Project Justification

Fort Benton High School is a public high school located in Central Montana, with about 85 students in grades 9-12. Technology has made great strides over the past few decades; unfortunately, the same cannot be said for the library housed at the High School. Our space is too outdated to adequately and effectively serve the student body with the advancements in technology. Over the past several years, the library has diminished their dated textbooks, which has freed up the space to be utilized for better education pertaining to new technology. The library has been combined with the computer lab however; space has not yet been created to meld the two practices together for a positive learning environment.

The challenge at hand is to put students into that space where they will have access to reference materials and technology resources. The opportunity to reconfigure the space will allow for creative expression and problem-solving skills to develop. We intend to upgrade the space to a "makerspace" for the student body**.** According to Public Library Online, a makerspace is a physical space that provides access to equipment and guidance in a flexible format that responds to the interests and skill levels of users collaborating on self-directed projects. (2016). The need for updated technology and creative space will allow the students to advance in their goals of higher education and continue on into the workforce. Students will enhance their creative skills through self-expression and will improve their collaboration skills by working with others. Collaboration also promotes interpersonal relationships, strengthens social support and can improve self-esteem.

Altering this space will allow students and faculty to conduct active learning sessions with positive interactions by transforming the way we teach as well as the way students learn. Our space will allow for structured learning assistance, peer-led team learning and cooperative learning skills.

"According to the current delineation, released in 2012 and based on the 2010 decennial census, rural areas comprise open country and settlements with fewer than 2,500 residents." (2018)

Fort Benton, Montana is located approximately 36 miles to the nearest urban city of Great Falls. According to the World Population Review (2018), the current population of Fort Benton is estimated at 1451. Rural communities provide for unique opportunities for the schools as well as the communities. Unlike urban settings, teachers in rural communities not only teach the subject matter their degree is in, but are often recruited to teach another subject or two. Our librarian is no exception to this rule handling multiple platforms within the school. The additional duties prove to be an obstacle for the school to dedicate one person to the library and/or the computer lab. Being able to bring in a part-time facilitator for the library to manage the revamped space would be a valuable position for the school. This would provide coverage for the library throughout the entire day when the current librarian is unable to manage the space due to other classes she teaches. This not only benefits the current librarian, but this would also benefit the students by having a person in the library at all times to assist them and support their goals.

The beneficiaries of this project are the student body, teachers, faculty, administrators and the community as a whole. Providing individuals with the freedom to utilize the space on a one to

one basis will allow for creative expression and self-discipline. Teachers will be able to use the space for projects consisting of hands-on experience and peer-led group exercises. Teachers will help shape the space and the functionality of it. The principal will be working with the Tech teacher and librarian directly as to the use of the space. He will also be incorporating additional teachers for input, set-up, and usage. Once our space is set up, he will bring in a group of students who have proven to be leaders within the school to help promote the space. Access to an innovative space allows students to make advancements in the Science, Technology, Engineering, Art and Mathematics fields. These advancements have the ability to trickle into the community through sustainability, infrastructure, manufacturing and medicine among other things. The community of Fort Benton has always played a very supportive role within the school system. We aim to have a team of volunteers that will help with our space, challenge the students, assist the students and learn from the students. This project will continue to build upon a well-established foundation of community support.

Transforming our school's library practice addresses lifelong learning by providing them a space to develop the skills necessary to be productive members of society. This revamped space will allow students to satisfy their curiosity while challenging their imagination to explore innovative concepts and expand their skill set. The exploration of the imagination also triggers their capacity to develop new with the ability to expand their imagination capacity will lead to positive outcomes for the community and the individual. We will achieve our goals through the following ways:

- *Reconfiguring space in learner-centric ways to support the development of 21st-century skills and literacies, informed by disciplines such as design thinking or user experience*

- *Purposefully integrating information technology and digital resources in ways that support media creation rather than consumption, informed by constructivist-based pedagogical approaches such as experiential learning, project-based learning, inquiry-based learning, or guided discovery;*

- *Developing, implementing, and evaluating programs and services that prepare students for success in college, career, and life;*

Through funds from this grant, we will be able to reconfigure the space to meld the traditional library space with the computer lab space. Creating a Makerspace area for the students will allow the students to use their imagination for design. We will use the space to involve the students in design challenges and hold not only grade level challenges but also class versus class challenges. We will involve the upper classes to mentor the younger classes through hands-on learning experiences and one on one interaction with positive roles models.

