

WHEN, WHERE, AND HOW I AM STILL IMPROVING MY SKILLS AT HELPING STUDENTS LEARN

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Most jobs are too small for the human spirit – Studs Terkel
Teaching is not!

Thank you for honoring me with the AB Baker Award. The list of others so honored before me is humbling indeed. My family will also make certain that I stay humble. My wife, Cynthia, who owns a Daube's Bakery in Rochester, Minnesota commented "Working as long as you have, you were bound to get some kind of award." And then my nine year old grandson asked "What did Grandma bake to get an award" when he noticed the front-page article in the AANews on our coffee table announcing that Daube is awarded the AB Baker award.

Passion

My conclusion is different than Cynthia's. The awards were not given for longevity. Each of the awardees in the last six years, Michael Aminoff, Marty Samuels, Ken Swaiman, Sid Gilman, Howard Barrows and I, did all graduate from college in the late nineteen-fifties or early nineteen-sixties. but these men were all honored for what keeps them working, their passion for teaching. A "passion" is an ungovernable devotion to some activity, a deeply stirring emotion. My passion for teaching keeps me up past midnight when Cynthia thinks that I should be in bed. My love of teaching is a critical element to what has kept me in the active practice of Neurology, instead becoming a chef in my wife's recently remodeled and renamed restaurant, Jasper's Alsatian Bistro.

The theme of my talk today is the passion you all have, a passion for teaching. The demands of academic neurology preclude success as a "triple threat" or "iron man". As Marty Samuels said in his talk in 2006, this ideal "leads to disappointment, cynicism and frustration as the next generation of neurologists find themselves failing to be able to live up to a distorted image of the 'days of the iron men.' The closer one gets to the giants, the easier it is to see their feet of clay." (1) Thus it is a passion to want to devote energies to the less well recognized role of teaching neurology.

Neurologic Education Constraints

Tim Pedley summarized the implications for neurologic education of the "changing face of academic neurology" with his quote from Charles Dickens *Tale of Two Cities* (2).

It was the best of times; it was the worst of times. It was the age of wisdom, it was the age of foolishness. It was the epoch of belief; it was the epoch of incredulity; it was the season of light; it was the season of darkness. It was the spring of hope; it was the winter of despair. We had everything before us; we had nothing before us.

Advances in basic science and expanding areas of investigation are surrounded by "political, regulatory and financial upheaval" threatening much of what we do. The resulting financial constraints on academic neurology departments has required an even greater passion for teaching to keep us on the necessary track. Dr. Pedley outlines the needs for:

- development of a 4-year neuroscience educational core (or pathway)
- defining the essential residency core curriculum with appropriate flexibility
- formalizing advanced fellowship training in essential elements of an academic career
- political action for a debt forgiveness program for young faculty members

Menken's recommendations take a broader view of the essential needs for medical school education to include (3):

- Greater role for patients in developing medical education programs
- Masters degree level competence in public health to better deal with population health
- Multidisciplinary teaching to provide a balanced education experience

The Future Still Looks Bright

These constraints would seem to be enough to douse a passion for teaching. But despite these constraints much is occurring in neurologic education that you are more aware of than I. The little I see of educational technology and educational research makes me confident that all of you together will keep your passions burning, and continue to advance neurologic teaching for the benefit of our patients.

Application of advances in educational technology summarized in the January 3 issue of Science to neurologic teaching can build on the technology skills that students bring with them. (4) The concerns voiced by Gelb five years ago that “current practices in neurologic educationare based largely on intuition and tradition rather than empiric evidence” were accompanied by recommendations. (5) These have been extended in a recent, extensive review of the opportunities and impediments for neurologic education research that suggest approaches for extending and testing the concepts of evidence-based practice, if we can learn vocabulary and methodology of education research.(6)

Burt Sandok

But my objective today is to give you some personal examples of what my passion for helping students learn has led me to. The first example is Burt Sandok who received the AB Baker award many years ago. Burt led four of us young clinical neurologists to build the Mayo Medical School basic neuroscience course 25 years ago. The course has remained a success by student accolades and their neurologic knowledge long after Burt, Barbara Westmoreland and I left it to be carried on by bright, younger neurologists, who are better able to keep abreast of the fundamental changes in our understanding of pathophysiology of neurological diseases.

