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<th>Purchased Services 400</th>
<th>Supplies 500</th>
<th>Capital Outlay 600</th>
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Adjusted Allocation | 0.00 |
Remaining | -961,733.00 |
**A) APPLICANT INFORMATION - General Information**

1. **Project Title:**
   Design & Innovation Program

2. **Executive summary:** Please limit your responses to no more than three sentences.
   The goal of the Design & Innovation Program is to improve student achievement, specifically students' college and career readiness in the various fields of engineering, industrial design, and architecture. This four-year curriculum will focus on the principles of design and engineering, critical thinking and project-based learning. Students will engage in guided research on partner college campuses to an increasing degree during their Junior and Senior years of high school.

   *This is an ultra-concise description of the overall project. It should not include anything other than a brief description of the project and the goals it hopes to achieve.*

3. **Total Students Impacted:**
   65
   *This is the number of students that will be directly impacted by implementation of the project. This does not include students that may be impacted if the project is replicated or scaled up in the future.*

4. **Please indicate which of the following grade levels will be impacted:**

<table>
<thead>
<tr>
<th>Pre-K Special Education</th>
<th>Kindergarten</th>
</tr>
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<td>9</td>
<td>10</td>
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<tr>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

5. **Lead applicant primary contact:** - Provide the following information:
   Ken Veon
   **Organizational name of lead applicant**
   Beachwood City Schools
   **Address of lead applicant**
   24601 Fairmount Blvd. Beachwood, OH 44122
   **Phone Number of lead applicant**
   216-464-2600
   **Email Address of lead applicant**
   kev@beachwoodschools.org

6. **Are you submitting your application as a consortium?** - Select one checkbox below
   - Yes
   - No

   If you are applying as consortium, please list all consortium members by name on the "Consortium Member” page by clicking on the link below. If an educational service center is applying as the lead applicant for a consortium, the first consortium member entered must be a client district of the educational service center.

   *Add Consortium Members*

7. **Are you partnering with anyone to plan, implement, or evaluate your project?** - Select one checkbox below
   - Yes
If you are partnering with anyone, please list all partners by name on the "Partnering Member" page by clicking on the link below.

Add Partnering Members

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

8. Describe the innovative project: - Provide the following information

The response should provide a clear and concise description of the project and its major components. Later questions will address specific outcomes and the measures of success.

The current state or problem to be solved; and

The United States has seen a significant decline in the number of students earning degrees in engineering, math, and physical sciences over the past two decades. The percentage of students studying these subjects has declined even more dramatically. We wish to be part of the solution to this problem by engaging our students in exciting, authentic learning experiences around the design process, subject-specific skills in the fields of engineering, architecture and design, and real-world research strategies. We will focus particular attention on recruiting to this program, female and African-American students who are underrepresented in these fields. Data also show that females and African-American students are underrepresented in these S.T.E.M. fields. In fact, a University of Wisconsin-Milwaukee study showed that 80% of women with a bachelor's degree in engineering are not working in their field. By building their knowledge, skills and confidence well before college, we will ensure a better track record for our female and African-American students' pursuit of S.T.E.M. degrees and success in their subsequent careers. Research suggests that 40% of engineering students switch to other majors or drop out, especially in the first two years. If Beachwood can provide our students with the foundational knowledge and skills for these fields, the odds that these students will successfully complete their degree and enter these career fields will be significantly improved. While our goal is to help prepare our students for college and career success wherever their path leads them, we have an important tangential goal of retaining talent in the Northeast Ohio region. Establishing close, productive relationships between our students and local universities and industries will be critical to reversing "brain drain" in our region.

The proposed innovation and how it relates to solving the problem or improving on the current state.

