

# AIRPORT DESIGN CHALLENGE



## Airport Design Challenge Parent Toolkit

Welcome to the STEM AVSED Airport Design Challenge Toolkit, a collection of helpful materials and resources you may use during your journey. Have questions or comments? Please contact the National STEM AVSED Airport Design Challenge Team at [avsed.challenge@faa.gov](mailto:avsed.challenge@faa.gov).

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Federal Aviation  
Administration

## ABOUT AIRPORT DESIGN CHALLENGE

The Airport Design Challenge (ADC) is a dynamic educational initiative and collaborative opportunity designed for students in grades K-12. Organized and sponsored by the FAA Science, Technology, Engineering, and Math Aviation and Space Education (STEM AVSED) Program, this challenge aligns with the program's mission to inspire students to pursue careers in aerospace, fostering a continuous pipeline of professionals for a thriving workforce in the future. The overarching vision of the STEM AVSED Program is to empower today's youth to explore and connect with the aerospace careers of tomorrow.



This challenge is conducted on the Blackboard learning management platform and is designed as an interactive and collaborative experience. Throughout the Airport Design Challenge, your child will embark on a virtual journey to design airports within the Minecraft platform, guided by insights from FAA aerospace and engineering experts. This unique opportunity allows students to engage with aviation professionals, work collaboratively with fellow young designers, and gain valuable insights into the aerospace industry. This hands-on experience provides a practical application of STEM concepts in an aviation context, allowing your child to apply academic knowledge and skills to professional simulations.

Encouraging teamwork, participants can form teams of up to five members, but individual participation is also welcome. The instructional modules cover a wide range of topics, including airport layout, pavement and lighting, structures, and innovative growth. Progress assessments and feedback are seamlessly integrated into the learning experience through module knowledge checks and the submission of screenshots showcasing your child's designs.

The Airport Design Challenge is flexible and can be seamlessly integrated into various educational settings, such as individual passion projects, homeschool curricula, school-based STEM programs, community organizations, and aviation-focused groups. Students can complete the challenge at any point up until the submission deadline, including over the summer. Designed to be accessible to students globally, regardless of geographic location or educational background, this program opens the door for your child to explore the fascinating world of aviation and aerospace.

## QUICK START GUIDE

### HOW TO GET MINECRAFT

Minecraft is available in two versions: the regular edition and the educational edition. Check with your child's school to see if they have a license to the platform that your child can access. If not, the Airport Design Challenge can be completed using the regular version of Minecraft.

Minecraft can be obtained on various platforms, including Windows, Mac, gaming consoles, or mobile devices. However, note that the educational edition is exclusively accessible on Windows, Mac, Chromebooks, and iPad.

How to Install:

The installation process for Minecraft varies depending on your platform. For mobile phones and gaming consoles:

1. Visit the app store or game store and download the game. Once the download is complete, the game will be ready to play.

To install Minecraft on your computer, follow these steps:

1. Go to [Minecraft.net](https://minecraft.net) to download the installer package.
2. After downloading the package, open the file to install the game onto your computer.
3. Upon installation, log in to your account.
4. Congratulations! You are now prepared to embark on the Airport Design Challenge.

For additional guidance, please check-out our Minecraft ADC Tutorials, available [here](#).



## CREATE AN ACCOUNT

Go to the [ADC website home page](#) and click on "Login Here" to register for the game. Students will need their parent and/or teacher to complete the form and provide parental permission to play. The good news is the updated enrollment process, including the automated parental verification, should only take a few minutes to complete.



## PROGRAM SCHEDULE

The Airport Design Challenge can be started at any point throughout the year; however, most students typically start in the Fall once the new academic year has begun. The program includes six modules for students to work through prior to submitting their design. Although the challenge is year-round, in order to be eligible to win the challenge all final submissions are due on or before August 31 of the current calendar year.

