



Idaho Exhibition of Ideas (IDX) is a team-based digital design and fabrication competition where students learn and practice design, iteration, and rapid prototyping skills with 3D printing technology. Student teams brainstorm, develop, and prototype an idea for a solution that responds to a challenge theme and incorporates 3D design/printing in some way. Each team works with an educator Coach, who guides the team through the design process and assists with documentation. IDX culminates in a regional Student Showcase, where teams will present their solution to a panel of judges and compete for prizes.

The Challenge Theme for the November 2019 Student Showcase is **Accessibility and Equity for the Visually Impaired**. [Refer to this video](#) for the official description of the 2019 Challenge Theme.

Team Eligibility

- Each team should consist of 4-6 youth
- Youth must be in grades 5-9 (mixed grade teams are OK)
- Each team should have at least 1 adult coach who is responsible for guiding the team, assisting with documentation and submission, and coordinating travel to the Showcase
- Coaches should have previously completed an *Idaho FabSLAM 3D Design and Fabrication workshop* between 2016-2019. Schools/organizations where one staff member has completed this training may be eligible to bring additional teams, led by Coaches who have not received training, provided there is collaboration with the educator who has been trained. **One coach should not lead more than one team**
- Teams must have access to a 3D printer and associated software in order to complete their Showcase entry
- Please contact Erica Compton (erica.compton@idaho.stem.gov) with questions about team/coach eligibility

Regional Showcase Locations, Dates and Times

Regional Showcases will be held on **Saturday, November 16th**. Showcases will begin with team set-up between approximately 10:00-11:00am and conclude by approximately 3:00-4:00 pm. Three regional showcases will be held at the following locations around the state:

- North Idaho: Lewiston, Exact Location TBD
- East Idaho: Idaho Falls, Exact Location TBD
- South/Central Idaho: College of Southern Idaho, Twin Falls

Teams must attend the Regional Showcase in the location closest to the sponsoring school/organization.

Exact schedules and venue information will be provided to registered teams closer to the event.

Showcase Submission Requirements

Teams are required to submit an original idea that responds to the Challenge Theme. Team entries should include the following:

1. Solution Prototype:
 - a. A physical representation of the solution idea created primarily by 3D printing.
 - b. Prototype should be thoughtfully designed and respond to the theme in a meaningful way.
 - c. Teams are highly encouraged to bring and display previous prototypes and iterations, including failed prints, that help tell the story of the team's process.
2. Digital Documentation:
 - a. A minimum one-page website detailing the team's process and what they have learned. Structure/platform of the website is up to the team.
 - b. Webpage should include both visual (photos/video) and written content.
 - c. Coaches are permitted to assist students with documentation (capturing photo or video) but not direct content creation.
 - d. **In order to streamline judging on the day of the Showcase, teams must submit their websites by Monday, November 10th for advance review.**
3. Presentation:
 - a. A presentation of no more than 5 minutes introducing the team's idea and describing the design process.
 - b. Include information about the solution, how the team arrived at the idea, challenges encountered, changes made, roles of individual team members and how the team might reiterate the design in the future.
 - c. A slideshow is NOT required; however teams may use one if they wish.
 - d. The presentation will be followed up by a 3-minute Q&A with the judges. Students should be prepared to answer judge questions independently, without assistance from the Coach.
4. Visual Materials:
 - a. Each team will be allotted a (6-8ft.) table to display the prototype, previous iterations and any accompanying visual materials.
 - b. Team presentations will take place **at team tables**
 - c. No specific visual materials are required however teams will receive a "Display" score based on how they use the space to explain their idea and process.

A full scoring rubric can be accessed [at this link](#).

At the Showcase: What to Expect

- Each Showcase will be approximately four hours in length, though times may vary depending on the number of teams attending.
- Teams will be allotted one hour at the beginning of the Showcase to set up. Most teams complete set-up within 20-30 minutes.
- A catered lunch will be available for students and coaches following set-up.
- Judges will travel from table to table for team presentations. A judging line-up will be provided so that teams know when they will be visited by the judges.
- Judges will spend **8 minutes** with each team: up to 5 minutes for the presentation and an additional 3 minutes for Q&A.
- In order to expedite the judging process, websites will be reviewed by judges prior to the start of the Showcase. To assist with this process, we ask that teams **submit their website URLs no later than Monday, November 10th**.
- While the judges deliberate, student tables will be open to family members/members of the public. Students are also encouraged to visit the displays of other teams. All participating students will be asked to vote on a "Student's Choice" award for their favorite entry. The Student's Choice Award will be given out alongside other prizes at the end of the Showcase. Students are not allowed to vote for their own project.
- The Showcase will conclude with a brief Awards Ceremony, where prizes will be given to selected teams.

Prizes

- Prizes will be awarded based on the scores given by judges on the rubric
- A 1st, 2nd and 3rd prize will be awarded
- All students are eligible to vote for a "Student's Choice" prize, which will be awarded to the team that receives the most votes. **Students are not permitted to vote for their own team for Student's Choice.**

IDX: Team Roles & Responsibilities

Student Role:

Students are the “makers” and bear most of the responsibility for developing a solution idea and completing a prototype. Student responsibilities include:

- Attending meetings/work sessions and participating by sharing ideas, giving feedback and contributing talents to get the work done
- Using 3D design software to design and model the agreed-upon solution
- Using 3D printing software (with Coach supervision/assistance) to complete prints and subsequent iterations
- Working to reach milestones and complete the project on time
- Documenting the team’s process on a webpage, including:
 - Developing an idea and prototype from start to finish
 - Important discoveries and decisions along the way
 - Challenges encountered and how the team responded/iterated
- Being able to explain the project idea and the design process, including:
 - The role of each individual team member in developing the final prototype
 - The reasoning behind different design decisions
 - The overall value of the solution idea
 - Answering judge questions
- Creating the presentation and display materials for the Showcase

