## Budget

North Canton City (044503) - Stark County - 2015 - Straight A Fund - Rev 0 - Straight A Fund - Application Number (223)

### U.S.A.S. Fund #:
Plus/Minus Sheet (opens new window)

<table>
<thead>
<tr>
<th>Purpose Code</th>
<th>Object Code</th>
<th>Salaries 100</th>
<th>Retirement Fringe Benefits 200</th>
<th>Purchased Services 400</th>
<th>Supplies 500</th>
<th>Capital Outlay 600</th>
<th>Other 800</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>368,133.00</td>
<td>0.00</td>
<td>0.00</td>
<td>368,133.00</td>
</tr>
<tr>
<td>Support Services</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Governance/Admin</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Prof Development</td>
<td>122,400.00</td>
<td>20,808.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>143,208.00</td>
</tr>
<tr>
<td>Family/Community</td>
<td>0.00</td>
<td>0.00</td>
<td>7,200.00</td>
<td>10,000.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>17,200.00</td>
</tr>
<tr>
<td>Safety</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Facilities</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>200,000.00</td>
<td>0.00</td>
<td>0.00</td>
<td>200,000.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>568,133.00</td>
<td>0.00</td>
<td>0.00</td>
<td>728,541.00</td>
</tr>
<tr>
<td>Total</td>
<td>122,400.00</td>
<td>20,808.00</td>
<td>7,200.00</td>
<td>10,000.00</td>
<td>568,133.00</td>
<td>0.00</td>
<td>0.00</td>
<td>728,541.00</td>
</tr>
</tbody>
</table>

**Adjusted Allocation**: 0.00

**Remaining**: -728,541.00
### A) APPLICANT INFORMATION - General Information

#### 1. Project Title:
Viking 21 Robotics: Suffusion, Recursion, and Entrepreneurship

#### 2. Executive summary: Please limit your responses to no more than three sentences.

This project creates a self-sustaining grades 3-12 cross curricular program that uses robotics as a unifying theme to teach advanced systems thinking, mathematics, physical science, engineering, and business concepts by creating and deploying entrepreneurial teams that work collaboratively to build, then program, robots to solve projects. It builds upon our first Straight A Grant project by engaging active learning in a "real-world" business atmosphere in which, at its conclusion, robots, robot kits and training are developed for use by the lower grades as well by other school districts for a fee. The project unifies the cross curricular work of our existing Business Marketing, Technical Writing, and Technical Illustration, and Digital Mass Communications classes to create a new business, Viking Robotics LLC, for this purpose.

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:

3618. 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>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

#### 5. Lead applicant primary contact: - Provide the following information:

First Name, last Name of contact for lead applicant
Michael Hartenstein

Organizational name of lead applicant
North Canton City Schools

Address of lead applicant
525 Seventh Street NE, North Canton, OH 44720

Phone Number of lead applicant
330-497-5600

Email Address of lead applicant
hartensteinm@northcantschools.org

#### 6. Are you submitting your application as a consortium? - Select one checkbox below

- [ ] Yes
- [x] 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

- [x] Yes
- [ ] No
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

We currently do not have a single curricular theme that threads vertically through the grades and builds upon our practice of active learning such that most, if not all, subjects are integrated within it. Further, we do not have a vertically articulated project that is both hands-on and provides equal opportunities for female students. The importance of this unified grand theme is analogous to branding within the business industry. Such an integrated and articulated theme presents an easily understood, deployed, and, measured means to accomplish our goals of active learning based upon systems thinking and twenty-first century skills development. Further, we do not have a "real-world" high stakes project that engages our students in the business and technology economy that they will enter into upon graduation.

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

This project engages a very portion of our student population in an integrated thematic multi-year project that is embedded in the "real-world" economy they are about to enter. The end result of this project is the creation of robots and robotic kits that can be used either "as-is" in the case of the educational telepresence robot or with "some assembly required" in the case of the robotic kits. Within our district the older students will create robotic kits of varying levels of sophistication to be used in the lower grade levels. These kits will enable students moving up through the grades to learn increasingly complex levels of mathematics, science, computer programming, and problem solving. They will do this in a collaborative team environment, one which was created as part of our first Straight A Grant. At the various grade levels teachers will integrate other facets of the curricula to complement this initiative. As part of the project our team will develop curriculum guides to assist teachers in how to use the robotic kits and how to integrate other subject matter with them. For instance, a middle school social studies teacher may do a unit on the social costs of automation or review the history of the Luddite movement in England during the Industrial Revolution and have students compare the current move to automation to that time. As the students matriculate through the grades the kits will become increasingly more complex and pose greater challenges for assembly and programming. Curricular tie-ins will reflect the greater sophistication and could include economic impact studies, discussion about humanity, artificial intelligence, and perception, etc.