Here is the recommended Program Schedule:

### ORIENTATION

Alexander Graham Bell taught that, "before anything else, preparation is the key to success." During orientation, there are a lot of tasks that you have to complete in order to be ready for the challenge to start.

1. Prior to beginning the challenge, you should complete:
  - a. Student Entry Survey
  - b. Tips Toward Success
  - c. Build Your Team
  - d. Choose Your Airport

## **MODULE 1: PAVED SURFACES**

To get started, make sure students understand how runways and other paved surfaces are laid out, then begin building them in Minecraft. This is usually the hardest part of the entire project so encourage students to take their time and make sure it is done just right.

1. By the end of this module, students should complete:
  - a. Airport Knowledge Pre-Test
  - b. Individual Assignment – SMART Goals
  - c. Group Assignment – Airport Layout Plan Part 1
  - d. Module 1 Knowledge Check Quiz

## **MODULE 2: SAFETY AREAS & SECURITY**

This module will give students a bit of a break after all the long, hard work they did on paved surfaces. In this module students will build a perimeter fence around your airport, including the gates to allow vehicles and people through. In addition to fences, students will want to make sure there are no obstructions at the end of your runways.

1. By the end of this module, students should complete:
  - a. Individual Assignment – Airport Security
  - b. Group Assignment – Airport Layout Design
  - c. Module 2 Knowledge Check Quiz

## **MODULE 3: LIGHTING, MARKINGS, AND SIGNS**

Adding airport lighting, markings, and signs requires some real attention to detail, but it is that detail that really makes your airport start to look like the real thing. Take your time this week and make sure you add as much detail as possible!

1. By the end of this module, students should complete:
  - a. Know Your Airport Lighting, Markings, and Signs Quiz
  - b. Individual Assignment – Airport Operations Staff
  - c. Group Assignment – Airport Layout Plan
  - d. Module 3 Knowledge Check Quiz

## **MODULE 4: AIRPORT BUILDINGS**

In Module 4, you should begin putting in all of the buildings on your airport. Some airports have a lot of buildings, and some have much less, but each building is unique so consider how you can make each one look as close to the real thing as possible. Hint: Consider asking for an airport tour!

1. By the end of this module, students should complete:
  - a. Individual Assignment – Airport Buildings
  - b. Group Assignment – Airport Layout Plan
  - c. Module 4 Knowledge Check Quiz



## MODULE 5: INNOVATION & GROWTH

Like most things, airports have grown through new technology, ideas, and needs. In Module 5, you get to stretch your creativity and determine what your airport could look like in the future. Perhaps it will have a new tower, a bigger terminal, or longer runways. Enjoy your own innovation!

1. By the end of this module, students should complete:
  - a. Individual Assignment – Innovation
  - b. Group Assignment – Airport Layout Plan
  - c. Module 5 Knowledge Check Quiz

