

Intuitive Teaching and Hard Science

By Shirley Brice Heath, Professor Emerita, Stanford University

Teaching artists within El Sistema share a foundational conviction that ensemble music learning is good for young people a conviction based on their experience and intuition. Yet outsiders who doubt this premise want more than the “soft and fuzzy” notions of music teachers. They ask: “Where’s the science behind what music teachers do and what the youngsters learn in El Sistema programs?” Fortunately, there is important support from both neurology and the neurosciences for the value of music learning.

Recent technological developments enable scientists to answer questions about what happens within various sections of the brain when music learning occurs in children. The research of pediatric neurologists and neuroscientists clarifies the effects of sustained participatory engagement in music learning, particularly instrumental music. Findings from transcranial magnetic stimulation studies attend in particular to the brain’s prefrontal lobe, where much of the work of “executive functioning” takes place. For neuroscientists, executive functioning includes problem-solving, managing and planning goal-directed behavior, maintaining information in working memory, developing verbal fluency and cognitive flexibility, and learning to handle task-switching smoothly.

All these behavioral and cognitive capacities are in play when music teachers call learners’ attention to following the cues critical to ensemble work. Young learners hear reminders about simultaneous behaviors, such as reading musical notation, following the conductor, and attending to other musicians in one’s section. In short, focus is everything; each player must always be visually attending, listening for detail, and following cues from the spatial placement of other players’ bodies. Each player must be aware of where the shoulders, head, arms, back, and hands are at any given moment. Instructions and reminders, as well as modeling and demonstrating, pepper good teaching of instrumental music.

Performing all of these actions calls on youngsters to learn simultaneously through several different “modes” or ways of taking in information. They read music while they observe the conductor’s signals and also listen and sort out information relevant for their section. Switching tasks becomes a fact of life in the instrumental music demands of ensemble work.

In addition, instrumental music learning involves the hand and eye working together for what neuroscientists term “embodiment,” or the sensation of aligning not only the limbs, but also the entire body,

for the positioning that will achieve excellence in performance. Embodiment helps to “plant” skills and deepen entry of information into long-term memory. Eyes, fingers, wrists, shoulders, and arms come together. This practiced and precise positioning for creative work by the hand in collaboration with other parts of the body has been shown to be important for small motor development and critical cognitive skills.

Recent studies contrasting such skills in today’s children with those of a decade or so ago (focusing on children of similar socioeconomic status and familial environment) have yielded striking results. Contemporary children show increased difficulties with long-term memory, integration of concepts through analysis, and general reading comprehension. The supplementary motor area of the brain actually looks different between children then and now.

In earlier years, cursive writing started at an early age and involved movement from large pencils without erasers to smaller pencils with erasers. Today, with pervasive devices such as iPads, computers and cellphones, a majority of schools no longer include the teaching of cursive writing on a regularly practiced basis – or of drawing, sculpting, or instrumental music. Over a mere decade, children immersed in contemporary technologies of writing are losing precision in small motor development as well as critical cognitive skills. The decline of instrumental school music learning has accentuated this trend.

Good music teachers have long known or intuited these points. Recent findings from hard science do not surprise them. However, El Sistema programs – staff, board members, parents, and partners – may benefit by learning more about how their teaching practices and principles align with findings from neurology and neuroscience. Doing so requires caution, since simplistic popularization of research published in refereed journals can yield inaccuracies. Turning instead to relevant departments of local universities to ask for key lectures and demonstrations will be the safest way to proceed. Neuroscientists will not tell music teachers what or how to teach. They will, however, enable all El Sistema supporters to understand more about how musical training, if consistently sustained with young children, can affect brain development in positive ways.

[Contact sbheath@stanford.edu for primary references for findings cited here. This article derives from her presentation at the April *Reframing El Sistema* conference in Baltimore.].

FROM THE EDITOR

What does “maturity” in an El Sistema-inspired program look like? A first answer to this question might describe what it sounds like: in an ES-i program that has been around for a number of years, kids are likely to play and sing with far greater skill levels than do kids in more recently-formed programs. But maturity can also manifest itself in the breadth and depth of the way programs support the development of their students’ social skills.

We saw a dramatic example of this on a recent visit to Baltimore’s [OrchKids](#), founded in 2007. We were struck by the poise and confidence with which students spoke to us – and to large roomfuls of people. “We prioritize helping kids develop leadership skills and a feeling of empowerment,” said OrchKids Artistic Director Dan Trahey. “It starts in small ways, like learning to say ‘Thank you for coming to our concert’ or to shake adults’ hands and make strong eye contact. As they grow, we build on those experiences by giving them more and more ways to contribute to what happens here.”

OrchKids students contribute in a striking variety of ways. As in many programs, older kids are encouraged to mentor younger ones, both musically and socially. But they’re also included in public advocacy and fundraising activities. When OrchKids leaders go to speak about the program to funders or politician, they often bring students with them. And the kids are part of the pitch. “They learn about the reality of advocating for their art – that it’s hard, and also that it’s vital,” said Dan.

In addition, more advanced students take on playing and teaching gigs as well as public speaking engagements. On the OrchKids website, there’s a “BOOK US!” tab: click on it, and you see a range of OrchKids ensembles you can hire to play for your event or to give workshops at your school. OrchKids’ gigs have included a TedX conference, playing with pop stars, government events, and a Ravens game. While the income from these events helps to support program initiatives, Dan stressed that their most important aspect is that they give OrchKids students opportunities to develop the capacity for leadership and responsibility. “It’s really about having a voice,” he said. “The voice doesn’t have to come only through the instruments. It also comes through feeling empowered to have an impact, and to make a difference.”