Mathematics and science integration is obvious and would lend hands-on opportunities where some may not have existed previously. At the higher end of the high school experience students are actively engaged in cross-class cross-curricular teams to develop the kits used in the earlier grades as well as in the development of the telepresence educational robot. As outlined in the Executive Summary, these classes would include the current Project Lead the Way (PLTW) students, students in the Technical Writing and Illustration classes, students in the Digital Mass Communications classes, Computer Programming I & II, etc. These teams will be utilize the Fabrication Lab built as part of our first Straight A Grant award to design, prototype, then build the telepresence educational robot. The Business Marketing class will work alongside the other classes to build a business model and plan, form an LLC, Viking Robotics, then be about the work of marketing and selling the telepresence robot and the robotics kits. This will be a "real-world" extension of their current practice of creating small businesses to create and market products for competition. All proceeds from the sale of the telepresence educational robot and the robotic kits will be put in an account managed by the project team. This account will be used to replenish consumable supplies for the project, pay for equipment repairs, and cover any licensure costs.

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.)

The principal focus of this project is grade 3 through 12. Our goal is to target and improve academic achievement in mathematics, science, technology, and critical thinking in these grades beyond that which is projected from our longitudinal data in these subjects. This will be done by working in active learning teams in specific projects that engage these learning disciplines. Further, we will devote special focus on both our special needs and gifted populations in order to address their requirements. For our special needs students, this hands-on collaborative environment will help us close the performance and achievement gap of this group. For our gifted population, this project will stretch these students far beyond our current efforts as a constructivist model of instruction has no end point.

- 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.)

Their are no spending reductions.

- Utilization of a greater share of resources in the classroom (Describe specific resources (Personnel, Time, Course offerings, etc.) that will be
### 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.**

728,541.00 State the total project cost.

* Provide a brief narrative explanation of the overall budget.

There are four cost centers in this project: Equipment/Materials; Construction/Renovation; Professional Development; and, Product Marketing and Sales. The breakdown by category is as follows: - Equipment/Materials $368,133.00 - Construction/Renovation $200,000.00 -
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.

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

Up-front capitalization of this project is sufficient to provide a multi-year start on all necessary equipment and materials to establish a working system to generate on-going revenue to cover the replenishment of supplies, materials, and obsolescence. Further, there are minimal licensure and maintenance costs. With the exception of the 3D printers all maintenance can be done internally by staff and students, this includes the CNC mill.

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.

0.00 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

[There is no expected savings.]

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.

Once the project is underway all development is internal. "See #9, "Implementing shared services. . . " above. Central to the project is the design, creation, and deployment of the materials we need to design, create, and deploy the materials we need. Known long-term costs include the replacement of raw materials such as plastics, metals, solder, etc., as well as small parts such as gears, wire, etc. In addition, some of the equipment will become obsolete and will be replaced. Revenue to cover these long-term costs will be generated by the sale of robots and robotic kits to other school districts and business end-users. The district has a very successful history of making small businesses and selling products such as business and Marketing Class. This class has been a multi-year national award winner for this effort. In our small company projects students typically generate several thousand dollars each year. By engaging a much larger integrated effort of other classes with advanced skills and techniques and by offering products, at least one of which is unique, that cost several hundred to several thousand dollars we feel confident that our team will raise the revenue necessary to cover our anticipated long-term costs to self-sustain the project.
### D) IMPLEMENTATION - 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.

<table>
<thead>
<tr>
<th>17. Planning - Activities prior to the grant implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Date Range: <em>September 2014</em></td>
</tr>
<tr>
<td>* List of scope of work (activities and/or events including project evaluation discussions, communication and coordination among entities).*</td>
</tr>
</tbody>
</table>

Throughout the month of September we will work on our project initiation plan. We will define and document team roles and responsibilities and our decision-making process. Each major objective will be further broken down into assigned tactical components and anticipated costs. The team will determine activity sequencing and estimated duration, as well as define key deliverables and major milestone dates. A risk plan will be created and a communication plan outline drafted. The Board of Education, staff, parents and the community in general will be notified of the grant award, and a general overview of the project and its objectives will be published. The project manager (PM) will develop a project plan with the team and manage the team's performance of project tasks using Microsoft Project. Risk analyses will be performed on a regular basis to identify slippage and address accordingly. The PM will also be responsible for communication, including status reporting, risk management, escalation of issues that cannot be resolved in the team, and, in general, making sure the project is delivered in budget, on schedule and within scope. We will ensure efficient and effective use of time by scheduling regular working meetings and team scrums, as well as being true to the project management process. Individuals will be accountable to the team, and progress will be regularly reported and monitored.

