THE ABCs OF INNOVATION

ASPIRATIONS  BALANCE  CREATIVITY

BY SUMITRAJIT DHAR
Let us invest time, thought, and energy into thoroughly evaluating the current audiology education model, and work toward a model that is based on the health-care needs of the nation today, as well as those that we can anticipate 10, 20, 30 years into the future.

The topic on hand is innovations in audiology education. Being critical thinkers that we are, we have to start by asking the question—why do we have to innovate? After all, we currently have a motivated, knowledgeable, passionate group of audiologists as examples of everything that is right about the current educational system. We could just stay the course and ignore the tsunami of changes in higher education and health care already underway. I am being facetious of course. Once you seriously start thinking about the shifting landscape of service delivery, it becomes obvious that the list of reasons to innovate may be long enough to paralyze us. However, paralysis would be the wrong posture for audiology to adopt at this time of great change (and opportunity) all around us.

I have chosen three reasons to provide a framework around our discussion about the need for innovation in audiology education.

**The Future Is Getting Fuzzier**

Remember manual focus cameras? You turn the focus ring one way and objects closest to the lens come into focus. Turn the ring the other way and everything in the distance pops into focus. Well, imagine one day you turned the focus ring but objects in the distance simply refused to come into focus. Here is the bad news—we are living in that day.

The future models of hearing health-care delivery are getting harder to predict. Forget the distant future; the immediate future and even the past is being challenged every day. You may have left your cochlear anatomy class all excited about the tip links of the stereocilia. Today, these tip links are still major players, but are not the only game in town. We have discovered horizontal links and the role they play in determining stereociliary stiffness. You may have danced all night long to the basilar membrane traveling wave when you finished that final exam. Turns out the new game in town is a possible second
The ABCs of Innovation—Aspirations, Balance, and Creativity

traveling wave on the tectorial membrane. Stop! Stop you say. Audiology can be many things but it is not schizophrenic.

True, audiology is not schizophrenic, but the pace of scientific discovery has accelerated to such magnitudes that scientific dogmas are toppling every day. What do you teach in this world? Today’s fact could easily be tomorrow’s fallacy. Perhaps the only thing worth doing in school is “learning how to learn,” which is perhaps one of the oldest cliché’s of higher education. But folks, we are not talking about accumulating incremental knowledge any more. We are talking about abjectly erasing established knowledge and starting over. Perhaps we need two types of CEUs—continuing education units and continuing erasure units.

Traditional Science Has Lost Its Monopoly

Life used to be easy. You took the immutable basics of science from the textbook and modified that knowledge over time from journals or presentations at conferences. Not so anymore. All of the action is no longer in science and technology labs at universities or research and development divisions of established companies. Just recently, a 16-year-old in Kentucky demonstrated a $60 device that would test your hearing and then automatically program itself as a hearing aid. And we learned about this not from the Journal of the American Academy of Audiology but from CNN Money. Of course this 16-year-old is not about to drive the entire industry to bankruptcy. I am simply marveling at the fact that such proposals from such unexpected quarters are appearing more and more frequently.

Is our educational paradigm preparing audiologists to assimilate innovations coming from every which direction into their practice? And will they be able to critically evaluate the validity and efficacy of a solution before adopting it? Not being responsive will be a ticket to extinction. Not being appropriately discriminating will make quacks out of us.

The Dollar Is Done Stretching

The assault on the economics of higher education is in full swing. College has to be affordable but tuition increases are legislatively restricted while state support is rapidly declining. Private institutions are deciding to invest in making undergraduate education more accessible. And all universities—public or private—appear to be determined to maintain a vibrant academy by making PhD education as affordable as possible. But the student in a professional program is a different beast. This student is bound to be gainfully employed the day before graduation, after all. In a field like audiology, where the Bureau of Labor Statistics predicts a growth of 30 percent in the next 10 years, each graduate might have more than one job lined up. What a luxury!! This makes it easy for planners to think that not only should this student cover the cost of her education, revenue from these programs should be available to cover the deficits in other areas of the university’s academic enterprise.

Let’s face facts, the cost of audiology education is probably going to grow over time. By itself, this would not be a problem if the cost of educating a health-care professional did not contribute to the cost of the nation’s health-care system. But,

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unfortunately, the health-care provider is seeing his or her share continuously shrink as the regulatory, technological, and administrative overheads soar at his/her expense. So we have to innovate to make these careers and the education of future professionals financially viable. Perhaps the effective innovation in this area has to be locally appropriate as the opportunities and aspirations are likely to be different at different institutions. Some institutions have decided to tackle this particular issue, to the extent possible, by introducing agility to its professional programs. We will revisit the issue of efficiency and agility later.

These three reasons may not be the most important to innovate but they certainly are a part of a long list. If we are convinced that we are due a good look at audiology education, I would like to discuss a possible response to these factors. I will describe some things already being practiced at various institutions and some others that we should aspire to adopt. I want to emphasize that I approach this discussion simply as a matter of fact, without attaching any evaluative judgment about the quality of any training program. This part of my story is about my aspirations as an educator, balancing them against the institutional priorities where I happen to teach, and being creative within this framework of local reality.

