

Budget

Northmor Local (048819) - Morrow County - 2014 - Straight A Fund - Rev 0 - Straight A Fund - Application Number (239)

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		25,200.00	5,040.00	0.00	9,800.00	62,170.00	0.00	102,210.00
Support Services		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Governance/Admin		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prof Development		21,560.00	6,468.00	131,211.00	9,654.00	0.00	0.00	168,893.00
Family/Community		0.00	0.00	0.00	1,800.00	0.00	0.00	1,800.00
Safety		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Facilities		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transportation		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		46,760.00	11,508.00	131,211.00	21,254.00	62,170.00	0.00	272,903.00
Adjusted Allocation								0.00
Remaining								-272,903.00

Application

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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:Mathematical Literacy: Reconceptualizing Mathematics in the Northmor School District

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 Northmor Local School District seeks to replace traditional math instructional approaches with a K-8 vertically-aligned, innovative program promoting Common Core (CC) Standards in Mathematics and corresponding CC Mathematical Practices. Focused on The Algebra Project principles and the Mathematics Literacy Framework (OSU), a partnership between Northmor Elementary School and OSU-Mansfield will increase teacher mathematical content and pedagogical knowledge. This innovative project will integrate visual, experiential, verbal, and conceptual aspects of mathematics to provide opportunities for students to justify their understanding of mathematical ideas with words, pictures, and vocabulary that are meaningful for students and can be connected to standard mathematical representation.

733 3. Total Students Impacted:

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

First Name, last Name of contact for lead applicant: Diane Ervin
Organizational name of lead applicant: Northmor Local School District
Unique Identifier (IRN/Fed Tax ID): 048819
Address of lead applicant: 7819 State Route 19, Galion, OH 44833
Phone Number of lead applicant: 419-946-3946
Email Address of lead applicant: ervin.diane@northmor.k12.oh.us

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.

Christian Winterbottom, Ph.D., Assistant Professor, Teaching and Learning, The Ohio State University at Mansfield; Terri Bucci, Ph.D., Associate Professor, Teaching and Learning, The Ohio State University at Mansfield Lee McEwan, Ph.D., Professor, Mathematics, The Ohio State University at Mansfield

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.

Diane Ervin served as building principal, Director of Curriculum, and Asst Superintendent with Shelby City Schools. She facilitated the implementation of a Comprehensive Reform Demonstration Grant (CSR) while principal. This innovative program connected teachers with OSU-Mansfield, University of Georgia, and the League of Professional Schools. School reform was accomplished through the following initiatives: 1. Developmentally Appropriate Practices, 2. Multiage groupings, 3. Curriculum mapping, 4. Standards-based progress reports, 5. Software development to track student mastery of academic benchmarks, 6.Shared Governance, and 7. Action Research. Mrs. Ervin currently leads Race to the Top activities at Northmor Local Schools and previously coordinated RtT and the RtT Innovative Grant (New Tech Network) at Shelby City Schools. Terri Buccian and Lee McEwan Currently, The Ohio State University at Mansfield math and math education faculty are working with Mansfield City School District (MCSD) teachers on the integration of Algebra Project (AP) methods throughout K-8 in the district. This work has been ongoing for the past few years and has been received positively by K-6 teachers who tend to be resistant or fearful of open-ended, experiential mathematics instructional methods. The mission of The Algebra Project (AP) is to ensure every child in America receives a quality public school education, using mathematics as an organizing tool. They believe every child has a right to education, necessary to succeed in a technology-based society and to exercise full citizenship. The Algebra Project works to achieve this by using the best educational research and practices, and building coalitions to create systemic changes. Christian Winterbottom. Dr. Winterbottom is currently working on a number of research studies. Recently, he conducted a study in two British primary schools where he examined the experiences of ethnic minority children attending British schools as well as studying the experiences and barriers of Japanese immigrant families in Florida's early childhood education system. Additionally, Dr. Winterbottom is involved in research in Ohio, as he is working with Child Development Centers in the state and statewide service-learning projects.

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.