*Anticipated barriers to successful completion of the planning phase*

There is a significant amount of work over and above everyone’s regular responsibilities and duties. In addition to individual responsibilities pertaining to the grant done on their own, the grant team must spend a significant amount of time collaborating and making decisions together in order to ensure alignment. The timeframe for implementation is aggressive and takes place during the actual school year. We plan to address these potential challenges by the assignment of our dedicated project manager and following a proven project development process.

<table>
<thead>
<tr>
<th>18. Implementation - Process to achieve project goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Date Range: <em>October 2014 - June 2015</em></td>
</tr>
<tr>
<td>* List of scope of work (activities and/or events, including deliverables, project milestones, interim measurements, communication, and coordination).*</td>
</tr>
</tbody>
</table>

--please see the uploaded project GANTT for specific details-- Milestones: August 2014: Design work begins on retro-fitting space in the engineering complex and FabLab. Bids will be issued for all equipment and materials listed on the "Viking 21 Robotics Equipment, Materials, & Professional Development spreadsheet." --please see uploaded spreadsheet document for details. October 2014: Section leaders will be identified from various grade levels, academic disciplines, and specific classes. The project goals, scope, and timeline will be presented and discussed. Job assignments will be given.; February 2015: sample instructional units/lessons will be tested in select classrooms May 2015: Revised kits are completed

*Anticipated barriers to successful completion of the implementation phase.*

There is a significant amount of work over and above everyone's regular responsibilities and duties. In addition to individual responsibilities pertaining to the grant done on their own, the grant team must spend a significant amount of time collaborating and making decisions together in order to ensure alignment. The timeframe for implementation is aggressive and takes place during the actual school year. We plan to address these potential challenges by the assignment of our dedicated project manager and following a proven project development process.

<table>
<thead>
<tr>
<th>19. Summative Evaluation - Plans to analyze the results of the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Date Range: <em>April 2015 - June 2015</em></td>
</tr>
<tr>
<td>* List of scope of work (activities and/or events, including quantitative and qualitative benchmarks and other project milestones).*</td>
</tr>
</tbody>
</table>

Please see uploaded document: "Viking 21 Summative Eval.pdf"

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

Based on lessons learned from our last major initiative (Straight A Fund Grant Project Viking21: Real Life Learning for the 21st Century), the
anticipated barriers at this stage will be the staff's fear of the unknown and the challenges posed by their desire to know exactly what is going to change before the project plan has been finalized. We will address this by creating an internal blog for administrators, teachers and staff, and regularly posting the actions of the project team, rather than holding communications until specific details are finalized. By communicating the process, we will allow staff to feel a part of the project earlier on and facilitate in buy-in. As details are finalized, they will also be shared.

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:

This project will be a unifying theme that engages teachers across grades and disciplines to work together in a structured environment that targets twenty-first century skills and entrepreneurship. It builds upon our current Straight A Grant Award which built active learning classrooms in grades 5-12 as well as a prototype-level FabLab at Hoover High School. This project requires teachers in related fields to work together to make a product and set of services that can be used elsewhere in the district and duplicated by other school districts. It provides that common theme and set of targets that will be the glue for change in our active learning classrooms. In the early grades teachers will collaborate—because their students must collaborate—to work with the kits. They will follow a developed set of curricular materials that provide complementary teaching opportunities in related subject areas. As students matriculate up through the grades the level of sophistication increases as does the collaboration with teachers in other fields. By high school teachers in mathematics, physical science, computer programming, digital media, technical illustration, engineering, and business and marketing will be required to pick-up parts of the project in order to make future robotic kits and materials as well as robots themselves. We envision the creation of separate engineering, design, and marketing teams. There will be programmers and students creating user manuals and technical guides. Teachers will develop curriculum guides for use at various grade levels. The focus on twenty-first century skills and knowledge will permeate the institution in a “real world” hands-on way. The focus on critical thinking, collaboration and communication will expand beyond the confines of the project and seed other initiatives as teachers and students who had no common currency or exchange begin to value the leverage of working together and the synergy of their action.