According to the Bureau of Labor Statistics, the S.T.E.M. fields involved in Beachwood's Design & Innovation Program have a range of positive job outlooks over the next ten years to be +6% for chemical engineering to a +62% increase in the demand for biomedical engineers. The purpose for this program/initiative is to promote the idea of every student being college and career ready. With a college attrition rate of about 40% (according to a UCLA study cited in the NY Times), students are not prepared for what they are going to encounter in their college course work and their subsequent careers. In addition, this program's focus on enrolling female and African American students, aims to counter the trend that these two groups are severely underrepresented in S.T.E.M. college majors and career fields. The Design & Innovation Program will help prepare students for the rigor they will face in a supportive and scaffold manner. By providing students with the opportunity to explore different S.T.E.M. career fields through field trips and internships as well as to engage in hands-on authentic research projects, developing their critical thinking as well as collaboration skills, they will be prepared to be a force in college and in their eventual career field. According to the Partnership for 21st Century Learning, students are, in addition to the 3 R's, supposed to develop "Learning and Innovation Skills - 4C's" (critical thinking, communication, collaboration, and creativity). This program stresses all of those components. In addition, students are to learn life and career skills, which are comprised of flexibility, initiative, cross-cultural skills, productivity and leadership. This program is the living embodiment of those skills. Beachwood City School District has a history of academic success. The District ranked #16 in the state according to performance index and our high school ranked #199 in the nation according to Newsweek. This rigorous, dynamic educational environment, coupled with this program for students, will produce a high caliber college student who will be accepted into the college of engineering, architecture or design at any university. The goal of this program is two-fold. Short-term it is to provide students with rigorous expectations to prepare them for college/careers. Long-term it is to keep talent in the local area, which is Ohio and Northeast, OH. Throughout this program, students will be tracked after high school to determine if, how, and where they are practicing their engineering/design skills. If students are being accepted into colleges of engineering, design or architecture, and THEN going into fields of engineering in the great state of Ohio, this program will be a success. Providing them with the resources is key. A facility that matches expectations, technology tools that allow them to make mistakes and refine, equally important, guidance from teachers, professors and experts in the field to provide enlightenment to spark students interest in the field and allow it to stay lit.

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

Applicants should select any and all goals the proposal aims to achieve. The description of how the goals will be met should provide the reader with a clear understanding of what the project will look like when implemented, with a clear connection between the components of the project and the stated goals of the fund. If partnerships/consortia are part of the project, this section should describe briefly how the various entities will work together in the project. More detailed descriptions of the roles and activities will be addressed in Question 16.

Student achievement (Describe the specific changes in student achievement you anticipate as a result of this innovation (include grade levels, content areas as appropriate) in the box below.)

Students who enter the Design & Innovation Program proceed through a four-year curriculum as a cohort. During their 9th Grade year, students will take an elective course at our high school in the principles of the design process. The course will feature hands-on design and experimentation experiences, entry into design competitions, as well as field trips to local universities and private industries. During the 10th Grade year, students will subdivide into tracks focused on general engineering, software engineering specifically, architecture and industrial design. These courses will also feature extensive project-based learning as well as exposure to university and private industry settings.

During students’ 11th and 12th grade years, they will develop small team or individual research projects appropriate to their selected field. They will be guided by a Beachwood teacher-advisor as well as matched with faculty and staff from Cleveland State University (or other local universities as appropriate) to help them pursue their independent projects. Use of Cleveland State University lab, fabrication, and other highly-specialized facilities and resources will help Beachwood students engage in real-world design, experimentation and research. This
program demands a team of experts to implement it with integrity and rigor. Unlike typical high school programming, reliance on a single teacher to implement this program will not be possible. Instructors with high-level expertise in the fields of engineering, architecture and design will be necessary, but come from a very limited pool. By partnering with Cleveland State University’s Fenn College of Engineering, students in Beachwood can be not only provided with the expertise of qualified instructors, but also a variety of professors and graduate assistants with the knowledge to help students translate their specific interests into rigorous, project-based learning and research. A university-based coordinator will also be necessary to facilitate student experiences on campus with various faculty and staff as well as in the utilization of specialized campus facilities. The coordinator will also serve as the liaison between Beachwood’s students and the university, as well as with private industry partners who can provide additional project-based learning experiences and internships. We want to provide students the opportunity to pursue creative ideas that push the limitations of the possible and help change the world in the areas of engineering, architecture and industrial design. In an increasingly global society, students need to be critical thinkers, effective collaborators and entrepreneurs. Through our partnership with Cleveland State and funding from the Straight A Fund, Beachwood will provide students with the appropriate instruction, facilities, resources and support vital to student success in these critical fields of study. We are going to prepare them for engineering, design and innovative fields that will change the world.

- Spending reductions in the five-year fiscal forecast or positive performance on other approved fiscal measures (Describe the specific reductions you anticipate in terms of dollars and spending categories over a five-year period in the box below or the positive performance you will achieve on other approved fiscal measures. Other approved fiscal measures include a reduction in spending over a five-year period in the operating budget approved by your organization’s executive board or its equivalent.)

- Utilization of a greater share of resources in the classroom (Describe specific resources (Personnel, Time, Course offerings, etc.) that will be enhanced in the classroom as a result of this innovation in the box below.)

- Implementing a shared services delivery model (Describe how your shared services delivery model will demonstrate increased efficiency and effectiveness, long-term sustainability, and scalability in the box below.)