Project Work Plan

"If we are to remain globally competitive in today's world," Tony Wagner writes in *Creating Innovators,* "we need to produce more than just a few entrepreneurs and innovators. We need to develop the creative and enterprising capacities of all our students" (pg. 4).

The specific activities carried out will be classes and after-school programs that will provide opportunities for students to engage in innovative, problem-solving activities. This will involve, but limited to, Makerspace projects, Robotics classes, STEAM projects and more. The activities will include design challenges between students and classes that will change periodically.

Our activities include but are not limited to as we continue to grow the space:

- Activity One: Space. Setting up our space. We will incorporate staff, students and the community leaders in designing and setting up our space for use.
- Activity Two: Open House. We will host an open house event to showcase the space and share our goals with the community, students and staff. This event will allow for attendees to tinker with the equipment to understand the intentions of the space.
- Activity Three: STEAM. We will host design challenges in the Science, Technology, Engineering, Art and Mathematics (STEAM) fields. These design challenges will be broken up into two-month cycles per field. Various design challenges can take place within those two months in the designated field of choice.
- Activity Four: Free play and design. All year long will allow for students, teachers and the community time to tinker with the tools. Free play also will provide designated time for teachers to utilize the space for hands-on classroom experiences.
- Activity Five: Robotics. We will host two different robotic challenges in November and January. These challenges will help form robotics teams to participate in state competitions.
- Activity Six: Summer Programs. We will utilize the space to offer summer programs to students. The program will again offer programs in the STEAM fields, robotics as well as creative innovation and free play.

These activities will allow students to explore topics of interest to them and allow for self-directed learning. The activities will be conducted in a safe space for students to develop new ways of thinking and to learn how to fail and try again. This space will allow for creative freedom to express themselves and collaborate with their peers as well as teachers.

These activities will be the same for the second year of the grant as well. We hope to add more programming based upon interest and feedback from the prior year.

A supervising teacher will plan and manage the project, with continued community member partnership. We have enormous support from the community for several projects that the school is in charge of. The community is not only helping support these projects, but they also support them with human equity. The community often volunteers their time to assist as chaperones for

trips or general support for the students. The offer support by engaging with the school in a variety of ways (financing, AG, robotics, and more). Many have expressed an even further interest, if this project were available, for the purpose of investing in the school, the local community, and for the building up of future leaders, thinkers, and innovators.

The greatest risk to the project is the teacher. If the teacher is not competent, inspiring, organized, and curious, the project will flutter. To mitigate this risk, we have secured a teacher (and several community members) who are not only excited about the project, they are seasoned and stable in their teaching profession. They will provide stability to the project as well as mitigate any losses if a teacher moves on. The new incoming teacher would be met with wellspring support and experience from the school and the local community.

The progress and success of the project (and student's performance) will be measured by the Montana K-12 framework aligned Science standards which embed engineering and math concepts, as well as the Montana Science (which include STEM) and technology standards.

Project Outcomes

The outcome of this project will eliminate the fear of failure and "what-if?" questions for they are the source of true creativity and innovation. The project will also "eliminate the bright lines between subjects", allowing for "a more disciplinary approach to learning," which "will better prepare people for the kind of problems they'll be confronting" in the future (Wagner, 2012).