Burt demonstrated his passion in convincing the hierarchy to allow us to do something different – integrating clinical neurology problem solving as the goal of teaching neuroanatomy, neuropathology, neurophysiology and neuroembryology around the clinical concepts of systems and levels of neurologic disease. There was reluctance to have us conduct the only Saturday classes in the school – but the students wanted it.

Burt’s passion was more evident in his work with the students, e.g. a lively, 20 minute, interactive, “Powerhouse” reviews of nervous system connections that included throwing Powerhouse candy bars to students; and his interactive, small group discussions based on student questions like how does a “sodium pump” work. The three of us are indebted to Burt for showing us his passion. and how we can all learn from our innovative colleagues if we are willing to take risks.

But what are some of the personal experiences where my passion has been kindled?

- ZingTrain
- EMG residents
- CNP technologists
- AAN topic chair
- Qwinkle
- Cello
- Animal research

As you may guess my wife Cynthia is better known in town than I am; I am known as Cynthia’s husband. She now has a full-line bakery and two restaurants. Her work shows her everyday that success depends on the product, customer service, and price. The first two depend entirely on her 45 employees, especially when she is on a trip with me, as she is here in Seattle. Her employees have been with her between 6 months and 22 years. They learn their jobs from her, their managers and from their coworkers in the inverse order. When problems arise, it is most often because of improper training.

Daube’s Bakery Training Programs

A number of years ago Cynthia figured that if I am a professional educator, I might be able to help improve employee training. So I went to work with Cindee, her general manager. Now to understand what this means, you need to remember that my sole function in her businesses had been quality control - eating the product. That meant that the employees that I was trying to help train knew much more about bakery and restaurant functions than I did. So I served to build the structure of formal training programs around Cindee’s knowledge with Cynthia occasionally reviewing what we were teaching.

Based on what I had learned teaching neurology, I helped put together classes with one or two sessions each on cash register operation, cake marketing, product display, taking orders, coffee/cappuccino/espresso preparation,

opening and closing the stores and telephone courtesy. Working with a bright, knowledgeable, high school graduate who started at, "I told them once what to do, why don't they do it" was a challenging, but fascinating experience. We had study plans, quizzes, and hands on demonstrations. The classes have in place for a few years, repeated every couple of months for each new group of employees and going OK, but without as much retention as we had hoped for.

One advantage of being married to a bakery owner was that I got to go to retail bakery conventions where I gave no lectures, classes or demonstrations, and had no committee meetings. I enjoyed the products being made with examples of the new ingredients and equipment on display, and occasionally sat in on half-day courses when Cynthia was busy with other commitments. One of these was on employee education – an eye opening experience given by Amy Emberling - the likes of which I do not recall having seen at the AAN. Amy was so impressive that Cindee and I spent two days a year ago at a seminar called "ZingTrain Bottom Line Training" at Zingerman's Deli in Ann Arbor, Michigan.

ZingTrain

Cynthia and I had been introduced to Zingerman's 25 years earlier by Jim Albers, U of M. neurologist and EMG'er, when I was visiting faculty in EMG. It was one of the best bakery-delicatessen's that we had ever seen, and we look at them in every city we visit. Over the years Zingerman's grew from a small, single business to a highly successful, multi-faceted, \$35 million operation with its own bakery, creamery, restaurants, catering service, coffee company and mail order business. Part of their success came from ZingTrain, their internal employee education program. The training program was made available as seminars for other businesses in 1994., Among their attendees have been not only other bakery-restaurants, but also the Italian trade commission, Blue Care Network, Michigan Museum Association, Booksellers Association, Smithsonian and University of Michigan Transplant Center among many others.

