REDBIRD FLIGHT

Starting an Aeronautics Program in K-12 Education

Greg Roark is the Director of K-12 Education at Redbird Flight, where he leads efforts to bring aeronautics programs to schools across the country. He holds degrees in K-12 Education and is an FAA Advanced Ground Instructor, Instrument Instructor, instrument-rated pilot, and Part 107 Commercial Drone Operator.

Known to students as “Mr. R,” Greg has taught aeronautics for over 18 years in classrooms nationwide, including 11 years at EAA AirVenture Oshkosh. He was the founder and former CEO of the Aspen Aerospace Alliance. Now, he works closely with school districts to help them create strong, sustainable aeronautics programs. He frequently speaks at industry conferences and trade shows, known for his passion and energy in promoting aviation education.

Greg Roark

Director, K-12 Education

Getting Started

So, you have decided to start an aeronautics program in your school district. Or, maybe you are in the contemplative phase and want to see what is possible. Either way, congratulations! You are exploring an educational opportunity for your school that can change students' lives forever, for the better.

The benefits of an aeronautical education are many. If I may be so bold, they rival those of almost every other course you may offer. If you think that is a wild boast, hear me out. Imagine what happens to a student as s/he works through the academic elements of what it takes to become a pilot. The coursework features topics from many of the classes that students have taken or will take, including mathematics, earth science, algebra, trigonometry, geography, topography, biology, physiology, communications, history, and the list goes on. More importantly, in an aeronautics program, students apply everything they have learned from those subjects, including the math and science topics we say are so critical for their future. As you know, when a student can apply what they've learned, the relevance of what they are learning kicks in, and they are logarithmically more likely to use that information again in other subject areas. The corollaries are profound.

In addition, as we lay the groundwork for these future generations, we realize that we must prepare them for the real world and the J.O.B. The development of transferable skills is a unique element of the modern aeronautics classroom.

As students participate in the simulations integrated into ground school, the part of aviation training in which aspiring pilots learn on the ground the topics they will later demonstrate in the air, they will also learn and practice skills that employers nationwide say are invaluable.

- Decision-making
- Multitasking
- Creative problem-solving
- Collaboration
- Communication
- Professionalism
- Integrity
- Management
- Initiative
- Empathy
- Leadership
- Teamwork

Do these skills look familiar? They are among the top 12 skills employers look for in job candidates. In an aeronautics classroom, students learn and develop these skills every day. Every. Single. Day.

So, whether your students decide to earn a living at the pointy end of an airplane or follow their heart into a career in art history, they will take with them valuable transferable skills, a higher technical literacy, a better understanding of the world around them, and, resultantly, several advantages in the job market.

Getting Started

You may be thinking, OK, Greg, this all sounds great. Where do I start?

Excellent question! I thought you would never ask. There are 10 questions I start with when consulting with school districts that are establishing or considering an aeronautics program.

- What is your purpose for wanting an aeronautics program at your school?
- What is your vision?
- What does success for your students look like as they complete the program?
- What grade levels are appropriate?
- Do you need to develop a curriculum?
- What does a modern aeronautics classroom look like?
- Who is responsible for teaching the classes?
- What type of marketing will you need to do?
- What community support will you have?
- What are some of the challenges and pitfalls you need to consider?

Think of this as a conversational checklist. Realistically, all of these topics are interconnected and challenging to evaluate individually. Let's break down each in more depth and consider how they impact one another.

Purpose

Think about your motivation.

- Why do you want an aeronautics program in your school in the first place? Why is it important to you?
- What benefits do you see for your students, school, and community?

Don't just passively brainstorm; write your answers down and take your time. Your work here is what builds the foundation for a successful program, so an honest self-assessment is critical. In my experience, having a solid understanding of your purpose is also a helpful reference during inevitable moments of tough sledding with the new program.

Vision

In your mind, what does the program look like? What do you see as your pathway to success? Think about how you would explain the program to someone who may be unfamiliar with aeronautics. At this point, I encourage school districts to create a program mission statement. It sounds like busy work, but credibly, it will help define the essence of your vision in a succinct and meaningful way. Additionally, it will serve as a source of truth as you make decisions about your program down the road. Another way to think about the mission statement is an "elevator pitch": a description you can deliver with effect in under 30 seconds.

At the Aspen Aerospace Alliance, our mission statement was simple: *to bring the benefits of an aeronautics education to students in the Roaring Fork Valley, Colorado, and beyond.* It succinctly stated our goal and our scope. It also begged the question, "What are the benefits of an aeronautics education?" This gave us the opportunity to tell our story and build support for our program.

As you clarify your vision for the aeronautics program, don't overlook some of your existing programming. How do you see this program blending with or complementing other CTE programs you may offer?