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

- New - never before implemented
- Existing: Never implemented in your community school or school district but proven successful in other educational environments
- Mixed Concept: Incorporates new and existing elements
- Established: Elevating or expanding an effective program that is already implemented in your district, school or consortia partnership

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

11. Financial Documentation: - All applicants must enter or upload the following supporting information. The information in these documents must correspond to your responses in questions 11-14.

* Enter a project budget in CCIP (by clicking the link below)

Enter Budget

* If applicable, upload the Consortium Budget Worksheet (by clicking the link below)

* Upload the Financial Impact Table (by clicking the link below)

* Upload the Supplemental Financial Reporting Metrics (by clicking the link below)

Upload Documents

For applicants without an ODE Report Card for 2012-2013, provide a brief narrative explanation of the impact of your grant project on per pupil expenditures or why this metric does not apply to your grant project instead of uploading the Supplemental Financial Reporting Metric.

The project budget is entered directly in CCIP. For consortia, this project budget must reflect the information provided by the applicant in the Consortium Budget Worksheet. Directions for the Financial Impact Table are located on the first tab. Applicants must submit one Financial Impact Table with each application. For consortium applications, each consortium member must add an additional tab on the Financial Impact Tables. Partners are not required to submit a Financial Impact Table.

Applicants with an "Ohio School Report Card" for the 2012-2013 school year must upload the Supplemental Financial Reporting Metrics to provide additional information about cost savings and sustainability. Directions for the Supplemental Financial Reporting Metrics are located on the first tab of the document. If your organization does not have an "Ohio School Report Card" for the 2012-2013 school year, please provide an explanation in the text box about how your grant project will impact expenditures per pupil or why expenditure per pupil data does not apply to your grant project.

Educational service center, county boards of developmental disabilities, and institutions of higher education seeking to achieve positive performance on other approved fiscal measures should submit the budget information approved by an executive board or its equivalent on the appropriate tabs of
The Financial Impact Table. Educational service centers should use the "ESC" tab and county boards of developmental disabilities and institutions of higher education should use the "non-traditional" tab.

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

Responses should provide rationale and evidence for each of the budget items and associated costs outlined in the project budget. In no case should the total projected expenses in the budget narrative exceed the total project costs in the budget grid.

961,733.00 State the total project cost.

* Provide a brief narrative explanation of the overall budget.

The total cost for the Straight A Funding portion of the project: $961,733. In addition to the grant portion, the total cost, including local funding, will be $1,100,961. The costs associated with this grant application are twofold: to provide the students of Beachwood City Schools with a highly-specialized facility for fabrication, experimentation, and research, and to fund a Program Coordinator hired by Cleveland State University as well as graduate student assistants who will provide guidance and expertise to our students as they pursue on-campus research projects. The facility addition, to be constructed abutting our school's existing science wing, will add approximately 4050 square feet designed specifically for the purposes of the Design & Innovation Program. It will serve as a model, unrivaled in the K-12 environment in both its form and function. It will include 3 distinct rooms for demonstrations/analysis, a computer lab, and a "tech room" with highly specialized equipment such as 3D Printers/Scanners, CNC machines, and fluid systems. This wing will be built consistent with the rest of Beachwood High School obtaining LEED Certification and going "Green". Beachwood City Schools and Cleveland State University are prepared to absorb the additional costs of this program in its first two years as well as the full cost of the program after two years. Beachwood will hire the teachers of the first, second and third year coursework associated with the Design & Innovation Program. In addition, the district will fund all of the program's technical services (Software, Internet and networking), transportation needs, as well as its prototyping and model building materials. Cleveland State University will fund approximately $2,500 of the program's additional needs during the period of the grant funding which will include faculty involvement and the material and equipment needs for on-campus demonstrations. Upon completion of the term of the grant funding, Beachwood and Cleveland State will determine methods of cost sharing to sustain the program for its current and future students. The university believes that other grant funding sources for this program will continue to be available to defray these costs. As noted below, Beachwood has made a priority to reduce costs over the next five years and beyond. Local Funding yearly costs (outside of the grant):

- Staff Count - $97,428 Equipment to be Purchased - $31,600 Supplies - $10,200

13. Will there be any costs incurred as a result of maintaining and sustaining the project after June 30th of your grant year?

Sustainability costs include any ongoing spending related to the grant project after June 30th of your grant year. Examples of sustainability costs include annual professional development, equipment maintenance, and software license agreements. To every extent possible, rationale for the specific amounts given should be outlined. The costs outlined in the narrative section should be consistent and verified by the financial documentation submitted and explained in the Financial Impact Table. If the project does not have sustainability costs, applicants should explain why.

- Yes - If yes, provide a narrative explanation of your sustainability costs as detailed in the Financial Impact Table in the box below.

