

PROJECT PROPOSAL

Redmond **STEM**
Center

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Executive Summary

In 2018, a sophomore at Tesla STEM High school wished to start a robotics team in the Redmond Area. He had hoped to host the team at his school, but there was neither the space nor the tools necessary for him to do so. Fortunately, the small team found a home at Black Lodge Research, a local makerspace who graciously offered space for the students to learn, which helped them become the best first-year program in the PNW division. However, what started as one idea would not have surmounted to anything without the vast generosity of the makerspace.

In our area, school districts do not possess the adequate facilities to support such complex endeavors, and inter-school programs are often overlooked. Furthermore, in all of the Greater Seattle Area, there is a lack of community spaces geared towards the development of creative STEM projects by high school students. This not only inhibits students' abilities to harness their creativity and technological expertise, but also prevents them from giving back to their communities and inspiring others to learn about science and technology.

We are proposing a nonprofit STEM center, Redmond STEM Center (*RSC*), that would function as a hub for students to work, learn, and interact with industry mentors and professionals. This teen-oriented makerspace will act as an outlet for creative and bright students who wish to help better themselves and their community. Featuring workshop equipment such as CNC equipment, laser cutters, and other engineering-grade machines, *RSC* aims to foster a collaborative environment in which those from all different backgrounds are brought together and are able to learn from highly experienced mentors. In addition, the center would feature many programs for teens, such as rocketry and robotics. Through these programs, not only will the youth in the Redmond area have a place to work and think, but also inspire similar projects in less-fortunate areas.

Since the execution of this project would be costly, this proposal aims to harness support from the community at large, generous corporations, and local governments. The support this proposal addresses comes in the form of financial donations, equipment sponsorships, space donations, and mentorship opportunities. The development of the Redmond STEM Center will require a great effort from all parties involved, but it will dramatically increase student involvement in STEM and foster countless future leaders and tech professionals.

Objectives and Beneficiaries

- Provide the much needed facilities and technical equipment for teens to work in project teams or individually, connect with professionals, and learn through workshops and talks.
- Foster a collaborative environment for people from different backgrounds to experience STEM together regardless of their school affiliation or financial situation.
- Create a sustainable, cash flow positive organization with scalable programs and the ability to expand.

Through this program and its dissemination throughout the Redmond area, many people will be positively affected both directly and indirectly. These beneficiaries are listed below.

- Students in the Redmond area will have their STEM educational resources expanded greatly, and be provided with opportunities for high level projects and working with industry professionals.
- Mentors, as a key role in the program, will not only gain substantial volunteering hours from working with these students, but also have an opportunity to truly connect with the brightest youth in the community.
- The parents of those who participate in the Redmond STEM Center will have the chance to witness the creative minds of their children at work, and the center will also be an adult-supervised place that those who are busy with work can leave their kids.
- Younger kids will be greatly inspired by the work of the more experienced students or mentors, through outreach events and community talks. Events will also be regularly scheduled to allow those in elementary school and middle school to participate in STEM center activities.

Programs

The objectives will be met through a series of programs housed by *RSC*, all dedicated towards disseminating STEM throughout the community. Due to the ambitious nature of this project, the programs will be realized through a multi-staged system, where programs are added periodically over the first year. These programs are open to corporate suggestions or sponsorships.

Online Programs

- Provide an online platform where ambitious high schoolers can engage in academic and STEM focused discussions easily.
- Host regular competitions in order to help engage the community and generate interest in the Redmond STEM Center. These include chess, competitive programming, design, and art competitions.
- Coordinate roundtables once every two weeks for groups of students to discuss possible ventures and new ideas. This also serves as a judgement free opportunity for teens to ask for help in certain subjects or projects.
- Begin exciting online social events for the community in order to engage them in the center and its environment. These can include ice cream socials, movies, and video game nights.
- Host virtual webinars presented by accomplished adults or academically driven students on various STEM subjects.