Success

As you contemplated the purpose of your program, I feel confident in assuming you had thoughts about what you want your students to accomplish before they leave your hallowed halls. So, what does success look like for your students? To answer this question, perhaps you need to find out what's possible. For example, do you want your students to be able to complete their private pilot certification before they graduate? Is that too much? Not enough? Some programs stop at providing an introductory experiential element; others create opportunities for their students to graduate as multi-engine commercial pilots. Then, there is everything in between.

You must define your own goals based on what is right for you, your students, and your community. For example, some districts think starting slowly is a good idea, and that may be the case. Personally, I have found the opposite to be true. The appetite for programming of this type almost always exceeds expectations, and failing to capitalize on it early can lead to student disenchantment and slow program pipeline growth.

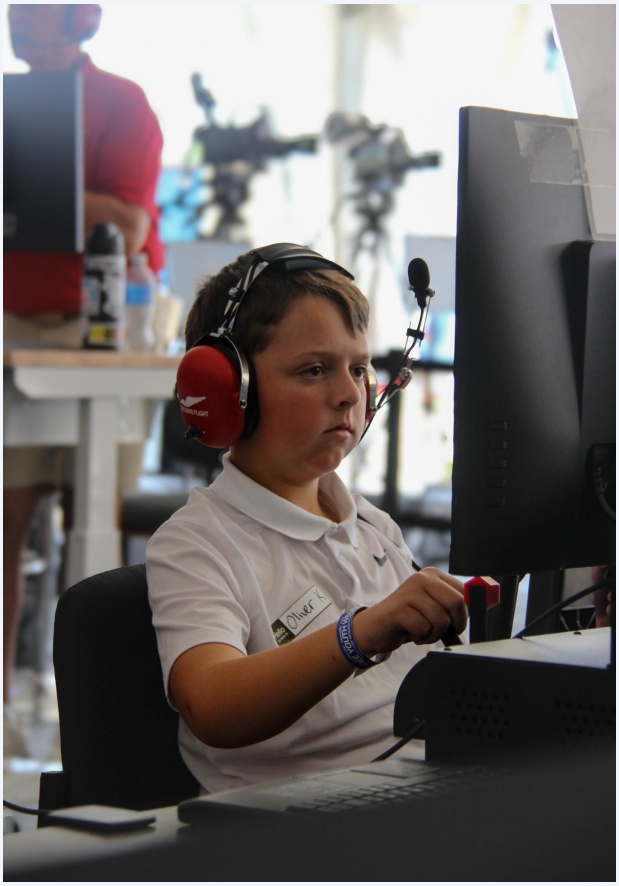
Additionally, think about the evaluation of your program. Will it be judged on the number of pilots produced per year? The industry certification boxes checked? Or, maybe there is a broader benefit of the program that you have not considered? Regardless of the yardstick you use here, define it now. It will minimize heartburn in the future.

Grade Levels

At what grade levels should you start this aeronautics program? High school? Middle school? Elementary? Maybe all three? There is a lot to consider here. Historically, school districts launch an aeronautics program at the high school level. And that makes a lot of sense, as long as you do not ignore the lower grade levels in your long-term plan. The initial path of least resistance may not yield the best outcomes several years into the program. Introducing aeronautics programming in middle and elementary schools creates a pipeline of students that cements your program's pathway to success. I typically start students on flight simulators in the fourth grade. These students build skills at a young age that make the more complex simulators and subject matter in high school manageable.

Curriculum

Five years ago, this topic would have been more challenging. Fortunately, today, multiple vendors and curriculum options are in the marketplace. The curriculum that is right for your program is the one you think will help get your students to the finish line, wherever you happen to place it. That said, programs grow, and goals change. You may start with one curriculum and add layers of another one a few years later. It truly depends on your vision and what success looks like to you. One thing I have learned is that one size never fits all. You will make tweaks frequently, both additions and deletions, as your program matures. At some point, you may look into developing your own. Personalizing your program will also help ensure sustainability.



