Winter 2003

The Role of Educational Institutions for Airport Security

Seth Young

FORUM

THE ROLE OF EDUCATIONAL INSTITUTIONS FOR AIRPORT SECURITY

Dr. Seth Young

The following narrative is transcribed from a keynote address presented by Dr. Seth Young, Associate Professor, College of Business at Embry-Riddle Aeronautical University, at the ICAO 4th Regional Aviation Security and Facilitation Seminar, held in Amman, Jordan, in September 2002. The seminar was attended by participating member states from ICAO's Middle East region. The purpose of the seminar was to discuss new regulations and policies regarding aviation security, and to become educated in enhancing airport security, from a security, as well as an operations facilitation, perspective.

A portion of the seminar was dedicated to education and training programs designed to improving the performance of airport security personnel, as part of this seminar, Dr. Young provided the following dissertation.

"Thank you. Before starting, I'd like to sincerely thank Dr. Taisir Taji and Mr. Jalal Haidar for hosting Dr. Dan Petree, Dean of the College of Business at Embry-Riddle Aeronautical University in Daytona Beach, Florida, and me to this conference, in what is really a wonderful location.

I do need to apologize, on behalf of Dr. Petree and myself. We had brought a number of gifts over from Daytona Beach to show our appreciation for this visit, but unfortunately they were confiscated at the security checkpoint at JFK in New York. It turns out, that one of our gifts, a pen/pencil/letter opening set, was on the list as a potential threatening item. When we asked the screener if she thought this was a little silly, she replied, "I know it doesn't make sense, but this is what I was trained to do."

Indeed, a policy was made and she was trained to follow it. Why the policy was made, I'm not exactly sure. Perhaps the new U.S. Transportation Security Administration can present some

findings of an academic study that determined that a small letter opener, in a packaged box, buried deep in a bag, wrapped in gift wrap by a university professor who happens to be Dean of a College of Business visiting Jordan to attend a conference on aviation security poses a threat to aviation security, but then again, maybe not.

All kidding aside, the point of this anecdote is that the screener performed her trained task, and performed it well, I might add, but unfortunately was not trained, or should I say, not educated to make her own decision as to the level of threat, and what policy to employ. Neither was any security supervisor at the airport, by the way, nor, I would argue has anyone in the industry at this point been so educated.

So, what I'd like to speak briefly about today, is how training, and moreover, education, at educational institutions, may be employed to significantly contribute to the progress of improving our aviation system in general, and aviation security in particular.

Currently, I am a professor at Embry-Riddle, before that, I was a graduate engineering student at the University of California, Berkeley, and in between

being a student and being a professor, I worked as a consultant to airport management.

Some may say, and sometimes I agree, that I've never really done anything in the industry. I've never actually screened a passenger or bag through security (although I've watched and studied literally thousands of passengers and bags, and let me tell you, I've seen a lot of things, and can tell you some crazy stories), I've never managed an airport, nor have I ever been the captain of a commercial airliner.

But, I believe at least my current position is a productive one, or else my boss wouldn't keep me on the payroll. In fact, what I am a part of, and what academic institutions are a part of, is more than merely training others to perform a task, but **educating** those who may do a task, or may choose to critique a task, or may choose to find a better way to perform a task, so that the environment we work and travel in may be improved for everyone.

So, what then, is the difference between training and education? And what is the role of education in aviation security? I'd like to attempt to answer that with a situation that happened to me when I first started teaching at Embry-Riddle.

During my first term at Embry-Riddle, I was teaching an introductory course in airport management. As part of the course, I was describing the infrastructure found on airport airfields, that facilitate aircraft operations. In the middle of my lecture, one of the students, who had happened to have his pilot's license asked me, "Dr. Young, are you a pilot?" I humbly replied, "No", to which he answered, "So then what makes you such an expert on airports?"