In its efforts to promote math literacy for all, and in particular for under-served populations (such as those from very small, rural districts), The Ohio State University at Mansfield (OSU-M) and Northmor School District will (1) increase teacher effectiveness in the area of mathematics by providing professional development designed to increase teacher content knowledge and content pedagogical knowledge using an integrated, job-embedded approach, and (2) develop teacher leaders in the Northmor School District to continue the professional development needs of the teachers in their district with in-house expertise, directly leading to a sustainable structure. As a re-conceptualization of the work The Ohio State University at Mansfield has been doing with Mansfield City School Districts, we would like to replicate this work with the Northmor School District. This replication will be adjusted to account for the different demographics. Mansfield City Schools is Typology 7, Urban-High Student Poverty, average student population while Northmor is Typology 2 Rural, average poverty, very small student population. Successfully implementing this transfer could have wide, positive effects on the way universities work with districts and the way teachers engage with their students through a "players of mathematics" structure as opposed to the more typically seen, lecture or directive teacher-student roles in many of Ohio's K-6 classrooms. The Common Core State Standards (CCSS), adopted in June 2010 by the Ohio State Board of Education, requires students to go beyond merely procedural knowledge in mathematics and deeper into the areas of understanding. We posit that the Algebra Projects (AP) five-step process (Moses & Cobb, 2001) will integrate visual, experiential, verbal, and conceptual aspects of mathematics to

provide opportunities for students to justify their understanding of mathematical ideas with words, pictures, and vocabulary that is meaningful for students and is then bridged to standard mathematical representation. The AP five-step process maps directly onto the CCSS Practices by providing opportunities for students to demonstrate their understanding of the mathematical ideas from using representations that are meaningful to their lives and experiences. Using the five-step Curricular Process teachers develop shared experiences, which are then represented in students' own pictures and language through a structuring that will lend itself to particular concepts and CCSSM Practices. The emphasis is on developing shared experiences in mathematic classrooms that would make it easier for the children to make a switch from their world to mathematics and then from arithmetic to algebra. In the classroom, the teachers and students will share experiences from their everyday life, which they would study and relate to the components of numerical thinking. Specifically, in this project, the curriculum is comprised of five important steps: 1.) Physical events 2.) Pictorial Representation/Modeling 3.) Intuitive Language/"People Talk" 4.) Structured Language/"Feature Talk" 5.) Symbolic Representation. The goal is to select experiences that allow students to gradually express familiar ideas in more abstract language resulting, finally, a mathematical statement. There is a clear focus on issues communications (pictorial, oral, and written) that provides the students with the bridge to the mathematical world that previous to this was often absent.

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. Objectives for Partnership: To ensure and develop teacher effectiveness in the mathematics classrooms, the objectives for this professional development series (PD, on-site support, and summer institute) are to enable teachers to: - strengthen their mathematical content knowledge; - strengthen and broaden their instructional practice; - implement experientially-based lessons developed by the Algebra Project (AP); - facilitate student-centered discussions in their classrooms; - build a classroom and school-wide culture where students and teachers are engaged and able to work both independently and cooperatively; - analyze Common Core State Standards for Mathematics and how the CCSSM aligns with Algebra Project curricular activities and pedagogical strategies - assess one's own current strengths and weaknesses as a learner of mathematics; and - construct an action plan for one's own continued professional development within the Algebra Project (AP). - Design a pacing guide inline with the CCSS and AP principles - Foster the development of Mathematics Teacher Leaders through their participation in the Math Specialist Endorsement courses and using that course work as a foundation for working with their colleagues as a PD and on-site resource for mathematics teaching and learning. Goal 1: The goal of the Northmor-OSU AP project is to increase teacher effectiveness in the area of mathematics by providing professional development designed to increase teacher content knowledge and content pedagogical knowledge using an integrated, job-embedded approach. Outcomes: 1.1 Teachers (those pursuing the Math Endorsement and those who are not) and administrators will participate in 2-day professional development sessions (one each month for five months) with the intent of increasing teacher knowledge of mathematics and mathematics pedagogy aligned with the AP 5-step process and the National Common Core Standards and Mathematical Practices. 1.2 On-site job-embedded work with K-8 teachers using modified Lesson Study protocol to assist with the transfer of content learned in the 2-day OD sessions. Dr. s' Buccu and McEwan will be a presence in the schools, working side-by-side teachers with students to ensure transfer of PD content and immediate feedback of innovative methods. 1.3 Spring Mathematics conference held on OSU campus and offered to area teachers who are using AP methods and strategies from several districts (Mansfield, Lucas, and Clear Fork). Conference organized and facilitated by OSU and MCS D Math Teacher Leaders. 1.4 Co-development of K-8 pacing guide using AP structures and aligned with CCSS 1.5 Summer PD to review, revise, and renew methods and strategies for K-8 teacher to use for the 2014/2015 school year. 1.6 Continuation of 2-day PD structure with monthly in-class mentoring by OSU faculty for autumn 2014 Goal 2: To develop teacher leaders in the Northmor School District to continue the professional development needs of the teachers in their district with in-house expertise, directly leading to a sustainable structure. Outcomes: 2.1 Teachers interested in pursuing the Ohio Mathematics Specialist Endorsement would begin working toward that endorsement by taking 3 of the 7 courses needed to complete the work: T&L 7712, K-6 Measurement and Geometry, 2 credits T&L 7701, Mathematics Teaching and Learning in Elementary and Middle Schools, 3 credits T&L 7705, Cognition & Socio-Cultural Issues in School Mathematics, 3 credits * Since Straight A Funds are restricted to June 2014 expenditures, teachers will utilize OSU credits earned by the school district for Student Teacher placements to complete coursework (4 additional courses) leading to endorsement. 2.2 OSU-M Math and Math Education faculty will work along side those teachers pursuing the Math Endorsement, modeling work with teachers in their building on-site using lesson study structures and coaching/modeling practices.

