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A novel "Google Classroom" based pathology education tool for trainees during COVID -19 pandemic: Impactful learning while social distancing

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To the Editor.-- The Coronavirus Disease 2019 (COVID-19) pandemic presents a global impediment in the delivery of education. This is especially relevant to pathology, where training happens one-on-one across the microscope. As the crisis hit, hospitals were forced to respond with measures to minimize close contact between staff. The situation was compounded by a reduction in the volume of cases. A survey of 279 healthcare facilities in the US by the College of American Pathologists (CAP) in April 2020 showed an average decrease of 64% in anatomic surgical pathology cases compared to the same period in 2019.¹ The pandemic has also served as an opportunity to expand the use of technology in education.

² Herein, we report our experience using a platform for education to facilitate a worldwide collaboration between pathology attendings and trainees

The Breast Cases Challenge (BCC) classroom utilizes the Google Classroom software, a free web service created by Google (Google, LLC) to help improve education via the internet and assessed via a web browser or through classroom app. The classroom is divided into pathology attendings (hereafter referred to as “teachers”) and trainees (hereafter referred to as “students”). Participation in the classroom is by teacher email invitation only, and each teacher is asked to invite one or more interested students from their institution. Teachers post a new case each week with a clinical vignette, a power point set of microscopic images and, in some cases, a series of topic related questions. Students post a differential or diagnosis and request additional studies over the next days. Immunohistochemistry or other student requested information is provided by mid-week with follow-up discussion surrounding differentials and existing literature from teachers and students. The students range from PGY-2 to fellows, while the teachers all have expertise in breast pathology and have been practicing for 5 to 25 years. The collaborating institutions include Montefiore Medical Center (Bronx, New York), Weill Cornell Medicine (New York City, NY), Yale University (New Haven , CT), Hospital of University of Pennsylvania (Philadelphia , PA) Danbury Hospital (Danbury, CT), Women’s and Infants Hospital (Brown University) (Providence, RI), University of Tennessee Health Science Center (Memphis,

Tennessee), All India Institute of Medical Sciences (New Delhi, India) and Hospital Alemão Oswaldo Cruz (Sao Paulo, Brazil).

Currently, the BCC has 16 active participants, including 8 teachers and 8 students. To gather data on the educational value of the BCC Google Classroom, we sent a survey to participants. Herein we highlight the results of this survey. Teachers and students were queried about how the BCC contributed to the training or practice of breast pathology, and whether the classroom provided unique educational opportunities.

Respondents noted that one advantage was the access to interesting, challenging, and unique breast pathology cases from multiple institutions across the globe. The classroom has provided opportunities for networking and research collaborations between participants. The discussion is stimulating and encourages students to explore the literature to arrive at a diagnosis. In real life sign-outs, there is limited room for a robust interaction when there are at most a few residents at the microscope. In the BCC classroom, there is an interactive dialogue between students and teachers. For the attendings coming from different backgrounds, this is an opportunity to develop a tolerance for difference in opinion and incorporate it into their practices. The classroom provides a forum for both consensus and common ground.

For students, one noted benefit of the classroom was that it provides a chance to sign out with different pathologists and learn new perspectives on how to approach a diagnosis. Both students and teachers noted that the classroom provides an opportunity to work at one's own pace, with time to digest and reflect on the discussion. One student noted that *"seeing how multiple different attendings handle borderline situations is incredibly valuable."* This student also stated that *"the greatest benefit of the Google BCC Classroom has been the fact that attendings have been sharing not only interesting and unusual cases, but also ones that require a bit of 'attending-finesse' or 'wordsmithery,'" and that he*

values the opportunity to hear multiple attendings provide input on everyday tasks such as grading lesions, ordering of ancillary tests, and writing comments. The classroom serves as a self-evaluation tool for the residents and fellows as they compare their own interpretations with observations posted by peers. Additionally, because the cases and discussions are saved, the forum has the potential to be a repository for future education. The classroom is also easily accessible: once the invited participants are notified via email; the cases and images are a few clicks away.

The pandemic has increased reliance on online educational platforms. When asked about partaking in other online academic forums, a majority of the participants responded as this being their first experience. There have been initiatives on Facebook (Facebook, Inc.) also that overlap with how our classroom functions. Like our classroom, it is free, easily accessible, and can be used on hand-held devices, desktops, and laptops. Discussion groups on Facebook are adept at addressing challenges in management and provide peer guidance.² Because Facebook is a social networking website, however, the accounts of the users are primarily set up for personal use. As such, there is potential for the overlap of their professional and private life. While a distinct professional page can be set up, it can be accessed by anyone and is not invitation restricted.² Additionally, because it is a public space with unrestricted access, it can be difficult to verify the credibility of the information. Drawbacks of other platforms like Twitter (Twitter, Inc.) include character limits and the challenge in keeping track of comments related to a post. In comparison, cases and discussions in our classroom are moderated by well-credentialed experts in the field and restricted to invited participants.

The Google Classroom has been a unique exploration into the concept of virtual pathology education, which we believe is widely applicable to all areas of anatomic pathology. The paradigm of *low-contact & high-interconnectivity pathology*³ is here to stay, and we hope that avenues such as ours will inspire similar initiatives.

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