“Houston, We Have a Problem”

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About three weeks ago I received a phone call asking me if I would fill in for a NASA astronaut who couldn’t be with you today. In keeping with your original theme, I would like to remind you of a true story. How many of you recognize these men?

James A. Lovell, Jr.
John L. Swigert, Jr.
Fred W. Haise, Jr.

You may not remember their names, but I bet many of you remember their compelling story or at least have heard about it or seen it in the movies.

On April 13th, 55 hours into the mission, as the crew of Apollo 13 finished a live television show that explained about life in weightless space, Captain James Lovell stated, *“This is the crew of Apollo 13 wishing everybody there on earth a nice evening.”* Nine minutes later, Oxygen tank No. 2 blew up, causing No. 1 tank also to fail. The Apollo 13 command module’s normal supply of electricity, light, and water was lost, and they were about 200,000 miles from Earth. The message came in the form of a sharp bang and vibration. Jack Swigert saw a warning light that accompanied the bang, and said, *"Houston, we've had a problem here”*—a phrase that has become a permanent part of our language.

Next, the warning lights indicated the loss of two of Apollo 13’s three fuel cells, which were the spacecraft’s prime source of electricity. With warning lights blinking on, one oxygen tank appeared to be completely empty, and there were indications that the oxygen in the second tank was rapidly being depleted.

Thirteen minutes after the explosion, Lovell happened to look out of the left-hand window and saw the final evidence pointing toward potential catastrophe. *"We are venting something out into space,"* he reported to Houston. Lovell said, "*It's a gas of*

some sort." It was oxygen gas escaping at a high rate from the second, and last, oxygen tank. When Houston Control realized the crew would lose all oxygen, they directed the astronauts to move from the Command Module into the Lunar Module that was designed to land on the moon. This was new territory. No program existed for a lunar module to be used to navigate the ship back to earth.

Power was a concern. In order to conserve energy, all non-critical systems were turned off, and the astronauts existed in sharply cold conditions. Water was their main consumable concern. It was estimated that the crew would run out of water before Earth reentry. Not only did the crew need water for hydration, the mechanical items on board had to be cooled by water.

Removal of carbon dioxide became a critical problem. Using plastic bags, cardboard, and tape—the only items on board, the crew was able to replicate a mechanism designed on the fly after the explosion by Houston Control that would release the carbon dioxide. The final challenge was to turn the Lunar Module into a path that would align them for re-entry to earth. With a computer program written by Houston in three days as compared to the typical three months required to write a program this complex, the crew was successful in carrying out the burn and using the sun to guide their alignment. The crew ultimately splashed down safely into the Pacific Ocean, dehydrated but fine.

So why today would I choose to recount the story of Apollo 13 at this conference? I doubt there are very few of you in the audience who would remember the genesis of gifted programming in the United States. If you have ever seen the movie *October Sky*, you witnessed the interest in Sputnik. The Russians were beating the United States into space. The government and citizens were worried that our communist enemy would gain a nuclear advantage over the United States if they controlled space. In 1961, President John Kennedy announced to a Joint Session of Congress that the United States would land a person safely on the moon by the end of the decade. By accomplishing this audacious task, the United States would catch up and overtake the Russians in the space race.

The United States government began pouring resources into science and mathematics. Schools were encouraged to identify students who excelled in these disciplines, and financial support was awarded to allow them to continue their studies. America needed engineers. States began to nurture bright students through programs for the gifted and talented. North Carolina began serving gifted students in the early l960s and established a position at DPI to support those programs, a position that, unlike in other states and even in tough financial times, has never been eliminated.

Does this situation sound familiar? Anyone read *The World is Flat* by Tom Friedman? It has been a little over 50 years since Sputnik sent Americans into a tailspin. Now we are worried again that we have fallen behind in math and science. Only this time the competition is coming from China and India. The Chinese have more gifted and talented

students than we have students in the United States. India is producing more engineers per year than we have students in total attending college. Because of technology and its flattening of the world, these educated individuals don't have to come to the United States to be our competition. They can sit in their homes in India and China and work for international companies, taking those jobs from U.S. citizens. Because they can work for lower salaries, educated professionals from China and India are a real threat to our livelihood. To make matters worse, they speak English as well as we do. So, what do we do to fight the competition just as we had to do some 50 years ago? Just like in the l960s when President Kennedy challenged education to furnish the talent and know how to give America the edge again, I am sure that the answers to our security are found in this room and in other venues like this one.