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.

This innovative Straight A project, "Mathematical Literacy: Reconceptualizing Mathematics in the Northmor School District", is purposeful in its design to increase teacher knowledge of mathematics and mathematics pedagogy aligned with the Algebra Project and the Common State Standards in Mathematics and Mathematical Practices. The district will likely note slight decreases in spending in the areas of math workbooks, paper costs, and printing fees. Though not evident on the district's Financial Impact Template as these related costs are typically charged to Permanent Improvement funds, there are also anticipated reductions in textbook expenditures. There is currently inadequate access to professional development with funding limited to Title I, Title II-A and Race to the Top allocations. With the successful award of the Straight A Grant, the district will be in a position to re-focus the existing allocations to other content areas and address K-8 Mathematics.

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

262,067.00 * 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, RttT 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.).

Instructional Salaries and Benefits: \$30,240 Teachers and administrators will participate in 2-day professional development sessions (one session each month for five months) with the intent of increasing teacher knowledge of mathematics and mathematics pedagogy aligned with the Algebra Project 5-step process and the National Common Core Standards and Mathematical Practices. Substitute teachers will serve in classrooms allowing teachers to fully participate in the integrated, job-embedded approach. With a total of 28 teachers involved in the project, 280 substitute days are needed. Teachers will receive a daily stipend for time beyond the negotiated agreement while participating in the Summer Academy to be held in June 2014. At a rate of \$22/hour plus benefits, a total of \$28,028 has been budgeted for this professional development. Instructional Supplies: \$9,800 Classroom math manipulative kits will be acquired to support the professional development requirements and implementation of the Mathematical Literacy Program. These materials are integral to the demonstration lessons and coaching activities that will occur in all classrooms. Twenty-eight classrooms will be involved, inclusive of Title and Intervention programs. Capital Outlay: \$62,170 Straight A funds will provide each teacher involved in the project with an iPad that will be utilized in the collection and documentation of student data. Many free apps are available relating to CCSSM Standards and Mathematical Practices that will be shared throughout professional development of teachers. The iPads will allow teachers to video themselves and input the video into the app for the CCSSM, allowing collaborating teachers to see and understand how their practice is connected to the Common Core math practices. An app such as "Penultimate" will help with observations of teaching and allow for immediate feedback on practice. Apps such as "ShowMe" and "Geoboard" will be used with the Elmo (see below) and for students who need multiple presentations of the material on a one-to-one basis. Three 10-packs of iPads will be purchased complete with covers and 2-year Apple Care. Each classroom will be equipped with an Elmo Vision Bundle (\$34,720) consisting of a wireless tablet and interactive document camera. Teachers will develop knowledge and skills in providing interactive lessons while modeling concepts and solutions using projections of concrete objects and materials. In turn, students will participate in more interactive classroom activities and share learnings and problem-solving strategies. Professional Development Purchased Services: \$131,211 Salary and benefits have been calculated at \$74,539.44 for job-embedded professional development and project evaluation activities provided by OSU faculty, Dr. s' Terru Buccu, Lee McEwan, and Christian Winterbottom. A budget of \$46,952 has been established for Math Endorsement course work for eight teachers which will lead to onsite Teacher Leaders. Professional Development Resource Materials and Supplies: \$9654 An allowance determined by eight percent of the total Professional Development Purchased Services allocation will allow the district to purchase necessities associated with teacher training activities. This will include basics - chart paper and markers - and PD resources such as the books "Putting the Practices Into Action - Implementing the Common Core Standards for Mathematical Practice, K-8", O'Connell and Sangiovanni or "Powerful Problem-Solving: Activities for Sense Making with the Mathematical Practices", Max Ray of the Math Forum at Drexel University. Family and Community Supplies: \$1800 A Family Math Night will be held showcasing the new instructional approaches associated with CCSSM. This event will be held at the school with learning stations set up for students and their families.

