

# EXPANDING THE RESIDENT EXPERIENCE AS AN EDUCATOR-TEACHING UNDERGRADUATES IN AN EXPERIENTIAL NEUROSCIENCE IMMERSION COURSE



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## Background

Physicians must be, in essence, consummate teachers. They must condense, interpret, and summarize highly complex conceptualizations for an array of consumers (patients) of tremendously varied medical/educational sophistication. These concepts must be understood, processed, and acted upon by the consumer. Thus, the better the “education” from their physician, the better the consumer can participate in a truly “informed” consent, and thus, shared decision making.

Neurosurgery training features a very heavy focus on critical thinking, particularly with respect to surgical decision making and critical care, and the acquisition of high-level technical skills. Little attention has traditionally been paid to the development of teaching skills in neurosurgical residents. We believe that exposure of our residents to wide and varied teaching opportunities will make them better educators overall, and thus better and more efficacious providers and surgeons.

We have long involved our residents in teaching efforts with medical students, other residents, and allied-health sciences students. In 2016, we initiated an experiential undergraduate course at a major university, featuring deep immersion into the clinical neurosciences. We sought to invest our residents in the conduct of the course in order to expand their experience as educators. We felt the course provided an exceptional opportunity for residents to practice breaking down the complexities of clinical neuroscience to their more “digestible” components, for medically naive students. We wish to report the response of our residents and their students to this unique effort.



## Methods

In conjunction with the Virginia Tech School of Neuroscience, we designed, initiated, and conduct twice yearly, a semester-long, experiential, deep immersion, undergraduate course entitled “Clinical Neurosciences in Practice.”

In this course, our team holds weekly seminars on various nervous system disorders, their medical management, and the related socio-economical and economic ramifications. Students prepare discussions on various disorders and evaluate and critique related scientific journal articles. Students, then spend 4-6 hours per week with our team in all activities including surgery, rounds, and consultations. They actually scrub in on several operations each during the semester. Students write weekly papers on various “related questions of the week.” They prepare personal statements and undergo mock graduate school interviews, patient encounters, and even malpractice depositions. As a “final exam”, students must give in-depth presentations on specific patients, their radiological studies, their hospital courses, and related discussions about their disorders. They are also required to take a full night of neurosurgical call with our team twice in the semester.

We involve our residents in every component of this unique course. They deliver the lectures and seminars. They shepherd and interact directly with the students on the in-hospital days. They act as mentors to 2-3 students per semester. They supervise the students on call. They are involved in the mock interviews and formal presentations. They help with individual essays, topic assignments and critical review of related papers.

We have evaluated the resident and student experience via “paper and pencil” surveys, interviews, and group discussions. Residents were surveyed about an array of related concepts including the impact of the course on their work schedules, their mood, their interest levels, their enjoyment of work, their comfort as educators, etc.

## Results

Responses from students were uniformly positive. Most students felt strong connection with the residents, and felt they learned the most from the residents. 60% reported spontaneously that the course was the greatest educational experience in their lives. 20% wrote that they would now consider a career in medicine due to the class. 20% noted that although they had no intention of going into medicine, the course heightened significantly their respect for residents. All students remarked on the selfless dedication of the residents and surgeons.

Below are a couple of student responses:

“Without being too dramatic, this is the single best class I have taken in my academic career. It has provided me with invaluable experience that I will remember for the rest of my life. This unique program has exposed me to the world of medicine in a way few other opportunities could.”

“The opportunity to participate in this course was a once in a lifetime experience. I grew not only professionally, but also morally and emotionally.”

## Results ctd.

Residents report that, realistically, the course adds a sizable load of work to their schedules, and that the presence of the students adds to the confusion and immediate stress of the day.

On the other hand, they reported that the presence of the students elevates their moods, adds to the excitement of the day, lowers boredom, lowers frustration levels, increases interest, increases pride in work, increases energy, provides a break in the monotony, and is an overall major positive. They report feeling that they are contributing to a better understanding of neurosurgery, and medicine as a whole. They report feeling more comfortable conveying complex medical concepts to those of limited medical sophistication. They also report satisfaction and pride in being involved in university-level academics. All report that they would not trade the experience in, and that they strongly desire for the course to be continued and expanded.

Some resident quotes and observations follow:

- “The adage certainly seems to hold that the best method to really learn something, is to have to teach it!”
- “I have learned better how to break down all that we do into simpler terms and concepts. I have already used these skills on my patients and their families.”
- “Going to the University and teaching in its classrooms makes me feel like I am a part of something much bigger- it gets me out of my isolated shell.”
- “It is amazing to see the students start to get it- start to see what we are seeing on the MRI’s, start to notice the emotional states of our patients and their families, start to understand what we are trying to accomplish in our interventions.”
- “I am a better doctor for this experience. I wish I could continue something like this throughout my career.”

## Conclusions

We feel that this experience is of great benefit for our residents. We believe it makes them better communicators and educators. Although it adds to their workload, they uniformly enjoy the experience and wish for it to continue. In fact, they eagerly volunteer to conduct the seminars and hosts students at the hospital. They also greatly appreciate the academic titles the university has generously afforded them. As an added and important benefit, the experience appears to elevate multiple indices of wellness, and thus potentially contributes to resident resilience. We believe that resident training should involve ample opportunity to teach at multiple levels with all kinds of learners. We believe this will contribute to residents’ skills as educators, both for future generation of learners and for their patients, and will contribute to their overall wellness.

