Proposal for



Locally Funded Magnet Schools or Programs

## 2010-2011 & 2011 -2012

Schools that are being funded using local NWSISD funds are asked to complete the following project proposal. Please submit the completed proposal, **no more than 10 pages**, along with the proposed budget to NWSISD by May 15, 2010.

Please type in the cells that say click here to enter text. The cells will expand as needed.

Name of School	District
Tatanka Elementary	Buffalo-Hanover-Montrose
Year of Local Grant	
2010-2012	
Give a brief overview of your project.	

Tatanka is looking at becoming a STEM school to be sure the school is preparing students with 21<sup>st</sup> Century Skills. The 21<sup>st</sup> Century Skill areas include Core Subjects and 21st Century Themes, Learning and Innovation Skills, Information, Media and Technology Skills, and Life and Career Skills. The specific learning and work skills partially include creativity and innovation, critical thinking and problem solving, communication and collaboration, information literacy, communications and technology literacy, flexibility and adaptability, initiative and self-direction, leadership and responsibility, etc. These are the life and academic skills students will need to be successful. The teaching of these skills will be enhanced through a STEM focused challenge or inquiry-based learning approach.

The STEM magnet at Tatanka will be a full school implementation. As a school, Tatanka will continue to teach the state standards and the district curriculum but will overlay them with a STEM theme. Ways to enhance the district supported curriculum will be examined in those STEM areas of learning. With the full school implementation, Tatanka will provide STEM focused instruction to all students. Tatanka currently supports a district-wide program for students with significant autism needs, the district Quest program for students with academic gifted needs, students with English language needs, and general education students. These students will all participate in the STEM focused learning. The STEM focus will provide the students another avenue to gain academic and learning skills through an inquiry or challenged-based learning with an increased focus on problem-solving skills. The expectation is students will increase their academic achievement in the STEM and inquiry based learning areas to support their overall academic achievement.

What is the theme or focus of your magnet school or program?

Tatanka will use the planning year to work with staff, families, and the community in developing the theme for Tatanka. To this point, Tatanka has been looking at an engineering STEM focus for the school since January of this school year. STEM has been assessed and discussed through the Tatanka Teaching and Learning Council, staff meetings, STEM school visits, and parent focus groups. Staff and a parent visited Weaver Lake Elementary in Maple Grove and Monroe Elementary in Brooklyn Park to meet with staff and look at current STEM programs. Tatanka held three focus groups with parents to share the STEM philosophy and to solicit parents' comments and feedback. Overall, the staff and parents are interested in pursuing an engineering STEM option for the school. This will be finalized through the planning process.

What evidence based curriculum components will be used?

**Reading** – Literacy by Design is the district reading curriculum. The curriculum provides a complete reading and writing program. It provides integrated science and social studies content linked to the state standards in those content areas. The science and social studies themes include whole class themes that assist in developing content-area vocabulary. These portions of the curriculum emphasize nonfiction texts to build informational reading skills and increase content area proficiency for students. Comprehension instruction is provided across whole class, small group, independent reading, and intervention portions of the curriculum. The whole class

instruction includes grade level skills and strategies provided to all students. The small group instruction is differentiated and linked to whole class instruction. Students are assessed to determine instructional needs and are leveled for small group reading instruction. Intervention by Design is the intervention program linked to the skills and strategies taught in the primary curriculum.

**Math** - enVisionMATH is the district elementary math curriculum. The curriculum provides students with daily problem-based interactive math instruction. The program uses visual learning strategies and supports to assist students in making connections to the instructed math concepts. The program includes daily and thematic assessments to determine student progress and needs for intervention. It also includes daily differentiated practice for students to develop math skills.

**Science -** FOSS is the district elementary sciences curriculum. The FOSS kits provide students with hands-on, inquiry-based science instruction. The curriculum engages students in constructing an understanding of science concepts through their own investigations and analyses, using laboratory equipment and student readings. Students use 21<sup>st</sup> Century skills like logical thinking and decision-making skills appropriate to their age level. The curriculum integrates reading, writing, and mathematics to assists students in developing basic skills within the context of learning science. The FOSS assessment system uses formative and summative strategies to help teachers and students monitor their progress and measure their ability to apply the concepts they have learned.

