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Adjusted Allocation: 0.00
Remaining: -67,400.00
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: Exploring Additive Manufacturing

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.

Applicants at Auburn Career Center and/or Associate Districts of Perry Local School District and Kenston Local School District will gain biomedical projects from Case Western Reserve University that will ask students to design, print out (3D Printer) and test their products at Case Western Reserve School of Engineering. In short, this is a project called leads to "Additive Manufacturing" which is manufacturing in layers. Example projects could be designing replacement skeletal parts, sensors to be inserted between layers of tissue in muscles, organs, or vessels. The focus of the grant is to train people to use additive manufacturing to create and produce products.

3. 100 Total Students Impacted:

4. Lead applicant primary contact: - Provide the following information:
   
   First Name, Last Name of contact for lead applicant: Margaret T. Lynch
   
   Organizational name of lead applicant: Auburn Vocational School District
   
   Unique Identifier (RN/Fed Tax ID): #051169
   
   Address of lead applicant: 8140 Auburn Road
   
   Phone Number of lead applicant: 440-358-8011
   
   Email Address of lead applicant: mlynch@auburncvc.org

5. Secondary applicant contact: - Provide the following information, if applicable:
   
   First Name, Last Name of contact for secondary applicant: Dr. Robert Lee, Superintendent
   
   Organizational name of secondary applicant: Kenston Local School District
   
   Unique Identifier (RN/Fed Tax ID): #047191
   
   Address of secondary applicant: 17419 Snyder Road-Chagrin Falls, OH 44023
   
   Phone number of secondary applicant: 440-543-9677
   
   Email address of secondary applicant: bob.lee@kenstonlocal.org

6. List all other participating entities by name: Provide the following information for each additional participating entity, if applicable: Mention First Name, Last Name, Organizational Name, Unique Identifier (RN/Fed Tax ID), Address, Phone Number, Email Address of Contact for All Secondary Applicants in the box below.

   Jack Thompson, Superintendent, Perry Local School District, RNR637902, 4325 Manchester Road, Perry, OH 44081, 440-259-9200, thompsonj@perry-oh.org

7. Partnership and consortium agreements and letters of support: - Click on the link below to upload necessary documents.

   * Letters of support are for districts in academic or fiscal distress only. If school or district is in academic or fiscal distress and has a commission assigned, please include a resolution from the commission in support of the project.

   * If a partnership or consortium will be established, please include the signed Straight A Description of Nature of Partnership or Description of Nature of Consortium Agreement.

   UploadGrantApplicationAttachment.aspx

8. Provide a brief description of the team or individuals responsible for the implementation of this project including relevant experience in other innovative projects. You should also include descriptions and experiences of partnering entities.

   Margaret T. Lynch, Superintendent-Auburn has been innovative in utilizing over 100+ employers to provide expectations for career center in strategic planning; created "hands on" career exploration lab for 7th and 8th graders; began student internship projects with seniors and employers presenting summary of experiences to juniors to build desire and motivation for a workplace internship. Dr. Robert Lee, Superintendent, Kenston Local School District has been a leader in green technologies and renewable energy. In the past two years, through his leadership, Kenston has installed a turbine windmill and a solar panel to store their energy savings on the grid. Jack Thompson, Superintendent, Perry Local School District, initiated the administrative position of Career and Readiness Coordinator and started mini-businesses created and operated by Perry Local students within the community. In addition, under his leadership, he has created a Business Advisory Council, changed to block scheduling to accommodate project based learning and has initiated STEM activities as part of the Core Curriculum implementation.

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
   - 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.

