

Vicksburg Community Schools Proposal Form with Guidance

Send completed *Proposal Form* and supporting documents to the Curriculum office by March 1st.

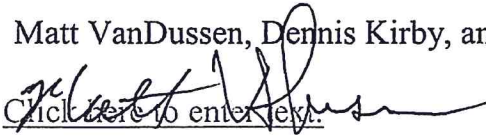
This form will be used as your proposal cover sheet. Check each item as you edit or create your final draft.

- This proposal is for:
 - Textbook and other teaching resources (*requires planned pilot process as part of the proposal request*)
 - New courses or course revisions
 - Full program or curriculum area reviews
 - Program or curriculum area modifications
- 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).
- N/A Include new course/textbook title, course/textbook replaced, credit, and prerequisite(s).
- N/A 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: PLTW Gateway Units Proposal Author(s): PLTW

Department and Curriculum Area: STEM Building: VMS and VHS

Committee Members: Matt VanDussen, Dennis Kirby, and Brendan McCaw

Principal's Signature:  Click here to enter text.

VHS – Keevin O'Neill and Scott Wills

Principal's Signature: 

Dates of Anticipated Review and Action: DSISC: April 2017 BOE: April 2017

*Include Attachment

(To be completed by Director of Curriculum and Instruction upon receipt of proposal.)


Date Received: 3/1/2017

Comments on proposal:

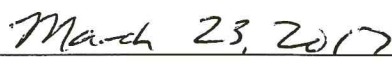
Reviewed with Brendan McCaw on 3/23; with agreed upon revisions, the proposal is good to go.

RESPONSE:

- Need more information: [Click here to enter text.](#)
- Need to consult with:
 - the building principal(s) affected by this proposal
 - curriculum area chairperson
 - Other: [Click here to enter text.](#)
- Proceed as outlined in the proposal**



Director of Curriculum and Instruction



Date

Proposal Background & Overview:

Proposal History and Background.

The proposed addition to Project Lead The Way (PLTW) is intended to expand the STEM programs currently offered at Vicksburg Middle School and Vicksburg High School to enhance and support K-12 PLTW initiatives district wide. Further implementation and additional course offerings secures Vicksburg Community Schools' position as a leader in preparing our students for college and careers in a technology rich society.

The addition of the App Creators and Computer Science for Innovators and Makers courses to PLTW is the logical next phase of implementation of K-12 STEM curriculum. A similar PLTW Gateway unit was proposed 6/5/2015 for implementation as an 8th Grade elective.

All PLTW units are aligned to the Common Core State Standards for Mathematics, English Language Arts, and the Next Generation Science Standards. PLTW goals fall under the Technology School Improvement Goal.

Summer training in PLTW units and technology costs are included in a separate grant proposal associated with implementation of these courses.

Complete Description of Proposed Change(s):

Major changes, components or strategies of proposal.

This proposal requests the addition of two PLTW courses: App Creators and Computer Science for Innovators and Makers. Information and course outlines are available at www.pltw.org for download. Initially, these courses will be offered to 8th grade students at the middle school and 9th and 10th grade students at the high school. We envision an expansion the program including additional courses and/or students in subsequent years.

App Creators introduces students to the field of computer science and the concepts of computational thinking, through the creation of mobile apps. Students are challenged to be creative and innovative, as they collaboratively design and develop mobile solutions to engaging, authentic problems. Students experience the positive impact of the application of computer science to society as well as other disciplines, particularly biomedical science. The unit provides students opportunities for self-expression. Teams identify a personal or community problem of interest to them that can be solved with a mobile app solution. The problem can address issues such as health and wellness, the environment, school culture, emergency preparedness, education, community service—the options are endless!

App Creators is a 9-week unit of study of three lessons.

Lesson 1: Let's Create an App! Students are introduced to the concept of pair programming, app development, and the MIT App Inventor development tool. They learn about the Model-View-Controller (MVC) design pattern, app graphical design, event-driven programming, debugging, and algorithm creation using variables and conditional logic. They create engaging biomedical science apps and fun interactive games that apply these concepts and use basic user interface features, media, and animation.

Lesson 2: Taking It to the Next Level Students further explore the concepts investigated in Lesson 1 and build upon their skills to use data in mobile applications. They create algorithms using loops to streamline repetition and iterate through lists, and create procedures to abstract the details of a task and reduce redundancy. They learn to organize and store persistent data collected from user input and device sensors.