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 of defining the problem(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:

There is past precedent for the use of robotics as a successful theme for integrating and teaching mathematics and science in the K-12 environment. How this project deviates is the integration of cross-curricular linkages and the vertical articulation to broader curricula such as technical writing and illustration. Further, this project is also entrepreneurial in spirit. It engages students in an effort to build and market products and services. This aspect of the project is new. We could not find any research to suggest it has been attempted elsewhere. Evidence documenting the success of robotics as an instructional medium can be found in many places including the work of the Ministry of Education in Israel by Kolberg; the work of Weinberg, Pettibone, Thomas, Stephen, and Stein; the National Research Council; the Massachusetts Department of Elementary and Secondary Education; and others. A suggested sample of the research is provided in the uploaded file "Robotics Research". Following the information gleaned from this literature this project will create instructional units at each grade level beginning in third grade and extending to grade twelve. We expect these units to be cross-curricular in nature and have actual tie-ins to units in other areas. We expect project teams to be created and products delivered. We expect to see greater participation by female students beyond middle school. We expect to see greater achievement mathematics, science, and technology achievement in our special needs and gifted population. And we expect greater collaboration and success with our general population. The research is clear, if we engage students together in thoughtful well-designed hands-on activities that integrate complex material they are more likely to be persistent working on it and will likely have greater achievement gains in a similar period of time versus those peers who do not. Much of this work was begun by Seymour Papert at the Massachusetts Institute of Technology in the early 1970's. His first described this work in "Mindstorms". It has proven to be prescient and relevant to our times. Students engaged in exciting active learning systems thinking succeed and achieve.

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...
As with our Viking 21 Straight A Round One Grant, documentation for evaluation and replication will be provided through copies of the weekly planning team meeting notes and MS_Project update files. Further, all information release will be cataloged and available for archival purposes. Finally, our television group will develop a comprehensive video documentary of the project from inception to completion year one. Quantitative measure for this project are straight forward and binary. We either created a unit/lesson for robotics at each grade level from grade 3 through 5 or we did not. We either created units/lesson for each subject area grade 6 through 12 or we did not. Teachers will be evaluated and observed using these lessons. In addition, the robotics kits and curricula were developed or they were not. A harder measure will be identifying math and science achievement gains attributable directly to this project. Care must be given by the designers of the curriculum materials to identify which standards are targeted in the instructional materials and a link must be created from these standards to the requisite measure on our testing instruments. Further, focus groups will need to be created to capture affective issues unrelated to standards. Other factors should be reviewed ad well such as the number of girls registering for upper level math and science classes, graduation rates, special ed gap closure, discipline issues, etc.

* 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).

As outlined above, we convene weekly project team meetings that use standard project management methodology (http://www.pmi.org/PMBOK-Guide-and-Standards/Standards-Library-of-PMI-Global-Standards.aspx) to continually assess our program in “real-time”. This formative assessment allows us to modify and adjust our efforts to address critical path and slippage issues. By May of next year we will examine whether or not units have been created. We will look to see if robotic kits are in place. We will verify that the physical space in the FabLab has been modified and the equipment is installed, working, and being used. We will have linkages established between the standards taught through the project and the standards tested and will do a regression and correlation analysis. We will verify that project teams are in place to collaborate on cross-curricular work and that work has begun and has created actual lesson deliverables.

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

As outlined above, we convene weekly project team meetings that use standard project management methodology (http://www.pmi.org/PMBOK-Guide-and-Standards/Standards-Library-of-PMI-Global-Standards.aspx) to continually assess our program in “real-time”. This formative assessment allows us to modify and adjust our efforts to address critical path and slippage issues. Where adjustments need to be made building project teams will be engaged in making those adjustments.

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

The response should provide specific quantifiable measures of the grant outcomes and how the project will lead to successful attainment of the project goals. Applicants should describe how the program or project will continue after the grant period has expired.

Please enter your response below.

