

Career Enhancement Grant: Human Body Systems

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 second course in 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. During the 2017-2018 school year, we began offering Principles of Biomedical Science at Raymore-Peculiar High School. Prior to that, less than 1% of our students had access to the PLTW biomedical program. The few students who did have access had to travel to a neighboring district's technology academy to do so. During our first year of offering PBS, we had approximately 100 students request enrollment in the course and a majority of those we able to fit it in their schedule. With the addition of Medical Detectives at the middle school this year, we believe interest in PBS will continue to grow. Due to the current popularity of PBS, we believe most of those students, if not all, will move onto Human Body Systems (HBS). As a district, 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 have begun to fill but there is still work to be done. We wish to expand biomedical learning opportunities to all of our students by offering the second level of PLTW biomedical coursework, Human Body Systems, in the 2018-2019 school year. In the following year, it is our intention to expand programming by offering a third year of biomedical coursework to our students.

This plan falls in line with the visions of our high school's College and Career Readiness Work Group, Advisory Board and our district Innovation Committee; all three 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 consists of district office administrators, building administrators and post-secondary institution representation. The high school Advisory Board consists of community/business members, parents, teachers, administrators and students. 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 this year under the leadership of our superintendent and involving over 50 stakeholders, including administrators, certified and classified staff, Board of Education members and community members. The team developed three focus areas (Success Ready Students, High Quality Staff and Financial Responsibility) 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. "Incorporate additional real-world, hands-on learning opportunities ." PLTW biomedical programming is absolutely focused on hands-on learning and provides students with real-world challenges they must work through. Students are more engaged in this type of learning and able to apply what they have learned more readily to a variety of situations. 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. "Expand STEAM opportunities for students." PLTW is a national curriculum that focuses on many components of STEAM. By continuing to add coursework to the biomedical programming pathway, we will be expanding opportunities for students in areas of science, technology and math.
- III. "Promote soft skills development--communication, collaboration, critical thinking and creativity." The PLTW curriculum and assessment allows students to participate in an intense, demanding, high level of educational excellence in the area of biomedical science. At the same time, it focuses on the exact soft skills listed above. Students often have to collaborate which requires them to communicate effectively. As they are moving through the curriculum, they have to utilize their critical thinking skill and creativity in how to approach various scenarios. 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.

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.

Prior to the 2017-2018 school year, less than 20 students could enroll in PLTW biomedical courses. Students were transported to an area technology center for these classes and enrollment was limited to the number of slots open and able to be financially supported. In addition, these slots were not solely for biomedical courses; they were also used for computer science and engineering courses, thereby greatly reducing the number of students who could actually enroll in biomedical courses. The high school itself did not offer any PLTW biomedical courses. In the 2017-2018 school year, the high school offered Principles of Biomedical Science for the first time and generated interest among students; four sections of the course were offered. With this funding, we wish to expand our course offerings in the PLTW Biomedical Pathway and offer Human Body Systems. 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. In addition, students are required to prepare and maintain a laboratory notebook showing their work; this will be evaluated using the PLTW guidelines. Finally, Raymore Peculiar High School will monitor the academic achievement (grades) of students in this course as well as their post-secondary career track.

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, in 2018-2019, we will offer the second course in the biomedical program, Human Body Systems with the intent to offer a third course in the 2019-2020 school year. Although not funded from this grant, our middle schools began to offer the foundational Gateway course in the biomedical pathway, Medical Detectives in the 2017-2018 school year. We believe this will better prepare our students as they enter high school and generate increased interest in the biomedical program. Based on preliminary enrollment requests, we have already expanded our course requests for PBS to 134 for the 2018-2019 school year, up from almost 100 in the previous year. Current requests for HBS are approximately 41 at this time. Not all enrollment requests are in so we look for those numbers to continue to grow.

Through 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 Board 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 Board 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. Finally, we will continue to monitor the involvement in our HOSA group.

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.

Human Body Systems

CIP Code 51.0001

Michael Frey will be teaching this course. He has already attended the PBS training and intends to enroll in the training for Human Body Systems this summer. He is passionate about the biomedical pathway. 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 (room 516). The new addition provides classrooms that are large enough to effectively implement the PLTW curriculum. 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: HBS instructor and student clay kits, Sherlock Bones, water bath, African bone sets, cell zone molecular puzzles, Tetrasource power supply for electrophoresis tanks and a Vernier spirometer. Monies are also being requested to pay the PLTW Biomedical science software license 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, the Advisory Board and the Innovation Committee.

- I. Students in HBS 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 an 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. Students who receive an 85% in the course and a score of a 6 or higher on the exam are eligible for credit at various colleges and universities, such as: Metropolitan Community College, University of Central Missouri, and Missouri Science and Technology.

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, setting goals 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 HBS course 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 on to further their education and/or start high need, high paying careers.