

Budget

Beachwood City (043554) - Cuyahoga County - 2014 - Straight A Fund - Rev 0 - Straight A Fund - Application Number (334)

U.S.A.S. Fund #:

Plus/Minus Sheet (opens new window)

Purpose Code	Object Code	Salaries 100	Retirement Fringe Benefits 200	Purchased Services 400	Supplies 500	Capital Outlay 600	Other 800	Total
Instruction		0.00	0.00	20,000.00	10,000.00	95,483.00	0.00	125,483.00
Support Services		0.00	0.00	25,000.00	0.00	0.00	0.00	25,000.00
Governance/Admin		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prof Development		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Family/Community		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Safety		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Facilities		0.00	0.00	0.00	0.00	911,250.00	0.00	911,250.00
Transportation		0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>		0.00	0.00	45,000.00	10,000.00	1,006,733.00	0.00	1,061,733.00
<b>Adjusted Allocation</b>								0.00
<b>Remaining</b>								-1,061,733.00

Application

Beachwood City (043554) - Cuyahoga County - 2014 - Straight A Fund - Rev 0 - Straight A Fund - Application Number (334)

**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: Design & Engineering Program

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.

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 increase student achievement by focusing 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.

45 3. Total Students Impacted:

4. Lead applicant primary contact: - Provide the following information:

First Name, last Name of contact for lead applicant: Ken Veon

Organizational name of lead applicant: Beachwood City Schools

Unique Identifier (IRN/Fed Tax ID): 043554

Address of lead applicant: 24601 Fairmount Blvd. Beachwood, OH 44122

Phone Number of lead applicant: 216-464-2600 x230

Email Address of lead applicant: kev@beachwoodschoools.org

5. Secondary applicant contact: - Provide the following information, if applicable:

First Name, last Name of contact for secondary applicant: N/A

Organizational name of secondary applicant: N/A

Unique Identifier (IRN/Fed Tax ID): N/A

Address of secondary applicant: N/A

Phone number of secondary applicant: N/A

Email address of secondary applicant: N/A

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 (IRN/Fed Tax ID), Address, Phone Number, Email Address of Contact for All Secondary Applicants in the box below.

Gregg Schoof, Cleveland State University, 2121 Euclid Ave Cleveland, OH 44115 (216) 687-2000 g.schoof@csuohio.edu

7. Partnership and consortia 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. Please 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.

This truly team approach for this endeavor will consist of Cleveland State University's Fenn 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 OAA's, OGT's, ACT's, and SAT's and the fiscal responsibility demonstrated in our use of the grant funds. Currently, the Beachwood City School District serves as the fiscal agent for several Tech Prep consortium units enrolling students from nine area school districts including Beachwood. The district also houses several special education units that enroll students from throughout Northeast Ohio. As fiscal agent, Beachwood oversees the annual budget for these programs, totaling \$4 - \$5 million dollars. That fiscal experience, coupled with Beachwood's history of perfect audits and its Aaa bond rating, serve as evidence of its ability to manage effectively any potential Straight A Funding. 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.

**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 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. Implementation of a Design & Innovation program of this rigor and scope demands resources beyond those possessed by a typical high school. The engineering and design components demand a specialized set of skills and knowledge that typical high school teachers do not possess. It also demands specialized machinery, software, hardware and instruments not typically found in high schools. 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.

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. By providing students with a progression of courses and research project experiences in the fields of engineering, architecture and industrial design, the district will be affording students the opportunity to learn material that is not typical of a K-12 public education. This will be accomplished by providing students with a rigorous and motivating program that is built around a project based learning model. 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. 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. The Design & Innovation Program's goals will not be accomplished solely within the brick and mortar school building. The program will support students to find industry-based internships during the summers between 10th and 11th Grade and 11th and 12th Grade through the development of school-to-business partnerships. The Cleveland State University-based coordinator will be instrumental in helping Beachwood cultivate these partnerships. Internships will help students gain valuable experiences in their area of interest during their four-year progression. In addition to the opportunities afforded through internships, the Beachwood students will be provided with the opportunity to participate in dual-enrollment. This would allow students to get credit for their work that is above and beyond the high school setting. 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.

### 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 how the project will demonstrate sustainability and impact.

N/A

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

1,201,080.00 \* 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.)

