NHMS Tech Fair 2022-2023

Dates, information, categories, and more!

Important Dates

Registration deadline: Friday October 21st

Applications can be found on the NHMS website and were handed out at presentation OR you can come see Dr. Nash or Mrs. Olson

NHMS Tech Fair: December 6-7

Regional Tech Fair: TBA

State Tech Fair: TBA

Due to the circumstances of this school year and Covid-19 related guidelines, we do not know yet if the regional and/or state competitions will be virtual or in-person.

Tech Fair Categories

Students must create a digital-based project which aligns with one of the following categories:

- 3D Modeling
- Animation
- Audio Production
- Device Modification
- Digital Game Design
- Digital Photo Production
- Graphic Design

- Internet Applications
- Mobile Apps
- Multimedia Applications
- Productivity Design
- Programming Challenge (7th-12th grade students)
- Project Programming
- Robotics
- Video Production

Students compete against other students in the following groups according to state Tech Fair guidelines:

- ❖ 5th/6th Grades
- ❖ 7th/8th Grades

State Tech Fair Website: https://www.gastc.org/category-information

3D Modeling...

This category is defined as any original work digitally created and modeled in three dimensions using specialized software.

Models are NOT required to be printed on a 3D printer. Project must be presented in the software used to create the model(s). Judges will ask questions to determine the level of understanding of the software and design process.

Software may include, but not limited to:

- Blender
- Zbrush
- Maya
- AutoCad
- SketchUp
- GollyGee Blocks (iOS)
- LightWave.

- Minecraft
- Rhinoceros
- TinkerCAD
- Chrome Educational Apps:
  - 3DTin

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/3d-modeling/

3D Modeling, continued

Links to other examples of 3D modeling, tutorial videos, etc.:

- Lego Digital Designer: Basic Tutorial(YouTube video)
- Lego Digital Designer Archive of user creations
- SketchUp K12 Case Studies
- Sketchup Basics (YouTube Videos):
  a. Part 1
  b. Part 2
  c. Part 3
  d. Part 4

- *Teach Kids how to Code, Make Apps and 3-D Models With These Tools* (via The Digital Shift)
- TinkerCad Gallery
- Sketchup Basics for K-12:
  a. Part 1
  b. Part 2
  c. Part 3
  d. Part 4
  e. Part 5
  f. Part 6
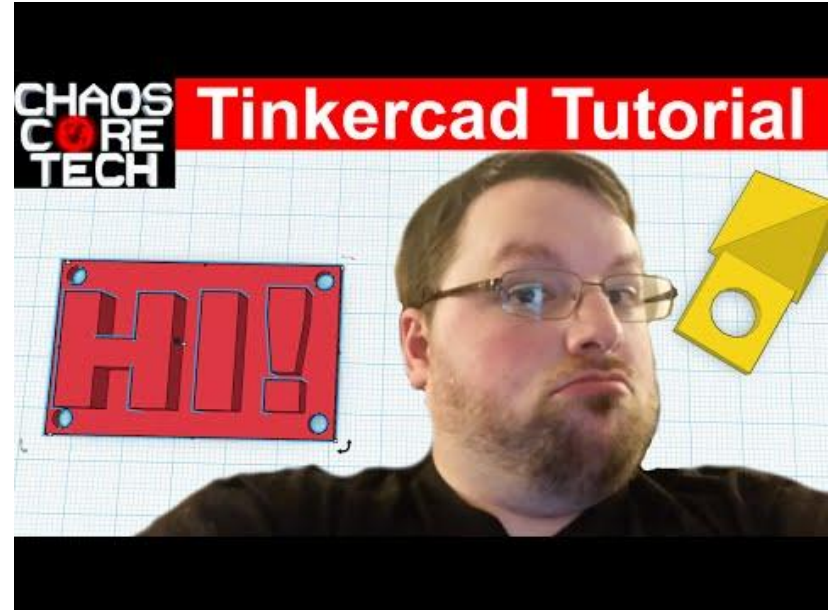 g. Part 7
  h. Part 8

3D Modeling, continued

Helpful tutorial videos:

