



## This Guide Is Intended To Provide A Brief Overview Of An Aerospace Fellows Mentorship

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We want to thank you for choosing to participate in the Oklahoma Aerospace Fellows initiative. We are a collection of Oklahoma aerospace industry, government, and education leaders who have come together to take a proactive stance to ensure a vibrant future for our industry and prosperous future for our citizens.

The aerospace industry requires a highly skilled workforce. It is truly a leading edge industry when it comes to technology, materials, manufacturing and maintenance processes. We know this high skill level is much easier to obtain if a person has the proper educational foundation. And because most people experience these elements during their primary and secondary school years, we are targeting mentorships for teachers in the 3<sup>rd</sup> through 12<sup>th</sup> grades. In this developmental timeframe we believe we can have the greatest impact on students and our collective futures.

Students excel in subjects when they are interested, excited, challenged, and when they see the relevance through applications of the subjects being taught. This is where a partnership between industry and the classroom can really take-off.

Again, thank you for participating. Now let's start rolling down the runway!

## What Is An Aerospace Fellows Mentorship?

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*First and foremost, an Aerospace Fellows Mentorship is a **relationship** with common goals, aligned expectations, and mutual benefits.*

The word mentorship can have very specific definitions in certain environments and have clearly identified processes and structures. Due to the many varying circumstances in the mentor's workplace environment and participating school, we will deliberately keep our definition loosely defined. We will talk more about what we want to accomplish than what our exact structure will be.

The main objective of the mentorship is to promote challenging Science, Technology, Engineering, and Math (STEM) activities in the classroom to create the excitement and relevance students need to excel. The teacher has the teaching tools and the mentor has the expertise and direct connection to the



industry. The teacher and the mentor will partner to find strategies for instruction that directly or indirectly use elements of the aerospace industry for the all-important application. This powerful combination will allow STEM to really take flight in our Oklahoma classrooms!

### **Communication is Key!**

Both the mentor and teacher need to take some time to identify the specific goals they wish to achieve and to plan the school-year activities. The teacher should share with the mentor the learning objectives they are required to cover in the school year. Together they should identify possible areas where the mentor could supply resources, activities, or applications to bolster the curriculum. Both parties need to actively communicate their intentions and expectations to ensure positive implementation.

It is critical that feedback be shared continuously along the process. It is just as important to identify what isn't working as what is. Having said that, we need to remember the objective of the mentorship is a positive one and we want to keep any criticisms, feedback, or concerns in a positive context.

### **What is My Role?**

#### **Mentor**

Your role as a mentor is to work with the teacher to create opportunities for exposing students to applications for the STEM curriculum they are learning in school. Mentors also provide insight into the industry students and teachers might not otherwise have. As students plan their futures they will hopefully consider career opportunities in aerospace. They will know as a result of your mentoring that they need to prepare now and create an education plan that involves a solid foundation in STEM-related classes.

As an Aerospace Fellows Mentor, your role should also involve providing growth opportunities for your teacher. Teachers are incredibly powerful elements in young peoples' lives. A successful mentorship should result in an informed and impassioned teacher.

#### **Teacher**

Most teachers are constantly looking for new ways to keep their students engaged. The mentor can be a powerful tool to add to your teaching tool bag. Your role is to glean what you can from your mentor about the aerospace industry and create a learning environment rich with aerospace applications. You should leverage this exciting leading-edge industry to challenge your students to excel.

As an Aerospace Fellow, you are asked to be a leader in spreading the information and resources you gained from the mentorship to other teachers in related STEM classes at your school. We hope you can inform, coach, and excite other teachers to use aerospace as a vehicle for student growth.



## How Long Am I Going To Be A Mentor?

We ask mentors and teachers to create a mentorship plan that lasts at least one school year. We hope the mentorship evolves into a long-term relationship and a continuous source of satisfaction for all involved. It is ultimately up to the teacher and mentor to determine if the mentorship will be a continuous relationship or for just one year.

## Suggested Activities

Possible activities for the mentorship might include:

### School Visits

Having the mentor or other industry professionals visit the school puts a name with a face. It adds a personal element for the students, and offers a real-world application. It also provides validation that the quality jobs are obtainable, because here is someone who has landed one of those jobs. Having industry professionals visit the classroom allows students to inquire and investigate elements the textbooks or teachers might not be able to answer.

Even though a mentor might work in a governmental office environment where they seldom see, touch, or hear aircraft they can still guide the class toward exciting elements of the aerospace industry. Mentors can share with the class what excites them about aerospace, or what made them gravitate to aerospace as a career.