The overall budget contains the proposal for the Straight A Innovative Fund grant, which is a total of \$1,061,733. Facilities - \$911,250 (includes building, plumbing, electricity, networking, furnishing, etc.) Cleveland State University Coordinator - \$25,000 per year Graduate Assistant(s) - \$20,000 per year Equipment Total - including, but not limited to: Computer Lab - \$32,500 Diagnostic instruments (instant temp., speed, sound, moisture, etc.) - \$7,098 Delta V Fluid Systems - \$7,200 3-D Scanners - (2) - \$5990 Full Size PRSAlpha Computer Numerical Control (CNC) - \$18,595 HP DesignJet T2300 eMFP (large format printer) - \$6,600 HP DesignJet 3D MultiColor Printer - \$17,500 Misc. Items (ebooks, consumables, entrance fees for competitions, etc.) - \$10,000 The additional funds, from the 1,201,080 total amount for the project, will be provided by local funds, consisting of salaries, RTTT funds, and general fund monies. The break down of the local funds is as follows: Staff - 1 teacher - \$97,847 (Salary - 68,730 plus 29,117 benefits) Equipment - \$30,000 Supplies - \$10,000 Race To the Top - Professional Development - \$1,500

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.

50,000.00 \* 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.

The new/recurring costs will be cost neutral or actually less: Because of a staff member retiring, we are realizing a 38,000 cost "savings" annually for the Design & Engineering classes. Old to new staff member - cost savings - 38,000 annually for program that is no longer offered (Woodworking, Furniture Building, and CAD). Replaced with more innovative program, Innovation and Design, with enhancements from Cleveland State Program Coordinator and Graduate Assistants. Updating equipment - \$5,000 per year (adding 3D printers, 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 Cost neutral due to change in curriculum with old classes into innovative classes Field Trips/Experiences - provided by CSU - Paid by grants obtained by Fenn Academy.

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.)

The Design & Innovation Program will not yield any savings in the first year. The program will need a certain amount of startup costs that will not yield savings in the first year. However, through elimination of ineffective/outdated programs, retired teachers and reduction of spending in other areas, the net gain/loss is \$0.00 over the course of time through 2019.

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.

This program is self-sustaining from the standpoint that the expenses associated with the construction of the program facility itself will have been borne by the grant itself. Any expenses associated with the maintenance of the facility will only be incremental within the scope of the high school facility itself. Future staffing costs have the potential to be offset by corresponding reductions in other high school offerings/programs when 20% of our student body is enrolled in Design & Innovation coursework. The retirement of a teacher and replacement with an experienced, but less costly teacher is affording a savings over a five year period of time. In addition, future grant funding sought in conjunction with Cleveland State University will be used to defray any future costs.

### 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): 08/20/2013

\* Narrative explanation

-The entire scope and sequence of the program will be completed by June 2014. 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, during the course of the year teacher(s) will be provided with ongoing professional development to learn how the equipment works and what the purpose is for students in their prototyping and engineering/design goals. -If we are awarded the grant on December 17th, we will spend the next three days (Dec. 18-20) with architectural firms to develop drawings based on our (administration and 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, especially the ones focusing on architecture, 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. Think about the opportunity. 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. With this grant, students will be afforded the opportunity and will create a world-class learning environment. The biggest barrier to successful implementation is timing. Not with the curriculum or personnel, but rather with the physical building. With a construction process being suggested, weather in Ohio could play a small part. However, due to recent construction related projects in the past few years, we are confident that something of this size could be implemented in a timely and efficient manner.

Implement (MM/DD/YYYY): 01/06/2014

**\* Narrative explanation**

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. It cannot be stressed enough the cooperation of professional engineers/professors working with our staff and students to develop a laser focused program that will benefit our students in their college and career. This will begin right after the start of the new year (with the grant being awarded on December 17th). Work with professors and coordinators was started this past year, but at a limited level and generous grant will provide the time needed to focus attention to the curriculum and mapping out the course of action in a true partnership. -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 start of the 14 -15 school year. The jointly created curriculum (BCS and CSU) will be implemented in the world-class facility on the first day of school using the highly focused technology tools to enhance student achievement.

Summative evaluation (MM/DD/YYYY): 06/30/14

**\* Narrative explanation**

Although there will be an ongoing evaluation of the program, formal evaluations of the program will be completed June of 2014. Waiting until the end of the school year is too long to make adjustments, so a check-in at spring break is a mandatory self-regulation. This will be reported to the State Board of Education, the Beachwood Board of Education, administration, Cleveland State University's Fenn College of Engineering and all stakeholders in the Beachwood City Community through publications, the district website, and board meetings.

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

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 to be competitive in the competitions, but also in preparing for college life. Schools cannot be stuck in the 7:30 a.m. - 2:30 p.m. paradigm; they should become 24-7 learning environments with longer hours for students to access technology and other school resources.

**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.**

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 an engineering 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 scaffolding 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 extremely creative and effective 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. We believe that this type of programming will retain talent in the local area, which is Ohio and Northeast, OH. Throughout future years, 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 is important. Critical to this is 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.