3D Modeling General Overview
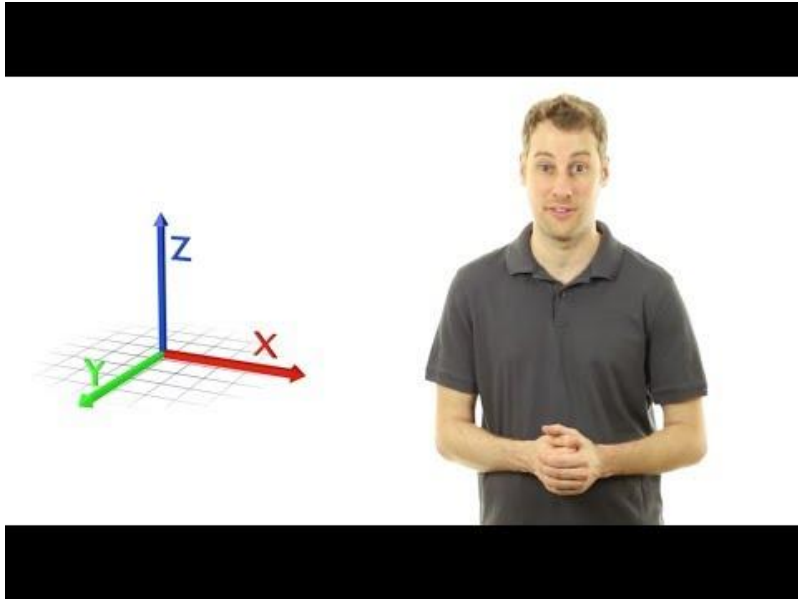
Tinkercad:

Animation

Do you enjoy digital storytelling? Have you considered adding motion to a digital storytelling project or a piece of visual information? An animation project is defined as any original project that generally consists of a sequence of images of the motion of objects to create a video.

Animation can involve programming sprites to talk, move, and interact. This can include, but is not limited to, short movies, music videos, comical shorts, and others by using a variety of animation techniques.

Animation can also be stop-motion animation; the technique of photographing successive drawings or positions of puppets or models to create an illusion of movement when the movie is shown as a sequence.

Software may include, but not be limited to:

- Scratch (or Scratch 2.0 Offline Editor)
- Adobe Animate CC
- Crayola Easy Animation Studio
- Toontastic
- iFunFace
- PowToon

- Flipnote Studio 3D
- iStopMotion
- StikBot
- Plotagon | Tutorial and Sample Project
- Toon Boom | Tutorial and Sample Project

- DigitalFilms
- Echograph
- GIMP
- GoAnimate

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium
https://www.gastc.org/animation/

Animation, continued

More examples of animation/animation projects:
- Examples of student-created Adobe Flash animations:
  - *The Red Balloon* (YouTube video)
  - *Turtle Story* (YouTube video)
- Adobe Flash animation: *Kite* (YouTube video) by James Pierson
- *Showreel 2012* features additional animations by James Pierson, a great springboard for ideas (Vimeo video and still shots)
- *SJAM Animation Team student exemplars* made with Adobe Flash and Photoshop
- *SJAM Animation Badge: Concept and Terms* house great how-to information and examples
- Animated GIFs created by Mrs. Federman's students at Benito Middle School
- The Echograph Blog houses examples of intriguing animated graphic design
- GoAnimate student projects: (YouTube videos)
  - *Digital Citizenship*
  - *Inferencing: Esperanza Rising*
  - *2D & 3D Shapes*
  - *Biomes*
  - *Numbers*
- KidPix animation ideas by Suzie Vesper (YouTube Video)
- Student-created Scratch animations

Audio Production...

Do you like producing your own podcast? Do you love to write/compose/produce your own music? If so, you may want to submit an Audio Production tech fair project! An audio production project is defined as any original audio production that has been edited/produced with digital tools. Projects may include speaking, singing, music, sounds effects, and other audio components.

The project must be displayed on a device using the program in which it was created. The student should be prepared to demonstrate to judges how the software was used to create the finished project.

Software may include, but not limited to:

- [Audacity](#)
- [Garage Band](#)
- [Wavosaur](#)
- [EarSketch](#)
- [Adobe Audition](#)
- [Wavepad](#)
- [Acoustica](#)
- [Paul's Extreme Sound Stretch Portable](#)

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/audio-production/

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Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/audio-production/

Device Modification...

Device modification projects are devices engineered and/or modified by students to serve a specific purpose or meet a specific goal. Device and parts do not have to be new. However, the device must be fully functional and the computer must boot up and open/run a program (example: Paint). Students can add moving parts, lights, etc. to devocare the computer they modified/engineered.

Think about this: How could I turn a computer/computerized device into a cleverly designed object?