However, this ideology of what could be cannot be met without clear and definable performance goals, for the individual and for the program. Goals such as the meeting of standards, but also an increase in school-wide test scores as this project will engage and prepare our students and their minds for adversity, problem-solving, and critical thinking. In addition, students who are successful in this program will not only develop Twenty-First Century skills, it will provide an opportunity for students to grow in the love of lifelong learning.

The intended results of this project would be to move kids up from their level of current comfort. If a student is confident in their ability to problem solve, interact with technology, and create, the goal would be for them to become advanced. If a student is characterized as basic, the goal would be for them to move into proficiency. And for those students who have zero interest (and therefore do not sign up for the class), our goal would be for them to be curious enough to take the class.

Success for our project, first and foremost, would be a growing number in participation. Believing that not every component of growth and achievement can be measured, getting students involved and becoming familiar with Makerspace will provide a multitude of benefits that may not be noticed until years down the line. That said, a tangible example of the Makerspace success would also be an increase in student participation. The more kids involved, the greater the impact. The greater the impact, the more kids will get involved.

We will collect and report data the same way we report and collect data with our other classes: through standards-based assessments and group analysis. Throughout each quarter, students will be expected to achieve proficiency in their standards. They will be continually assessed and taught throughout each quarter, and the data compiled at the end of each semester will be evaluated by students, teachers, and administration. The data will drive instruction for the coming quarter and year.

The greatest obstacle for the Makerspace program is the initial funding. Once a solid foundation is laid, there is room in the annual budget to sustain the project. There are also opportunities for community members to contribute to the program, which they often do for other programs such as Agriculture and Metal Technology. We are committed to addressing the needs of the student body as programming changes and technology advances.

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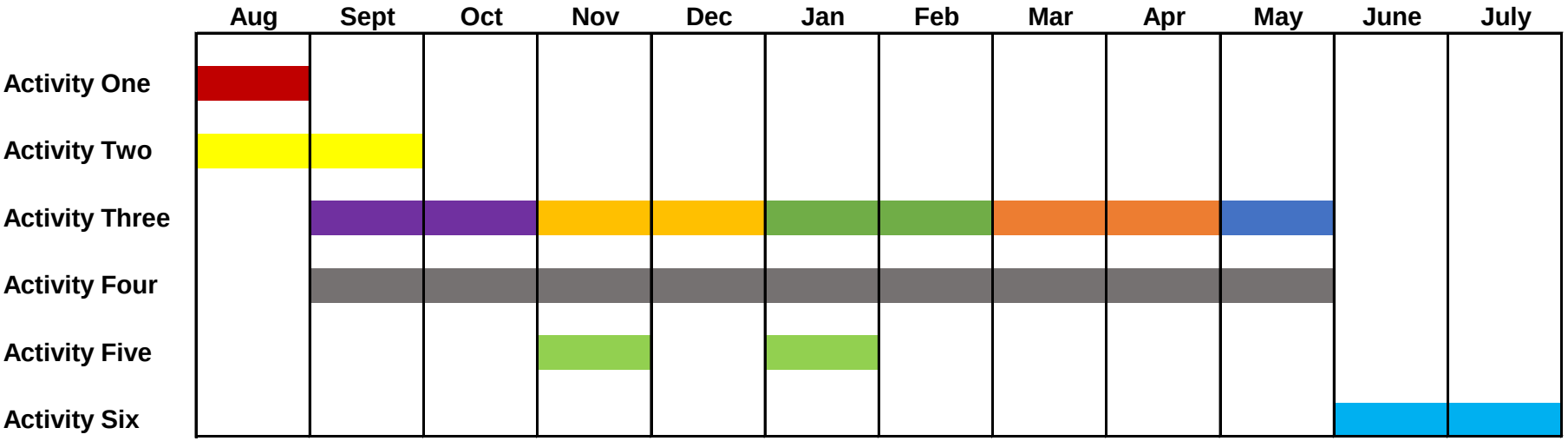
FY 19-20 Schedule of Completion



FY 20-21 Schedule of Completion