Coach Role:

Each team has an educator who supports the team and acts as the point of contact with STEM Action Center. The Coach’s responsibilities include:

- Registering the team with STEM AC
- Arranging travel to the Showcase (STEM AC will provide travel stipends)
- Ensuring that any school-required permission slips or forms are completed by youth and their parents/guardians
- Coordinating with youth/parents as needed to set up meetings and work sessions for them to complete the project
- Introducing youth to 3D design software and printing technology and assisting with technical troubleshooting
- Guiding youth through problem solving/design thinking process
 - Provide a scaffolding/process for students to identify a problem, brainstorm a solution and develop a prototype
 - Ask questions about design ideas and prototypes
 - Prompt them to think about factors/users/circumstances they may not have considered
- Submitting team webpage URL, final .stl file and any information requested by STEM AC

IDX: Frequently Asked Questions

I am doing this project with multiple teams of students. Am I allowed to host a mock Showcase at my school/organization to determine which team attends the Regional Showcase?

Absolutely! Schools/organizations working with a large group of students are encouraged to host a mock Showcase to determine which team to bring to the Regional. This has the additional benefit of giving your students a chance to practice and update their idea based on feedback they receive during the mock competition. If you are doing a mock showcase, make sure you allot time for this in your overall project timeline.

Are there divisions for different grades/ages at the Showcase?

No. All teams in the same region compete together. Mixed grade teams are permitted.

Is there a State Showcase after the Regional Showcase?

Currently, STEM AC does not offer a State Showcase for IDX. This may be something we offer in future years, depending on interest.

Some of my students are really interested in the 3D design aspect, but some are more interested in research or web design. Is that OK?

Yes. We recognize that different students have different skills, interests, and areas of expertise. The important thing is that each student plays a role in the design process and works together as a team. Students are encouraged to highlight the unique ways in which each team member contributed during the Showcase.

Can my school/organization bring more than one team?

Schools/organizations are allowed to sign up more than one team, provided either a) an additional staff member has completed a FabSLAM training, OR; b) an additional staff member who has not completed the training is willing to serve as a Coach and works closely with a staff member who has attended the training. Each team should have its own associated Coach.

Why do teams have to submit their webpages ahead of time?

We are asking teams to submit their webpages by November 10th in order to give judges a chance to review the webpages ahead of time and save time during the day of the Showcase. This will mean less waiting around for you and less restless students during the Showcase, as well as lead to more thoughtful review from our judges.

Are teams required to use a specific platform for their website/webpage?

No, teams can use whatever platform they wish, if it is publicly accessible on the internet. We suggest using a platform that you are comfortable with as a Coach so that you can best support your students. Do make sure that your website is published prior to sharing the URL with STEM AC; otherwise judges may not be able to access it.

Who are the judges?

The judges will be a team of 3-4 local professionals with experience in STEM/design-related fields. If you know someone that you'd like to recommend as a judge, please have them contact Francesca Bessey at francesca.salmonmakers@gmail.com

Design Resources

Not sure where to start? Below is a list of resources to help you in supporting your students through the design and digital fabrication process:

Design Resources:

- Tinkercad: <https://www.tinkercad.com/>. Our number-one recommended, free design software for learning 3D design and creating your Showcase entry. Check out <https://www.tinkercad.com/learn> for helpful tutorials and <https://www.tinkercad.com/teach> for educator resources.
- OpenSCAD: <https://www.openscad.org/>. Another free 3D-design software that using coding commands to create objects. May be suited to students with a coding background or who are ready to create more sophisticated projects.
- Cookie Caster: <http://www.cookiecaster.com/>. A very basic platform for introducing the concept of 3D design to students, by inviting students to scale 2D objects into 3D.
- Instructables: <https://www.instructables.com/>. A DIY website with tutorials on almost anything.
- Convertio: <https://convertio.co/>. A free platform to convert files from one file type to another, useful for converting images into vector graphics for scaling in Tinkercad (for example if you wanted to add 3D graphics to a design).

Digital Documentation Resources:

- Google Sites: <https://sites.google.com>. Collaborative website builder, easily integrated with other Google tools.
- Weebly: <https://www.weebly.com/>. Easy, free website builder and blogging tool
- Wix: <https://www.wix.com/>. Easy, free drag-and-drop style website builder
- Wordpress: <https://wordpress.com>. Free tool for building more sophisticated websites.
- Jing: <https://www.techsmith.com/jing-tool.html>. Free, downloadable tool for screen-recording (screen-casting) and creating video: good for live-capturing student work on Tinkercad as they design.
- Animoto: <https://animoto.com/>. Free, online platform for drag-and-drop video editing.

3D Printer Troubleshooting Resources:

- MatterHackers 3D Printer Troubleshooting Guide:
<https://www.matterhackers.com/articles/3d-printer-troubleshooting-guide>
- All3DP 2019 Troubleshooting Guide to Common 3D Printing Problems:
<https://all3dp.com/1/common-3d-printing-problems-troubleshooting-3d-printer-issues/>
- Flashforge Finder User Guide:
https://cdn.shopify.com/s/files/1/2510/7166/files/Flashforge_Finder_User_Guide.pdf?14412776308217865576
- Flashprint User Guide: https://store.flashforge.com/wp-content/uploads/2017/07/Flashprint-UserGuide-en_US.pdf
- Flashforge Finder Video Center: <https://flashforge-usa.com/pages/finder-videos>