**Engineering** - The *Engineering is Elementary*® (EiE) curriculum will be implemented at Tatanka Elementary for the STEM program. The EiE curriculum provides students with the opportunity to develop engineering and technological literacy skills. The EiE curriculum is a research-based, standards-driven curriculum that integrates engineering and technology concepts and skills with elementary science topics. The EiE units coordinate with the concepts taught in the FOSS kits. The EiE lessons are connected with literacy and social studies. Storybooks featuring children from a variety of cultures and backgrounds introduce students to an engineering problem. Students participate in this challenge-based curriculum to solve a problem similar to one faced by the storybook character or one connected to their community. Through the hands-on engineering design challenge, students work in teams to apply their knowledge of science and mathematics and use their inquiry and problem-solving skills to design, create, and improve possible solutions.

Will the magnet incorporate additional reforms that will increase student achievement? (For example; project based learning, or inquiry based learning, integrated, theme based units, etc)

Tatanka will implement inquiry or challenge-based learning with the STEM focus. Staff training will be required in the area of inquiry or challenge-based learning. A concept developed by Apple, Inc., challenge-based learning is a collaborative learning experience in which teachers and students work together to learn about compelling issues, propose solutions to real problems, and take action. The approach asks students to reflect on their learning and the impact of their actions, and publish their solutions to a worldwide audience. Training in STEM integration and inquiry-based learning will be provided through a variety of sources including the Science Museum of Minnesota, Hamline University, and The Works: A Hands-on Museum of Engineering.

How will the theme be incorporated into classroom instruction?

Additional teacher work on the integration of STEM concepts into the current curriculum will be part of the planning process. With the support of the Curriculum Integration Specialist, the instructional teams will examine the state standards and the district curriculum to identify places where STEM concepts can be integrated into the existing curriculum and where additional curriculum or resources are needed to support these concepts. The instructional teams will develop a plan for the integration of STEM concepts and for developing curriculum to support the curricular needs. The instructional teams will examine all curriculum areas of math, science, literacy, health, and social studies. The specialist areas of physical education, music, and art will also examine their standards and curriculum to integrate STEM concepts. For example, the music teacher may include the physics of sound in her music instruction. The art specialist position will be added for the 2011-2012 school year. This position will be added to support technology design and to provide additional time for teachers to implement STEM engineering curriculum in place of art curriculum.

What technology will be incorporated into the classroom and how does it tie into the integrated curriculum and increased student achievement?

Currently, Tatanka uses SMARTBoards, laptops, netbooks, projectors, voice enhancement systems, and computers for instruction. Tatanka has developed a scope and sequence of technology skills for students to learn across the grade levels. This will be the first year of impleting these skills and having time devoted to their instruction. For the younger students in kindergarten through second grade, these skills will be specifically instructed to prepare them for the continued use of technology. In the upper grades, the skills will be integrated into curriculum expectations and projects. A pilot with the iPad2 will begin in first grade at Tatanka and two other schools in the district. The pilot will provide a classroom with a classroom set of iPads for instruction and skill practice. The District Technology Integration Specialist will provide support to this project to focus on increased student achievement through the supportive use of technology. The art specialist will begin assisting students in learning to use technology to support design for both art and STEM concepts. Some art instruction will include the use of technology to design and market engineering projects. Tatanka will continue to use technology to assist students in accessing information and communicating ideas and concepts for other audiences. Student achievement will be increased through the use of technology to support 21<sup>st</sup> Century Skills, such as creativity and innovation, communication and collaboration, information literacy, communications and technology literacy, and initiative and self-direction.

How will the student learning experience be different/better because of these changes? What is this assertion based on?