Initial Programs

- Provide support for a FIRST Robotics Competition Team — The FIRST Robotics Competition is the highest level of competition robotics for high school students, and it takes a lot of support, including a space to work, precision machining equipment, and raw materials. In addition, teams often focus heavily on outreach to the community.
- Provide support for The American Rocketry Challenge, the world's largest student model rocketry competition, providing them with resources such as 3D printers and laser cutters in order for teams to build their most aerodynamic rockets.
- Coordinate biweekly talks on various educational topics surrounding science, technology, engineering, and math. These talks can be done by high school students, mentors, or any adults who have a unique skill or experience to share. This also poses as an opportunity for younger students to come and learn, paving a way for their future.
- Begin exciting social events for the community in order to engage them in the center and its environment. These can include ice cream socials, movie nights, and general social gatherings.

Second Stage

- House a VEX Robotics Competition field for local teams that do not have one themselves to try out strategies, practice driving, and iterate on

programming routines. Scrimmages could also be hosted at the STEM center for teams to come together and play 2v2 matches.

- Host workshops for teens over the summer covering subjects such as CAD and CAM, basic machining practices, programming, and basic electrical engineering topics. These workshops can range from a day to 3-5 days, and will begin with the most basic concepts, and delve deeper over time. Workshops will be facilitated by mentors, but can be taught by experienced high schoolers.
- Have monthly shared task projects where members work together in order to brainstorm and complete one-week builds. This program will bring the community closer together.
- Open the center to the general public through Open House events, where younger students as well as prospecting future members can observe and learn about RSC and its functions. This is also an opportunity for further exposure to companies and capable adults.

Third Stage

- Coordinate and facilitate a programming camp for younger students, which will both introduce younger students to the world of computer science and its applications, and also serve as a source of revenue to aid the center's sustained programs.
- Provide a funding request pool, for students and groups to request grants or purchases of materials for the space, that they can use in their projects (such as different types of roller chain, belting, metal stock, etc.)
- Provide resources on mental health and stress management, to facilitate a healthier environment for the community.
- Host large scale STEM events such as hackathons and maker fairs.

Procedure and Preliminary Timeline

Phase One: Initial Infrastructure

April 10th, 2020 - June 30th, 2020

- Recruit an initial student team, taking into mind diversity, skill sets, and sustainability.

- Develop key operating documents including the:
 - Project Proposal
 - Business Plan
 - Initial Floor Plan
- Create engaging and representative branding.
- Develop possible programs and activities for the space and network with local organizations to construct sustainable partnerships
- Contact possible mentors & establish adult advisory board
- Develop an affordable but necessary membership plan that will allow the program to maintain sustainability, but still be accessible to everyone. This includes team fees and separate membership fees for usage of the expensive precision machinery.
- Construct a website stating our purpose and objectives, with a list of programs we offer, contact information, and a procedure for joining the center. This site will provide information about mentorship opportunities as well, having a portal for qualified adults to sign up to volunteer.

Phase Two: Generating Support

July 1st, 2020 - December 1st, 2020

- Procure funding for a space ranging from 3000-10,000 square feet in the Redmond area, capable of housing machinery, computers, electrical equipment, and a classroom. This space will house large open working spaces used for both creating projects and testing them, a classroom for classes and other presentations, a quiet area for studying or reading, a workshop, a kitchenette, and multiple tables scattered around for group activities.
- Find equipment donations for the tools and furniture of the space. These items will be garnered through channels such as company sponsorships, family donations, and sales from the community. If the necessary equipment cannot be acquired by these means, Redmond STEM center will utilize the financial support of grants and sponsorships to purchase them.
- Work with industry professionals in order to develop a sustainable mentorship program where volunteer mentors can partner with local students, and provide guidance for them in various areas to aid in their growth as students and community leaders, with guidelines in place to ensure a healthy environment.

