

Testimony of Sarah Murr
Community Investor, The Boeing Company

Before
The Joint Committee on the Arts
California Assembly
Sacramento, California
April 18, 2012

Thank you, Mister Chairman and members of the Joint Committee on the Arts. My name is Sarah Murr and I am honored to participate in this hearing today and to represent The Boeing Company.

Boeing employs more than 165,000 people across the United States and in 70 countries. This represents one of the most diverse, talented and innovative workforces anywhere. 77 percent of our workforce has college degrees and 26 percent of those are advanced degrees.

In the state of California, we have an employee base of over 20,000; we own six subsidiaries in the state; and invest over \$7B per year with over 5,000 California-based suppliers. As a Company, we provide over \$11M annually in Boeing charitable, business and employee contributions within the state.

As a Community Investor for Boeing, I provide charitable grants to bring arts education back into the classroom.

Boeing believes that all students deserve a quality education, and the arts are a part of that education. An education that is rich in arts education and arts integration provides students with skills and abilities to succeed in life and navigate careers in the 21st century. It enables students to solve problems, encourages perseverance, and provides the opportunity to collaborate and communicate.

The Partnership for 21st Century Skills provides tools and resources to help the U.S. education system by fusing the 3Rs and 4Cs (Critical thinking and problem solving, Communication, Collaboration, and Creativity and innovation). Today the 4C's are known as Science, Technology, Engineering and Math (STEM) competencies or the "soft skills" which are needed in all employees.

There is much debate about the need for creativity and arts education in the classroom. Perhaps it's because there is a disconnect at a very basic level in how many people perceive arts education, and what skills it can teach. In his book, "The Global Achievement Gap," Tony Wagner details what business leaders have defined as the "seven survival skills" for the 21st century workforce:

1. Critical thinking and problem-solving,
2. Collaboration across networks and leading by influence,
3. Agility and adaptability,
4. Initiative and entrepreneurialism,
5. Effective oral and written communication,
6. Assessing and analyzing information, and
7. Curiosity and imagination.

Wagner based this book on extensive interviews not with educators but with corporations. These are the same skills we've seen in various reports, presentations and articles as the ones needed to develop, create, sustain and grow business.

These "survival skills" should be mastered to succeed in work and life. And, oh by the way, they are acquired through an education which includes the arts. These skills ensure workplace success whether that worker is an engineer, actor, lawyer, factory worker, clerk, artist, or writer. Arts education is an essential component of a strong academic foundation, giving young students the flexibility for whatever path they choose – whether it's entering the workforce or attending a community or four-year college.

The arts are one of the most powerful ways to build creative minds. The actual teaching of an arts discipline or the integration of the arts with other core subjects are real game-changers for students. The arts bring connection, wonder, and understanding to a student's mind and enable that student once again to become engaged and excited about learning. According to creativity expert Sir Ken Robinson, "Creativity is now as important in education as literacy, and we should treat it with the same status,"

Today's knowledge-based economy requires workers who can think creatively, solve problems, exercise individual responsibility and interact effectively with others. At Boeing we believe that children deserve access to high quality education and opportunities to develop skills that will enable them to realize their dreams. We believe that if students are offered a complete education, one that fosters creativity and innovative thinking, then all those "survival skills" are achievable.

We're not talking about developing the next Leonardo da Vinci or Mozart, but we are talking about developing young people with an appreciation for the visual and performing arts that translates into and supports their careers in all fields making them well-rounded workers and parents and patrons of the arts. It's well known that a well-developed arts education teaches communications skills, team work, problem solving, responsibility and adapting to change. All of these skills are considered critical for our workforce at Boeing.

Nurturing youngsters to pursue higher education and study in science, technology, engineering and math, and the creative arts, is critical to the success of aerospace companies such as Boeing. As our president and CEO Jim McNerney has said, "Nothing is more fundamental to sustaining our ability to compete and win against enterprising new competitors than a strong pipeline of future American innovators." (3/10/11 address to Atlantic Legal Foundation)

Our portfolio of products and services depends on innovative thinking and creative problem-solving.

- For example, the primary structure of our newest commercial airplane, the 787, is made from composite materials. The use of composite materials and other innovative technologies allows the 787 to use 20 percent less fuel than today's similarly sized airplanes. It also means 20 percent fewer emissions.
- Boeing is also at the forefront of the global effort to develop sustainable biofuels which will help lower carbon emissions. Boeing focuses on sustainable aviation biofuels produced from renewable resources that do not compete with food crops for land or water. Our experts have investigated a number of biofuel candidates, including algae

and salt-tolerant plants known as halophytes. These efforts confirmed the feasibility of creating jet fuel from biomass feedstock.

- We're also at the forefront of innovation in space, including developing a replacement for the Space Shuttle. Known as the Crew Transportation System, or CST-100, this vehicle is a reusable capsule-shaped spacecraft with a crew module and service module. The CST-100 relies on proven materials and subsystem technologies and will be capable of transporting up to seven people, or a combination of people and cargo. The CTS will provide safe, affordable access to the International Space Station and other destinations in low Earth orbit, and will enable NASA to focus on deep space exploration missions.

When you talk with business leaders looking for a workforce to meet their needs, the predominant feedback is that there is not a labor shortage, especially with unemployment at the level it is today. The challenge is that we have a **skills shortage** – a shortage of people with the right skills to do the jobs that are needed in an increasingly competitive marketplace.

Most jobs today require at least some level of technical savvy, problem-solving aptitude, an ability to communicate and work with others, and the capacity and desire to learn new ways of thinking and doing. Technology-based companies like Boeing have an even greater need for employees with these attributes.

Arts education plus STEM can nurture the qualities and attributes Boeing seeks in its workforce to be successful. The future Boeing workforce must include people who have:

- a passion for technology and innovation
- integrity and high ethical standards
- an ability to think critically, adapt to change and collaborate with others in a complex environment
- top talent with hands-on experience

No longer is a high school diploma sufficient and no longer does a college degree guarantee a job. This nation and our children are learning that now. And as parents we have to be more direct with our kids: Life has changed; we have to earn our role and job every day. Everyone else in the world has to, and so do we. We must retool our approach to preparing our youth for the future – a future where competition is fierce.

Changing the “ecosystem of education” is critical to the future of the United States and its competitiveness as a nation. The process of change must start with a wide-ranging discussion about the most effective strategies to adopt—partnerships between industry and academia, improved teaching methods that develop the critical attributes students need, and economic investments. With a focus on integrated, active, and ongoing learning, we can improve our educational system, accelerate the novice-to-expert timeline, and equip future workers to solve many problems we don't yet know exist.

Providing comprehensive arts programs as early as pre-school will help nurture future generations of creative thinkers and problem solvers who will invent the next life-changing products or services.

At the end of the day it's about educating students to have the capacity to solve large problems and create the next really cool thing.