The most significant change in instruction at Tatanka will be the use of the inquiry-based method for student learning. Currently, Tatanka primarily uses direct instruction methods with practice for skill development for student learning. Students are additionally taught strategies such as comprehension or problem-solving strategies to access information and learning. Experiential, hands-on learning is used in science to duplicate and observe experiments and to develop concepts. The inquiry-based method of instruction will be important to support the students in developing 21<sup>st</sup> Century skills. The inquiry-based method provides the students the opportunity to explore and test answers to questions. The students are provided with a problem to solve and use their previous knowledge and current learning to develop, design, build, and test solutions to provide an answer to their question. This inquiry-based method provides students with practice in using the 21<sup>st</sup> Century skills of creativity and innovation, critical thinking and problem solving, communication and collaboration, flexibility and adaptability, initiative and self-direction, leadership and responsibility, etc. The U.S. Department of Education, AOL Time Warner Foundation, Apple Computer, Inc., Cisco Systems, Inc., Microsoft Corporation, National Education Association, and other corporations and individuals formed The Partnership for 21st Century Skills in 2002. Collaboratively, they identified the knowledge and skills students need in the 21<sup>st</sup> Century to succeed as effective citizens, workers and leaders. They identified the three Rs including English, reading or literacy, mathematics, science, foreign languages, civics, government, economics, arts, history, and geography, and the four Cs including critical thinking and problem solving, communication, collaboration, and creativity and innovation. This curricular and programmatic change will provide the support necessary for Tatanka students to begin developing and enhancing these 21<sup>st</sup> Century Skills.

#### What additional staff will be necessary to implement this plan?

Tatanka will add a Curriculum Integration Specialist to lead the integration and writing of STEM curriculum. The specialist will work with grade level teams to review grade level standards and curriculum to identify ways of integrating STEM concepts into current curriculum and writing curriculum for identified areas of need. The specialist will also provide coaching for staff in implementing the inquiry method into classroom instruction. Educational Support Professional (ESP) time will be added to support engineering and science labs. The ESP will use the time to order and manage lab supplies, assist in preparing the lab for classroom use, and support the classroom teacher and students in the lab processes. An art specialist will be added to the program to support technology design and art for the students. This specialist is not a budget addition but is available due to restructuring school priorities.

### How will additional staff be funded after the local funding has ended?

Ongoing funding will be provided through the NWSISD budget provided to the district. This funding will be used to support the continuous need for staff development, curriculum integration and development specialist, and additional material required to support STEM concepts. Once teachers are trained and experienced in the inquiry-based method of instruction and STEM integration, teacher leaders will provide training and support through building-based ongoing staff development. The district provides technology integration support through District Technology Integration Specialists available for all schools and grade levels.

How will training for new staff be accomplished once the local funding has ended?

The school district has a process for training staff new to the district in district procedures and curriculum. New teachers participate in an annual training program for the first three years of their employment. During this time, each teacher has a building mentor to support them in understanding the school culture and curriculum. In addition to district staff development days, Tatanka has staff development days throughout the school year to provide training on needs specific to student needs and school programs. A portion of each staff meeting throughout the school year is devoted to staff development around school needs. At Tatanka, teachers are assigned to grade level teams. The grade level teams meet regularly to work together in providing instruction for students at their grade level. New teachers receive additional support in understanding district curriculum and school initiatives through these teams.

#### How will the technology be sustained after the local funding has ended?

Currently, Tatanka budgets a portion of its annual budget to support technology within the school program. In addition to the annual budgeted technology amount, the PTO holds an annual fundraiser in the fall to support school technology projects. In previous years, the PTO has purchased laptop carts, SMARTBoards, digital cameras, digital projectors, etc. Tatanka has a technology committee to take applications for funding projects within the school and distributes the budgeted and donated money to meet the academic goals of the school.

# What standardized and local tools will be used to evaluate improved student learning? (Baseline data should be gathered prior to project implementation using these tools.)

The Buffalo-Hanover-Montrose School District currently has an annual evaluation process for all schools. The schools develop an annual Building Improvement Plan to identify how they will implement the School Board's goals and initiatives and present the plan to the School Board in October. In August, the school's data for the Building Improvement Plan is reviewed with the School Board. The building improvement plan includes MCA and Measures of Academic Progress (MAP) testing data and other measures related to specific goals to evaluate student performance. This data has been gathered for several years to provide baseline performance.

#### How will depth of implementation of the theme be evaluated?

The program will be evaluated using the current Buffalo-Hanover-Montrose evaluation system for school programs. The Building Improvement Plan goals and results will be used to assess and report progress to the school board. Additionally, the school will review the program goals using standards-based reporting for science and engineering portions of the program. Currently, these areas are not specifically assessed on the individual student report cards. Staff and parent surveys and focus groups will be administered to monitor the implementation of the program and to respond to identified needs. The school leadership team will complete a self-assessment using the NWSISD Magnet School Performance Review Rubric to make necessary adjustments and modifications to the program. Finally, the school will examine ways to assess and report 21<sup>st</sup> Century Skills to students, families, and the community.