

OBJECTIVES

Histology is a classic component of the first year preclinical curriculum at most U.S. medical schools. At the University of Michigan, the Histology module of the M1 curriculum consists of a total of 26 lecture hours in addition to 21 laboratory units. The laboratory units encompass an oral presentation by a faculty member accompanying a PowerPoint introduction and up to 3 hours of web-guided practical work using virtual microscopy. In addition, the students are provided with multiple traditional and electronic resources to supplement the lecture and laboratory instruction. These include textbooks, microscope stations with real histological slides, posters of electron micrographs and several series of downloadable PowerPoint files.

In this project we investigated the differential usage of these traditional and electronic learning resources and the study habits of first year Michigan medical students and how these parameters changed over the progression of the Histology component during the 2010-11 academic year.

METHODS

After the end of the 2010-11 M1 Histology component, email invitations were sent to all 168 members of the Medical Class of 2014 to participate in a Qualtrics-based, structured online survey that also contained a few open-ended questions. Participation was encouraged by offering four \$75 cash raffle prizes. 146 students (87%) self-reported on their Histology resource usage and studying habits, as well as their academic background. These responses remained anonymous, but linked for a planned subsequent correlation with individual course performances (not part of this poster).

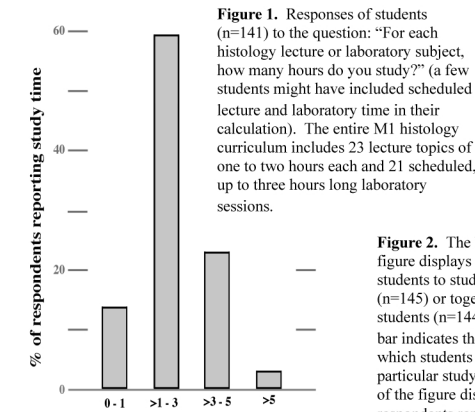


Figure 1. Responses of students (n=141) to the question: "For each histology lecture or laboratory subject, how many hours do you study?" (a few students might have included scheduled lecture and laboratory time in their calculation). The entire M1 histology curriculum includes 23 lecture topics of one to two hours each and 21 scheduled, up to three hours long laboratory sessions.

Hours of reported study time per lecture topic

Figure 2. The bottom part of the figure displays the tendencies of students to study histology alone (n=145) or together with other students (n=144). The shading of the bar indicates the frequency with which students reported using a particular study modus. The top part of the figure displays the percent of respondents reporting an increase (green arrows) or a decrease (red arrows) of a specific mode of study over the academic year.