- Advertise the project through means such as social media, local newspapers, and a website. Through avenues such as Instagram and Facebook, information about the area can be transmitted to a sizable teen audience for virtually zero costs. We are also looking for news outlets such as the Redmond Reporter in order to bring our ideas to the general public.
- Begin online events throughout the summer and into the fall, bringing a sense of community during the Coronavirus pandemic.

Phase Three: Project Launch

TBD - COVID-19 dependent

- Open doors to the public with initial programs running and in place. The first two weeks after the launch will be free to the public, in order to entice future memberships and create the largest impact possible.
- Begin training sessions for workshop safety and proper machining operation with the support of adult volunteers.
- Plan plentiful activities and projects throughout the week to keep the community engaged, giving them an idea of what the makerspace will look like over the year.

Phase Four: Sustaining Programs

- Facilitate monthly board meetings consisting of the Redmond STEM Center executive team and a group of trusted adults. These board meetings will review the evaluation guidelines, analyze cash flow reports, and address any issues that occurred over the month.
- Gradually implement additional programs while still sustaining and growing the initial ones.

Requirements

As this project is highly ambitious, it will require many resources in order to follow out the procedure correctly and efficiently. These needs range from monetary donations to fully functional machining equipment and computers, most of which we hope to acquire from sponsors, donations, or buy with the money that the center produces. They include:

- A large flex space that can comfortably house machinery, computers, project storage, and general amenities.
- Funds to cover rent, equipment, utilities, and other extra costs associated with launching and maintaining the project on a monthly basis.
- A large variety of hand tools and machinery, including but not limited to: standard workshop hand tools, 3D Printers, plastic filament, CNC routers and mills, a laser cutter, and an extensive inventory of manual machinery.
- A supply of electrical tools for basic wiring and soldering projects. This includes basic crimping/stripping tools, soldering irons, multimeters, power supplies, and any other essential electrical tools.
- Technology that is able to assist programmers and designers alike. For example, desktops, monitors, and peripherals capable of running CAD/CAM software and software development utilities will be necessary.
- A general assortment of the necessary furniture required to create a safe and comfortable workplace environment. These include but are not limited to multiple workbenches, chairs, tables, couches, shelves/racks, bookshelves, ladders, a mini fridge, a microwave, a projector, whiteboards, first aid equipment, a bulletin board, a television, and tent coverings for outdoor use.
- Basic utilities such as Electricity, Plumbing, Internet, and HVAC(Heating, Ventilation, Air Conditioning)

Budget

Through a series of preliminary calculations, the team has decided on an initial budget with estimates for costs of equipment, rent, and other miscellaneous costs.

Item	Cost (\$)
Rent (Year 1)	38,400
Tools and Equipment	10,500
Insurance (Year 1)	2000
Computers	3,000
Legal Services (Year 1)	2,000
Safety Gear + Misc.	1,000
General Furniture	1,000

Stock Materials	1,000
Electrical Equipment	200
Remodeling	1250
Utilities	880
Advertising	300
TOTAL:	62530

These expenses will be covered through multiple means including membership fees, one time team fees, company sponsorships, grants, matching volunteer hours, and the sale of stock materials.

Key Personnel and Recruitment Plan

For this endeavor to be sustainable long-term, it will require strong student and adult leadership. The adult leadership will be relatively consistent year to year, providing a consistent foundation to work from, while the student leadership will be responsible for the majority of operations. Outlined below is a model for how the leadership will be structured:

- Chief Executive Officer
- Chief Operating Officer
- Chief Financial Officer
- Chief Marketing Officer
- Chief Technology Officer
- Chief Programs Officer
 - VP of Workshops
 - VP of Programs
 - VP of Programs

As we are still in the early process of creating a team and delegating roles, many of these positions have not yet been designated. However, Redmond STEM Center currently has a team of 18 members, led by co-founders Abhinav Didee and Eric Zhou.

