



Rural Math Excel Partnership Update

A Busy Year For VASS

2013 was a very busy year for everyone at Virginia Advanced Study Strategies (VASS) as we continued our work with K12 schools to develop advanced academics in STEM-H while also embracing the responsibilities of the Rural Math Excel Partnership (RMEP) grant with the US Department of Education. The RMEP project is a very unique opportunity for VASS.

Details of the RMEP

Grant

RMEP is a USED i3 (Investing In Innovation) Development Project, one of only three in the nation funded in 2012 with a focus on rural needs. This 2.7 million dollar grant is a three-year program beginning January 2013 and ending September 2016. There are six rural school division partners: Cumberland, Prince Edward, Charlotte, Halifax, Henry counties public schools and Martinsville City Public School.

The innovation being developed is the creation of a shared responsibility model for student success in math. Shared responsibility means parents, teachers, and community-based organizations each perform specific functions to support student learning.

Math is the focus of attention because post-high school training programs for technician-level careers report the highest concentration of remediation need is in math. The RMEP project focuses on training and support with middle and high school Algebra I, Geometry, Algebra II, and Algebra Functions and Data Analysis (AFDA) classes.

Stanford Research International (SRI) is conducting the evaluation component of the grant.



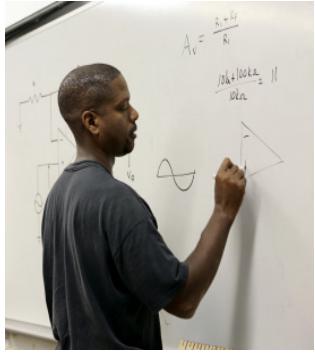
What is a Development Grant?

A development grant is unique in that it funds a new, "innovative," idea and allows for research to determine if the idea has potential to become a promising practice to help students with their education. Most grants take an existing program and financially support its implementation into a school. The innovative concept in RMEP is that students will benefit from external support, specifically the support from parents and the community, in addition to the teacher's instruction, to be successful with the math expectations required from jobs available in today's global economy. In the first year, VASS has focused on creating the foundational components of the model.

Steps Completed So Far

- 1) Created an advisory team that represents key stakeholders. Representation includes school division superintendents, principals, math teachers, technology specialists, parents, and students. Also represented are community leaders, community college administrators and faculty, VA Cooperative Extension youth specialists, and the VASS Board of Directors.
- 2) Hired staff with the expertise needed to implement the project. Dr. Hobart Harmon, a nationally recognized specialist in rural K12 education is serving as co-director of the project. Sandy Wilborn, a local master teacher with middle and high school teaching and consulting experience joined the team as math specialist.
- 3) Created the Math Development Team. This group, a middle or high school teacher from each of the school divisions, works with Mrs. Wilborn to create a math resource guide and training for teachers. This guide includes results of a DACUM analysis of math competencies used by local technicians in the workplace, Khan Academy videos, information on careers, a Family Math Night protocol, and other math resources.
- 4) Created a community support team within each local community. The local 4-H agent is being asked to provide leadership for the community in establishing and facilitating the team. The team is responsible to develop and conduct a community event that will

engage the student and their parents or other adult family member in ways that help them understand why math is needed for the student's future success, particularly in careers requiring competencies in science, technology, engineering and math (STEM).



5) Identified technologies that will provide resources for students to access math support content outside of school. These technologies are internet based. The focus is on high-speed Internet access at home, a device to complete homework assignments, and the software or internet applications that will make access easy and safe for students.



6) Collaborated with SRI to develop an appropriate evaluation plan that will determine if the model of shared responsibility is successful.

These responsibilities have taken a year to complete. More complete detail of the developments is provided throughout this newsletter. Years two and three will now focus on implementation of the model into the individual school divisions. Each school division is very unique in its preparedness to implement the model. VASS staff met with administrators, teachers, technology leaders, and community leaders within each school division to plan for implementation. The last meeting was held in March, after numerous cancellations because of winter weather.