Although there will be recurring costs, the Beachwood City Schools have been diligent to reduce costs in other areas of operations, mainly in the technology budget (offering more tech for less money....) and this is demonstrated in our financial impact table. Recurring costs will be will be: Staff member - 1 FTE teacher - Approx $97,428 (with slight increase for cost of living over years) Professional Development - Approximately $2,500 per year Updating/Maintaining equipment - $5,000 per year (adding equipment, updating software, etc.) Supplies/Prototyping materials (i.e. 3D Printer material, wood, foam, drill bits, laser bulbs, ink cartridges, etc.) - Approx. $10,000 per year Field Trips/Experiences - provided by CSU - Paid by grants obtained by Cleveland State University's Fenn Academy Again, after the initial grant, costs will dramatically be reduced because of the building costs. The actual operating costs are minimal and the costs of the teacher/recurring costs are counterbalanced by reductions in other areas of operations. Because we are partnering with CSU, we are able to provide students with many experiences outside of the typical school day at no cost to the school district.

- No - If no, please explain why (i.e. maintenance plan included in purchase price of equipment) in the box below.

14. Will there be any expected savings as a result of implementing the project?

- Yes

- No

Applicants with sustainability costs in question 13 or seeking to achieve significant advancement in spending reductions in the five-year forecast must address this response. Expected savings should match the information provided by the applicant in the Financial Impact Table. All spending reductions must be verifiable, permanent, and credible. Applicants may only respond "No" if the project will not incur any increased costs as a result of maintaining and sustaining the project after June 30th of your grant year. The Governing Board will use the cost savings as a tiebreaker between applications with similar scores during its final selection process. Cost savings will be calculated as the amount of expected cost savings less sustainability costs relative to the project budget.

322,543.00 If yes, specify the amount of annual expected savings. If no, enter 0.

If yes, provide details on the expected savings (i.e. staff counts and salary/benefits, equipment to be purchased and cost, etc.). If no, please explain why.

This is a yes/no question/answer, but met with an explanation. No there are no expected savings because of the project directly, but yes, the district is going to demonstrate savings because of reductions in other areas, mostly technology reductions and reduction of staff from other areas of the district. The district is going to realize a total reduction in spending by more than $1,500,000 at the end of the five years because of savings through changing technologies from more expensive computer devices that require software purchases to lower costing devices.
that utilize free software in the cloud. In addition, reductions in staff due to attrition will show significant cost savings. This can be verified in our Financial Impact Table. Innovative projects cost money and need to be sustained, but Beachwood City Schools will not "add" to the balance, but have made significant changes to reduce costs in the district over the next several years that are able to be maintained through changes in practices.

15. Provide a brief explanation of how the project is self-sustaining.

All Straight A Fund grant projects must be expenditure neutral. For applications with increased ongoing spending as documented in question 11-14, this spending must be offset by expected savings or reallocation of existing resources. These spending reductions must be verifiable, permanent, and credible. This information must match the information provided in your Financial Impact Table. Projected additional income may not be used to offset increased ongoing spending because additional income is not allowed by statute. Please consider inflationary costs like salaries and maintenance fees when considering whether increased ongoing spending has been offset for at least five years after June 30th of your grant year. For applications without increased ongoing spending as documented in questions 11-14, please demonstrate how you can sustain the project without incurring any increased ongoing costs.

For educational service centers and county boards of developmental disabilities that are members of a consortium, any increased ongoing spending at the educational service center or county board of developmental disabilities may also be offset with the verifiable, permanent, and credible spending reductions of other members of the consortium. This increased ongoing spending must be less than or equal to the sum of the spending reductions for the entire consortium.

Explain in detail how this project will sustain itself for at least five years after June 30th of your grant year.

The district is going to realize a total reduction in spending by more than $1,500,000 at the end of the five years because of savings through changing technologies from more expensive computer devices that require software purchases to lower costing devices that utilize free software in the cloud. In addition, reductions in staff due to attrition will show significant cost savings. This can be verified in our Financial Impact Table and are permanent reductions. The savings from these changes are permanent adjustments to practices. In the financial impact table, salaries were adjusted and maintenance fees were taken into consideration for this grant and for the cost reductions to reflect more than 1.5 million dollars in savings. Innovative projects cost money and need to be sustained, but Beachwood City Schools will not "add" to the balance, but have made significant changes to reduce costs in the district over the next several years that are able to be maintained through changes in practices. The cost of sustaining this program will be minimal with a collaborative vision developed by Cleveland State University and the Beachwood City Schools. Although there are some costs to sustaining it, these are offset by savings from other resources, as noted above.

