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Adjusted Allocation 0.00

Remaining -2,062,079.42
Application

Campbell City (043703) - Mahoning County - 2014 - Straight A Fund - Rev 0 - Straight A Fund - Application Number (85)

Applicants shall respond to the prompts or questions in the areas listed below in a narrative form.

A) APPLICANT INFORMATION - General Information, Experience and Capacity

1. Project Title: STEM

2. Executive summary: Provide an executive summary of your project proposal and which goal(s) in question 9 you seek to achieve. Please limit your responses to no more than three sentences.

3. Overall description of project and alignment with Outcomes

B) PROJECT DESCRIPTION - Overall description of project and alignment with Outcomes

9. Which of the stated Straight A Fund goals does the proposal aim to achieve? - (Check all that apply)

   [ ] Student achievement
   [ ] Spending reductions in the five-year fiscal forecast
   [ ] Utilization of a greater share of resources in the classroom

10. Which of the following best describes the proposed project? - (Select one)

   [ ] New - never before implemented
   [ ] Existing and researched-based - never implemented in your district or community school but proven successful in other educational environments
   [ ] Mixed Concept - incorporates new and existing elements
   [ ] Enhancing/Scale Up - elevating or expanding an effective program that is already implemented in your district, school, or consortia partnership

11. Describe the innovative project

   The project is modeled after INVENTORcloud's successful secondary school program. INVENTORcloud advanced manufacturing labs will be built at the host elementary and middle schools, with 3D printers, a laser cutter, a vinyl cutter, scanners, and other manufacturing technologies. The labs will be remotely accessible, with AST2’s proprietary software that provides virtual presence to students and teachers. Easy to use, the cloud-based technology allows students to interact with equipment and professional staff as if they were physically in the lab. Students will learn the idea is to get each student experience with several concepts prior to entering high school and postsecondary environments. By providing access to curriculum in a collaborative online environment each student has a chance to get a familiarity with blended online learning. Also, each student receives hands-on and virtual experience using tools used in industry to innovate, invent, create and model. PLTW is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematicians (STEM) education curricular programs used in middle and high schools across the U.S. STEM education is at the heart of today's high-tech, high-skill global economy. For our students to remain economically competitive, they must develop the critical-reasoning and problem-solving skills that will help make them the most productive in the world. The PLTW programs engage students in activities-, projects-, and problem-based (APPB) learning, which provides hands-on classroom experiences. Students create, design, build,
Discover, collaborate and solve problems while applying what they learn in math and science. They’re also exposed to STEM fields through professionals from local industries who supplement the real-world aspect of the curriculum through mentorships and workplace experiences. The Gateway To Technology, Middle School Engineering Program, consists of the following foundation units: (1) Automation and Robotics; and (2) Design and Modeling. Specialized Units include the following: (1) Energy and the Environment; (2) Flight and Space; (3) Green Architecture; (4) Magic of Electronics; (5) Science of Technology; and (6) Medical Detectives. The Pathways to Engineering, High School Engineering Program, consists of the following modules: (1) Introduction to Engineering Design; (2) Principles Of Engineering; (3) Aerospace Engineering; (4) Biotechnological Engineering; (5) Civil Engineering and Architecture; (6) Computer Integrated Manufacturing; (7) Digital Electronics; and (8) Engineering Design and Development. Finally, the High School Biomedical Sciences Program includes the following modules: (1) Principles of the Biomedical Sciences; (2) Human Body Systems; (3) Medical Interventions; and (4) Biomedical Innovation.

12. Describe how it will meet the goal(s) selected above. – If school/district receives school improvement funds/support, include a brief explanation of how this project will advance the improvement plan.

In addition to the shared INVENTORcloud Lab resource, schools will also use the TeamUp, the collaboration and instructional site, based in a private cloud that supports the digital curriculum and INVENTORcloud projects. Students and teachers, regardless of location, will be able to collaborate on projects and share best practices. In addition to the shared INVENTORcloud Lab resource, schools will also use the TeamUp, the collaboration and instructional site, based in a private cloud that supports the digital curriculum and INVENTORcloud projects. Students and teachers, regardless of location, will be able to collaborate on projects and share best practices. In the past Distance Learning Labs were created and it allowed for several schools to share a teacher in order to keep a course. This is a similar idea, but at an individual student level, so the funding can follow the course to the level.

