All-State: Promoting Productive Practice: Suggestions from Brain Research

presented by Dr. Margaret Schmidt — reported by Lisa St. Ores, Brenda Radloff, Carlin Stiles

Dr. Schmidt approached this session by explaining that brain research is divided into two areas. Neuroscience is the study of brain function. Cognitive science is the study of mental processes. Neuroscience has some amazing statistics. We are born with 150-200 billion neurons, mostly disconnected from each other. We keep about 100 billion neurons to adulthood, those that get wired through use. 1 cubic cm of brain tissue has more than 1 million miles of nerve fibers throughout our body.

One informative fact she explained was that every time you do an action neurons are moving along pathways that generate motor memory. So if your first time in doing something new is done, the human brain creates a schema that is employed every time one calls for that action. So, from the beginning of learning the technique of holding the bow, if it was wrong, every time a child does a hold that is incorrect, neurons are stimulated to continue the action in the same way as always because of that first experience or schema. It is nearly impossible to counteract the action.

So, what does this all have to do with improving practicing at home?

Productive practice starts with deliberate practice. Students need to have a well-defined, achievable goal that they can accomplish within a certain time period. Students need to be set up for success with goals that are the right level of challenge and with a plan in place to accomplish that goal. When you use a "tell, show, fix" approach, it does not engage students in the process of learning so it does not get committed to long-term memory. We have to teach students how to practice a piece and then have the students do it themselves.

Teaching students about "deliberate practice" will help students be more productive. It is important to identify a task, and have a specific goal. This means that when you give a student an assignment, they know what it is they are to work on. If you just tell a student to practice *Lightly Row*, they might just play through it a couple of times and think that they are done. If they know that this tune has a string crossing, and they need to work on getting from 1st finger on the E string to a high 2nd finger on the A string, then they can focus on that task. Students need to be aware of hearing the difference of when they do something right vs. when it is not.

Formative feedback is critical for the achievement of a goal in practice because it guides how they are doing and what they need to do to continue to improve. She used the example of one of her orchestra experiences in which she told the student mid-rehearsal, "I love how that crescendo sounded. Let's do it again and see if you can hear it." She pointed out that the crescendo is always better after she has said that to an ensemble. This gives the kids praise for what they are doing well and it tricks them into repetition.

"Deliberate practice" is always accompanied by opportunities to apply corrections and repetitions. Reinforcing through slow practicing using the same length of bow or perhaps even staccato. Students should also distribute practice. She used the example with a beginning student: 5 minutes before school, 5 minutes after school and 5 minutes after dinner. Finally, it is important that teachers model how to practice. It may benefit students to do a mock practice session within the orchestra rehearsal.

One way to help the student to achieve their goal is to give them a goal sheet, rather than a practice record that just focuses on the amount of time spent practicing. The goal sheet needs to include the specifics of what to work on. Hopefully, students will be know when they have accomplished the goal.

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