The seminar was conducted by Maggie Bayless, MBA, who had worked as project manager and instructional designer for corporate clients that included Arbor System, IBM, NCR, and the Ford Motor Company. She developed ZingTrain with the owners and Amy Emberling, artisan baker and co-manger of Zingerman's Bakehouse.

It was a truly exciting experience for both Cindee and me that kindled my passion with new ideas not only for teaching at the bakery but also at Mayo. We learned simple basic principles and their application in specific situations. The bakery educational program was revamped based on our new insights into teaching and learning.

We were first reminded that since all students are adult, the principles of adult learning need to be understood:

Adults Must:

- Have a reason to learn
- Be involved in the learning

Adults Learn:

- By building on experience
- By doing
- In different ways
- At different rates

Adults Need:

- A variety of methods
- A meaningful program
- Constructive feedback

Adults Appreciate:

- An informal environment
- Being treated with dignity and respect

Learning Styles

- Visual
- Auditory
- Kinesthetic

We came away having accomplished our objectives for the seminar:

1. Name 4 Training Plan Questions and use them to develop Training Plans
2. Name 5 Steps to Effective On-Shift Training and use them to train your staff more effectively
3. Demonstrate how to use new training tools and techniques

4. Call upon a network of peers to help get past roadblocks
5. Take responsibility for the effectiveness of your own training

The classroom training program begins with the student agreeing to take responsibility for the effectiveness of their training and the trainer agreeing to the “**Bottom-line Four**”:

1. Document clear performance expectations - what and by when
2. Provide training resources – how will they be made available
3. Recognize performance – define how it will be measured
4. Reward performance – define the rewards and consequences

Specific examples of each of these for different work environments were discussed.

The “**On-the-job Five**” steps needed to learn hands on skills are:

1. Prepare yourself and the materials
2. Tell the student exactly what they will learn to do
3. Show the student how to do it
4. Ask the student to do it
5. Review what they did with suggestions for improvement

We had to demonstrate the skills we were learning in an active, small group, interactive session with other students from a wide range of businesses. Among the exercises was the Acme Sandwich shop program on the first day and the ZingShoe training the trainer session on the second day.

These basic principles applied openly and documented at Daube’s Bakery and Jasper’s Bistro have made measurable improvements in employee skills and customer satisfaction. They only worked because there was:

1. Management involvement - Cynthia
2. Focus on learning rather than teaching – general manager attitude
3. Documented expectations – integral part of each session
4. Performance evaluation – integral part of each session and follow-up evaluation
5. Understanding that it's never finished – need for course improvements already apparent

Resident EMG Program

ZingTrain and my fun with the bakery training program have kept me excited about my work, but so have a number of other experiences. Resident and fellow training in EMG is another of these. Neurology and physical medicine residents spend 2 months full-time in clinical neurophysiology learning the basics of EEG, EMG, nerve conduction studies, evoked potentials, autonomic testing, sleep studies, vestibular testing and the movement laboratory. Physical medicine residents all spend an additional four months in EMG, while neurology residents spend this four months in EEG, EMG or other electives. None of the residents have had any experience with EMG or NCS; they come to learn a “new language and skills”. While many of the basic steps in ZingTrain were already in place, applying the **Bottom-line Four** more formally has helped the residents focus and learn. “Lectures” cover the same material much more quickly and informally. The residents are expected to read assigned material and look at the slides ahead of time, so that the “lecture” focuses only on the areas that need clarification fostered by short, interactive, verbal and written quizzes on the material. Their needle EMG skills training includes the **On-the-job Five**; a discussion and demonstration of needle electromyography on one of the residents the first week is followed by resident EMG testing on each other on basic muscles with staff oversight and guidance during the following six weeks with two half-days of fresh-frozen cadaver dissection. Two formal examinations on EMG and NCS skills occur during the initial two-month CNP block. Successful mastery of the skills is required before the resident can begin patient studies. Residents not staying on for EMG do not participate in the “on-the-job” EMG training, but do participate in the “lectures” and quizzes.