D) IMPPLEMENTATION - Timeline, scope of work and contingency planning

16. Please provide a brief description of the team or individuals responsible for the implementation of this project, including other consortium members and/or partners.

This response should include a list of qualifications for the applicant and others associated with the grant. If the application is for a consortium or a partnership, the lead should provide information on its ability to manage the grant in an effective and efficient manner. Include the partner/consortium members' qualifications, skills and experience with innovative project implementation and projects of similar scope.

Enter Implementation Team information by clicking the link below:

Add Implementation Team

For Questions 17-19 please describe each phase of your project, including its timeline, scope of work, and anticipated barriers to success.

A complete response to these questions will demonstrate specific awareness of the context in which the project will be implemented, the major barriers that need to be overcome and the time it will take to implement the project with fidelity. A strong plan for implementing, communicating and coordinating the project should be outlined, including coordination and communication in and amongst members of the consortium or partnership (if applicable). It is recognized that specific action steps may not be included, but the outline of the major implementation steps should demonstrate a thoughtful plan for achieving the goals of the project. The time line should reflect significant and important milestones in an appropriate and reasonable time frame.

17. Planning - Activities prior to the grant implementation

* Date Range: June 20, 2014 to June 30, 2015

* List of scope of work (activities and/or events including project evaluation discussions, communication and coordination among entities).

June/July 2014 The entire scope and sequence of the program will be completed by June 2015. This will include aligning the curriculum, both vertically within the program, and horizontally, with courses students need (or are encouraged to participate in during the sequencing), Cleveland State professors, Beachwood teachers/administrators, and students will work collaboratively to develop a rigorous and worthwhile curriculum*. In addition to the curriculum being developed a rigorous evaluation will be developed prior to implementation. This is detailed below. *Ongoing PD will be provided throughout the year - Planning for the needs of the PD for the teacher will be based on need and evaluated by administrators. June 20, 2014 - we will spend the next three days (June 20-22) with architectural firms to develop drawings based on our (administration/teachers) expectations for the space provided to the students for their "Engineering Lab". Engineers from Cleveland State and local businesses will have their input solicited too within that time frame. Finally, most inspiring, is students will be provided the opportunity to work with the architectural firm to develop a space that is aesthetically pleasing, but more importantly, provides students with a state of the art engineering/design facility. Students from a high school helping to develop, draw, and critically analyze a space that they are in turn going to learn more about the process and create for future engineering/design students. This is a real world application that cannot be provided too often. In this process, a timeline will be developed for the construction of the Design & Innovation facility.

* Anticipated barriers to successful completion of the planning phase

Time - Because it will be summer when the grant is awarded, trying to gather all necessary parties in a succinct timeframe to develop
18. Implementation - Process to achieve project goals

* Date Range: June 20, 2014 - June 30, 2015

* List of scope of work (activities and/or events, including deliverables, project milestones, interim measurements, communication, and coordination).

The partnership between Beachwood City Schools and Cleveland State University has already started and will be strengthened by the Straight A Fund grant. This will provide the financial assistance needed to provide resources to Cleveland State University and Beachwood City Schools to hire a coordinator for this project as well as graduate assistants as needed to help develop the curriculum, become resources to the students and teachers in Beachwood, and very importantly, develop relationships with businesses and professors to assist in the project based learning process. This will begin right after approval (with the grant being awarded on June 20th). Work with professors and coordinators was started last year, but this will provide the time needed to focus attention to the curriculum and mapping out the course of action. This will also provide a graduate assist and and professors from CSU to assist our students in the current facilities and allow students to go to CSU to use their fabrication labs during this construction process. Because this facility will be an addition to the high school, students and staff will not be interrupted for the building aspect of the facility and building can start immediately. This gives time for building and installation of equipment to be ready by the summer of 2015. The jointly created curriculum (BCS and CSU) will be implemented in the world-class facility on the first day of school (2015) using the highly focused technology tools to enhance student achievement.

* Anticipated barriers to successful completion of the implementation phase.

Weather - If there is an unusually wet or cold spell, it could potentially delay the project. However, due to the relatively small size (4050 sq ft), it is expected this won’t be a tremendous issue. Another barrier that could be an issue is the availability of professors and graduate assistants. Because they are not *on demand* scheduling could be a barrier, but CSU’s College of Engineering has assured us in this partnership that we will be able to find the common ground.

19. Summative Evaluation - Plans to analyze the results of the project

* Date Range: June 20, 2014 - June 30, 2015

* List of scope of work (activities and/or events, including quantitative and qualitative benchmarks and other project milestones).