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

Yes  No

**22. If so, how?**

Many districts would be able to replicate this program if they can establish partnerships with higher education institutions and businesses/manufacturers near them that are willing to provide on-campus/on-site experiences for high school students. Even without high tech machinery, schools can offer courses that teach the principles of design and provide students opportunities to engage in authentic project-based learning experiences that involve design and experimentation.

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

The Design & Innovation Program will continue after the grant period has expired because of the relationship established with Cleveland State University and local businesses, as well as the sense of accomplishment and pride within the high school and larger community. By utilizing the grant to help with the initial cost of the program facilities, tools and personnel resources, the program will be continued after the expiration of the grant through local funding and possibly additional grant funding. The Beachwood City Schools and our community are very supportive of S.T.E.M.-oriented programs that will allow our students to excel in future careers. Future funding of the program after the initial startup will not be a problem, as evidenced in Beachwood's five year forecast. The way the grant will be quantitatively evaluated short term will be through the use of surveys, student learning objectives, and cost analysis. Long-term, the program will be deemed a success when students who have gone through the program major in these fields, then choose careers in these fields in Northeast, Ohio. This data will be tracked along with attrition rates within the high school, during college, and after college. Again, we believe that this type of programming will retain talent in the local area. 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 is important and will help build a sequencing of classes that build students' confidence and skills.

**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 idea of improving student achievement in this program goes back to the idea of preparing each and every student for college and their careers. Comparisons of students in the program and students outside the program may be skewed because the students entering the program may already have a high degree of success in school. However, using the new PARCC and NextGen assessments developed for Ohio, student performance will be taken into consideration in our reporting. In addition, students will be required to track the time they work on projects during their sophomore, junior and senior years. Attrition rates will be low for students entering this program because of the support and encouragement they receive from its staff. Females and African Americans will be targeted to enroll in this program to counter their underrepresented status in S.T.E.M. fields. This information will be compared to schools that have similar programming. Beachwood Schools will begin to make connections with these schools shortly in order to learn of their successes and failures. In addition, the Beachwood Schools would be proud to have students from Beachwood's Engineering/Design program be the next local residents to create the next Gmail, Sherwin-Williams environmentally friendly paint, or something that is unfathomable by us at this time. We expect our students to be world-changers. When discussing "success", providing students with an avenue for college/career readiness, promoting minority groups into the field, and keeping all students engaged in the program will demonstrate "success."

**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 methodology, which will be conducted through several data collection points, will be using the Plan-Do-Study-Act model. This is also called the Deming Wheel or Cycle. The cycle begins with the Plan step. This involves identifying a goal (in this case to improve student achievement in preparation for future educational studies and careers in various engineering fields, industrial design and architecture through critical thinking and project-based learning) and putting a plan into action. This is followed by actually implementing the program and collecting data. The next step is to study the results and finally to act upon those results and make adjustments as necessary. The data collection employed to evaluate the impact of the program will include satisfaction surveys with students, parents, teachers and administrators. This information will be used to determine what are areas of strength and which areas need improvement. This will be done twice a year and changes, consistent with formative assessment, will be made to improve the program. Graduates' and their parents' contact information will be maintained in a database so that post-high school surveys can be conducted to assess the impact of the Design & Innovation Program in the first four years after high school as well as during the subsequent years when students begin their careers. This information, including opinions of the students, along with charting their progress in the fields of engineering/design/architecture will help the district make a determination about what changes need to be made to improve rigor, raise expectations or improve on the publicizing of the program to enlist more students and expand it. This is to be determined during the next 5-10 years and beyond. Any attrition from the program will be closely monitored from one year to the next within the high school program, but also after students are in college as well as during the entry years of their careers. This longitudinal tracking of our

graduates is important given that the Institute of Electrical and Electronics Engineers reports that almost 20% of all males, and 34% of all females in electrical engineering leave the occupation within five years. This is coupled with the fact that only 23% of both men and women in electrical engineering are very satisfied with their occupational choice. The goal for the Beachwood City Schools is to produce students that experience success in the field of their choice, engineering/design/architecture, and stick with it after college with a high level of satisfaction. We believe the Design & Innovation Program will accomplish this goal through support and guidance during their high school years. Finally, a major focus for the Beachwood Schools will be to recruit female and African American students into the Design & Innovation Program. Our degree of success in this regard will be well documented and addressed with leaders of higher education institutions, business leaders, our parents and school staff. An upward annual trend will be the only acceptable result. If we are not successful in this regard, a different means of recruitment and retention will be employed.

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. KV Ken Veon Director of Curriculum and Technology Beachwood City Schools October 24, 2013