Some software and project examples include, but are not limited to:

- [Arduino Projects](#)
- [Raspberry Pi](#)
- [Makey Makey Projects](#)
- [Modders, Inc's featured case mods](#)
- [Student Project Build](#) via the [ModZoo Forum](#)
- Jeffery Stephenson's [examples of case modification, computer design, and innovation](#)
- [TechPowerUp Case Mod Gallery](#)
- [MnPcTech Case Mod Gallery](#)

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/device-modification/

Digital Game Design...

Do you enjoy video games? Have you tried creating your own? Game design promotes a wide variety of transferable skills for students such as problem-solving, research, writing, coding, digital content creation, and more! Digital Game Design tech fair projects should include original content, design, and rules of an interactive game.

Students may use the software program of their choice in order to demonstrate creativity, originality, organization, and interactivity. Students should be able to explain to judges what inspired their game idea and how they programmed their game to achieve project goals.

Software may include but not limited to:

- Scratch
- Hopscotch
- GameSalad Creator
- Minecraft
- Android Studio
- Tynker
- Unity 3D Game Engine
- Gamemaker Studio 2

- Sploder
- Stencyl
- Zondle
- PuzzleScript

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/digital-game-design/

Digital Photo Production...

Get your camera ready! Take pictures with your phone, iPad, or camera and use software to enhance your photos or turn them into something brand new. A digital photo production project is defined as any project using a single original student photograph where digital editing tools were used to enhance/modify the image. Images containing non-original content or collages fall under the Graphic Design category.

The project must be displayed on a device using the program in which it was created.

The student should be prepared to demonstrate to judges how the software was used to create the finished project.
A hard copy of the finished project may be displayed but is not required.

Software may include but not limited to:
- Adobe Creative Suite
- BeFunky
- GIMP
- PicMonkey
- Pixlr
- Pixelmator

- Microsoft Photo Gallery
- Photoshop
- Picasa
- Corel Draw
- FotoFlexer

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/digital-photo-production/

Digital Photo Production (continued)...

Additional digital photography resources:

- Examples of student work from Natomas High School
- Elective Class Photography Projects(with a bit of music, too), via Middle School Tech Lab teacher Todd Mitchell's pupils
- Student photography projects via Quest Community School

Additional examples of digital photographs/related resources/ideas:
- *7 Ways to Use Digital Photography in The Classroom* from WeAreTeachers
- Buck Institute for Education Project-based learning resource: Photojournalists Project(ideas and step-by-step teaching guide)

Techniques/creative photography ideas:
- bokeh (blur/blur quality) photography suggestions from Nikon
- frame-within-a-frame photography(see also, natural frames as explained by Digital Photo Secrets)
- high key photography as explained by Digital Photography School
- KAP (kite aerial photography)--Andrew Newton, American Kitefliers Association KAP resources, andKAPshop
- digitally combine paint and photographs in a fashion similar toFabienne Rivory's LaBokoff project
- use a flatbed scanner as a digital camera via technique called scanography (examples: Digital Photography School,LightStalking, Photogalaxy, andScannography Blog)
- tilt-shift photography (resources: Digital Camera World's *Tilt-shift Photography: How To Use 1 Lens For 6 Very Different Effects*, Digital Photography School's *Introduction to Tilt-Shift Photography*, TiltShiftMaker, and Tilt-shift apps for iPhone

Graphic Design

Do you enjoy creating original artwork using a computer/digital means? Do you view your computer as a digital canvas? Graphic design projects are computer-created *original* art projects. They use a combination of static images and/or words into a single design to convey information or an idea with an intended effect.

Digital Photography and 3D Modeling are **NOT** part of this category.

<u>**The project, including all images and content, must be displayed on a device using the program in which it was created**</u>.

Software may include, but not be limited to:

- Microsoft Publisher
- Crayola Color Alive
- Adobe Creative Suite
- Sketchpad
- ToonBoom
- ArtRage
- Corel Draw

- Paint
- Paint.Net
- Photoshop
- SmoothDraw
- GIMP
- Inkscape

 Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/graphic-design/

Internet Applications

Internet applications projects are network based applications including, but not limited to, web sites, chat rooms, forums, and blogs. These projects often allow students to collaborate with others and interact with content. These projects rely on networks/the internet for creation and publication.

The project must be displayed on a device. Judges may ask to view elements of the design and production process. Source code must be available where applicable.

Software may include, but not limited to:
- **Dreamweaver**
- **Wordpress**
- **Weebly**
- **Cloud9**
- **Google Sites**
- **Weebly**
- **Adobe Spark**

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/internet-applications/

Mobile Apps...

A Mobile Apps project is an app that is specifically developed for a mobile device (smartphone, tablet, slate, etc.).. The app can be developed for any mobile operating system (iOS, Android, etc.).. Students should be able to explain to judges what inspired their idea and how they programmed their app to achieve its intended purpose.

