



Empowering Radiology Education: Embracing the Potential of Online Learning

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We read the article “Radiology Residents’ Dilemma in Present Time!”¹ with great interest and would like to offer a different perspective on the issue raised. While we acknowledge the concerns regarding the quality and increasing number of online resources, we firmly believe that embracing the advantages of digital resources can significantly benefit radiology education. Moreover, due to the lack of standardization in residency structure across various states and institutes/hospitals in India, it is essential to highlight the difficulties encountered by radiology residents in tier 2 and 3 cities.

- Underestimating radiology residents:** It must be remembered that these residents, who are among the top performers in the postgraduate (PG) entrance exams,² have already navigated a wide range of resources during their competitive exam preparations at the pre-PG level, incorporating them into their study habits and seamlessly integrating practical skills. We feel that underestimating their perceptiveness and judgment as adults is unwise, and doing so would be a massive disservice to these intelligent students.³
- Abundance of radiology cases:** Websites like Radiopaedia.org, Learningradiology.com, Auntminnie.com, Radiologyassistant.nl, Eurorad.org, and the Radiological Society of North America (RSNA) case collection provide comprehensive and up-to-date knowledge. Radiopaedia has 54,000+ real-life radiology cases with high-quality scrollable images, making it an invaluable repository that no single radiology department can match.⁴
- Continuous knowledge update:** Remaining up-to-date in radiology is vital as books can become outdated rapidly.

Expert-led online forums offer current information and guidelines, benefiting both mentors and residents. Neglecting these resources could result in outdated educational materials, emphasizing the importance of embracing the advancements of the digital age.

- Reality check:** Recognizing the challenges encountered by radiology residents is crucial. There is a stark difference in education quality and departmental support between tier 1 (metro) and tier 2/3 cities, highlighting the importance of online resources. For the radiology residents in tier 2/3 cities, these digital platforms serve as a great equalizer, bridging the gap and providing essential support for their learning and professional development.
- IRIA to the rescue:** IRIA’s proactive online teaching initiatives, particularly the webinars conducted by ICRI, aim to tackle the mentioned disparity effectively. With such online teaching initiatives, top national-level radiology teachers can now reach residents from distant institutions, providing vast outreach that was previously impossible without these online portals. Overlooking their immense potential would disregard the tremendous efforts invested by IRIA and ICRI.
- The future is now:** Experienced mentors are crucial in guiding residents through vast information, but dismissing online resources is incorrect.⁵ The digital era has revolutionized radiology learning,⁶ and educators must embrace online resources as a valuable complement to modern radiology education. Failure to recognize and adapt to this shift could lead educators to lag in their teaching approaches.

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7. Chat Generative Pre-trained Transformer (ChatGPT) in radiology residency: In the dynamic landscape of radiology education, the integration of artificial intelligence has gained paramount importance. A study by Biswas⁷ emphasizes ChatGPT's potential in pediatric radiology, while a recent study by Sethi et al⁸ has illuminated the role of ChatGPT in the practices of on-call radiology residents.

Biswas highlighted ChatGPT's promising role in pediatric radiology, including tasks like radiation safety guidance, imaging technique recommendations, checklist creation, and report generation.⁷ The tool's potential for image interpretation and administrative task streamlining was also emphasized.

Sethi et al observed that ChatGPT tool was utilized by on-call radiology residents, with 61.8% employing it.⁸ However, 57.6% participants found its information to be somewhat inaccurate, and 67.2% deemed it insufficient for diagnoses. The absence of images was a key limitation, with 100% indicating future usability concerns. Yet, 85.8% participants were open to using ChatGPT for report templates. Feedback underscored the need for images (100%) and references (74.5%) for reliability. It should be noted that the study by Sethi et al centered around the utilization of ChatGPT, the free version based on the GPT-3.5 architecture.⁷ In contrast, GPT-4 has the capability to "handle images as inputs," although this functionality is not yet available for testing by the general public.^{7,9} Additionally, BARD, Google's AI experiment, is equipped to manage image-related prompts.¹⁰ Consequently, the key limitation highlighted by the residents may soon become obsolete in the near future.

8. Blended learning: The authors emphasize the importance of practical radiology skills, which every radiology department should ensure their residents acquire. While online education cannot cover certain skills (e.g., ultrasonography, interventions), it complements traditional teaching methods.¹¹ Blending both approaches can enhance residents' learning, ultimately elevating radiology education in India.

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Conflict of Interest
None declared.

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