



## Greater Cincinnati STEM Collaborative (GCSC)

### STEM Bicycle Club and 3d Printers Club

### 2019-2020 Application Packet

Release Date: May 28, 2019

Greater Cincinnati STEM Collaborative (GCSC) is a non-profit housed at the University of Cincinnati (UC). It helps prepare students for their futures and to join Greater Cincinnati's workforce through connected, robust STEM (Science, Technology, Engineering, Math) learning pathways. STEM learning is propelled by business, education, community collaboration and our culture of incubation, acceleration, and inclusion.

Our vision is that Greater Cincinnati continues its growth as a technologically rich, vibrant community with the most talented STEM workforce in the country that is representative of the region's population. GCSC prioritizes organizations serving students underrepresented in STEM (low-income students, girls, and students of color – African American, Latino/Hispanic, mixed race) for direct funding and support.

Due to the generosity of our supporters and demonstrated positive impact, GCSC will again support 3d Printers Clubs and STEM Bicycle Clubs during the 2019-2020 school year. For the first time schools and other organizations able to fund 100% of their club costs, including fees to cover GCSC program costs, will also be selected to participate.

**Any school / school partner interested to host and lead a GCSC 3d Printers or STEM Bicycle Club in 2019-2020 must apply online by Monday, August 19, 2019.**

### 3d Printers Club

The [GCSC 3d Printers Club](#) is a "heads on, hands on" project that uses an exciting, hot technology to engage students . . . 3D printers! For ten weeks after school 20 or more students design solutions to real problems using the engineering design process, modeling software and a 3D printer. The club builds student confidence; strengthens students' design, technology, problem-solving, and leadership skills. Students often drive their learning in this club that reinforces math and science principles taught during the school day.

The 3d Printers Club is aligned with both science and math standards (5<sup>th</sup> through 9<sup>th</sup> grades) and extends well to both earlier and later grades. Approximately 20% of 49 2018-2019 clubs used the curricula during the school day. The club includes curricula for new clubs ([Problem Solving Inventions](#), [3D Grand Prix](#)) plus two \*new\* for 2019-2020 curricula for returning clubs ([Cleverly Contrived Contraptions \(C3\)](#), [Baseball / Softball Edition](#)). The club concludes with an all-region "3d Printers Showcase" hosted at UC.

### STEM Bicycle Club

The [GCSC STEM Bicycle Club](#) is a "heads on, hands on" project that engages 15 students for 10 weeks after school. Students break down and re-assemble bicycles they get to keep. The club builds student confidence; strengthens their making, problem solving, and persistence skills; and brings relevance to math and science principles taught during the school day. It offers leadership experiences, especially to students who return to the club for a 2<sup>nd</sup> and 3<sup>rd</sup> year as peer mentors and coaches.

The STEM Bicycle Club is designed primarily for 7<sup>th</sup> and 8<sup>th</sup> grade students and aligned with both science and math standards. It also extends well to other grades. [See curriculum introduction here.](#) The program includes extension curricula written by previous club teacher leaders (example, [Inquiry Labs](#)) and a culminating "STEM Bicycle Club Celebration" event hosted at UC. 21 clubs ran 2018-2019.

Both clubs provide students exposure to STEM career possibilities in design, engineering, advanced manufacturing, IT, science and more. This is accomplished most powerfully through the involvement of volunteer mentors / coaches, who are ideally in STEM professions. GCSC strongly encourages, and provides resources for, club leaders / hosts to involve families in both clubs.

### Application Timeline

Milestone	Date
Application window opens	May 28, 2019
Applications due	August 19, 2019
Announce club selections	October 15, 2019

## Key Dates

Event	Who Attends	 <b>3d printers club</b>	 GCSC stem bicycle club
<b>Professional Development (PD) and Training</b>	Club Teacher Project Manager	<b>Returning Club Leaders (Refresher and New Curricula Walkthrough)</b> November 12, 2019 11:00am-1:00pm  <b>New Club Leaders</b> November 13, 2019 9:00am - 3:00pm 3:00pm - 5:00pm (Optional Tech Session)	December 11, 2019 9:00am – 3:00pm
<b>Project Debrief</b>	Club Teacher Project Manager	March 11, 2020 11:00am – 1:00pm	May 6, 2020 11:00am – 1:00pm
<b>All-region Club Culmination at the University of Cincinnati</b>	Students, families, club leaders and partners	<b>3d Printers Showcase</b> March 18, 2020 9:00am – 1:30pm	<b>Celebration</b> May 16, 2020 9:30am – 2:00pm

*Volunteers are welcome and encouraged to attend all events!*

## Submitting Your Application

Use this link to submit your club application:

[3d Printers Club](#)

[STEM Bicycle Club](#)

*Schools / school partners may submit applications for each club if they are strongly ready and committed to both.*

Once you're on the application site:

1. Make an account or sign in.
2. Begin filling out your information.
3. If you want to save a draft, scroll to the bottom of the application and click the "Save Draft" button. Access draft by logging into submittable.com, clicking the drop-down menu on the top right by your name, clicking "My Submissions," selecting "Saved Drafts" from the top bar, then clicking "Continue."
4. When your application is complete, click the orange Submit button. You will receive an email confirming your application has been received.