Lesson 3: The App Challenge Students apply all of the knowledge and skills they have acquired to design and create a mobile app solution for a personal or community problem. They apply the design process and

computational thinking skills to decompose the problem into smaller modules. Following user-centered design principles, they design and create an appropriate user interface and program the app to produce the desired behavior.

Computer Science for Innovators and Makers is 9-week unit of study of three lessons. It teaches students that programming goes beyond the virtual world into the physical world. Students are challenged to creatively use sensors and actuators to develop systems that interact with their environment. Designing algorithms and using computational thinking practices, they code and upload programs to microcontrollers that perform a variety of authentic tasks. The unit broadens students’ understanding of computer science concepts through meaningful applications. Teams select and solve a personally relevant problem related to wearable technology, interactive art, or mechanical devices.

Lesson 1: Blink! Students begin to explore the capabilities of physical computing systems with The Digital Dive game, an engaging, live-action activity where students “become” computer parts and transmit commands. They learn to use algorithmic thinking as they prepare to code. Students use block-based coding to create, download, and upload programs to the micro:bit microcontroller. They learn processes and gain skills to debug programs starting with pre-bugged programs. They apply these skills to their own project where they code a blinking message that includes text, images such as emojis, and animation.

Lesson 2: The Ins and Outs In this lesson, students explore a variety of sensors and actuators to use as inputs and outputs in physical computing projects. Using different materials to transfer electrical signals, such as conductive thread, alligator clips, conductive paint, and copper tape, students create their own input device—a sensor or switch—to interact with a program they develop on the microcontroller. They use these skills in the lesson’s project to design, develop, and program a system to protect safes and secrets.

Lesson 3: Program the Physical World Within teams, students become innovators and makers. Teams apply their physical computing knowledge and skills as they design and create one of three problem options: • A wearable safety device someone might use when completing a physical activity outside at night • An engaging art installation to help improve a community space • A useful mechanical dispenser for a person or animal who needs assistance to retrieve an object Teams collaborate and learn that solving authentic problems involves the unit content knowledge, as well as skills from other disciplines, such as communications, mathematics, and science.

Implementation Plan:

Implementation strategies

<i>Timeline</i>	<i>Action Item</i>	<i>Anticipated Costs and Funding Sources</i>	<i>Person Responsible</i>
Summer, 2017	Apps Creator Training, two teachers Computer Science for Innovators and Makers, two teachers	\$3600/training; Total - \$7800 MiSTEM Advisory Council Grant and Community Grants administered through KRESA	Brendan McCaw Scott Wills
Summer, 2017	Order technology – tablets for Apps Creator and Computer Science Innovators and Makers courses at Middle School and High School (Remains with the program)	\$6400/building; Total - \$12,800 MiSTEM Advisory Council Grant and Community Grants administered through KRESA	Brendan McCaw Scott Wills

201-2018 School Year	Attend MyPLTW State Conference	Costs TBD Community Grants administered through KRESA	Brendan McCaw Scott Wills
2017-2018 School Year	Implement one nine-week section of Apps Creator at the 8 th grade level as a component of a semester course. Offered first and second semester.	Teacher Compensation \approx .37 FTE - General Fund	Brendan McCaw
2017-2018 School Year	Implement one nine-week section of Apps Creator at the 8 th grade level as a component of a semester course. Offered first and second semester.	Teacher Compensation \approx .37 FTE - General Fund	Brendan McCaw
2017-2018 School Year	Implement four semester courses of Apps Creator and Computer Science for Innovators and Makers at the high school	Teacher Compensation \approx .33 FTE - General Fund	Scott Wills
Spring, 2018	Evaluate courses and review suitability for other grade levels	n/a	Brendan McCaw Scott Wills

Anticipated/Expected Impact:

Proposal outcomes

This program will result in students:

- Highly engaged in critical thinking and problem solving
- Motivated to learn
- Prepared to take high school PLTW courses
- Applying content in real world experiences
- Increasing test scores
- Connecting knowledge to skills essential in a technology driven economy/society
- College and career ready
- Uniquely experienced in STEM courses and content

Proposal Evaluation Plan and Student Achievement:

Evaluation and assessment

- Quality of Student Projects
- Feedback through partnerships from local professionals
- Enrollment numbers in PLTW courses as an elective at MS/HS levels.
- Informal pre- and post-experience student surveys designed to gauge how the PLTW experience influences their feelings towards math and science and school in general