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.

0.00 * 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 Mathematical Literacy project is focused on professional development designed to increase teacher mathematical content knowledge and pedagogical knowledge that leads to a sustainable structure. In Question 14, the narrative is indicative of the emphasis of Straight A budgeted funds on teacher development over the span of January 2014 - June 2014. Substitute costs, stipends for work beyond the contracted school year, and PD purchased services are limited to the scope of the project and constitute approximately 70% of the total budget. OSU-Mansfield is actively developing a network that will promote and sustain teachers' acquired skills beyond the grant period. Additionally, teachers completing the Math Endorsement coursework will have the capacity to serve as Teacher Leaders in their own district and in other districts. Technology allowances include teacher iPads and Elmo bundles which were selected with durability and longevity in mind. The iPads will carry an Apple Care+ plan extending support and repair/replacement for an additional two years. The document cameras have a five-year warranty. An important note regarding technology purchases for the district is that these purchases are historically made using Permanent Improvement (PI) funds. The Financial Impact document does not reflect this source of revenue/expenditure. However, for breakage or issues beyond the included service agreements, the district will have the ability to utilize PI funds. In fact, there is an expectation that with the implementation of the CCSSM and Mathematical Processes for classrooms engaged in this project, there will be a reduction in the use of textbooks (also typically purchased with PI funds) consistent with the Straight A goal to reduce costs. Concrete math materials such as pattern blocks, unifix cubes and counting disks obtained with grant funding will continue to be used for years to come. For these instructional supplies and the PD supplies, loss and breakage issues will be addressed through yearly instructional supply and PD budgets. The Northmor District has the financial capacity to meet the ongoing replacement issues. The Straight A Fund allows Northmor the unprecedented opportunity to reconceptualize teaching and learning in the area of mathematics.

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.).

As discussed in Question 15 above, there is an expectation that some limited savings may result from the implementation of the project. However, please note that the Northmor Local School District has not received any new local operating revenue since 1992. Consequently, spending has been minimal allowing for limited opportunities to anticipate reductions or savings.

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.

Straight A Funds will provide the necessary supplies, equipment and professional development critical to the full implementation of this project, with current Kindergarten through 8th grade teachers to be comprehensively trained. In the future, replacement instructional supplies - expected to be minimal - will be purchased through instructional supply accounts or through the use of savings from reduced copy and paper costs. Permanent Improvement funds will be available to address replacement issues beyond the service agreements and warranties for technology purchases. OSU-M and Northmor Elementary will deepen an existing relationship as university student placements provide expanded opportunities for pre-service teachers and experienced teachers to develop professionally. This collaborative relationship will promote sustained professional development beyond the grant cycle, with OSU-M faculty participating in the school program. Additionally, course vouchers received by the district will allow teachers engaged in the Math Endorsement series to complete the remaining four courses at significantly reduced costs. Teachers completing the Math Endorsement Specialist program will be designated as teacher leaders, collaborating with project colleagues and new teachers to the district. Additionally, project teachers will have opportunities to network and collaborate with other teachers in the area. The successful Algebra Project in place in the Mansfield City School District will offer professional opportunities for sharing of successful methods as well as support for ongoing improvement and adjustments.