Tricia Tunstall

“The youngster who is in touch with the aesthetic fiber of his humanity grows in a world of infinitely precious values.” – José Antonio Abreu

News Notes

The U.S. Department of Education has just announced a [new research funding opportunity](#). It will support investigations into the links between arts learning programs and policies and student academic outcomes and/or social and behavioral development. Upon investigating, we found that the guidelines permit U.S. Sistema-inspired programs to apply if they have a close school partnership, and if their team includes researchers "capable of carrying out scientifically valid research." On Wednesday, May 4, the [National Endowment for the Arts Interagency Task Force on the Arts and Human Development](#) will host a free interactive webinar about this grant opportunity. Please register in advance: <https://www.arts.gov/event/2016/arts-human-development-task-force-may-2016>. You may listen using your computer's speakers or dial-in to 1-877-685-5350 and use participant code: 739587. An archive of the webinar will be available afterwards at <http://arts.gov/videos/webinars>.

In March 2016, the Glasgow Centre for Population Health (GCPH) published a paper on [the work of Big Noise in a special edition of The Journal of Public Mental Health](#) on "Childhood, parenting, families and young people." Sistema Scotland (the parent organization of Big Noise) already sets the international standard for research on Sistema-inspired programs, and this publication adds to that stature by taking the endorsement of Big Noise from the independent GCPH that conducted the research into peer review by international experts. The peer review states that the research findings are reliable and important to the international public mental health field; it also asserts that the research methods GCPH used are valid, a finding that is useful for other Sistema researchers to know about for their future studies. The article is available at: <http://makeabignoise.org.uk/files/4314/6129/2787/JPMH-11-2015-0047.pdf>.

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Resources

Sistema Global & The Leading Note announce the [launch of Sistema-inspired Resources \(SiR\)](#), a hub of Sistema-inspired print music and pedagogical resources. Sistema Global has long provided free repertoire and pedagogical resources, and now The Leading Note will make additional resources available for sale based on recommendations of Sistema teachers and leaders, with a 15% discount for programs registered with Sistema Global. The coupon code is SirGlobal2016 and works in the online store or with e-mail or phone orders. SiR hopes that composers and arrangers will create and sell their own arrangements and compositions on the new site. See www.sistemaglobal.org/sir for complete details.

The newly updated [Sistema Global Literature Review](#), the research overview and analysis of what has been written about the global movement, is now available free in Executive Summary and Full Version at: <http://sistemaglobal.org/literature-review>

An article from the BBC World Service considers the [importance of a mentor](#) in achieving on-time high school graduation, and this article points out the ways that high school band teachers fulfill that role for many students. <http://tinyurl.com/jjdllcs>

A new study in Canada has confirmed that 3rd and 4th grade children who take music lessons (even if mandatory) [developed more pro-social behaviors and empathy](#) than children who didn't have music lessons. However the positive effect was significant only for students who started with poor pro-social skills before the music study began. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0141449>

The April issue of the International Journal of Education & the Arts contains an article entitled: ["The Future of Homegrown Teaching Artists? Negotiating Contradictions of Professionalization in the Youth Arts and Humanities Fields."](#) Authors Hannah Winkler and Tyler Denmead investigate the phenomenon that is prominent in Latin America and is beginning to emerge in the U.S. and Canada. <http://www.ijea.org/v17n10>

YOLA at the Super Bowl

By Debbie Devine, Artistic Director, 24th Street Theatre

The Super Bowl Halftime Show is about music – but it's also about acting, conveying big emotions onstage and onscreen. The YOLA students who were invited to be part of this year's show are already expert musical performers. Through YOLA, they have already found a profound way to express themselves. But now they were being asked to show that expressiveness in a big, bright, authentic way, for the stage and screen, and that's what I was asked to help them with. A large part of my professional life is coaching reluctant musicians to speak – to find and speak about their personal emotional connections with the music. With YOLA, I used those same techniques. The goal was to help them express joy visibly, through their faces and bodies.

I met them at Disney Hall, approximately fifty wide-eyed but guarded kids. I could see that the job of helping them abandon their self-consciousness would take a little negotiation. The first step was talking: they had to be able to speak about music and about themselves before they could put that feeling in their bodies. They were initially hesitant and doubtful of their ability to talk about themselves aloud. But their commitment to the project was a strong incentive. I had them create a rant about situations in their lives and the world around them that they were angry about. This gave them permission to verbally express outrage, and it changed the room. They were surprised to find that others felt rage about life as an urban teen.

Then we explored the opposite feeling, euphoria. I asked, "What are things you adore and appreciate about your life?" They found the language for that too. They felt agency and authority from saying it out loud to each other. With each session, they grew more courageous, more personal and trusting.

They found the subtext, the meaning in what they were doing: Music matters! They learned to shout that out using their bodies and faces. We watched videos of the Bolivars, and saw how they did it. "It's a party!" was the message. "Let's host one!"

"Euphoria" became our anthem. We whispered, bellowed and hugged it. And that Sunday, when they played and danced and sang in in the halftime show, they were in a state of euphoria. Watching them, so was I.

"The scientist or the artist takes two facts or experiences which we separate, finds in them a likeness which had not been seen before, and creates a unity by showing the likeness." – Jacob Bronowski, *Science and Human Values*