### Digital Sharing

**Email** between a mentor and teacher is a great way to share progress on projects and activities. Students can follow along with projects their mentor is involved in at work. Students can follow along as they would a story in a book, but through email, they can experience it in real-time.

**Virtual Community** sites are available on the internet where mentors, teachers, and students can communicate, share, and collaborate.

**Web log (Blog)** - Many blogs provide commentary or news on a particular subject; others function as more personal online diaries. Blogs provide a method for people to follow a discussion or event.

### Projects or Challenges

**Short-term** – The mentorship can create activities that surround or employ a specific educational element such as using algebra to calculate specific gravity of a liquid or the drag coefficient of an airfoil. These activities tend to be directly connected to a specific and sometimes singular STEM process.



Mentorships with younger students might use an event such as a NASA shuttle mission to have students draw a picture or write a story about how they imagine it would feel to be on a shuttle mission. The goal here is not to subject the youngsters to complex STEM theories or processes that are far beyond their early capabilities, but to let them reflect on the event to see if it excites or interests them. This will, in turn, provide motivation for later lessons or classes.

Long-term – the mentorship can connect a series of short-term activities into a semester-long or multi-semester project. Using one of the short-term examples above, a long-term project might be the evaluation of an aircraft design using the drag coefficient activity combined with other performance and mission parameter activities to determine if the aircraft will meet the mission it is designed for.

Long-term projects for younger students might involve story telling on the history of flight in chronological order over a period of time. Students could then imagine and predict what the world of aerospace might look like in the future.

#### Industry Visits

Students enjoy getting out of the classroom and going on field trips. The mentorship might arrange for students to visit the manufacturing plant where the mentor works, or possibly an airport where the components they build are installed. Whatever element of the industry the mentor comes from is relevant to the industry as a whole. Exposing students to as many different elements of the aerospace industry as possible will increase the probability of them finding something that excites them.

If it is not possible to take younger students to the industry, the mentorship can bring the industry to them. Younger students like stories, movies, demonstrations, and museums because they excite their imaginations. The earlier grades are more for exploration and preparation than actually application and design.

#### Shadowing

In some instances, the mentorship can create shadowing opportunities for the teacher or even students, when appropriate. A teacher can pick up many things while shadowing in the industry. Many times mentees say after a shadowing experience, “I didn’t know that... there is much more to this than I ever thought about.” It is this eye-opening experience that makes shadowing so powerful.

#### Contests

Drawing on the competitive human nature can be an effective way to encourage someone to push themselves beyond where they are. The mentorship can create a competitive event with a reward for high performance. The reward can be a formal



recognition of performance or some other activity that provides satisfaction for a job well done. Rewards should not be of significant monetary value.

### **How Do We Know We Are Having A Successful Mentorship?**

We stated earlier that we deliberately have a loose definition for our mentorship. Without a specific identified structure, it might seem difficult to tell whether you are engaged in a successful mentorship. However, if the relationship is promoting challenging (STEM) activities in the classroom, if the mentorship creates excitement and relevance students need to excel, if both the mentor and teacher are satisfied with the relationship, and if the stakeholders see the mutual benefit, then you are having a successful mentorship.

### **Remember The Teacher Is The Expert in The Classroom!**

We encourage mentors to be actively involved with the students. It is always best to have the teacher present at all levels of student interaction. Teachers are professionals who have training and experience to facilitate interaction with students in safe and productive ways. Mentors should rely on the teachers' expertise and let them identify the boundaries and approve the strategies. Mentors should be personally diligent and avoid one-on-one interaction with students, either virtually or physically.

### **How Do We Bring The Mentorship To An End?**

Now let's bring it in for a smooth landing....As with all landings we want to make sure all systems are communicating and all passengers are able to share their experiences. A progress report will be sent out to the mentors and teachers that will help you track your involvement and progress over the school year. You will receive one in December at the close of the first semester and then a final report in late April before the end of school.

We will be looking for ways challenging STEM activities were used in the classroom and if it sparked interested in the students, any successes the teacher experienced in the classroom (including photos) and any ideas you both have for improving the program.

During the school year you will experience successes and learn new things. We are very interested in sharing these experiences with the entire network of Aerospace Fellows and Mentors. Please send your stories to [hbair@okcareertech.org](mailto:hbair@okcareertech.org) throughout the year. Periodic updates and ideas will then be sent out to the network to help encourage you and keep you fired up about Aerospace.