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): 12/18/2013 - 01/17/2014

* Narrative explanation

During this time, OSU faculty will meet with teachers and administration, sharing specifics of the Mathematical Literacy project and anticipated outcomes. A parent meeting will be held, intended to promote lines of communication and increased understanding of the potential achievement gains for students in the area of mathematics. Updated quotes for instructional materials, PD materials and technology will be reviewed; purchase orders will be submitted. Goal 1: Increase teacher effectiveness in the area of mathematics by providing professional development on teacher content knowledge and content pedagogical knowledge Outcomes 1.1, 1.2 Activity: Monthly 2-day PD sessions, 1-day on-site with each (Dr. Bucci and Dr. McEwan) to assist with transfer of PD content Possible barriers: Availability of substitute teachers Solution strategies: Have teachers attend in two subgroups, A, B Stakeholders: Teachers, intervention specialists, principals, university faculty

Implement (MM/DD/YYYY): 01/21/2014 - 06/30/2014

* Narrative explanation

Lesson development consistent with CCSSM and Mathematical Practices will be initiated. Monthly PD will be provided with opportunities for teacher reflection and collaboration. Instructional supplies and technology will be utilized throughout Northmor classrooms. The Family Math Night will be organized and held, showcasing new instructional strategies and increased student engagement and understanding. Goal 1: Increase teacher effectiveness in the area of mathematics by providing professional development on teacher content knowledge and content pedagogical knowledge Outcomes 1.1, 1.2 Activity: Monthly 2-day PD sessions, 1-day on-site with each (Dr. Bucci and Dr. McEwan) to assist with transfer of PD content Possible barriers: Availability of substitute teachers Solution strategies: Have teachers attend in two subgroups, A, B Stakeholders: Teachers, intervention specialists, principals, university faculty Outcome 1.3 Activity: Spring Conference with other teachers in the area using AP methods Possible barriers: None noted Solution strategies: NA Stakeholders: Teachers, administrators, and intervention specialists from area schools, university faculty, university students Outcome: 1.4 Activity: Intensive work with participating teachers on development of vertically aligned and CCSS-based pacing guide Possible barriers: None noted Solution strategies: NA Stakeholders: Dr. s Bucci, McEwan, and Winterbottom, teachers pursuing Math Specialist Endorsement, principals Outcome: 1.5 Activity: Week-long summer PD on AP methods, content, and with a goal of developing units for implementing in 2014/2015 Possible barriers: None noted Solution strategies: NA Stakeholders: Teachers, intervention specialists, principals, university faculty

Summative evaluation (MM/DD/YYYY): 06/30/2014

* Narrative explanation

One aspect of the summative evaluation will include Teacher Professional Development Activity journals. Teachers will document their professional growth relating to perceived increased teacher knowledge of mathematics and mathematics pedagogy aligned with the Algebra Project 5-step process and the National Common Core Standards and Mathematical Practices. Teachers and principals, in collaboration with OSU faculty, will define observation protocols to be used in informal (not for the purpose of OTES at this time) observations, establishing "look-fors" and promoting a common understanding of expected instructional behaviors for students and teachers. For students, the district anticipates a significant improvement in the percentage of 3rd - 8th grade students achieving Proficient, Accelerated and Advanced levels on the Ohio Achievement Assessment - Mathematics for Spring 2014. ODE Data file ready for download June 15, 2014; reports due June 30, 2014. Documented completion of the outcomes will also be included as a part of the summative assessment.

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

Teachers will strengthen their mathematical content knowledge and instructional practices. They will know and understand the content for which they have instructional responsibility. Lessons will be developed that engage students in the CCSS Standards for Mathematical Practice including: 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct valid arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. Students will participate in student-centered discussions in their classrooms, actively engaged and able to work both independently and cooperatively. They will develop skills in evaluating their own progress and achievements as a learner of mathematics. Because teachers have personally grown in their math competencies and better understand students as learners of mathematics, students are appropriately challenged with supports, extensions and interventions which are readily available and effectively utilized. Varied assessments are used to inform instruction, evaluate and ensure student learning. Resources, including technology, will be effectively used to enhance student learning. The current practice of over-reliance on textbooks will be replaced with balanced and appropriate practices involving the selection and creation of instructional resources from varied sources to engage students and meet their learning needs. Taking the place of the traditional lecture, "teacher-in-front-of-the-class" model, teachers will embrace the importance of their role as a facilitator. The classroom environment will be content-rich where a shared enthusiasm for mathematical learning is evident. A combination of independent, collaborative and whole-class learning situations will be intentional and purposeful in optimizing student learning. Teachers will also perceive themselves as learners of mathematics and evaluate their professional growth in meaningful ways that lead to higher learning. Some will serve as Mathematics Teacher Leaders, completing the Math Specialist Endorsement courses and then advancing their collaborative role within the district and area districts. The curriculum will be vertically aligned and clearly articulated among students, educators and families.