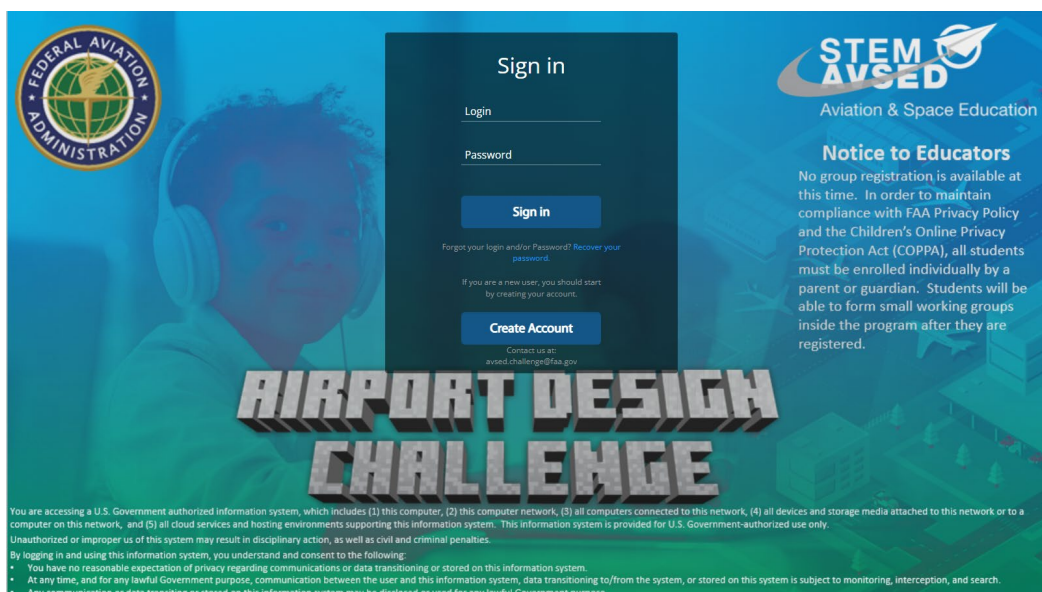
## MODULE 6: FINAL AIRPORT TOUR

This is it, your chance to show off all your work since Day 1! You will take our judges on a brief, virtual tour of your Minecraft airport. Remember, you can only turn in your final video once all the Module Quizzes have been completed.

1. By the end of this module, students should complete:
  - a. Airport Knowledge Post-Test
  - b. Final Project – Airport Video Tour

## BLACKBOARD OVERVIEW

To participate in the Airport Design Challenge, students need to individually register and obtain parental or guardian consent. The registration process is entirely electronic and can be initiated by visiting the ADC website at [faa.gov/adc](http://faa.gov/adc) and clicking on the “Click here to sign up for a new user account!” link.



Once registered, students will independently complete the online Blackboard modules. While coursework and activities can be done outside of Blackboard, it is crucial for each participant to successfully complete all knowledge checks before submitting their final project.

Upon logging into the Blackboard system, students will encounter a visible timer indicating the time left to complete ADC for the current cycle, fostering awareness among participants. As they navigate the system, students will find learning modules aligned with the earlier-discussed schedule, each including lessons, activities, and concluding with a knowledge check. We strongly recommend adhering to the suggested schedule, completing tasks in the specified order to ensure success, avoid mistakes, minimize rework, and prevent long-term fatigue throughout the project. Starting with the orientation is crucial.

In addition to core content, students can access Minecraft tutorial videos and message boards within Blackboard, providing a platform to pose questions and connect with fellow participants. We encourage active engagement with the community and FAA employees who moderate the message boards.

Our objective is to equip students with all the necessary resources for success, achieved through the thoughtful design and implementation of the Blackboard system. If students encounter challenges, we welcome feedback at [avsed.challenge@faa.gov](mailto:avsed.challenge@faa.gov). While we continually work to review, audit, and enhance the experience, your input, and that of your students, is invaluable.

### Parent & Educator Access:

In the latest updates, educators, parents, and mentors now have exclusive access to their own Blackboard hub within the Airport Design Challenge (ADC). Upon registering for a parent account on the ADC webpage, you gain entry to the dedicated educator section of Blackboard.