RSC is focused on finding key students, sponsors, and robotics teams to support our mission. When a student or team is interested, they will go through an application process composed of filling out a short google forms application followed by a phone or in-person interview. After joining, tools and safety training will be required to ensure safety in the build space. *RSC* will reach out to tech companies in the surrounding area and leverage personal connections in search of mentors. For potential mentors to work at the *RSC*, they must go through the application process plus a background check. Then, if their values match the values of *RSC*, they will be accepted. Mentors are required to volunteer 20 hours a month and will receive 2 free memberships.

Evaluation

The proposed project aims to accomplish many objectives in hopes of creating a large-scale impact on the youth in Redmond, inspiring them to pursue STEM further in the future as well as helping them gain valuable technical skills essential to survival in the technological industry. However, there must be indicators to show the progress of the project and if it accomplishes the goals. The results that will indicate a successful implementation of the Redmond STEM Center include:

- Number of successful program integrations:
- Number of adult and student talks (including attendance for each talk)
- Total number of hours open (workshop, classroom, and working space)
- Financial numbers
- Number of high school volunteers
- Number of mentors
- Social media engagement
- Money made over 2-3 years

Each of these indicators will be measured monthly and reviewed during the board meetings, while a report containing these statistics will be sent out to sponsors and partners quarterly.

Sponsors and Partnerships

Much of the funds required to run this project are planned to be acquired through corporate sponsors and/or partnerships. The capital investment will go towards paying rent each month, buying equipment, and sustaining or opening our

programs. Refer to the Budget section for more specific information. Through our partnership and sponsor programs, not only will RSC flourish, but the generous companies will benefit greatly as well.

Sponsorship Tiers

Seed - \$500+

- Your business will be listed on our website

Sprout - \$1,000+

- Includes all perks above
- Your business will be included on all promotional content

Sapling - \$2,500+

- Includes all perks above
- Your business will be on our physical sponsor's wall
- You will be invited to attend the sponsors dinner

Tree - \$ 5,000+

- Includes all perks above
- Your business will be displayed on all RSC apparel
- All employees will receive 20% off discounted memberships for their children for a year

Woodland - \$ 10,000+

- Includes all perks above
- All employees will receive 50% off discounted memberships for their children for a year

Arboretum - \$ 25,000+

- Includes all perks above
- All employees will receive free memberships for their children for a year

Nonprofit Information

The Redmond STEM Center initiative falls under the 501(c)(3) nonprofit organization Redmond Robotics. Redmond Robotics provides opportunities for a diverse range of individuals to engage in learning about science, technology, engineering, mathematics, business, and design while sharing these learnings with the greater community.

The specific objectives and purpose of this organization are:

- A. to provide programming for individuals to learn and practice science, technology, engineering, mathematics, business, design, and other relevant fields.
- B. to help develop soft skills such as leadership, communication, respect, trust, time management, public speaking, and attention to detail.
- C. to prepare individuals for future careers in science, technology, engineering, mathematics, business, and design.

Further information about Redmond Robotics is detailed below.

Organization Name: Redmond Robotics

Federal Tax ID: 84-4322442

Organization Address: 2690 152nd Ave NE, Apt 514, Redmond, WA 98052

Organization Phone Number: (714) 512-2096

Organization Email: kevin.tran@redmondrobotics.org

Organization Primary Contact: same as organization info

Organization Website: <https://redmondrobotics.org>

Board of Directors for Redmond Robotics:

- Kevin Tran - President / Treasurer / Executive Director
- Phil Sodoma - Vice-President / Parent Committee Chair
- Amit Kumar - Member / Finance Committee
- Saliha Azzam - Member / Mentor Committee Chair

Total Annual Budget: \$80,000

Major Services and Programs: FIRST Robotics Competition, Redmond STEM Center

Key Accomplishments: FIRST Robotics Competition World Championships, 2019

Key Objectives: High student engagement in STEM programs in the Greater Seattle area