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

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

The Algebra Project's founder and participants have worked in classrooms for two decades to develop classroom teaching methods, teacher professional development, and community development that will enable students to succeed in a typical Algebra I course in late middle school or early high school. While the project initially focused on supporting students as they transition from arithmetic to algebraic thinking, it has now developed materials for high school in collaboration with a cadre of university mathematicians. These materials are designed to enable students who may enter high school performing in the lowest quartile on standardized tests to graduate from high school on time and succeed in credit-bearing college mathematics courses. In 2009, The Algebra Project won its sixth National Science Foundation award (\$4 million for 5 years) to study a test of these materials within a "cohort model" that keeps students together in a group throughout high school, with daily instruction in extended periods. Four sites around the country were chosen for the study, including one in Ohio, in collaboration with OSU-Mansfield and Mansfield Senior High School. A first cohort of students graduated from Mansfield Senior in Spring 2013. This graduating class was drawn entirely from the lowest quartile of academic achievement at the start of ninth grade. About two thirds of this class remained with the project for the entire 4 years of High School. A majority of those students have now entered college. Four of them are enrolled at OSU-Mansfield, two of whom are planning careers in education. The successes of that implementation were great enough that Mansfield City Schools decided in 2012 to attempt an ambitious scale up of the project, offering all K-8 teachers in the district an opportunity to work with local and national Algebra Project researchers and professional development facilitators in monthly workshops. So far more than 40 teachers in grades K-6 are actively involved in adopting AP pedagogy and curriculum units, which are being mapped to Common Core State Standards. The Mansfield implementation of the project which this current proposal is based upon dovetails with reports of implementations elsewhere: In 1994, teachers in the Mississippi Delta noted: (1) teachers and students begin to express themselves -- the project develops a "comfort zone" for this expression; (2) teachers are drawn into the project when they see students expressing themselves; (3) teachers learn and accept the facilitator's role because summer trainings, workshops, and community meetings provide continual modeling and practice; (4) "we can continue this hard work because we are not alone." - From 1997 to 2001, under an NSF grant for work in Cambridge, MA, Brooklyn, NY; Plainfield, NJ, and several areas of the south, the Algebra Project attracted over 700 teachers into professional development institutes and workshops. 31% participated more than the 100 hours expected, and 17% participated from 150-400 hours, because they volunteered to attend additional workshops, to lead workshops for other teachers, or to organize and lead supplementary sessions for students. This profile compared favorably to a similar NSF project serving eastern Massachusetts. -At St. Helena Elementary School near Beaufort, SC, where nearly all students are African American and qualify for free or reduced-cost lunch, under the leadership of the principal and several Algebra Project teachers, Grade 5 state math test scores rose from 20 percentile points below state average in 1999 to 25 points above in 2004. 80% of 5th graders performed at or above proficiency, higher than nearby affluent Hilton Head.

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

Yes

No

22. If so, how?

This project is a key component in a system of reflective mathematics instruction in the Central Ohio Schools. The basis of our effort is to develop a learning community of mathematics teachers to serve as demonstration teachers, coaches, cooperative teachers for preservice students, excellent instructors, and staff developers. This initiative will transform our culture to embrace the common core curriculum and will allow us to create learning environments where students can thrive. The Algebra Project has benefited from the extension of the project's materials from K-8 and has explored the correlation between Common Core content and mathematics practice standards with the MCSD teachers. OSU, AP, and Mansfield City Schools (MCSD) has produced new material to meet the needs of the teachers and students in central Ohio. MCSD has provided an effective whole school change model that involves the use of AP across the district, K-12. The project has transformed the way that math education takes place on the Ohio State Mansfield campus, and in so doing will eventually present an evidence-based model for all campuses (regional and Columbus) to consider for adoption. In turn, the project also will advance the academic success of students in the participating districts. Finally, the project will contribute to the OSU-M's efforts to delineate a community organization model that answers the question: what happens when a university, a school district, and a community decide to partner in activities designed to support health youth development and well-being? As a regional campus of a large university, OSU-M is uniquely positioned to realize the vision of an interdisciplinary, K-16 immersion program centered on mathematics instruction for diverse learners. In addition to having a small campus, which facilitates stronger cross-departmental relationships, the K-16 continuum is easier to manipulate simply due to smaller numbers. Finally, because OSU-M is part of a larger structure, the possible reach of this work is extended. The innovation of this K-16 Immersion of an AP worldview is primarily to create a cycle that doesn't exist. Elementary and middle childhood preservice teachers, K-8 students, and K-8 teachers will be instrumental in changing the teaching and learning in the university service area. This is a mechanism for long-term change which engages all parties in the immersion of the philosophy and pedagogy of the AP in mathematics. The existing relationships between university mathematicians and their mathematics education colleagues and K-8 teachers and administration will be strengthened and expanded through the increased number of students and teachers effected via this proposed project and by the increased exposure of the Algebra Project methods and philosophies to produce good teaching (undergraduate and K-8 instruction) and lasting effects on the teacher education program (preservice and inservice teachers). Northmor and Mansfield City are two very different types of districts. But these differences demonstrate that the activities and processes described in this proposal are replicable by the mere fact that we will be able to adjust what worked in Mansfield to the smaller, rural district of Northmor. By extension, replication to other districts in central Ohio and in other areas of our great state is assured.

