

Innovative methods in Medical Education: bridging Histopathology and Internal Medicine through the use of experiential learning

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Background

- Amid the latest pedagogical trends in medical education, there have been considerable reform efforts, mainly due to the ever-growing body of information to be delivered by the professors and assimilated by the students. One way to address this matter is to incorporate experiential learning models in the university curricula. This way, students learn by doing.
- The purpose of the present study was to (i) assess the **efficacy of applying active learning methodologies** in the undergraduate Histopathology medical education curriculum, and (ii) acquire **student feedback**, not only regarding these teaching methodologies, but also to explore the students' motives and perceptions of Histopathology education, in general.

Methods

- Prospective study involving third-year medical students enrolled in the Histopathology course of our department, during the winter semester of 2022-2023.
- An optional educational intervention was offered, while both cases and controls observed the already established curriculum. The students had already taken a mid-term examination, the grades of which we used to compare our study's participants with the rest of the class to ensure the comparability of the two groups.
- Our educational intervention consisted of 2 main activities:
 - the interdisciplinary **case-based learning seminars**
 - the **group-based presentations** of Histopathology cases.
- In order to evaluate our intervention, we compared the final exam grades of the students who participated in these activities with the control ones. In order to obtain feedback, an online questionnaire was distributed to the students at the end of the semester, with a different set of questions for the two study groups.

Results

- 348** students recruited (**35** participated in our intervention; **313** control group).
- Our intervention group had better baseline performance in the mid-term exams compared to the controls, but after performing a stepwise multivariate regression analysis (independent variables: sex, mid-term exam grade and intervention participation), we showed that students who participated in our intervention scored **1.3/10 points** more than the controls, other variables remaining constant.
- As for the **questionnaire**, from the data gathered by the intervention group we saw that
 - Our students generally enjoyed participating (**Figure**).
 - Most students thought that the intervention helped them to better understand Histopathology and to retain information easier.
 - Since one of our main educational objectives was student engagement, the fact that **25 (78.1%)** of participants claimed to have answered at least one clinical question during the intervention was viewed as a success.
 - Interestingly, **20 (62.5%)** students answered that they participated in the intervention because they already valued the Histopathology professor's teaching style, indicating the importance of the educator in the students' interest in the learning process. Also, five (**15.6%**) students answered that they participated in search of a better grade in the final exam, highlighting that many university students still focus more on grades, rather than knowledge.
- From the **data** gathered by the control group:
 - Paradoxically, most students requested a more clinical approach, additional practical lessons, more interaction with the professor and team-based learning, all of which being aspects of our intervention.
 - When asked why they did not attend our intervention, almost half of them replied that they did not have enough time in order to participate or preferred to spend this time studying for the final exam.
 - Fortunately, when asked about their opinion about the usefulness of Histopathology in their future medical career, most students agreed that Histopathology will play an important role in the latter.

Conclusions

- Active learning** and **interdisciplinary methodologies** seem to be of value in undergraduate Histopathology teaching.
- However, the educator's appeal to his students as well as shifting the students' focus from grades to **actual learning** are important factors to consider irrespective of the educational method used.
- As the ancient Greek philosopher Plato said, "*No tools will make a man a skilled workman, or master of defence, nor be of any use to him who has not learned how to handle them, and has never bestowed any attention upon them.*"

Figure. Student satisfaction score in a 10 - Likert point scale