NOTE: Projects designed as **mobile-friendly web pages** fall under the Internet Applications category.

The student must be able to run the app on the day of the competition on a device or a mobile simulator.

Software may include, but not limited to:
- Android Studio
- MIT App Inventor
- Xcode
- Appery.io
- AppyPie

Examples of student-created apps:
- MIT App Inventor's App of the Month highlights student-created apps.
- Westside High School junior Edmon Adams created an app for the Henry Doorly Zoo. The app helps visitors find the shortest routes between zoo exhibits. The app is named ZooNav. iPhone or iPad users can download the free app via iTunes.

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/mobile-apps/

Mobile Apps Resources...

Additional resources on how to create mobile apps:
:

- Code Studio helps students to learn the basic concepts of computer science needed for app development. This site provides students a place to create and send apps.

- App Academy

- Want to see a few examples of well-designed, helpful apps? Check out the American Association of School Librarians list of the best apps for teaching and learning

- MIT App Inventor is a (FREE) blocks-based programming tool that allows everyone, even programming beginners, to begin programming and building fully functional apps for Android devices.

- *MIT App Inventor's Guide to Creating Challenge-Worthy Apps* is an hour-long YouTube video that demonstrates how to use the MIT App Inventor.

- For ideas and guidance in developing a superior mobile app, visit the Verizon Innovative App Challenge site and review the products and qualities of past winners.

Multimedia Applications...

Multimedia applications projects are defined as any multi-page creative presentation using any combination of media including audio, video, images, or text.

Videos do not go in this category. Video projects fall under the [Video Production](#) category. Animated movies fall under the [Animation](#) category.

Software may include, but not limited to:
- [PowerPoint](#)
- [Google Slides](#)
- [Apple Keynote](#)
- [Microsoft Sway](#)
- [Prezi](#)
- [Adobe Spark](#)

 Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/multimedia-applications/

Productivity Design...

Productivity Design projects can be developed from various non-multimedia application programs such as desktop publishing, word processing, spreadsheets, databases or any other non-multimedia software. Examples include newsletters, calendars, business flyers, infographics, charts and graphs, graphic organizers, annotated timelines, brochures, etc.

Software may include, but not limited to:

- Microsoft Publisher
- Microsoft Office (Word, Excel, Publisher)
- Google Docs
- Microsoft Access
- File Maker Pro
- Piktochart
- Canva
- Adobe Spark

- Numbers for Mac
- QuarkXPress
- Pages for Mac
- Scribus
- Access
- Adobe InDesign
- Chart Chooser
- CMap Tools
- Coggle
- Create A Graph

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/productivity-design/

Productivity Design...

Additional resources:

- For students interested in creating documents and spreadsheets online, Google has instructions for using Docs and Sheets

- Technology director and instructor Steve Ignacio's K5 Computer Lab shares ideas and activities to help students learn how to create a wide variety of non-multimedia products: word processing documents, spreadsheets, brochures, and much more.

- Eastern North Carolina Instructional Technology Specialist Lauren Boucher shares a lot of helpful information in *Totally Awesome Things to Do with Spreadsheets in the Classroom*. Check out even more ideas in her *More Totally Awesome Things to do with Spreadsheets in the Classroom*.

- Many Microsoft Office applications are useful for creating non-multimedia products:
  - Access: Learn several reasons you should use Access as well as online training resources and courses
  - Excel: Learn uses for Excel and check out a Microsoft training course by Judi Hurlock
  - Publisher: is a versatile tool for creating documents from a wide variety of templates
  - Word: Watch training courses to see why Microsoft Word is still an incredible resource for creating all sorts of documents

Project Programming...

Calling all coders! Projects in this category are **executable programs created by the student** using a programming language. All parts of the program must be the author's own design.

Programs must be functional and have a specified intended purpose.

Sample programming languages include, but are not limited to:

- Java
- Python
- Javascript
- C++
- PHP
- Swift
- LOGO

- Objective-C
- Pasca
- Python
- Ruby
- SQL
- BA
- C#

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/project-programming/

Tech Programming Challenge...

Note: This category does not take place at the school fair level

Calling all coders (again)! This category is an on-site event in which one or two students are given a series of problems that they must solve during the two-hour competition time. Each team will be awarded points for each problem solved correctly. Programs will also be judged on structure, design, and organization.

Any questions regarding interpretation of the problems must be submitted in writing to the judges who may choose to answer or reject the question. The decisions of the judges are final.