C) SUSTAINABILITY - Planning for ongoing funding of the project, cost breakdown

13. Financial Documentation - All applicants must enter or upload the following supporting information. Responses should refer to specific information in the financial documents when applicable:

   a. Enter a project budget
   b. Upload the Straight A Financial Impact Template forecasting the expected changes to the five-year forecast resulting from implementation of this project. If applying as a consortia or partnership, please include the five-year forecasts of each school district, community school or STEM school member for review.
   c. If subsection (b) is not applicable, please explain why, in addition to why the project will demonstrate sustainability and impact.

N/A

14. What is the total cost for implementing the innovative project?

   2,062,079.00 * Total project cost

   * Provide a brief narrative explanation of the overall budget. The narrative should include the source and amount of other funds that may be used to support this concept (e.g., Title I funding, RTT money, local funding, foundation support, etc.), and provide details on the cost of items included in the budget (i.e., staff counts and salary/benefits, equipment to be purchased and cost, etc).

   Each middle school Gateway To Technology core classroom will require $10,475.49 of materials. Additionally, each of the eight modules (Automation and Robotics, Design and Modeling, Energy and the Environment, Flight and Space, Green Architecture, Magic of Electronics, Science of Technology, Medical Devices) under the Gateway to Technology have associated costs that total $9759.28. There is also an annual $750 program fee. Each Pathways to Engineering High School core classroom will require $81,785.85 of materials. Each of the eight modules (Introduction of Engineering Design, Principles of Engineering, Aerospace Engineering, Biotechnological Engineering, Civil Engineering and Architecture, Computer Integrated Technology, Digital Electronics, Engineering Design and Development) have additional costs of $57214.79. The annual program fee is $3000. Finally, the high school Biomedical Science core classroom will require $26,797.69 of materials. Each of the five modules (Principals of Biomedical Science, Human Body Sciences, Medical Interventions, Biomedical Innovation) will require an additional $13,425.61 of materials to begin programming. The annual program fee is $4000. These figures for the Project Lead the Way were doubled so that each site, Campbell and Columbiana, was fully equipped and functional. Additional costs for lab equipment are $108,700 for each site, totaling $217,400. Additionally, the purchase service costs from AST2 to support the implementation will be $14,738 per district, with a total cost of $29,476. There will also be a cost associated with support personnel from YSU to help in the setup and initial usage of the lab equipment. AST2 will enter into a multi year partnership agreement with both districts for staffing the lab at a cost of $750,000 per district, for a total cost of $1.2 million.

15. What new/recurring costs of your innovative project will continue once the grant has expired? If there are no new/recurring costs, please explain why.

   68,976.00 * Specific amount of new/recurring cost (annual cost after project is implemented)

   * Narrative explanation/rationale: Provide details on the cost of items included in the budget (i.e. staff counts and salary/benefits, equipment to be purchased and cost, etc.). If there are no new/recurring costs, please explain why.

   Costs to maintain the INVENTORcloud lab and the Project Lead the Way curriculum would be approximately $46,488 per year for each of the districts involved. This would include the annual fees associated with the Project Lead the Way in the amount of $7,750, fees associated with AST2’s maintenance of the INVENTORcloud lab at $14,738 per year for each district. These additional costs can be charged to each district’s Title I.

16. Are there expected savings that may result from the implementation of the innovative project?

   114,000.00 * Specific amount of expected savings (annual)

   * Narrative explanation/rationale: Provide details on the anticipated savings (i.e. staff counts and salary/benefits, equipment to be purchased and cost, etc.)

   We would expect to save approximately $114,000 per year in each district. This would be due to the fact that our innovative programming would attract students back to the respective districts and/or maintain the current students we have now. Typically, our ADM count has been declining, which in turn results in less funding from the state. If we were to maintain, and not lose, enrollment, we could potentially realize a cost savings that is listed above.

17. Provide a brief explanation of how the project is self-sustaining. If there are ongoing costs associated with the project after the term of the grant, this explanation should provide details on the cost reductions that will be made that are at least equal to the amount of new/recurring costs detailed above. If there are no new/recurring costs, explain in detail how this project will sustain itself beyond the life of the grant.

