Imagination: A Critical Skill for Learning

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In recent years, schools have become increasingly focused on developing "executive functions" in students. These functions—which include the ability to concentrate, ignore distractions, regulate emotions, and integrate complex information in working memory—are certainly important contributors to learning. However, I believe that in our school's excitement over executive functions, we've missed out on the *why* of education.

Another class of functions have been recently discovered by cognitive neuroscientists that-- *when combined with executive functioning*—contribute to deep, personally meaningful learning, long-term retention, compassion, and creativity. Dubbed the "default mode network" by cognitive scientists, the following imagination-related functions have been associated with this network: daydreaming, imagining and planning the future, retrieving deeply personal memories, making meaning out of experiences, monitoring one's emotional state, reading fiction, reflective compassion, and perspective taking. This is an important set of skills to fall by the wayside among our students! In fact, by constantly demanding the executive attention of students for the purposes of abstract learning, we are *actively robbing students* of the opportunity to use the limited resource of attention for the purposes of personal reflection, meaning-making, and compassionate perspective taking.

Let's be clear: *both executive functions and imagination-related cognitive processes are critical to learning*. However, when these networks couple together, we can get the best learning outcomes out of students. People who live a meaningful life of creativity and accomplishment combine dreaming with doing. A common thread that runs through both grit and imagination is *trial-and-error*: the ability to dream, to set concrete goals, to construct various strategies to reach the goal, to tinker with alternative approaches to reaching the goal, and to constantly revise approaches where necessary. This is the essence of the creative process.

How can schools cultivate imagination and creativity in children? First, ***we must allow time for mindful daydreaming***. This may seem like a contradiction in terms, but it is not. Mindfulness is not the opposite of daydreaming. That's a false dichotomy we have set up in schools. Instead, for optimal learning outcomes, teachers should cycle between instruction and the opportunity for students to reflect on the instruction, and be mindful of their thoughts, dreams, and feelings. This could involve journaling, discussions among a small group of students, or any other way to allow students the opportunity to thoughtfully connect the material to their own personal lives and futures.

Second, we must ***help support each student's harmonious passion***. Each student has a particular activity that captures his or her interest. However, it is important that we encourage the child to engage in the activity in a way that is most conducive to creativity and well-being. This includes helping the student integrate the activity into the student's identity in a healthy way. This includes asking the student whether the activity reflects things he likes about himself, helping him see how the activity fits in with other areas of his life, teaching him the importance of flexibly engaging in the activity, and encouraging breaks when there are no more returns on the investment. Research by Robert Vallerand and colleagues has shown that compared to obsessive passion— in which the child has lost control of the activity, and the activity is engaged in for external contingencies such as self-esteem or public validation— harmonious passion predicts higher levels of physical health, psychological well-being, work stamina, a stable form of self-esteem, concentration, flow, and creativity.

Third, ***we must encourage a diversity of experiences***. Students may develop interests in multiple areas, but they will not realize this unless we expose them to a variety of content, and encourage an openness to new experiences. What's more, creativity involves connecting dots, and the more rich experiences student's have, the more likely they will to start seeing larger patterns and make unexpected connections.

Fourth, ***we must encourage risk-taking***. Students who are placed in a learning environment where they must do everything right all the time, and who experience single judgment day tests on a regular basis, quickly learn to *not* take risks and challenge established thinking. However, imagination and creativity only develops under conditions where a person feels comfortable generating multiple possibilities, knowing that not all will pan out. To encourage greater risk-taking, educators should encourage students to challenge established knowledge, and to constantly allow students to revise tests and assignments, grading students on their capacity to learn from feedback and create thoughtful and creative products that indicate deep learning, instead of always reaching some standardized answer.

Finally, **we must encourage thinking differently**. This includes encouraging students to think divergently, to think about many different possibilities to solve a problem. But this also involves rewarding students who naturally do think differently. Many students with learning disabilities— from dyslexia to autism to auditory processing—naturally see the world differently. We should listen to them and try to see the world the way they see it. Who knows—we may find they are making connections we would never have made ourselves! This can also happen among students with behavioral problems. Instead of immediately sticking them in detention, maybe we can build on their divergent thinking and behaviors to help them channel the energy into a personally meaningful project.

If we create a culture in school that promotes imagination, as well as grit, we will better prepare students to not just be learners, but to also shape the world in new, meaningful directions that make it a better place.