History has shown us that Americans are the most ingenious, innovative, and creative people in the world. We haven't always necessarily recognized innovation when we have found it. For example, Bill Gates tried to convince IBM that the future of technology was in small personal computers at the time that IBM was paying high salaries to people who could write programs to fill bigger and bigger mainframe computers. The digital watch and the copy machine were other examples of American ingenuity and creativity that weren't recognized as change inventions when first introduced. However, even with the advent of foreign-educated scientific talent, Americans still have more patents than any other country in the world. Even though manufacturing and now knowledge-based jobs are going off-shore, creativity, innovation, and invention will keep America ahead. So what can we, as educators of the gifted, do to encourage innovative and creative thinking?

By focusing on the State Board of Education's 21st century agenda, we can upgrade our instructional programs to prepare students with the knowledge and skills they need to be successful. So what are 21st century skills? We don't know for sure everything that students will need to know and be able to do in the future, in fact, many of the jobs that your students will assume haven't been invented yet. However the Partnership for 21st Century Skills suggests the following are some of the important skills that successful 21st century adults will need to demonstrate: problem solving, the ability to work collegially in teams, self regulation of health and financial matters, deep knowledge in content, the ability to communicate effectively through different media, and sensitivity to a variety of cultures.

If we examine the core tenets of gifted programs since their inception, we would find that the focus of those programs used to include these 21st century skills I just referenced. When I began teaching gifted education in the late 1970s, those skills were the basis of our programs. We taught Williams' and Bloom's thinking skills; Taylor's and Torrance's creative thinking; problem or project-based learning, Future Problem Solving and Odyssey of the Mind. We focused on communication and technology; we conducted Paideia seminars and talked about Kohlberg's Moral Dilemmas. We also focused on the affective taxonomy offered by Krathwohl. There are even more models

available today that focus on those skills, such as the Parallel Curriculum and Understanding by Design to name two.

If we are going to prepare our students with 21st century skills, my suggestion is that we return to our core origins in gifted education—that we return to our roots. Over the past few years we have allowed frenzy over state testing and accountability to narrow our curriculum and cause us to focus too much on the basics with students who simply didn't need this overemphasis. They were already proficient. We were wrong. Our gifted students need conceptual, in-depth learning opportunities and enrichment extensions focused on essential understandings. They need to participate in performance-based assessments to get a clear picture of what they can do. They need to work in teams with authentic and relevant problems.

When the astronauts in Apollo 13 needed a miracle to get back to earth safely, they didn't need people who could only answer multiple choice questions in a narrowly designed curriculum. The Apollo miracle was made possible by a group of creative, innovative scientists who under great stress created a solution with limited resources—cardboard, tape, and plastic bags—a real life Odyssey of the Mind. The miracle was possible because the scientists in Houston and the astronauts in space were able to work under pressure as a team to solve real problems and find real solutions.

I would argue that with the natural resources found in our country and the most innovative, creative, and courageous people in the world, I have no doubt that this new threat—the economic threat—can be answered with the same determination that was demonstrated in the 60s when Sputnik signaled we were behind. Just as education was the solution in the past, our schools, and your programs, in particular, are the answers for the future.

Some form of state tests will always be with us, it is a fact of life. We should be held accountable to the public. But we can't allow our classrooms to be limited by that reality. We have to teach the way we know is right and rely on the fact that good instruction will lead to good results, and not just good test scores—although I think that too will follow if we teach a rich curriculum.

I strongly encourage you to reflect on your practice and return to the roots of gifted education. Ironically by looking to our past, you will be preparing your students for the challenges of the 21st century that lie ahead.

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