



Vicksburg Community Schools Proposal Form and Guidelines

Send completed proposal and required forms to the Curriculum office by March 1, 2015

Use the Vicksburg Community Schools Proposal Form and the form outline as indicated. This form will be used as your cover sheet. Check each item as you edit or create your final draft.

- Proposal Background & Overview – Write a narrative that includes:
 - Relevant background/history.
 - Problem or other basis for the proposal (i.e. student needs, etc.).
 - Reasons for making the change.
 - Targeted School Improvement Goals

- Complete Description of Proposed Change(s):
 - List all major changes, components and/or strategies of the proposal.
 - Give rationale for each change (base the rationale on research or best practice information).
 - Include new course/textbook title, course/textbook replaced, credit, and prerequisite(s).
 - Attach the current content expectations, course outline, and/or general syllabus.

- Implementation Plan
 - Give a full explanation of the implementation timeline, action items, and responsibilities for implementing.
 - *Itemize, in detail, all proposal costs. Include 1st year costs and a budget to maintain the proposal after implementation. Include resource needed to support change. (texts, soft/hardware, web-based license, consumables, training, substitute cost for training, equipment, personnel). Use *Purchase Requisition form to itemize costs.

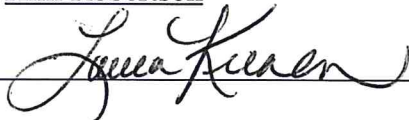
- Anticipated/Expected Impact
 - Explain the anticipated proposal outcomes. Describe how the proposal will impact students, staff, and the instructional program. Include expected gains in student success. Include how this proposal articulates with other courses/levels in this subject area & across the curriculum.

- Proposal Evaluation Plan and Student Achievement
 - Explain how this proposal will be evaluated, the timeline used, what data is to be collected (survey results, national, state, district, or classroom assessments), and how the evaluation will be reported.

Title of Proposal: Project Lead The Way Proposal Author(s): Project Lead The Way

Department and Curriculum Area: Computer Building: VMS

Committee Members: Kim Robertson

Principal's Signature: 

Dates of Board Review and Action: _____

*Include Attachment

Proposal Background & Overview:

Career and college readiness requires that our students are prepared to think critically and problem solve. Over the past 10 years, jobs that are STEM based (Science, Technology, Engineering, and Math) have increased three times more than jobs that are not STEM based (EDTECH, 2013). “By 2018, 1 in 20 global jobs will be STEM-related—an estimated 2.8 million jobs in total. Over 90% of those opportunities will require secondary degrees, and over two-thirds will require a bachelor’s degree.” (<http://www.connectionslearning.com>) The U.S. Department of Commerce estimates that jobs in STEM will grow 17% by 2018 – nearly double the growth for non-STEM fields. They also estimate that the U.S. will have more than 1.2 million unfilled STEM jobs because there will not be enough qualified workers to fill them. It is critical that we prepare our students to enter college and the work force with the skills necessary to meet these employment demands.

One program that is designed around the STEM practices is Project Lead The Way (PLTW). PLTW is the nation’s leading provider of k-12 STEM programs. Currently our high school has implemented multiple PLTW courses as part of the Education for Employment consortium through KRESA. PLTW is supported by local and state businesses because they believe in the skills it promotes. There are thirteen other middle schools in Kalamazoo County that are providing PLTW at the middle school level. It is our goal to provide PLTW at our middle school for our students. Some students have experienced PLTW STEM practices in a few of our middle school Science classes, however, we would like to provide a more comprehensive approach to PLTW at the middle school. We feel that PLTW will provide our students with an experience that integrates multiple content areas. With this integration students will be applying content in a real world context and at a higher level. At the same time it will support/extend the work that our Mathematics and Science teachers will be doing as they integrate the STEM practices in their classes. It will take the place of our current Computer courses that are offered to sixth and seventh graders.

All PLTW middle school units are aligned to the Common Core State Standards for Mathematics and English Language Arts and the Next Generation Science Standards.