   Currently in Columbiana, students have left the district to open enrol to neighboring districts that are offering STEM programs at the middle school level. In Campbell City Schools, a number of students also open enroll for the same purposes. In each year, we will project 20 students in each of the partnering districts that continue to receive their education in their home district due to the STEM offerings and the increased rigor of the curriculum. The multi-year commitment from AST2 will allow us to provide such instruction for five years in each of the districts. This initiative will later be sustained due to the increased purchased service spending to charter schools, community schools, or open enrollment districts offering STEM programming.

D) IMPLEMENTATION - Timeline, communication and contingency planning

18. Fill in the appropriate dates and an explanation of the timeline for the successful implementation of this project. In each explanation, be sure to briefly describe the largest barriers that could derail your concept or timeline for implementation and your plan to proactively mitigate such barriers. In addition, the narrative should list the stakeholders that will be engaged during that stage of the project and describe the communication that occurred as the application was developed.

Describe the ongoing communication plan with the stakeholders as the project is implemented. (Stakeholders can include parents, community leaders, foundation support and businesses, as well as educational personnel in the affected entities.)

   * Proposal Timeline Dates
   
   Plan (MM/DD/YYYY): 01/03/2014
   * Narrative explanation

   AST2 will set up a middle school lab and an elementary lab with all of the equipment and get the participating schools the access to be able to communicate with the appropriate lab.

   Implement (MM/DD/YYYY): 02/01/2014
   * Narrative explanation

   Training will have to be done with teachers on the INVENTORcloud hardware and software. Teachers will also need formal training in Problem and/or Project-based learning.

   Summative evaluation (MM/DD/YYYY): 07/14/2014
   * Narrative explanation

   Teachers will receive professional development through YSU and AST2 to navigate the components of the curriculum, how to connect to the lab virtually, and what the requirements are in the
### E) SUBSTANTIAL IMPACT AND LASTING VALUE - Impact, evaluation and replication

19. Describe the expected changes to the instructional and/or organizational practices in your institution.

**STEM education is more motivating and challenging than traditional school experiences, it makes school more interesting and relevant to the real world. It allows students to take control of their own learning by personalizing the education with experiences that are tied to their own personal interests and abilities. It will better prepare our students to be college and career ready and will give our students skills they need to compete in the global economy. Our students will learn skills such as creativity, critical thinking, research, teamwork and communication that will ultimately open doorways to their futures. Our students will be students should be problem-solvers, able to define questions and problems, design investigations to gather data, collect and organize data, draw conclusions, and then apply understandings to new and different situations. This will help them to be more innovative, creative and problem solvers in science, mathematics, and technology concepts and principles by applying them to the engineering design process. We will allow our students to become inventors, recognizing the needs of the world and creatively designing, test, redesign, and then implement solutions and self-reliant, where they are able to use initiative and self-motivation to set agendas, develop and gain self-confidence, and work within time specified time frames. Our students will become logical thinkers, where they are able to apply rational and logical thought processes of science, mathematics, and engineering design to innovation and invention and will become technologically literate, able to understand and explain the nature of technology, develop the skills needed, and apply technology appropriately.**

20. Describe the rationale, research or past success that supports the innovative project and its impact on student achievement, spending reduction in the five-year fiscal forecast or utilization of a greater share of resources in the classroom.

For a society so deeply dependent on technology and engineering, we are largely ignorant about technology and engineering concepts and processes, and we have largely ignored this inequality in our educational system. (Bybee, 2000) According to the National Dropout Prevention Center, in the U.S. this year, approximately 1.25 million students will leave school without a high school diploma, that is about 7,000 students a day. The national Science Board in 2008 reported that the U.S. is currently experiencing a chronic decline in homegrown STEM talent and is increasingly dependent upon foreign scholars to fill the workforce and leadership voids. Additionally, the Council of Graduate Schools (2007) noted that graduate school admissions to some post secondary STEM programs are down by 30 percent over previous levels. In some areas, only 16 percent of students in science and engineering disciplines were citizens of the U.S. A recent report of the U.S. Bureau of Labor Statistics predicts that the number of jobs in STEM occupations will continue to grow by 47 percent annually, three times the rate of all other occupations. Our educational system can be enhanced by STEM initiatives to appropriately teach our students to function for a new world reality.