I stood there, somewhat shocked, having just spent five years of my life earning a Ph.D. to become qualified to teach this

course, and consulting to airports along the way. After a brief pause, I said, "You're right, I'm not a pilot, but my education has taught me, from a variety of perspectives, including that of a pilot, what it takes to successfully operate and manage an airport". My education not only taught me the airport from a pilot's perspective, but also from the perspective of the passenger, the airport employee, the airlines, the engineer, and even those who may never actually use the airport, but are certainly concerned about the noise they seem to cause.

Even though we were both satisfied with this more than acceptable answer, I signed up for flight training the next day, and let me tell you, earning my private certificate and currently completing my instrument rating has been an excellent education!

So, one difference between training and education, is that education facilitates the understanding of an environment in a comprehensive variety of perspectives. For complex systems, such as airports, used by a wide variety of concerned parties for a variety of reasons, such a full perspective is absolutely necessary. Being trained on any one facet of an airport, or through any one perspective, is far too limiting.

In the area of airport security, this is particularly important. To develop and manage a secure and efficient system, understanding of operations from every perspective, from the pilot, to the passenger, to the potential threat, is absolutely necessary. To only address security from one perspective is limiting to the point of system failure – and I believe we've seen this occur, not only on September 11th, but throughout the history of commercial aviation, through today.

A few weeks later in that class, by the way, I was lecturing on the topic of navigation. As part of the lecture, we

were discussing how winds affect the course and ground speed of aircraft. The student, the pilot, had told me that he'd already been trained on calculating course and groundspeed in his pilot training. During the class, we did a little experiment. I asked the student to calculate the course a pilot would be traveling if he were maintaining a heading of 270° with an airspeed of 120 knots, with the winds at 320° at 40 knots.

The student looked at me, reached into his bag, pulled out something called a "whiz-wheel", started spinning it around, put a dot on it, with a pencil, twisted it again, finally coming up with an approximate answer. All the time, I went to the chalkboard, did a quick calculation using the basic trigonometric functions we'd been reviewing, and came up with an exact answer in half the time it took the student. He claimed he would have gotten the answer more quickly if he had his fancy electronic pilot computer with him.

The moral of this story is, with a solid education on the fundamentals surrounding, in this case, trigonometry and physics, virtually any problem can be solved, and without the need of some expensive computer or "whiz-wheel" to approximate a solution. Whereas training may teach how to use a tool to derive a solution, education teaches the underlying fundamentals which the tool is based on, which allows the educated to derive not just current solutions to current problems, but future solutions to future problems, as well.

In fact, regardless of the particular field of study, a solid education from an academic institution should include areas of learning on a broad range of topics: the engineer should learn a foreign language, the art major should learn calculus, the aviation management student should learn psychology.

In aviation security, the division between education and training is rampant. For years, current solutions to current problems, or moreover old solutions to new problems, have been applied, to what many have conceded to be disturbingly little success. For years for example, aviation security programs, at least in the U.S., have focused entirely on the training of screeners towards identifying "prohibited" items carried on by passengers, without a more comprehensive education on understanding the passenger who might be in possession of such items. As a result, literally millions of innocent passengers, ranging from ages 2 through 92, including Dr. Petree, who falls in there somewhere, are having common personal items confiscated, while other passengers are discovered to have passed through security with caches of weapons on their possession, or while other passengers in the future may intend to cause harm with objects that are not yet "prohibited". Educating would be screeners, or their managers, on the fundamental behavior patterns of human beings might indeed provide the fundamentals to apply new screening methods to new threats.

So yes, there are fundamental differences between training and education, including the learning of a full range of perspectives, and understanding fundamental principles. But there is yet another fundamental difference between training and education.

Training, by definition, is designed to teach someone to understand and apply a currently accepted tool or procedure to perform a task. Education, on the other hand, is designed to teach the student to understand, but also to question the tool and/or its use. The goal of higher education in particular, is to encourage the student to research and understand a situation so deeply, that he or she is motivated to further develop theories, technologies, policies, and other

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solutions to address the situation. This is truly where progress in any area, especially including ever evolving issues surrounding aviation security, may be made.