The screenshot displays the 'Airport Design Challenge Educator Access' Blackboard hub. At the top, a navigation bar includes 'SO/OL', 'Instructor Resources (5/2020)', and 'Learner Resources (3/2019)'. The main header features the FAA logo and the text 'AIRPORT DESIGN CHALLENGE'. A left-hand menu lists 'Airport Design Challenge Educator Access', 'Start Here', 'Get Help', 'Minecraft Tutorials', and 'Educator Resources'. The main content area is titled 'Welcome Educators and Parents!' and contains several informational paragraphs. The first paragraph states: 'This course is for teacher reference only. Any work submitted here will not be graded or counted for credit. If you are a student and are enrolled here in error, please email [avsed.challenge@faa.gov](mailto:avsed.challenge@faa.gov) for assistance.' The second paragraph reads: 'Hello teachers, parents, and adult coaches! We are thrilled to have you participating in the Airport Design Challenge. I hope that as you register and begin to navigate the course, you are enjoying the content and the opportunity with your students.' The third paragraph clarifies: 'As a point of clarification, please be aware that all students must enroll individually and receive parental consent in order to participate in the program. If you have created your account as an educator and are using the content to teach your students, but they are not enrolled, they will not receive credit or recognition from the FAA; they will not be entered into the competition.' The fourth paragraph provides instructions: 'To enroll your students, please have them complete the short registration form in Genius at <https://faa.geniussia.com/PublicWelcome.aspx>. Once they complete the form with their parent's information, the parent will receive an automated email asking for their verifiable consent. After consent is given, the student's account is activated and they are ready to begin.' The fifth paragraph states: 'As educators and parents, you have full access to all of the content that the students see. In addition to the content we provide to the students, your view of the course includes an Educator Resource tab. This section is filled with supplemental resources to assist you in working with your students. (You will find this on the dark menu to the left 🍷)' The final paragraph concludes: 'We are constantly considering new ways to grow this resource library so if you have a need, please reach out and let our team know.'

It's important to note that this hub is distinct from the students' Blackboard interface but precisely mirrors their course content. In addition to providing access to course content, the

parent hub offers supplementary resources, message boards, and valuable tips for success, acknowledging the unique needs of educators, parents, and mentors participating in the ADC.

We understand that this setup may differ from your typical coursework experience, as direct monitoring of students' progress within the system is not possible. This intentional separation safeguards sensitive information and data of all participants while streamlining the grading and review processes for final submissions.

If you would like to receive regular progress reports solely on your child's completion and scores for assignments throughout the challenge, the ADC team is available to assist. Simply reach out to [avsed.challenge@faa.gov](mailto:avsed.challenge@faa.gov), and we will be happy to accommodate your needs.

## RESOURCES AVAILABLE

### EDUCATOR FAQs

We have organized our most frequently asked questions into an [Educator FAQ webpage](#), many of which also apply to parents of students participating in the Challenge. This webpage is regularly updated to serve as a resource for information related to the Airport Design Challenge.

### SUBSCRIBE TO THE MAILING LIST

To learn more about future design challenges and STEM-AVSED events and opportunities, considering [joining our mailing list](#).

### OFFICE HOURS & TOWN HALLS

We offer monthly live office hours, which are led by FAA educator mentors for the ADC program. These are available to all educators, and we invite participants to come with questions or hear questions and ideas from other educators.

The ADC 2024 Office Hours are scheduled monthly from 10:30 – 11:30 AM Eastern Time (USA). Exact dates are listed on the resources page of Blackboard.

Email your STEM AVSED Point of Contact or [avsed.challenge@faa.gov](mailto:avsed.challenge@faa.gov) for the direct link.



## GET THE WORD OUT: DIGITAL TOOLKIT

Take a look at the Airport Design Challenge Digital Toolkit. In the toolkit, you can find a variety of resources for you to share with your networks, including videos, sample social media posts, email templates, ADC graphics, and official FAA channels to stay up to date with the agency.

The [Airport Design Challenge Digital Toolkit](#) is available at [www.faa.gov/adc/toolkit](http://www.faa.gov/adc/toolkit)

## CONNECT WITH US

Don't forget to tag the FAA's social media accounts so we can amplify your posts!

- Twitter: [@FAANews](#)
- Facebook: [@FAA](#)
- LinkedIn: [@FAA](#)
- Instagram: [@faa](#)

Feel free to connect with use via email for any Airport Design Challenge questions at [avsed.challenge@faa.gov](mailto:avsed.challenge@faa.gov).

To stay connected with FAA STEM AVSED check out [www.faa.gov/education/contact-us](http://www.faa.gov/education/contact-us)