple viewpoints, while the RRM-pocket card serves as a tool to foster meaningful participation and self-active learning. This concept is associated with improved student engagement and the ability to improve practical skills in our PTR implementation. The didactic application of Assisted Learning illustrates how radiology departments can serve as dynamic training settings that promote professional development through observation, active involvement, and reflection. While the approach is primarily conceptual and based on theory, its practical implementation will depend on individual and institutional contexts. Observations indicate practical potential, while further studies can provide more insights into different clinical contexts to confirm broader use.

6. Disclosure Statement

The authors declare that they have no conflicts of interest. The authors alone are responsible for the content and writing of this article.

7. Abbreviations

CT: computed tomography

MP: Multiple Perspectives

MRI: magnetic resonance imaging

PTR: practical training in radiology

RRM: Radiology Rotation-Model-22

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