Year 1 Development Details: Development and Work of the Math Implementation Team



The Math Advanced Studies (MAS) Guide Development Team includes one teacher from each school division as well as the math specialist at VASS. Thus far, they have determined the gaps between what is taught in the Virginia Standards of Learning (SOLs) for Algebra 1, Algebra 2, and Geometry and the skills used by technicians in the fields of healthcare, energy, advanced manufacturing, and IT. They have also been working on creating a math guide to be used by Algebra 1, Algebra 2, Geometry, and Algebra Functions, and Data Analysis (AFDA) teachers that includes lessons, real world applications and Khan Academy videos and assessments related to each competency. The development team de-

termined the gaps using a DACUM process. There were two sessions held with technicians, on September 28 and November 13, 2013. With team members present at each meeting, technicians were asked to give the following information:

- *Job title and major responsibility
- *Tasks or math competencies used
- *Application or example of using competency
- *Math courses or other important classes students should take in high school
- *Explanation of why a student should take math



During the DACUM process, the information provided by the technicians was recorded on cards and posted on the wall.

The math and technical faculty of the community colleges in the region also participated in group interview sessions. We met with Patrick Henry Community College on November 8, Southside Virginia Community College on December 3, and Danville Community College on February 3. These faculty members were asked to give information on each of the following topics:

- * Name, title, occupational program, and courses faculty member teaches
- * Examples of the math competencies students are required to learn in the course
- * Prerequisite math competencies for the course
- * Math competencies students struggle with most in the course and why
- * STEM courses high school students should take to succeed in certificate or Associate Degree occupational/technical programs

Information shared by community college faculty was recorded on flip chart paper and placed on a wall in the room.

After the DACUM sessions, the development team members reviewed cards and determined math competencies used by technicians. Then, the competencies were divided among team members, with each member responsible for searching the Khan Academy data base for videos related to the competencies. The team also determined which category each of the math compe-

Development and Work of the Community Teams

In all five counties, the 4-H youth specialist has worked to create a team that will plan and conduct the "community STEM event." In some instances another key organization in the county, in addition to Cooperative Extension, has been asked to assist in leading the effort to establish the community team. The usual first meeting was for Dr. Harmon to present a PowerPoint explaining the purpose of RMEP and the community event team. Most teams concluded the first meeting with numerous ideas regarding who needed to be on the team to ensure appropriate representation of parents and youth in the county. Teams also discussed what existing events might be leveraged to accomplish an effective community event for students in math courses and their parents/family members.

The teams are in various stages of development. Two teams have held an event. The RMEP project's external evaluators have examined one event and reported "overall it seems to have been successful and appreciated by the attendees. It's clear that the community was able to come together and plan and hold a STEM community event." This first evidence also helps reveal how RMEP can work with the community event teams to increase the potential value of such events as a key component in the model of shared responsibility.

The team and community event are unique to the county and school system(s) represented. The team in Henry County serves both Martinsville City and Henry County school divisions. There is no one way or how-to-do-it approach for all teams to follow. Each team and its community event is evolving based on the possibilities available in each county. It is also very likely that the event may change in a county, as more key community partners can be encouraged to become involved (e.g., businesses, non-profit organizations, faith-based entities). Evaluation results from all five counties will be used in arriving at the "community responsibility" component of the shared responsibility model.

Development of the Technology Platforms

Purpose of the Technology – All math students taking Algebra I, Algebra II, Geometry, and AFDA must have the capability to watch Khan Academy videos at home and complete the related assessments. Monies are set aside in the grant budget to pay for equipment and/or services for those students who do NOT have Internet at home. VASS is working with several Internet providers to make this possible. If it is impossible for a student to receive an Internet signal at home, other out of school online possibilities are being explored.

Equipment and Internet Access

In late fall of 2013, VASS issued Ubislate 7-inch Android tablets to the lead math teachers. These teachers are the teachers representing their respective school divisions on the RMEP Teacher Development Team. Teachers were asked to test the product and to have some of their students do the same. Many issues were discovered that led VASS to seek alternative solutions.

VASS began discussions with Verizon Wireless in early January to ascertain whether the company could offer a low-cost tablet with internet connectivity at an affordable price. In April, negotiations with Verizon were successfully concluded. A Verizon tablet will be used in the project. VASS may also continue discussions with US Cellular since that company has much better coverage in some areas (especially in Charlotte County).