Institutions of higher education have been built on the concept of providing an environment where fundamentals are learned, as well as an environment where current applications of the fundamentals are evaluated and tested, critiqued, and enhanced, or even re-invented. Virtually every new technology introduced in, well, in history, has been the product of education and research. Furthermore, the metrics themselves, used to evaluate technology have been researched and evaluated. After all, it's the ultimate goal of education and research to not just find the answer to the question, but in fact, to understand if the question is the right question to be asking!

This actually brings up some very interesting, and perhaps sensitive, issues in aviation security. What's the question we're trying to answer? How do we know what we're doing in aviation security is the right thing to be doing? How do we measure the effectiveness of aviation security? Do we measure the success of aviation security by the number of prohibited items we've confiscated? If so, then we may be doing pretty well! Do we measure the success of aviation security by efficiency, the number of passengers we're processing during a given period of time? If so, then we may not be doing so well. Do we measure by the level of "hassle-factor"? If so, then we really have work to do. How about the number of potential threats thwarted? How about the number of potential threats that weren't caught? I don't know the answer to any of these questions, or whether they're the right questions to be asking. But I do know one thing, only with formal education and research program will we get closer to knowing, and applying what we know to improving aviation security.

At Embry-Riddle, faculty have been researching and educating their students on a number of aviation security related issues including:

- Estimating the capacity and efficiency of airport security checkpoints under varying conditions, policies, and infrastructure environments.
- Understanding the fundamentals of biometric technologies and their applications to the airport security environment.
- Developing information and communication systems to coordinate and track the activity of travelers between intelligence departments.
- Studying organizational and other management theories that may best be applied to administer a more efficient system.

Embry-Riddle is also involved in assisting the training and educating of airport staff in understanding the ever changing policies of the new Transportation Security Administration – and let me tell you, with all respect to my colleagues at the TSA, understanding the new administration, and the policies they've employed, is a whole education in itself.

By definition, air transportation involves the connection of passengers and cargo between different markets. As a result, it is of utmost importance to understand the similarities, and differences, between each market, from operational, financial, to cultural perspectives. Particularly, in this world of global commerce, it is imperative that a solid foundation of international education and research be nurtured.

With partnerships between Embry-Riddle Aeronautical University in the

United States, Queen Noor Aviation Technical College here in Jordan, and all of you, from throughout the Middle East and rest of the world, we may all be able to advance the educational institution surrounding aviation security, with the ultimate goal of providing a more secure and efficient air transportation system for our world's travelers."

The ideas presented in Dr. Young's remarks were strongly endorsed by the seminar's executive panel, including Mr. Dominique Antonini, Chief of ICAO's Airport Security

Section. The remarks were well received by the seminar's participants. Dr. Young's participation in this seminar was the formal commencement of potential professional opportunities between Embry-Riddle Aeronautical University, the Jordanian Civil Aviation Organization, and ICAO.

Indeed, education plays a unique and important role in the development of all areas aviation, the realm of aviation security being no exception. It is the opinion of the author that any opportunities to promote education throughout the industry can contribute to the security, efficiency, and overall performance of civil aviation.

Dr. Seth Young is an associate professor in the College of Business at Embry-Riddle Aeronautical University's Daytona Beach Campus, with research and teaching focus in the areas of airport operations and management. Dr. Young has performed extensive research and instruction worldwide in the specific area of airport security issues, particularly in the Post-9/11 aviation environment. Prior to his position at Embry-Riddle, Dr. Young was an Associate with Leigh Fisher Associates – Consultants to Airport Management, in San Mateo, California. Dr. Young has earned an M.S. in Industrial Engineering / Operations Research and a Ph.D. in Civil and Environmental Engineering / Transportation from the University of California at Berkeley. Dr. Young is a Certified Member of the American Association of Airport Executives, and is an FAA licensed private pilot.