   Although Auburn has been involved in Architecture and traditional manufacturing in the past, the opportunity to expand the process and insert this into traditional middle school curriculum is an opportunity not to miss. By utilizing 3D software programs and 3D desktop printers, students could participate in projects focusing on biomedical solutions real-world problems. Real-world problems would be shared by Case Western Reserve University Engineering department. The unit length for this learning activity would be from 4-6 weeks in length and could be inserted into the students current math or science course. Students would take a problem and all students would create their own solution. The process would then include designing the object, building the object by having it produced through a 3D printer, and then taking their products to Case Western Reserve University to have them tested in the engineering labs. Example products could be replacement bones, sensors that could be inserted between layers of tissue, or monitors of oxygenated blood levels within the body. The applications in the biomedical field are numerous. Because of the project, the equipment needed to provide this opportunity is minimal in expense and will not create barriers within the school facilities. To pilot this program, three grade levels of students would be targeted. At Auburn Career Center, 11th grade Allied Health Technologies students would be selected and an adult class working within the Industrial Engineering class. At Kenston Local and Perry Local a minimum of one section of middle school students in grade 7 or grade 8 would be selected. The total pilot group would be a maximum of 150 students. By using various age groups, it will be insightful to learn if the amount of education or experience would limit or enhance creative solutions in the biomedical field. By providing students with real-world problems and having them test their solutions with an authentic audience of striving biomedical engineers at Case Western Reserve University, students will experience academic integration through these projects, 21st century skills of teamwork, project presentation and a working knowledge of the engineering approach toward problem solving. It is a win for the students and their teachers to explore these opportunities.

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.

   This unique pilot program utilizing problems provided by Case Western Reserve University will engage students to research, experiment, conceptualize and synthesize ideas into projects. Skills from math, science, language arts will be all tapped to solve these problems and listen to how their solutions competed with others of varying age groups working on the same or similar challenges. By providing students with 3D software and printers, the applications of this to other projects within their classroom can be expanded. The process of design, build, and test would become a supplemental learning
C) SUSTAINABILITY - Planning for ongoing funding of the project, cost breakdown

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

67,400.00 * 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 costs and salary/benefits, equipment to be purchased and cost, etc.). The overall budget for this project focuses on the 3D software package, 3D printers, and 20 refills for supplies for each class. Because this would be inserted into existing courses with existing faculty, there would be no additional expenses. The total Project amount is calculated as follows: Eight 3D printers, two for Auburn AHT students, two for Auburn Evening classes, two forKenston Local and two for Perry Local students ranging from $1500 to $2200 each to max out at $20,000.00 total for printers. To keep the printers in supplies, a complete five color supply kit of wire would cost $150. Multiplying four additional kits for each of the 8 printers would total 32 kits.

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.

1,200.00 * 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.

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

0.00 * 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.)

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.

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.

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

The expected change in instruction would be the power of students to be engaged in real world problem solving that could change the biomedical field. The power of this opportunity will provide students with experiences in researching the problem, theorizing solutions, discussing pro's and con's of the solutions with their classmates, creating and revising actual designs of their conceptualization of their solution, watch the product be produced in the 3D printer, and then take their work product to be reviewed and evaluated by professional engineering students at Case Western Reserve University's School of Engineering. This innovative challenge taps into the creative and unlimited potential of students to create a solution to a problem not yet solved. This is truly a powerful opportunity for those students.

E) SUBSTANTIAL IMPACT AND LASTING VALUE - Impact, evaluation and replication

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.

The lasting value would be the application of problem based learning and the reinforcement of logical analysis, discipline enactment of a plan of action, seeing it materialize, and having it reviewed by professional engineering students could help students gain confidence in the methodology of learning as well as their ability to tackle problems that do not have known solutions. The very fact that their unique solution could change the learning may provide a new level of learning and engagement in the learning process.

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

Yes
22. If so, how?

The simplicity of this model and the affordability of these learning tools would make this pilot replicable in most districts and in potentially targeted grade levels for the future.

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

The greatest value of this project and its impact will be in engaging students in real-world, biomedical, practical problem solving that may tap into their individual academic and imaginative talents and open them to potential career interests in biomedical manufacturing.

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.

The short term objectives would be to focus on the implementation of the insertion of a biomedical problem into the existing class. Finding the course which would have a natural lead into this learning project would be the first goal. Provide students with evaluation sheets that they would assess their own thoughts and attitudes about the project before beginning the project and at the end of the project. Ask students to evaluate if this had any impact on them with regard to understanding careers and manufacturing in the biomedical world. Tally the number of projects that receive a positive rating for “plausible solution” at Case Western Reserve University. Long term objectives will be to reinforce problem-based learning in other areas of the curriculum to help students master this learning methodology.

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.

The use of authentic evaluation by professional engineering students will be a goal and reward in itself. If the program persists annually, it is very possible that internal school competitions would be held to limit the number of solutions being forwarded to Case Western Reserve University professional engineering students. However, the short term and long term objectives would still remain as extremely impressionable learning experiences that could affect students future choices of careers.

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.