21. Is this project able to be replicated in other districts in Ohio?

**Yes**

22. If so, how?

Any school district in the nation can partner with Project Lead the Way to bring STEM initiatives to their district. Additionally, INVENTORcloud is offered at 11 high schools and two campuses of EGCC. It is piloting elementary and middle school programs at two schools. In Fall 2014, the prerequisite course will be a required engineering course at YSU. These schools virtually access the INVENTORcloud Lab located at Youngstown City School District's Choffin Career & Technical Center.

23. Describe the substantial value and lasting impact that the project hopes to achieve.

The STEM program will best prepare our students and allow them to be competitive in NE. Ohio, where we are currently experiencing job demands in related fields due to the Marcellus Shale gas drilling in our region. We are aware that there are concerns from our local government that are current graduates are not prepared to enter this specific job force. The STEM program, which is a cost saving measure for the districts, will not only impact our learners, but will also have a greater impact on the local economy.

24. What are the specific benchmarks related to the fund goals identified in question 9 that the project aims to achieve in five years? Include any other anticipated outcomes of the project that you hope to achieve that may not be easily benchmarked.

We would expect to see the utilization of greater shared resources immediately. With the purchase of equipment and curriculum materials, and with the support of AST2, YSU, EGCC and Project Lead the Way, we would realize the availability of the resources immediately. Within the first year of receiving the lab equipment and curriculum materials, we would look to provide professional development to our teachers in a shared fashion between Campbell and Columbiana, both traditionally and virtually, to meet the needs of all staff involved. By providing the professional development to the teachers and staff, we would then see a greater utilization of the resources in an appropriate manner, which will then, in turn, help to increase our achievement of our students. We would look to see a decrease in the number of students scoring below proficient in the areas of math and science by at least 10% annually over five years. And finally, we would look to see a reduction in the five year forecast by October 2014. This would be due to the retention of students. Additionally, each year, we would realize the savings due to retaining our students and we would not see a decrease in our finances.

25. Describe the plan to evaluate the impact of the concept, strategy or approaches used.

* Include the method by which progress toward short- and long-term objectives will be measured. (This section should include the types of data to be collected, the formative outputs and outcomes and the systems in place to track the program's progress).

* Include the method, process and/or procedure by which the program will modify or change the program plan if measured progress is insufficient to meet program objectives.

Pre- and Post-test measures, using questionnaires, tests of knowledge, and other assessment tools will evaluate the following: learning of content, which will include knowledge of scientific principles and enhancement of technical or problem solving skills, enhanced positive attitudes toward the discipline, increased self-confidence in one’s ability to excel in this field, increased knowledge of the value of math and science in the workplace and increased awareness of math and science careers and removal of any barriers to possible advancement in math and science that existed prior to the implementation. Long-term goals for programs will focus primarily on whether participants enter STEM careers at rates higher than would be likely without having had the exposure in the middle school grades, or if students use their increased knowledge and appreciation of math and science in other careers (e.g., science journalism). We would also look at the participation in subsequent optional math and science opportunities at the precollision level and beyond, high achievement in rigorous math- and science-related courses at the high school level and beyond, choice of a STEM discipline as a college major; honors and awards for math and science achievement, positive attitudes toward math and science content, confidence in one’s ability to excel in scientific fields, interest in and continued progress toward achieving entry requirements for a STEM career and finally entry into a STEM career.

By virtue of applying for the Straight A Fund, all applicants agree to participate in the overall evaluation of the Straight A Fund for the duration of the evaluation timeframe. The Governing Board of the Straight A Fund reserves the right to conduct evaluation of the plan and request additional information in the form of data, surveys, interviews, focus groups, and any other related data to the legislature, governor, and other interested parties for an overall evaluation of the Straight A Fund.

PROGRAM ASSURANCES: I agree, on behalf of this applicant agency and/or all identified partners to abide by all assurances outlined in the Assurance section of the CCIP. In the box below, enter "I Accept" and indicate your name, title, agency/organization and today’s date.

I Accept  Matthew Bowen, Superintendent Campbell City Schools 10/24/13