Competition will begin with a briefing session. The contest(s) problems will be distributed to all teams at the same time. At the end of the two hours, the programs developed in the competition will be submitted for judging. The judges will use the contestants' computers to check the solutions to the problems. Results will be announced at an awards ceremony.

(continued on next slide)

 Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/programming-challenge/

Tech Programming Challenge... (continued)

Note: This category does not take place at the school fair level

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Each contestant is required to bring the computer of their choice, appropriate operating system software, and programming software with which to compete. Students must also bring a power strip and extension cord to the test site. Contestants may bring an additional computer only for emergency situations in the event that one computer does not function. However, back up computers must remain unplugged and may not be used unless permission is obtained from one of the judges. Contestants may bring to the contest only the manuals for their computers. Any contestant using other resources including textbooks, published program listings, notes, or any storage media, will be disqualified.

Contestants will not be permitted to communicate with their advisors. No visitors will be allowed in the testing areas. Contestants will be monitored on a random basis. Each contestant must be able to enter their programming code, execute the solutions to the problems and save them as directed by the judges.

Judges will use a category rubric as a guideline for exemplary characteristics of projects in this category. Students should use the rubric as a guide for what judges are looking for.

Information courtesy of the Georgia Student Technology Competition Website and the GA Educational Technology Consortium https://www.gastc.org/programming-challenge/

Robotics...

Projects in the robotics category are autonomous machines engineered and programmed by the student from their own concepts and designs, or published drawings/kits. All projects must be a working and functional piece of electro-mechanical hardware where movement and intent is controlled through student-created programming.

Devices controlled through direct, real time remote control by the student are not appropriate (ie: remote controlled cars). Once started, the robotics project should operate as a standalone independent machine without human interaction.

Examples of commercially available robotics kits include (but are not limited to):

- Lego
- K'Nex
- Capsella
- VEX
- Technics
- Hummingbird
- Owikit

Student engineered robot designs and concepts are encouraged. Additional resources are listed on the next slide.

Robotics, continued...

Additional robotics resources:

- The First LEGO League robotics competition site is a great resource for students who want to hone their skills or get started with a Virtual Robotics Club.

- The Center for Engineering Education and Outreach at Tufts University explains why exploring and working with robotics is important.

- Carnegie Mellon University's Robotics Academy helps students understand how robots are designed, prototyped, and tested for business, government, and industry. The site's Robotic Academy Blog is also helpful and worth exploring

- Oregon State University's College of Engineering site features a *Robots in the Real World: Projects* page that describes why the university is leading and designing a new generation of Autonomous Research Vessels (ARVs) for deployment in extreme environments.

- The TeachEngineering site provides several ideas for working with robotics (e.g. commanding a robot using sound).

Video Production...

Do you want to be the next JJ Abrams or George Lucas? Do you love making your own videos? If so, then video production might be the category for you! Video Production includes any original video project that has been edited on a computer with digital video editing software and exported into a digital video format. The project must be displayed for viewing on a computer. Judges will ask questions to determine the level of understanding of the software and production process.

Stop-motion and animation projects fall under the [Animation](#) category.

Software may include, but is not limited to:
- Adobe Premier
- Apple Final Cut Pro
- Apple iMovie
- Wondershare Filmora - free version

- VDSC Free Video Editor -free
- Shotcut- free
- [WeVideo](#)

The focus of this category is on the editing process. Original video content used in this kind of project may come from the student or it may be obtained from other permissible sources. Regardless of its origin, all content used must be properly cited in the project.

Examples of video editing software are listed on the next slide.

Video Production, continued...

Keep in mind that the focus of this category is on the editing process. Original video content used in this kind of project may come from the student or it may be obtained from other permissible sources. Regardless of its origin, all content used must be properly cited in the project.

- **Adapter**
- **Any Video Converter**
- **Camtasia Studio**
- **iMovie**

- **Pinnacle**
- **WeVideo**
- **Windows MovieMaker**
- **VLC Media Player**

More examples of digital video production:
- Animoto's *6 Videos to Use in Your Classroom* provides ideas that students can adapt
- Mathtrain (student-created tutorials companion to the Mathtrain iTunes educational podcast)
- Matt Miller, a high school Spanish teacher in West Central Indiana and author of *Ditch That Textbook*, presents *20 Video Project Ideas To Engage Students*
- CHeck out these great examples of how videos can be used for learning: Watch Students at Westgate School create and use video to discuss their passion projects.
- Tellagami is an app that allows users to create and share animated messages. Click here to view examples.