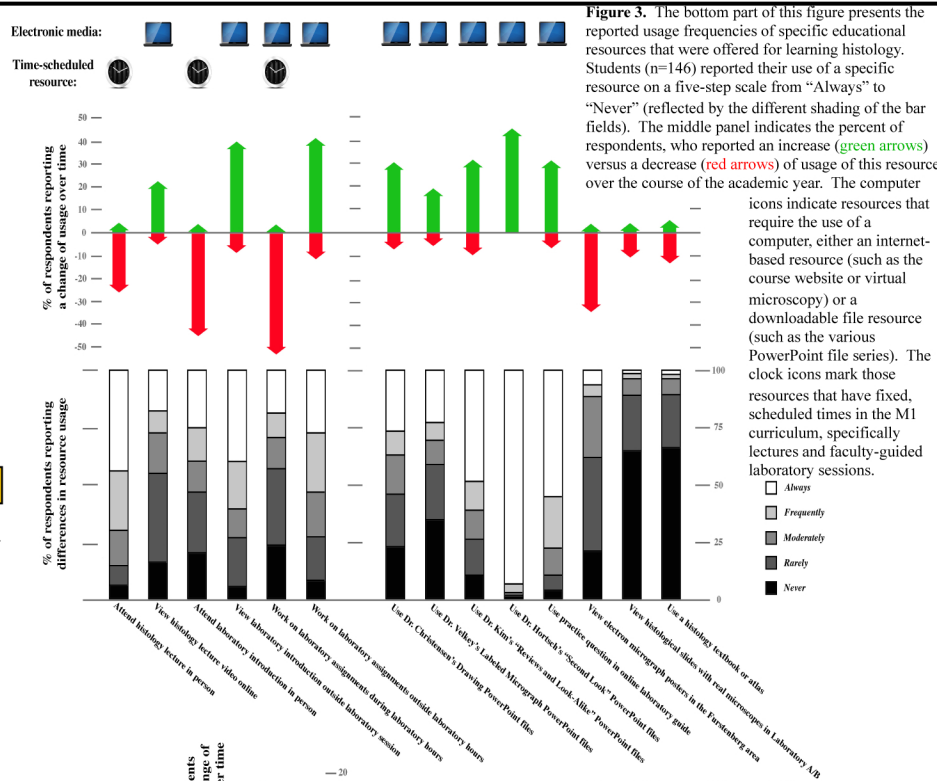


Figure 3. The bottom part of this figure presents the reported usage frequencies of specific educational resources that were offered for learning histology. Students (n=146) reported their use of a specific resource on a five-step scale from "Always" to "Never" (reflected by the different shading of the bar fields). The middle panel indicates the percent of respondents, who reported an increase (green arrows) versus a decrease (red arrows) of usage of this resource over the course of the academic year. The computer icons indicate resources that require the use of a computer, either an internet-based resource (such as the course website or virtual microscopy) or a downloadable file resource (such as the various PowerPoint file series). The clock icons mark those resources that have fixed, scheduled times in the M1 curriculum, specifically lectures and faculty-guided laboratory sessions.

Among all learning resources, electronic media were clearly favored and their usage increased over time (Fig. 3). Among traditional learning resources, only attending lectures in person remained relatively popular (>43% of the class states that they always attended the lecture in person). Nevertheless, students reported that their lecture attendance decreased over the course of the academic year, whereas their viewing of lecture videos increased. In general, the use of electronic media (course webpage and downloadable PowerPoint series) was more popular than the use of traditional teaching resources (laboratory introduction, electron micrograph posters, real microscope stations or a histology textbook). Usage of all electronic media increased over time, whereas the use of all traditional teaching media declined.

RESULTS

Most students (58.9% of respondents) reported spending 1 to 3 hours of study time per lecture/ laboratory topic (Fig. 1). A majority of students always studied alone (>67%), whereas less than 3% of students always studied as part of a group (Fig. 2). Over the academic year, this preference for studying alone became even more prevalent.

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Figure 3 also demonstrates that over time, students abandoned resources with a fixed time schedule (specifically scheduled lecture and laboratory sessions) and preferred those, they were able to use at times of their own choosing.

As shown in Figure 4, when given a choice between a paper version of the lecture notes and downloadable lecture PowerPoint files, the paper version or a combination with the electronic version still remained popular among M1 students (presumably to facilitate note-taking during lectures). In contrast, the electronic, web-based version of the laboratory manual was strongly preferred over a paper-based format.

CONCLUSIONS

First year medical students at the University of Michigan are inclined to study histology alone rather than in a team setting.

Over time they will gravitate to time-flexible learning opportunities, which allow them to study at a time (and location) of their own choosing.

With the exception of traditional lectures, computer-based teaching resources are strongly preferred and their use sharply increased over time.

ACKNOWLEDGEMENTS

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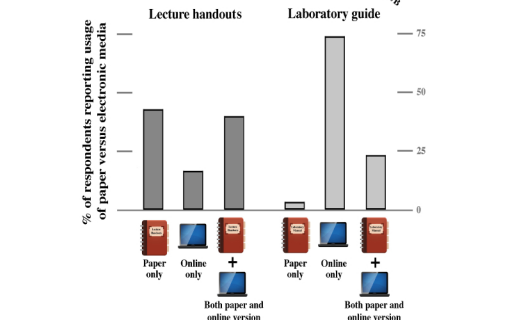


Figure 4. This figure displays preferences of students to use a paper copy of a specific resource versus the equivalent online downloadable file (lecture PowerPoint files) or the histology course website (<http://www.med.umich.edu/histology/>). The bars indicate the percent of students reporting the exclusive use of either the paper or the online version or of a combination of the two versions for the lecture handout (n=145) or the laboratory guide (n=144).