**Unintended Consequences of Innovation**

Let’s start with where I teach. Northwestern University granted its first PhD in 1936 to Raymond Carhart, the “Father of Audiology.” The university has grown tremendously in stature since then and is today consistently amongst the top 15 universities in the world. This rise in prominence has come largely on the backs of a growing research enterprise that attracted $620 million in extramural funding this last calendar year. Guess what the university rewards its tenure line faculty for the most? Then try to guess what the tenure line faculty spend most of their time doing?

In this environment, with all of the attention on the superstar research faculty, professional training was at
risk of becoming an afterthought. Housed outside the direct line-of-sight of a medical school and hospital, clinical faculty in our department were at risk of losing the position of importance they should hold in a professional training program. Our innovative response has been to slowly start establishing a triple-layered operating system. A research layer populated by field-leading scientists, an independent clinical layer with nationally recognized experts in specific areas of hearing and balance care, and an educational layer with faculty whose area of academic interest is the scholarship of teaching and learning. A structure that may be just common at other institutions has been incredibly rewarding and satisfying to create at my institution because it needed a cultural shift. My colleagues became tired of hearing me say things like, “only a great clinic can aspire to train great students.”

So focus on the clinic first and the students will benefit automatically. Interestingly, once we started to essentially segregate ourselves into layers, it became much easier to build bridges across these layers than it was to try and act like everybody was made out of the same cloth. People come to the table as equals to discuss collaboration, just as two scientists would discuss a collaborative project. This layered but integrated approach is an example of something that may be mundane for some programs, but is a local innovation that is making a critical difference in our lives, the lives of our students, and the lives of our patients.

We also yearn for students entering audiology to have a solid foundation in the basic sciences. Lois Elliot and colleagues started an undergraduate program at Northwestern in the 1980s ending in a major in human communication sciences. The requirements are mapped to a pre-med curriculum and indeed the major serves as one of the pre-med majors on campus. The major attracts incredible students. But here is the unintended consequence. Of the forty or so students in each class, approximately half go to medical school and only one or two enter audiology. So here we are fighting against the natural hierarchy of societal norms, parental desires, and the perceived professional hierarchy in the health-care delivery system. We are not ready to abandon our strong
The ABCs of Innovation—Aspirations, Balance, and Creativity

curriculum that has been grounded in basic science, but rather are continually trying to highlight the rewards of audiology as a career. After all, when the future is fuzzy, your best bet is to see the present as clearly as possible and gather all the tools that might help you understand the future, whatever it might hold.

Finally, our approach to AuD education became really clear the day we agreed on a set of core values that we wanted every student to leave with. It is important for me to point out that these core values do not in any way replace the core knowledge and skill thresholds that we expect every student to obtain before graduation. The core values of responsibility, leadership, and critical thinking form an intentional parallel layer that is woven into every classroom, clinic, and laboratory experience. Students attend a weekly core meeting to discuss readings on leadership, professional responsibility, and science-based practice guidelines. We are beginning to emphasize science-based practice, rather than evidence-based practice, to address increasing amounts of noise in the evidence space. And being able to critically evaluate the evidence against first principles, we believe, will be important in maintaining and expanding the scope of audiology practice.

Ubiquitous Data

I was recently forced to abandon my 20-year-old beloved Toyota for a gently used Toyota Prius. My head almost exploded when I first looked at the dashboard of this car. There is so much information on display, changing in real time in a context-sensitive way. It only took a few days though for my brain to start using all of this information in a meaningful way and change the way I drive. The point of this story is that obtaining information is fast becoming a commodity, and it will continue to get cheaper and easier to acquire high quality data. I believe audiology education needs to find a way to quickly move away from solely, or even primarily, emphasizing data acquisition to focus on what you do with information—integration and interpretation ultimately leading to insight about the individual and his or her health condition we are trying to diagnose or treat.

Conclusion

Let me highlight some other principles that will be important to consider if we are going to open the door to rethinking audiology education. Efficiency and agility of training has to be near the top of our list of considerations. We at Northwestern are acutely aware of this because the university has long-held focused and accelerated professional programs to be their hallmark. The honors program in medical education that takes high school graduates to a medical degree in seven years has been around at Northwestern since 1961. Kellogg, the third-ranked business school in the nation, has an MBA program that can be completed in a year. The law school with a two-year JD and the DPT program, one of the largest and highest ranked programs in the country; can be finished in 2.75 years. So every time we go to the university with a prescribed program length, we are asked to think of more agile alternatives without sacrificing quality.

All professional programs, not just in audiology, are starting to seriously think about the return on investment and the conversation is quickly moving away from mandated program length. Perhaps we should consider an even longer but lower impact education program to allow mid-career individuals to move into audiology while maintaining their current occupation to defray costs. Perhaps we should be thinking about developing a multi-layered audiological work force, responsive to the nation’s hearing and balance care needs, rather than reengineer the monolithic model of audiology education. We do not need a nationally mandated program length. We need a nationally mandated independent assessment system for readiness to practice.

The Accreditation Commission for Audiology Education, American Academy of Audiology, and the American Speech-Language-Hearing Association have all opened an inclusive dialog about audiology education. Nothing can be more encouraging than this. Let us invest time, thought, and energy into thoroughly evaluating the current model, changing only if change is necessary and a better alternate is available. And if we do decide to change anything, let’s work toward a model that is based on the health-care needs of the nation today, as well as those that we can anticipate 10, 20, 30 years into the future. Let us innovate to no end but not blindly follow any other profession. Let us not confuse best practice with innovation or methods with outcomes. And above all, let all voices be heard.

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