Career Enhancement Grant: Principles of Biomedical Science

1. Describe the program improvement plan's alignment to the appropriate institution or building plan(s). For all program improvement plans which are multi-year in length, explain the connection the funding request has to enhanced or augmented instruction during the grant period, and to longer term improvement for the program and either institution or building plan(s).

With this grant money, we wish to begin offering the Project Lead the Way biomedical program to our high school students with the express purpose of preparing them for post-secondary options that match their career interests. Currently, less than 1% of our students have access to the PLTW biomedical program. The few students who do have access must travel to a neighboring district's technology academy to do so. Yet we know, based on ACT career interest survey results from the past three years, that health sciences is consistently the top career pathways of interest among our students. They have a need we are not coming near to fulfilling. We wish to expand biomedical learning opportunities to all of our students by offering the first level of PLTW biomedical coursework, Principles of Biomedical Science, in the 2017-2018 school year. In the following year, it is our intention to expand programming by offering Human Body Systems and, following that, offering a third year of biomedical coursework to our students. In addition, our feeder middle schools intend to offer the Gateway program, Medical Detectives, in the 2017-2018 school year. We believe this will further spark interest in the biomedical field and help students be better prepared to enroll in biomedical PLTW coursework at the high school.

This plan falls in line with the visions of our high school's College and Career Readiness Work Group and our district Innovation Committee; both groups are committed to expanding course offerings at the high school in areas of occupational need and increased rigor. The College and Career Readiness Work Group includes district office administrators, building administrators and post-secondary institution representation. The district Innovation Committee includes district administration, building administration (K-12), teachers (K-12) and community members.

The plan for these grant dollars aligns to the Raymore-Peculiar School District's multi-year strategic plan which was developed under the leadership of our superintendent and involving over fifty stakeholders, including administrators, certified and classified staff, Board of Education members and community members. The team developed eight focus areas and all work in the district is aligned to at least one of these areas.

The goals of our strategic plan directly aligned to this improvement plan are as follows:

I. "We believe we must ensure the relevancy of educational programming for preparation of students for post-secondary opportunities." PLTW biomedical programming is absolutely relevant based on the job market needs of our society and the need for students to engage in critical thinking and problem-solving learning experiences. By opening this opportunity up to all of our students, they will be better prepared for post-secondary opportunities in college and the

workforce. Each year, more and more students will be able to access this learning to a deeper level as we continue to offer additional courses.

II. "We believe we must ensure an environment that is conducive to learning." PLTW is a national curriculum that is both engaging and challenging to students. In addition, it prepares students for their future by providing real-world, hands-on learning in a scaffold manner. Students will be able to take concepts they have learned and apply them in an authentic manner. They will dig deep into the biomedical inquiry process, applying math and science knowledge as well as critical thinking skills.

III. "We believe we must maximize academic proficiency for all students." The PLTW curriculum and assessment allows students to participate in an intense, demanding, high level of educational excellence in the area of biomedical science. The skills and knowledge students bring into the course will further be sharpened and enhanced through participation in the curriculum. Through this opportunity, students will be able to maximize their academic potential and challenge themselves and their peers.

IV. "We believe we must maximize technology applications and resources to facilitate effective instructional delivery and student learning." PLTW uses up-to-date technology and software that is currently being used in the biomedical industry. The training provided to teachers ensures they know how to best deliver instruction for optimum student learning. The curriculum seamlessly blends technology and instruction and is well known across the country to be a leader in student preparatory programs.

2. Describe how each program to be funded will use measurable objectives to determine effective use of requested funding and to demonstrate successful rollout of the improvement plan for the grant period, and positive impact toward success of the institutional or building plan(s). Explain the extent in which the program improvement plan has determined the composition of allowable items to be funded by the grant.

To date, less than 20 students can enroll in PLTW biomedical courses. Students are transported to an area technology center for these classes and enrollment is limited to the number of slots open and able to be financially supported. In addition, these slots are not solely for biomedical courses; they are also used for computer science and engineering courses, thereby greatly reducing the number of students who can actually enroll in biomedical courses. The high school itself does not offer any PLTW biomedical courses. With this funding, we will open the opportunity to enroll in PLTW biomedical coursework to all high school students. Enrollment numbers and student success on the end-of-course exams will be used to determine the success of the program over a multi-year process. The first year of enrollment and testing will serve as baseline data. Our advisory board and innovation committee will review this data and create specific benchmarks we will seek to reach in subsequent years. Goals would be focused on continuing to increase enrollment numbers and PLTW biomedical course offerings and steadily increasing the number of students who score proficient on the end of course exams with 100% proficiency being the ultimate goal.

For all of our PLTW programs, data and progress will be measured on a regular basis by the advisory board and innovation committee. In addition, our district practices the data team process. Once specific learning targets are designed, the teacher will be expected to track student achievement at the classroom level by analyzing pre/mid/post assessment data aligned to the targets. The items requested on the grant are aligned with the PLTW supply list so there is no question as to whether we have the appropriate items for optimal student learning. Items not covered in the grant will be purchased by the district.

3. Include a description of the improvement plan's measurable objectives for the grant period, and if applicable, longer term rollout of the plan. If the program improvement plan identifies objectives beyond the grant period, explain the correlation between those anticipated to be achieved during the funding timeline and those further into the future. Explain the extent in which the objectives will determine project success.