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

The mission of The Algebra Project (AP) is to ensure every child in America receives a quality public school education, using mathematics as an organizing tool. They believe every child has a right to education, necessary to succeed in a technology-based society and to exercise full citizenship. The Algebra Project works to achieve this by using the best educational research and practices, and building coalitions to create systemic changes. Through the proposed project, we aim to reach the goals of the Algebra Project. One of the results of the work between OSU and Mansfield City Schools was the development of a Mathematical Literacy Framework based on the principles of The Algebra Project. That framework, if implemented in a wider span of Ohio schools, has the potential of changing the way teachers and students engage with mathematics daily. Mathematics Literacy Framework Mathematical Explorations Students increase and enrich their mathematical understandings through hands-on activities in the classroom. While exploring new mathematical concepts students will use problem solving and inquiry strategies as they take ownership of their learning. These explorations take place in various settings in the classroom. They are composed of trips, experiments, and grounding metaphors, which are vertically aligned to provide repeated occurrences with similar activities where it is only the concept that changes as students travel through the years. Within these concrete experiences, the teacher serves as a facilitator, respecting all ways of thinking with justification. Reinforcement/Practice Students spend as much time as necessary enhancing their mathematical understandings. They make connections between already learned concepts and new experiences through various activities in whole group, small group, and individual activities. Language, tools, and shared experiences are repeated K-8. Through this repetition, automation and connections are increased. By increasing their fluency and efficiency when solving math problems, students will be able to explore new mathematical concepts with success. 5-Step Process The Algebra Project's 5 Step Curricular Process allows students to discover and master the common core standards by making sense of their own learning. These are comprehensive core lessons that embed ownership and accountable talk in the classroom. Mathematical Communications The AP mathematical classroom is a community of learners. Teachers use effective questioning techniques to stimulate independent thinking and encourage students to justify their reasoning to others. Students write and communicate daily to explain their solutions to math problems. The teacher encourages students to solve problems using various strategies and respecting multiple solutions with valid justification. A culture of risk-taking and collaborative mathematics "players" provides the setting for the AP Mathematics Literacy classroom. OSU-Mansfield and AP have had substantial success implementing the Mathematics Literacy Framework, AP theory, practice, and vertically aligned shared experiences with the Mansfield City School District over the past four years. A result of this work is the establishment of a wide-band partnership between the university and the school district. With the addition of more districts, this work will provide a solid base for professional learning communities and interdistrict partnerships. The common language and practice between geographically close districts can lead to a lasting impact in Central Ohio.

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.