In preparation for the implementation of PLTW, I will attend training this summer for each of the gateway courses. The training for each course is 1 week in length. PLTW goals fall under the Technology School Improvement Goal.

Complete Description of Proposed Change(s):

Design and Modeling is a nine-week STEM unit of study. This unit focuses on the application of the engineering design process to solve problems. Students work in teams to solve various design problems. They learn basic technical drawing skills and use 3D solid modeling software to create 3D representations of their designs in a virtual environment and create technical drawings to represent their designs.

Automation and Robotics is a nine-week STEM unit of study. The focus of this unit is the development of automation and robotics and their use to improve daily life. Students will investigate mechanical systems, energy transfer, machine automation, and computer control systems. Using the VEX® Robotics platform, students will design, build, and program real-world devices such as traffic lights, toll booths, and robotic arms.

Introduction to Computer Science (ICS) is a course designed to be implemented as two nine-week Gateway modules. The course aims to develop computational thinking and build student excitement. Several days in each module are targeted to build career awareness about computing skills in all fields and to improve students' cyber hygiene. The modules are sequential. The goal of the first module, ICS, is to excite students about programming and to build students' skill by breaking apart a problem and persistently building solutions in small steps. Student creativity and an iterative design process are emphasized. Students work with MIT App Inventor to

create basic Android™ applications that rely on the concepts of event-driven programming, branching and iteration, variables, and abstraction - the building blocks of creating with code.

The goal of the second module, ICS, is to reinforce students' understanding and enthusiasm for computing as a powerful tool for many jobs. The module is also designed to create a smooth transition to text-based programming environments. Text programming is introduced with *Python*®. Students write functions to play a variety of strategy games. Students also create algorithms using a text-based language in Excel®. Students use data visualization to explore large data sets and use spreadsheets to simulate models that include random variability. In the final problem, students discover patterns in data related to a topic of their own interest, crowd sourcing the data collection using an Android™ application they create.

The content expectations, course outline and/or general syllabus will be created after course training certification is completed.

Implementation Plan:

Our goal is to phase in Project Lead the Way over the next 2 years.

2015-2016

6th Grade – PLTW Foundation Unit – Design & Modeling (9 week course of introduction of Design & Modeling)

7th Grade – PLTW Foundation Units – Design & Modeling and Automation & Robotics – (semester course)

2016-2017

6th Grade – PLTW Foundation Unit – Design & Modeling (9 week course of introduction of Design & Modeling)

7th Grade – PLTW Foundation Units – Design & Modeling and Automation & Robotics – (semester course)

8th Grade – PLTW Gateway Units – Introduction to Computer Science

Anticipated/Expected Impact:

As a result, middle school students will be:

- Highly engaged in critical thinking and problem solving
- Motivated to learn
- Prepared to take high school PLTW courses
- Applying content in a real world experience
- Increasing test scores
- Apply their knowledge and skills to other classes at VMS

As a result students from Vicksburg Community Schools will be:

- Prepared for college courses in STEM
- Prepared for career skills related to STEM
- Prepared to persevere

Proposal Evaluation Plan and Student Achievement:

- Quality of Student Projects
- Feedback for local engineers
- Increased number of students taking PLTW courses as an elective at the middle school level as well as the high school level.

- Student evaluation of their own work and their experience in course.

Proposal Technology Cost:

Cost and Commitments

Instruction: VCS is responsible; no added cost; using PLTW in place of the current computer curricula

Technology Hardware: VCS is responsible, see below.

Training: Grant-funded through KRESA

Equipment and Materials: Grant funded through KRESA

Software: Grant funded through KRESA

Annual License Fee: Grant-funded through KRESA

32 Computers @ \$600 each	\$19,200
32 Monitors & 3D mouse	\$19,200
Cabling in classroom	\$ 8,637
3D Printer w/ Spool	\$ 2,000
16 Tablets @ (ICS courses) @ \$300	\$ 4,800
Tablet cart for 16 Tablets	\$ 2,000
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	\$55,837