Although there will be an ongoing evaluation of the program, formal evaluations of the program will be completed in December of 2014 and June 2015. Waiting until the end of the school year is too long to make adjustments, so a check-in by winter break is a mandatory self-regulation. Short-term this will include the number of students participating in the program, the number of students that drop out, satisfaction surveys, projects completed, and hours spent working with professors, grad assistants and professionals in engineering/design fields. This information will be reported to the State Board of Education, the Beachwood Board of Education, administration, Cleveland State University’s Penn College of Engineering and all stakeholders in the Beachwood City Community. Long-term, students participating in 2-3-4 years of the program will be tracked in college to determine the fields of focus and of the ones choosing a design or engineering field, track how many of the students achieve awards in college, scholarships, track their GPAs, and the various fields they enter when leaving college. In addition, surveys about the Design & Innovation coursework in high school and how it helped prepare them, their advice about adjustments and suggestions will be collected.

* Anticipated barriers to successful completion of the summative evaluation phase.

The qualitative nature of the information. Because there is no "High Stakes Testing" and focused state standards, the quantitative data is about students entering and exiting the program. The long term study will provide more of the quantitative information, but the qualitative information will provide Beachwood Schools with data to improve student engagement and involvement in the program. In addition, losing track of students if they move too often or don’t "check in" after graduation and past college will lower the number of participants in the study. The more students that go through the program and we can track, the more reliable the information.

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

The response should illustrate the critical instructional and/or organizational changes that will result from implementation of the grant and the impact of these changes. These changes can include permanent changes to current district processes, new processes that will be incorporated or the removal of redundant or duplicative processes. The response may also outline the expected change in behaviors of individuals (changes to classroom practice, collaboration across district boundaries, changes to a typical work day for specific staff members, etc.). The expected changes should be realistic and significant in moving the institution forward.

Please enter your response below:

The changes that will occur based on this initiative will be the focus on the science and math instruction at the lower levels in preparation for all students leaving middle school and entering high school in this STEM program. The Beachwood Schools have hired a science coordinator/teacher to help the elementary science programs become more rigorous and expand project based learning at the early stages of development. By doing this at the early levels, students will have a more mature skill set of critical thinking and understanding the scientific process. In addition, the Beachwood City Schools have changed the way gifted programming is delivered. The students in the gifted program are now served in a science based model. This provides students with a challenging curriculum that will prepare them for the next level of science education. This vertical progression will enhance student achievement for all students in science. As stated earlier, the US is falling behind in S.T.E.M. fields and it is important for our district to do its part in keeping talent in Northeast Ohio. In addition, the design classes that are established at the middle school will serve to provide students with an overview of what they are going to be expected to do at the high school if they choose to participate in this program. Competitions in First Robotics allows students to have fun while competing to be the best in their design choices. An expectation for this program will be to participate in not only local and state competitions, but national competitions such as the TSA Conference (Technology Student Association), the Intel Science and Engineering Fair, and various local, regional and national architecture and design competitions. One opportunity that may be developed by creating the world-class facility is the idea that students will be able to use the facility outside of school hours. A graduate assistant from CSU will be hired to guide and supervise student use of the resources and materials, allowing them to explore, create and conduct research outside of the school day. This will help students
E) SUBSTANTIAL IMPACT AND LASTING VALUE - Impact, evaluation and replication

The responses in this section are focused on the ability to design a method for evaluating the project's capacity for long-term sustainable results. Therefore, the questions focus on the method(s) the project hopes to solve and the measures that will determine if the problem (s) have been solved.

21. 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 response should provide a concise explanation of items which provide rationale that will support the probability of successfully achieving the goals of the project. Answers may differ based on the various levels of development that are possible. If the proposal is for a new, never before implemented project, the response should provide logical, coherent explanations of the anticipated results based on some past experience or rationale. For projects that have been implemented on a smaller scale or successfully in other organizations, the response should provide the quantifiable results of the other projects. If available, relevant research in support of this particular proposal should also be included.

Please enter your response below.