This project is focused on the fund goal "Increase Student Achievement". Significant achievement gains are expected in the area of CCSSM and Mathematical Practices for all Northmor students, grades K-8. Through the implementation of the project, the district anticipates a five-year transformation of teaching and learning; teachers will display high levels of confidence in mathematical content and pedagogy while students will demonstrate increased levels of achievement and growth. Full implementation of Ohio's New Learning Standards and Next Generation Assessments is slated for 2014-2015. Educators across the state recognize the importance of changing instructional approaches to align with this more rigorous set of expectations however, like the teachers involved in this project, may lack the necessary instructional approaches and resources. This project will change the culture of teaching of mathematics K-8 through a focused and highly collaborative K-16 partnership. For teachers, students and families in the Northmor School District, the achievement bar may currently appear out of reach. Ohio Achievement Assessment trend data reveals results in Mathematics are near or below the state average. "Reconceptualization of Mathematics" will provide the professional development, networks and tools for teachers to innovate their classrooms to reach - EXCEED - the bar for their students. By 2019, the following benchmarks will be met: 1. Learning targets in the area of mathematics will be established, providing clear expectations for student learning. 2. Formative classroom assessments will be used to monitor student progress. 3. "Below", "On", and "Above" grade level expectations will be defined at each grade level, K-8. 4. Student readiness for successful completion of high school math courses will be evident through high school reports. 5. In math, students will perform above the state average on Next Generation assessments at all grade levels, K-8. The impact of this project has the potential to extend well beyond the content area of mathematics. These outcomes may not be easily benchmarked but will have lasting impact as students graduate more College and Career Ready. The 21st Century Skills are grouped into four categories (Assessment and Teaching of 21st Century Skills - ATCS): 1.) Ways of Thinking 2.) Ways of Working 3.) Tools for Working and 4.) Skills for Living in the World: 1. Creativity, critical thinking, problem-solving, decision-making and learning are "Ways of Thinking". 2. "Ways of Working" include communication and collaboration; 3. "Tools for Working" are the skills associated with technology communications, information and literacy; and 4. Citizenship and personal/social responsibility are aspects of "Skills for Living in the World". All categories of 21st Century Skills are powerfully embedded in the CCSS Mathematical Processes and are anticipated outcomes of the project.

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.

Two major areas of impact 1. increase teacher effectiveness in the area of mathematics content knowledge & content pedagogical knowledge and 2. develop teacher leaders in the Northmor School District will be evaluated. This will be conducted by Christian Winterbottom who has a great deal of experience with professional development, and evaluation of grants. Thomas Guskey (1999) developed the evaluation theory for teacher learning. The specific steps to the Guskey model include participant reactions and learning, the degree to which the learning can be implemented or transferred, organizational support and/or barriers and finally student outcomes. This evaluation will focus on the first three steps in the evaluation theory as part of the teacher learning approach and examine student outcomes as it reflects fidelity of implementation in the classroom. Program efficacy will also be tracked through document and records review. Data collection methods will be both qualitative and quantitative and will include inservice teacher focus groups and written reflections, university faculty interviews, in-service teacher interviews, and classroom observations at both the K-8. As well as tracking student achievement through the Ohio Achievement Assessments and Ohio Diagnostic Assessments, student outcomes will also be observed and documented then compared with implementation in the classroom to identify the fidelity of the implementation in the field. Field observations will be made by the evaluator with emphasis on the principles of The Algebra Project and Common Core Mathematical Practices. The Evaluator and research assistant will monitor classroom discourse, classroom culture, and student engagement. The field observers will further receive observation guidance through use of the OSU-M developed quick sheets for AP practices and the Algebra Project Model of Excellence. Finally all of the grant personnel will meet weekly to share their observations about the teacher participants regarding their mathematics content knowledge or attitudes toward the teaching and learning of mathematics. These quantitative & qualitative data will be used in both formative and summative analysis of the project goals. During the academic year teachers will be observed, video tape lessons, and meet monthly with other teacher participants and grant staff for the purposes of lesson study. This process will give each teacher participant an opportunity to demonstrate they can plan, implement, and evaluate the quality of algebra project lessons being implemented in their classrooms. These activities and video-tapes will give the evaluator an opportunity to assess the rigor of the mathematics being implemented in the lessons as measure by the IQA (Instructional Quality Assessment). In addition to the regular meeting with teachers, administrators from both the IHE and Northmor School District will be invited to the PD activities the teachers are part of during the summer and the associated activities that will be held during the academic year. The purpose is to communicate clearly what the goals are for the PD, what effects are anticipated for students learning of mathematics, and what other benefits there are to the K-8 students and participating teachers. This part is for the purpose of assessing the potential for sustainability of the project beyond the end of the grant. Finally, we are using the Algebra Project workshop practice of frequent debriefing to collect participants' views periodically on what is most effective and least effective in current activities, followed by group discussions, to allow feedback to circulate among collaborators and to be the basis for reflection/project improvement. End of year analyses that synthesize and summarize these discussions will be used to identify progress along targeted areas and necessary revisions through reflection. This approach is similar to what Patton (2010) calls developmental evaluation (grounded theory).

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" Diane Ervin, Director of Curriculum and Assessment, Northmor Local Schools October 25, 2013