## Club Selection Principles

1. **Inclusion and Access:** GCSC will award donor-supported clubs disproportionately to educators (and their partners) serving students who are underrepresented in STEM (students of color – African American, Latino/Hispanic, mixed race, low-income students, and girls). Beginning in 2019-2020 schools and other organizations able to fund 100% of their club costs, including a \$1,000 fee to cover GCSC program costs (curriculum and professional development, culminating event, project management and consulting), will also be selected to participate. GCSC will award clubs broadly across the region, while meeting other principles.
2. **Readiness & Commitment:** Club leaders and their sponsors must be committed to collaborate with GCSC and community volunteers to:
  - Maximize and measure positive student impacts
  - Share the story of club and student success
3. **Sustainability:** **GCSC prioritizes funding clubs that will co-invest to cover at least a small portion of their club costs.** In previous years clubs have accessed Title I or Title IV Block grant, 21st Century, PTO / PTA, local business, school foundation, etc. funds. GCSC is willing to help with partners' fund-raising (coaching / consultation, provide information needed for grant writing, letters of endorsement, etc.).
4. **Sponsor Priority:** Clubs will be awarded in line with sponsors' priorities: geographic location / diversity, student age and / or diversity, etc.

## Club Resources Provided By GCSC

1. Curriculum that includes lesson plans and student workbooks.
2. Resources to learn how to use 3D printers and modeling software (3d Printers Club) and how-to videos (STEM Bicycle Club).
3. Online resources to support club planning, volunteer recruiting and orientation, student recruitment, family engagement, and more.
4. Professional Development (PD) / training and consultation for club leaders.
5. Club materials (bicycles and tools, 3D printers, etc.). Purchases and delivery are coordinated by GCSC.
6. Culminating events hosted at UC for club students, families, volunteers, leaders and other club supporters.
7. As needed a small budget for club food, teacher stipend, and transportation to culmination event / field trip.

## Club Roles and Responsibilities

1. **Project Manager:** Plans the club, including logistics and resources. Is the primary communication interface between the school, parents, community partners, volunteers, and GCSC. Key partner with the teacher to plan space and food, recruit students and obtain family permissions, administer post-club surveys, arrange transportation to culmination event. Collaborates with others to recruit volunteer coaches / mentors. Ensures organization agrees to and accepts GCSC club grant terms. Serves as liaison between teacher and technical (IT) support to ensure all required technology is operational (3D printer connections, connection to STEM Bicycle Club videos). With club teacher plans involvement of students' families.

*GCSC has seen many types of people successfully provide project manager leadership, including: resource coordinators, school counselors, after-school / 21<sup>st</sup> Century coordinators, instructional coaches, other teachers, administrators, community partners, and volunteers.*

2. **Teacher:** Prepares and leads club meetings, using provided curricular resources. Creates tie-ins to science and math curriculum taught during the school day. With club project manager plans involvement of students' families. Ideally, is a K-12 math, science, engineering, or other STEM / STEAM teacher.

## High-Level Action Plan for STEM Bicycle and 3d Printers Clubs

1. Determine club leaders (project manager, teacher) and set club schedule.
1. Decide club meeting location / work space.
2. Recruit volunteer coaches (mentors) from the partner organizations identified & confirmed during the application process.
3. Notify technical (IT) personnel of 3D printer connection, STEM Bicycle Club video-viewing needs.
4. Attend all-region club training / professional development at UC.
5. Plan food.
6. Plan how and where club materials will be stored between club meetings.
7. Select students. Collect permission forms and media releases.
8. Plan parent / family involvement.
9. Plan for club visitors, including media.
10. Run club, including:
  - Administer online surveys regarding club impact and benefits
  - Regularly post club news and pictures on social media
11. Attend all-region project debrief at UC.
12. Attend all-region club culmination / field trip at UC with students, families, volunteers, and other club partners.

## Resources to Help Partners Plan a High-Impact Club

[Attracting Volunteers](#)

[Student Selection](#)

[STEM Engagement Best Practices](#)

[Involving Families](#)

[Workspaces & Technology](#)

## Questions?

Contact GCSC at [gscstemed@gmail.com](mailto:gscstemed@gmail.com) if more information is needed to complete an application. Inquiries should include a description of the information needed and full contact information (name, organization, email address, and phone number).