According to the Bureau of Labor Statistics, the S.T.E.M. fields involved in Beachwood’s Design & Innovation Program have a range of positive job outlooks over the next ten years to be +6% for chemical engineering to a +62% increase in the demand for biomedical engineers. The purpose for this program/initiative is to promote the idea of every student being college and career ready. With a college attrition rate of about 40% (according to a UCLA study cited in the NY Times), students are not prepared for what they are going to encounter in their college coursework and their subsequent careers. In addition, this program's focus on enrolling female and African American students, aims to counter the trend that these two groups are severely underrepresented in S.T.E.M. college majors and career fields. The Design & Innovation Program will help prepare students for the rigor they will face in a supportive and scaffold manner. By providing students with the opportunity to explore different S.T.E.M. career fields through field trips and internships as well as to engage in hands-on authentic research projects, developing their critical thinking as well as collaboration skills, they will be prepared to be a force in college and in their eventual career field. According to the Partnership for 21st Century Learning, students are, in addition to the 3 R's, supposed to develop “Learning and Innovation Skills - 4Cs” (critical thinking, communication, collaboration, and creativity). This program stresses all of those components. In addition, students are to learn life and career skills, which are comprised of flexibility, initiative, cross-cultural skills, productivity and leadership. This program is the living embodiment of those skills. Beachwood City School District has a history of academic success. The District ranked #16 in the state according to performance index and our high school ranked #199 in the nation according to Newsweek. This rigorous, dynamic educational environment, coupled with this program for students, will produce a high caliber college student who will be accepted into the college of engineering, architecture or design at any university. The goal of this program is two-fold. Short-term it is to provide students with rigorous expectations to prepare them for college/careers. Long-term it is to keep talent in the local area, which is Ohio and Northeast, OH. Throughout this program, students will be tracked after high school to determine if, how, and where they are practicing their engineering/design skills. If students are being accepted into colleges of engineering, design or architecture, and then going into fields of engineering in the great state of Ohio, this program will be a success. Providing them with the resources is key. A facility that matches expectations, technology tools that allow them to make mistakes and refine, equally important, guidance from teachers, professors and experts in the field to provide enlightenment to spark students interest in the field and allow it to stay lit.

22. Describe the overall plan to evaluate the impact of the concept, strategy or approaches used in the project.

This plan should include the methodology for measuring all of the project outcomes. Applicants should make sure to outline quantitative approaches to assess progress and measure the overall impact of the project proposal. The response should provide a clear outline of the methods, process, timelines and data requirements for the final analysis of the project’s progress, success or failure. The applicant should provide information on how the lessons learned from the project can and will be shared with other education providers in Ohio.

* Include the name and contact information of the person who will be responsible for conducting the evaluation and whether this will be an internal or external evaluation.

Ken Yeon, Director of Curriculum and Technology will be the responsible party for evaluating the impact of the program from start to finish. These mixed-methods will be triangulated using surveys, observations, and document analysis for the qualitative analysis. This will include information from current students and when applicable, past students about their views of the program. The process will be to provide the surveys through electronic means and be anonymous for the current students. Observations will be conducted by professors from CSU as well as administrators to determine any adjustments that need to be completed. Document analysis will be done through critiquing of lesson plans and curriculum guides by the teacher and professors from CSU. Quantitative data will be collected in regards to the number of students participating in the program, the number dropping the program and the number of students entering college with design or engineering as a major. Long-term, students participating in the program for 2-3-4 years will be tracked through college to determine the design or engineering field entered, track how many of the students achieve awards in college, scholarships, track their GPAs, and the various fields they enter when leaving college as well as the attrition rates. Finally, the other qualitative data to be collected will the number of underrepresented groups, including females and minorities, will be tracked. We would like to see an increase by 25% per year in our program as well as those groups entering these fields in college. The program will be determined to be a success if we are able to demonstrate student success in college as well as high school. Although this will be an engaging program for students in high school, it is to prepare students for college and careers. All of this information will be shared with ODE as well as available on the district website and upon request.

* 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 project’s progress).

Qualitative Survey data - Opinions about the program, what works and what needs improvement (From current and past students) Document Analysis - Lessons plans (ensuring expectations are being met, providing scaffolding activities for students, etc) and Courses of Study (adjustments made as needed) Observations - Determine if students are engaged, projects meet rigorous and challenging standards, facilities match expectations for program Quantitative (check for trends over time) Collection of evidence of number of underrepresented
24. Describe the specific benchmarks, by goal as answered in question 9, which 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 applicant should provide details on the quantifiable measures of short- and long-term objectives that will be tracked and the source of benchmark comparative data points. Responses should include specified measurement periods and preliminary success points that will be used to validate successful implementation of the project. If a similar project has been successfully implemented in other districts or schools, identification of these comparable benchmarks should be included.

* Student Achievement
  - Increase the number of students entering STEM fields in higher education - Increase the number of females entering STEM fields in higher education - Increase the number of minorities entering STEM fields in higher education - Decrease the attrition rate in various STEM fields in higher education (by having a very low attrition rate from our students - well below the national average)

* Spending Reduction in the five-year fiscal forecast

* Utilization of a greater share of resources in the classroom

* Implementation of a shared services delivery model

* Other Anticipated Outcomes

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

- Yes
- No
If the applicant selects “Yes” to the first part of the question, the response should provide an explanation of the time and effort it would take to implement the project in another district, as well as any plans to share lessons learned with other districts. To every extent possible, applicants should outline how this project can become part of a model so that other districts across the state can take advantage of the learnings from the proposed innovative project. If there is a plan to increase the scale and scope of the project within the district or consortium, it should be included here.