This project creates a self-sustaining grades 3-12 cross curricular program that uses robotics as a unifying theme to teach advanced systems thinking, mathematics, physical science, engineering, and business concepts. It develops entrepreneurial teams that work collaboratively to build then program robots to solve projects. It builds upon our first Straight A Grant project by engaging active learning in a "real-world" business atmosphere in which, at its conclusion, robots, robot kits and training are developed for use by the lower grades as well by other school districts for a fee. The project uses the cross curricular work of our existing Business Marketing Classes to create a new business, Viking Robotics LLC, for the purpose of marketing and selling robots and robotic system kits to other school districts. This marketing and sales effort will coordinate with the development of user manuals and training materials developed in conjunction with our Technical Writing and Technical Illustration Classes in the high school which will be formed as a part of the project. On-line marketing expertise will be provided by our current Digital Mass Communications Class. Proceeds from the sales of these robots and robotic kits will be returned back to the project fund to off-set the cost of equipment obsolescence, on-going tool maintenance, and raw materials usage. Viking Robotics LLC, will create multiple levels of kits to accommodate the needs of students beginning in grade three and extending up through early high school. In addition, the upper level engineering students will work in the Robotics and FabLabs to design, fabricate, and program an educational telepresence robot, the Viking 1, which can be used for remote instruction of home-bound students as well as distance learning inception and reception. Students will be more deeply engaged in the learning environment as it is exciting and hands-on. Achievement, especially in mathematics and sciences will increase. Participation by females and special needs students will be greater and more successful. Teachers will be collaborating and using their active learning environments more fully. High school students will be working with real tools on real projects in the real world. Because the program is designed to be completely self-sufficient once it is seeded the very nature of the project guarantees its' sustainability. Unlike many other projects this project has physical deliverables that are used by the project–hence the reference to recursion. It continually builds and reinvents itself. This is one of the key features of the project and why it will have lasting value.

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

Measures administered and reported on annually to for initial report: Faculty Information and Communications Technology (ICT) and 21st Century efficacy measured by 21st Century skills, and NETS-S based rubrics. Measures administered and reported on annually as an initial report (2014-5): Student engagement measured by teacher surveys, administrative walk throughs/evaluation Student achievement measured by common assessments, standardized tests, student growth measures Student ICT and 21st Century efficacy measured by 21st Century skills and NETS-S based rubrics Student attendance improvement
### Spending Reduction in the five-year fiscal forecast

| None |

### Utilization of a greater share of resources in the classroom

| This entire model is predicated on sharing resources both horizontally across grade bands and vertically with the development and deployment of curricula and kits. In addition, by marketing our products to other districts and end-users the district is able to provide advanced and targeted materials for use by others. |

### Implementation of a shared services delivery model

| As stated previously, at its’ core, this project is the ultimate shared services model. It cannot be successful if the services are not shared. As outlined in the quantitative measure question, the outcomes here are very binary. We either have the curriculum or we do not. We have the guides or we do not. We have the teams or we do not. We have the kits or we do not. Since we are the developers of our own tools we can only be successful if we share thinking and effort. That is the model. |

### Other Anticipated Outcomes

| We anticipate student spin-off projects from our high school. We will be teaching very advanced business and marketing concepts. We will be engaging students in a collaborative high-energy environment imbued with highly technical skills—from design and manufacture to graphics design and technical writing. They will have access to a very advanced FabLab. It is not hard to envision this becoming a technology and business incubator for job creation and development in our community. |

### 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 |

| We outlined earlier our abilities to document how this project will be done. We will follow our highly successful methodology from our first Straight A Grant. With the documentary and archival evidence we can give a district along with the curricula and products we develop this project will be able to deliver an actual step-by-step menu for replication. |

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).

<p>| I agree Michael Hartenstein Superintendent |</p>
<table>
<thead>
<tr>
<th>Consortium Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>No consortium contacts added yet. Please add a new consortium contact using the form below.</td>
</tr>
</tbody>
</table>
### Partnerships

**North Canton City (044503) - Stark County - 2015 - Straight A Fund - Rev 0 - Straight A Fund**

<table>
<thead>
<tr>
<th>Sections</th>
<th>Partnerships</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>No partners added yet. Please add a new partner by using the form below.</strong></td>
</tr>
<tr>
<td>First Name</td>
<td>Last Name</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Debra</td>
<td>Kennedy</td>
</tr>
<tr>
<td>Paul</td>
<td>McIntyre</td>
</tr>
<tr>
<td>Todd</td>
<td>Alkire</td>
</tr>
<tr>
<td>Michael</td>
<td>Hartenstein</td>
</tr>
<tr>
<td>Todd</td>
<td>Tolson</td>
</tr>
</tbody>
</table>
sustainability and replicable nature of the Robotics Project as we move into project development.

State University.

Area Regional Computer Consortium. His past experience also includes R.G. Drage and the Ohio State Auditors office.

Jamie  Smart  Director of Communications and Special Projects  The Director of Communications and Special Projects will be responsible for project managing the implementation of the Robotics Project as well as all internal and external communications in regards to it.

Bachelor of Science, Newspaper Journalism and Technical Problem Solving, Syracuse University.

She served as the lead project manager in Viking21 and has 18 years of professional experience in marketing communications and project management. She manages and develops all district-wide communication and marketing, including the current redesign of the district website and has also managed multi-million dollar digital development projects for Fortune 500 companies.