Clinical Neurophysiology Technology Program

A different, but equally rewarding educational challenge are the high school graduates in the Mayo CNPT program obtaining an associate degree from the local junior college through a combination of junior college classes and on the job training in all the subdivisions of CNP. They are an impressive group to work with. Many are married with children and/or working part-time jobs. During their second year I was asked to give them 7:00 AM lectures on the diseases that they had already encountered in their clinical rotations. In order to bring about greater student involvement and learning, my sessions have evolved over the years to a “Socratic” approach discussing written material that they receive ahead of time, supplemented by models of the spine, nerves and muscles, by simplified diagrams of anatomy connections, and by work sheets tied to their work in the laboratory.

For example, for one work sheet asks that they list the changes in nerve conduction studies that occur with pre-ganglionic and post-ganglionic lesions for radiculopathies at each of the cervical and lumbar levels.

Helping a Diversity of Students Learn

A different kind satisfaction comes from helping individuals to learn, who are not students in the usual sense. As an example, some of you know, that each of the 2500 abstracts submitted to the AAN for this meeting was reviewed and ranked by two or three experts in the field. Topic chairs bring all the rankings and other information together to establish platform and poster sessions under a number of AAN guidelines and strict deadlines on difficult judgment calls. Science committee members make the final decisions based on input from their topic chairs. The task of topic chair, an expert in the area, is a complex process can be frustrating, particularly for busy academic neurologists. Recently, as science committee member, I was able to work with a topic chair who was ready to resign, by reviewing the basic requirements and choice constraints by phone over Christmas. With my guidance we worked through each of the decisions that had to be made with an excellent outcome. The topic chair expressed deep thanks, and is comfortable continuing and the accomplishing the tasks quickly and easily next year.

Qwirkle

My two children and six grandchildren spent the holidays with us. Interactions among the children and us were markedly reduced by their electronic devices. These provided them with private entertainment and connection to their friends at home. The adults agreed that I would be the activity director, bringing the children and adults together in the evenings with board games (which the children refer to as bored games). To make it more enticing I had brought a new game, Qwirkle, an interesting variation of dominoes. The challenge was to teach the six, less than interested children how to play the game. Success was achieved by using the **On-the-job Five** steps. I described the tiles (a mixture of colors and shapes), how they could be connected and how they were scored. We then played a practice game during which I made corrections of misunderstandings of the rules and scoring. They learned quickly and we all enjoyed it. Two adults joined in and the kids played it again on subsequent days.

Cello

Cynthia, who had played piano and sung in the church choir in the past decided to take up the cello two years ago. She has done remarkably well. I am non-musical, and do not apply any of the ZingTrain program to her cello playing. Because of Cynthia's cello avocation and my interest in teaching, John Noseworthy sent us a link to a remarkable video of Benjamin Zander teaching cello to a high school student on PopTech. The video beautifully illustrates the importance of the teacher in bringing about lasting change in a student. I urge you to view it (7) – you will enjoy it as a teacher, whether you are musical or not. My entire family, including the kids, stayed and enjoyed the entire 30 minutes.

Unsuccessful as a Teacher

The mission of the AAN Animals in Research Task Force of the Science Committee that I chair. is teach AAN members and their patients the importance of animal research to the care of our patients. Our goal is to that neurologists will make their patients aware enough of the issues that they will support animal research, and not be led astray by the statements and actions of animal rightists. Despite a number of different efforts we have not achieved our goal. Given the needs of adult learners mentioned above, it will be difficult to succeed. Suggestions would be welcome. Take a look at the AAN Website listed in the references (8)..

It has been my good fortune to have worked with so many marvelous students and I thank them all. I still pinch myself to be sure that I am not dreaming that I am still being paid to work with them.

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