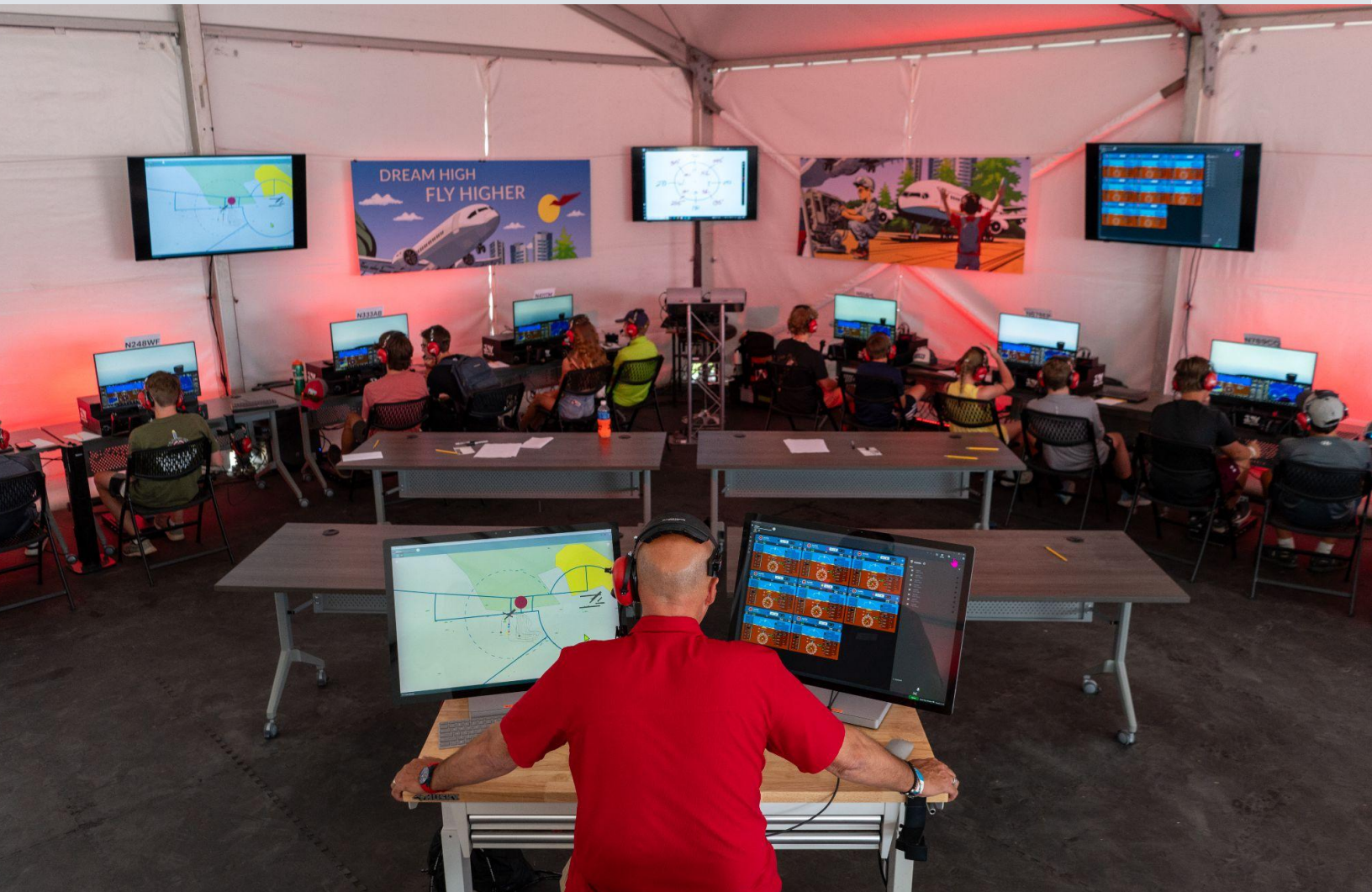
Don’t know where to start? Among others, the Aircraft Owners and Pilots Association (AOPA), Aviation Supplies & Academics (ASA), and the Embry-Riddle Gaetz Aerospace Career Academy offer curricula and/or dual-enrollment programs that will give you an idea of the opportunities available to your program and students. Or, if something more specialized meets your needs, we offer custom curriculum development, as well.

Your Aeronautics Classroom

Today's modern aeronautics classroom is a technological marvel. Just a few years ago, the idea of a full-motion flight simulator in a high school was far-fetched. Now, a thoughtful collection of various types of flight simulators is almost commonplace. What can this look like? Once again, the answer to that depends on you and your program goals.

The first thing to remember is that a flight simulator is a means to an end. Its job is to reveal and reinforce the academic takeaways of the coursework. We do not recommend any flight simulators to school districts until we have a thorough understanding of your goals and needs. From there, we make recommendations to help you achieve the success you have envisioned.

Sometimes, the number of devices necessary to accommodate your student class load can be a challenge for your aeronautics instructor to handle. That is where aeronautics lab management tools come into play, not only to simplify classroom management but to elevate the learning experience for educators and students alike.



