

Chapter 6

Modern Technology in Dermatopathology Education

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ABSTRACT

Technological advancement is steadily reshaping the field of medical education. In histopathology and especially dermatopathology training, the transition from glass slide microscopy (GSM) to virtual microscopy (VM) is serving as an instructional tool for medical students, residents, fellows, and experienced physicians. Online slide atlases and digitalized content are being utilized by educators and trainees to enhance and assess both individual and collaborative learning. With the expansion of mobile technology, new avenues are emerging for image attainment, in addition to remote instruction and consultation in resource-limited areas. Various computer-based applications (“apps”) and social media sites also serve as digital assets in education and training and allow for rapid dissemination and sharing of information around the world.

INTRODUCTION

Advancements in technology are inevitably changing the landscape of medical education. Textbooks and paper exams are being replaced by digital content across multiple educational realms. Undergraduate medical education, post-graduate residency and fellowship training, and experienced physicians are all facing this

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shift towards electronic material for teaching and clinical work. The advent of the electronic medical record, online academic resources, and virtual microscopy are just a few examples of recently implemented technological milestones. Virtual microscopy has gained popularity as a method of digitalizing glass microscope slides for high-resolution interactive viewing. Herein, we will focus on modern technology and its application to education in dermatopathology (DP), in addition to the undergraduate teaching of histopathology. Within these fields, the transition from glass slide microscopy (GSM) to virtual microscopy (VM) has been successfully incorporated into all levels of education through online databases, atlases, and digital slide sets. Digital expansion has also created opportunities in mobile microscopy and other computer-based applications for instruction and telepathology services. Image sharing through the internet and networking sites has not only been shown to be beneficial for educational purposes, but also for collaborative research and widespread dissemination of information. New technologic advances that efficiently and easily convert stained tissue on glass slides to digital images have made these educational innovations possible.

Education using digital microscopy is steadily being incorporated into the specialty of DP. Understanding histopathology is critical for both clinicians and pathologists in the diagnosis and management of numerous dermatologic disease processes. Relevant training is essential for dermatology, pathology, and DP fellows. The importance of DP to the education of a dermatologist is exemplified by the fact that 19% of the American Board of Dermatology (ABD) certifying exam in 2017 was dedicated to DP (American Board of Dermatology, 2017). As a result, dermatology residencies commit a great deal of educational time to DP. To highlight the importance of histopathological correlation for dermatology-trained clinicians, a previous study estimated that 25% of the residency curriculum is reserved for DP teaching; however, a more recent study found that number to be closer to 30% (Hinshaw, Hsu, Lee, & Stratman, 2009). In this latter study, only 19.2% of the programs surveyed reported utilizing computer-based learning, with preferential use of GSM for educational purposes (Hinshaw et al., 2009). Although DP instruction has evolved over the years as a result of technological progress, opportunity for further growth exists. Virtual technology in this field is presently underutilized, despite the vast potential for its future implementation and teaching roles.

BREAKING THE GLASS: THE TRANSITION FROM TRADITIONAL MICROSCOPY TO VIRTUAL MICROSCOPY

Glass slide microscopy has been the gold standard for both diagnostic and educational purposes for over two centuries. However, advances in modern technology have

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