* Explain your response

The key to the implementation/replication is to form partnerships with institutions of higher learning, in this case Cleveland State University, and local businesses in the field. Most K-12 institutions do not have the expert knowledge to know where to start with a program such as this. Through the last few years, several surveys, face to face interactions and meetings were held to gather more information about what the goal of the program was and how a partnership would be mutually beneficial. This ranged from higher institutions, local businesses, to individuals. Making sure students were provided with the baseline knowledge without moving too quickly seemed to be a key. By making this program last over four years (and actually building some of the scientific methods base at the elementary and middle school levels), students will be provided with a thorough understanding of what it will take to be a successful engineer, industrial designer or architect. Schools could replicate this by developing a strong elementary science program, with a focus on the design/scientific method process. Because we have a freshmen level course, students are introduced to the various components of the program, given an overview, and slowly developed into the high level of students we expect. By the time they are seniors, students will be working on an independent project (not necessarily solo, but a project that takes planning, consideration of variables, constraints, revision and presentation). The teacher, along with the collaboration from Cleveland State University, will help students in their project, but will not have as much of a hand in the process as students will have in sophomore and junior year projects. Right now, it is hard to determine which areas of focus students will most likely be enrolled in (such as industrial design, biomedical engineering, architecture, etc.) until students are in the process and have been exposed to the various options afforded to them. To that degree, the Beachwood Schools are not able to determine at this time the need to scale up or back on the options provided to students. There may be mistakes made along the way with the implementation process, but just as the design process, Beachwood will refine it and make it better. This process can easily be communicated to all districts across the state and school districts will be welcome to come observe the classroom in action at any time.

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 time frame. The Governing Board of the Straight A Fund reserves the right to conduct an evaluation of the project and request additional information in the form of data, surveys, interviews, focus groups and other related data on behalf of the General Assembly, Governor and other interested parties for an overall evaluation of the Straight A Fund.

PROGRAM ASSURANCES: I agree, on behalf of this applicant, and any or all identified consortium members or partners, that all supporting documents contain information approved by a relevant executive board or its equivalent and to abide by all assurances outlined in the Straight A Assurances (available in the document library section of the CCIP).

Ken Veon
Director of Curriculum and Technology
216-464-2600 x230
24601 Fairmount Blvd. Beachwood, OH 44122
kev@beachwoodschools.org
No consortium contacts added yet. Please add a new consortium contact using the form below.
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<td>Gregg</td>
<td>Schoof</td>
<td>(216) 687-5272</td>
<td><a href="mailto:g.schoof@csuohio.edu">g.schoof@csuohio.edu</a></td>
<td>Cleveland State University</td>
<td></td>
<td>2121 Euclid Ave., Cleveland, OH, 44115</td>
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The team for this endeavor will consist of Cleveland State University's Washkewicz College of Engineering faculty and staff and Beachwood City Schools' administrators and teachers. The Beachwood City School District has demonstrated its ability to manage a grant of this scope through our participation in the state/national Race to the Top (RTTT) grant. Over four years, our district team developed a targeted plan, managed its funding and improved classroom instruction with the support of the RTTT grant. This is evidenced by improved performance on OAAs, OGTs, ACTs, and SATs and the fiscal responsibility demonstrated in our use of the grant funds. In addition, a collaboration among the Cleveland State University Staff, professional engineers, and the Beachwood City Schools administrative staff and teachers will ensure a guaranteed and viable curriculum that proves to be rigorous and challenging in order to prepare them for engineering and design courses in higher education.

Cleveland State University has promoted S.T.E.M. programming for K-12 students at the Fenn College of Engineering through various grant funded initiatives. The Fenn Academy, for example, is a partnership between the college, local school districts, government agencies and corporations. The partners collaborate in the design and implementation of educational activities geared to encourage high school students to pursue college coursework and careers in engineering. The Fenn Academy currently works with forty-four Northeast Ohio school districts, including the Beachwood City Schools. Fenn has seen a 37% increase in their engineering freshmen class and increased enrollment in the university's honors program. The Beachwood City Schools have developed curriculum and implemented state standards since inception. However, this program is one year old and much learning about it has taken place. Although the course was an entry level course, many adjustments were made and learning took place at the teacher and administrative level. Adjustments will be made for next year’s coursework and will continue to be adjusted based on need.