VASS held a webinar with IT directors and related staff members in late January to discuss the project and to get feedback on issues needing to be considered such as web content filtering to ensure CIPA (Children's Internet Protection Act) compliance and how deployment of tablets might best be handled. To date, VASS has also had follow-up conversations with all of the IT directors in the six partner divisions to talk about policies and issues unique to each area.

Because implementation of the project will begin this spring semester with ONLY the students in the classes of the six teachers on the development team, these math teachers are currently surveying their students to determine who already has the capability to view online videos on the internet at home. This information will be used to plan how the project best assists students who need Internet access to be able to view the Khan Academy videos assigned as homework by their math teacher. VASS staff will work closely with school division personnel and teachers to address this student need.



By the end of the current school year, VASS will survey all of the students who will be taking Algebra I, Algebra II, Geometry, or AFDA in 2014-2015 to determine the number of tablets and data plans necessary for full project implementation in the fall.

Tablets will become the property of the school division at the end of the grant period; internet connectivity paid for by the RMEP project funds will end December 2015.

Plan for Assigning Videos and Accessing Student Progress Data

VASS has entered into a partnership with Carney Labs, Inc. to use their custom software application called MARI. MARI is an online application (basically a complex website) that will provide teachers with a simple way to assign the online videos and will give their students one place to go to access the right video on the right date.

The MARI app will be loaded on the tablets purchased by VASS. Students who already have equipment and internet access outside of school will be given access to MARI as well.

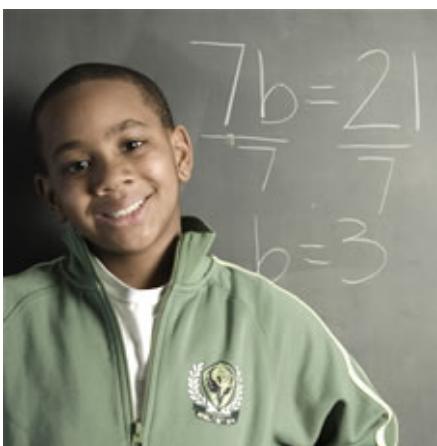
VASS staff and partners will provide training to the teachers on how to set up accounts and student rosters, how to assign videos within MARI, and how to access data related to the assessments taken by students online. Information about STEM careers and pursuing education after high school will also be included.



Year Two Implementation Plans

Year two of the RMEP project began on January 1, 2014. Having laid the foundational work for all of the components mentioned in this newsletter in the first year, it is now time to begin implementing key components of the shared responsibility model in each of the schools and communities. We discovered in the first year that readiness to implement the RMEP project differs greatly among the six school divisions. Focus on the math Standards of Learning, use of instructional technology (including the Internet), and capacity for community support varies considerably among the school divisions. Therefore, a school-division specific implementation strategy will be used in year two of the RMEP project. This will allow implementation of the model of shared responsibility components based on classroom, school and community readiness.

This process begins with a visit to each of the school divisions to meet with key central office administrators, school principals, math teachers, and the key leaders of technology. A schedule for these meetings was set in January. Bad weather forced several cancellations at each school. Ultimately the meetings were not completed in each division until mid-March. A meeting of the RMEP Advisory Leadership Team was held on April 29, 2014 to discuss year-one implementation challenges.



Successful implementation of the math homework assignment videos available through the Internet will mean that all technology must be thoroughly tested in each school. The local teacher from each school division that is on the RMEP Teacher Development Team has had the most interaction with all processes of the RMEP project. These teachers will be the first to implement this part of the model of shared responsibility with their students during the spring of 2014. VASS will make appropriate adjustments to software, hardware, home internet access support, and the Family Math Night activity with parents of students in math classes of these teachers.

At the end of the 2013-14 school year, once results of the technology surveys are analyzed regarding access to the Internet at home, we will gear up for full implementation of all components of the model of shared responsibility in each school division. All teachers will receive training on using the Math Advanced Studies Guide and the technology (i.e., MARI) during the summer of 2014 so that all students in Algebra I, Geometry, Algebra II, and Algebra Functions and Data Analysis (AFDA) will be ready to go in the Fall of 2014. The SRI external evaluators will be conducting evaluation activities throughout this implementation year.

For more information about anything contained in this document or about Virginia Advanced Study Strategies in general, please contact the VASS Office at 434-572-5474.