The ultimate measurable objective of the improvement plan is to increase the number of students who graduate college and career ready. As a part of this grant, we will offer Principles of Biomedical Science to our students in the 2017-2018 school year. In 2018-2019, we will offer the second course in the biomedical program, Human Body Systems with the intent to offer the third course in the 2019-2020 school year. Although not funded from this grant, our middle schools intend to offer the foundational Gateway course in the biomedical pathway, Medical Detectives in the 2017-2018 school year as well. We believe this will better prepare our students as they enter high school and generate increased interest in the biomedical program.

For the biomedical PLTW programs, and as a result of the strong curriculum, teacher training and real-world/hands-on learning opportunities PLTW courses provide, we will be able to provide a relevant, academically challenging path for students that will prepare them for a variety of post-secondary options. We will use our initial year of enrollment as baseline data and seek to continue to increase this number in subsequent years with the specific intent to double enrollment numbers after the first year. The advisory committee will set reasonable yet challenging benchmarks to reach in regards to enrollment for future years and courses. In addition, we will administer the end of course exams to our students as an external measure of progress made and learning achieved. The first year will serve as baseline data and, again, the advisory committee will be charged with setting and monitoring measurable goals starting with the baseline. Many universities and colleges use end of course exam scores for student recognition opportunities. In addition, PLTW utilizes a balanced assessment approach and therefore formative and summative assessments are used at the classroom level. The teacher will monitor student achievement through the data team process as an internal measure of achievement.

4. Describe the eligible courses for which funding is sought by course name and CIP Code, what teacher will be providing instruction for each course, and designate in what building and room(s) instruction will occur for each funded course. Include a description of what is to be purchased for each course along with how these expenditures will address needed improvements and/or augmentation in the delivery of the eligible course(s) and student performance and/or learning.

Principles of Biomedical Science

CIP Code 51.0001

Michael Frey will be teaching this course. Although he has not yet completed the training, his is excited about the opportunity and committed to attending the training in the summer of 2017. The district and the school are currently registered with PLTW.

The course will be taught at Raymore-Peculiar High School in the new part of our science wing. An addition to our current high school is currently being built; this addition includes several new science rooms and the PBS course will be taught in one of these new rooms. Students will have the most up-to-date resources and equipment for the course.

Students dig deep into the biomedical inquiry process, applying math and science knowledge as well as critical thinking skills to solving real-world, hands-on projects. They work both individually and in teams to design solutions to a variety of problems using the same equipment and tools used by lab professional and use a biomedical science notebook to document their work. The PLTW supply list was used as guidance in regards to what needed to be purchased. This will ensure the fidelity of the program. The following items are recommended by PLTW in the biomedical core class inventory and are a part of the grant proposal: teacher laptop, student laptops, digital camera, a storage cabinet and several pieces of lab equipment such as microscopes and a sterilization chamber. Monies are also being requested to pay the PLTW Biomedical science participation fee and the registration for the teacher training this summer. The PLTW supply list was used as guidance in regards to what needed to be purchased. This will ensure the fidelity of the program in regards to equipment being of industry-standard. Training will ensure the fidelity of the program in regards to the curriculum being used and the instruction being delivered. This combination will lead to high student achievement in our PLTW course.

5. Describe any student performance and/or learning measures which be used to determine project success.

The courses will be evaluated using a variety of methods during the initial implementation year and subsequent years after. Results will be shared with building and district administration as well as the advisory board. In addition, regular updates will be provided to the Career and College Readiness Work Group and the Innovation Committee.

I. Students in PBS will be assessed through the PLTW end-of-course exams via online assessments and hands-on labs.
II. Throughout the school year, students will be assessed through the use of unit assessments; results will be used to plan for additional instructional opportunities as needed via our data team process.
III. The teachers will be evaluated using the district's performance-based teacher evaluation tool as required by the state of Missouri and our local school board policies.

IV. Data gained through assessments, hands-on labs and evaluations will be analyzed by advisory boards, teachers and administration.
V. Students who complete the program will be surveyed for post-graduation work and/or education through the 180 day follow-up as required by the state.

6. Describe any relationship the program improvement plan and/or funding request has to specific industry credentials, including the development of such when none is presently available, and the potential for future career mobility for students.

While there are no specific industry credentials for the biomedical course sequence, students will be able to take and end-of-course exam that will show higher institutions their expertise in the field. Colleges and universities will also be able to see, on the student's transcript, that he/she has engaged in a challenging, real-world curriculum at the high school level. Some college and universities offer reward opportunities for students based on end of course exam results.

Health science is one of the fastest growing industries in the Kansas City area. Currently there are over 147,000 health career jobs in Kansas City and that number continues to grow by approximately 3000 jobs each year. The job potential for our current students is extraordinary. Jobs available are at all levels of education. Allowing students the opportunity to enroll in PLTW courses in the biomedical field will better prepare them for the rigor of post-secondary education and provide them with a solid foundation in these respective areas.

7. Describe the composition of the applying program's occupational advisory committee. Explain the extent the committee, building/district/institution administration, faculty and other key stakeholders were involved with the development of the program improvement plan and prioritization of the funding request.

The advisory board consists of building administrators, counselors, teachers and district level administration. In addition, we have business/labor leaders, parents, community leaders and senior citizen representation. Members are involved in creating plans and prioritizing fund requests. Student interest is also considered in the development of plans. For the past three years, health science has the top career choices for our students according to their ACT interest surveys. The supply list for the PBS courses is based on the PLTW recommended inventory list so that students have what they need to achieve. The instructors reviewed the supply list as well. Advisory board members will be a part of reviewing the progress of the implementation of PLTW in the high school and monitoring the success of the program through an analysis of enrollment numbers and assessment data. Eventually, members will also be able to review students' postsecondary decisions to determine if students who are a part of the PLTW program go to further their education and/or start high need, high paying careers.