Marketing

If I could go back 15 years to when I started in aeronautics education and do one thing differently, it would be to start with a better appreciation for the power of marketing my program. “Build it, and they will come," I thought. And sure, some did—but not the way they should have. Marketing your program to stakeholders who live in your community is mission-critical. You have a compelling story. How you tell it (and to whom) is everything. You want to be very clear about what the program is and, perhaps more importantly, what it is not. You do not want people at your school or in your community developing the wrong idea about the program or its benefits.

So, what types of marketing might be appropriate or more effective than others? When do you start shouting about your program from the rooftops? A website, social media channels, club presentations, informational program meetings, and classroom presentations are all good ways to get the word out. Word of mouth also helps, provided that the right words are coming out of that mouth. None of this information is novel, but many districts overlook it nonetheless. An aeronautics program is a new idea for many, as are its benefits. Get your story straight and spread it. Otherwise, buy-in may be harder to come by than you prefer.

Community

You will be amazed by how quickly local businesses will reach out to you after hearing about your program. Why? They need workers! So, how do you turn community enthusiasm into an opportunity for your students? Honestly, that is the easy part. The more challenging responsibility is recognizing when well-intentioned people could derail your program plans or see an opportunity that benefits them more than your students. I have seen it happen, and it requires ample time and effort to remediate.

Be prepared to get offers from community members to help in your aeronautics classroom. While this may initially seem like a good thing, go into it with your eyes open. There should be one voice in that classroom, and it should come from your teacher. Community support is invaluable, and you undoubtedly will find altruistic people who help you advance your vision. However, ensure you are clear on that vision and that you see all the angles before engaging.

Staffing

Who is the right person to spearhead your efforts in the classroom? Do you hire from within or without? My recommendation may surprise you! A few years ago, the conventional wisdom was to hire a retired industry professional to run your aeronautics program, which can be a viable, if not terrific, option. Over the last few years, however, we have noticed a very distinct trend: Outside hires have a higher turnover rate. While they certainly do not lack aviation skills, many are not prepared to teach and work with students today. Let's be honest; there is a reason they did not initially enter the education field.

Recently, we have seen more success with internal hires. Seasoned education professionals are accustomed to the system and to working with students. What most of them lack, however, is the aeronautics or aviation side of the coursework. With that in mind, we have revamped our training programs specifically for non-aviation professionals. With the combination of software, hardware, and content available, aeronautics educators do not have to be certificated pilots or flight instructors. While we certainly encourage educators to explore those opportunities, they do not need to be Chuck Yeager or Amelia Earhart to have success in their roles.

Challenges and Pitfalls

As with every worthwhile endeavor, there are trials and tribulations. We have all heard the adage, “The devil is in the details." It certainly applies here. You will face challenges as you begin and grow the program. Make no mistake about it; somewhere along the way, something will test your commitment to this endeavor. If you have done anything like this before, you already know that. If you have not, you should be prepared, but do not be afraid either. Keep one eye on the end goal and the other eye out for these pitfalls.

Poor Planning

Some of the potential pitfalls people face result directly from poor or incomplete planning. Receiving a sizable grant and rushing into starting the program is where I have seen the most heartache. It is natural to be excited, and you should be, but take a breath and look at the big picture before leaping.

Funding

The opposite side of the coin is struggling to find the money. Tracking down funding can be a challenge, but it should not be an impenetrable barrier. Most CTE directors are aware of multiple funding pathways.

Legal Considerations

Legal considerations frequently arise in our conversations with schools, as does corporate structure for giving. While, of course, I cannot provide legal advice, I am always willing to share my experiences for your consideration.

Hopefully, these questions can help you get the ball rolling at your school. Then again, you may be thinking, “There is a lot more to this than I thought!" The good news is you do not have to tackle this alone.

At Redbird Flight, we offer consultation services to help you navigate these complex questions and point you in a positive direction. As Director of K-12 Education, I have more than 17 years of hands-on experience in and out of the aeronautics classroom. In addition to the programs I have built myself, I have worked with aeronautics programs across the United States, which can bring valuable experience, observations, and best practices to your planning sessions.

Whether you get your program started alone or with some assistance, know that an aeronautics program like the one you are considering can impact the lives of young people in ways they cannot yet possibly appreciate. But you can. You and most adults see the opportunities that well-prepared students like those graduating from your program will have as they step out into the world. Building the skills outlined earlier at a young age provides notable competitive advantages. Regardless of the post-secondary passions they pursue, they will be well-equipped to face their future. Ultimately, that is what we are after: a better education for them and a better nation and world for us!

Let us know how we can assist your program.

-Greg Roark & the Redbird K-12 CTE Team

Get a Free Consultation

Ready to Launch Your K–12 Aeronautics Program?

Backed by extensive experience in the flight training industry and guided by in-house primary education experts, we help you design, build, and expand a future-ready aviation program.

Request a Consultation