Curriculum Matters…

Transformative Work by the Faculty and Students of SAU 21
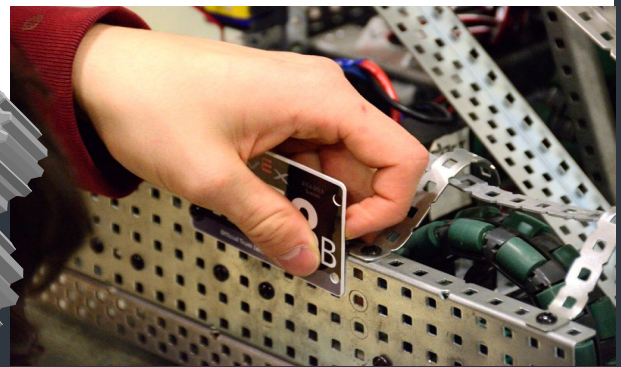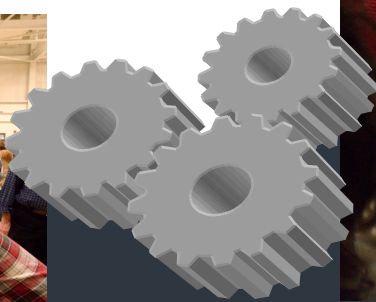
Tech Engineering

Last year the Winnacunnet High School (WHS) engineering team was formed as an extra-curricular activity/club open to any WHS student interested in supplementing their academic studies in science, technology, engineering and math, i.e. STEM. WHS presently offers the nationally recognized four-year pre-engineering curriculum sequence known as Project Lead the Way (PLTW). The PTLW curriculum enables students the ability to explore the various engineering disciplines while reinforcing fundamental math and science topics. The current focus of the club uses the nationally recognized VEX robotics competition platform as a means for providing after school motivation for student innovation. Expanding from three teams of five students last year to four registered VEX teams this year, (WHS teams 4558A, B, C, and D), the club practices twice per week after school throughout the school year with many additional Friday evening pizza/work sessions.
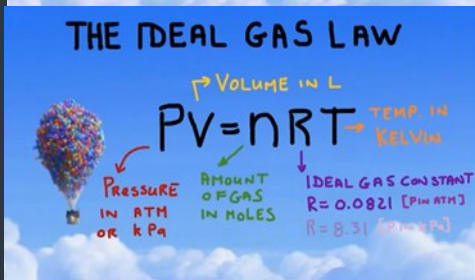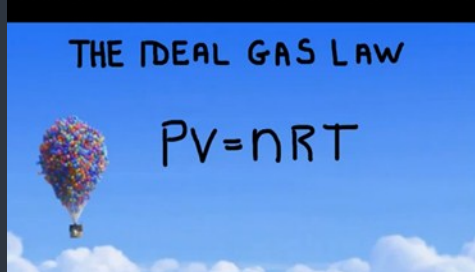
In late spring each VEX registered team is given a copy of the subsequent year's game specifications and rules and tasked to construct a semi-autonomous robotic design that will be used to compete against other schools at regional events. Last year the three WHS teams competed in four regional competitions steadily showing improvement as the year unfolded. At the Northern New England VEX Championships at the New Hampshire Technical Institute in March of 2012, one of our teams was awarded with the most innovative design and one individual student came away with the programming skills challenge award for his autonomous programming routine. This year our four teams have competed in five tournaments, with successful end of tournament finishes at the various events. Each team has qualified for a spot in the New England regional championships in March. In fact at the VEX VRC championship at Pembroke Academy last December, WHS team 4558A was crowned tournament champion and gained a national AND world bid to events in Nebraska and California later this year.

On January 19, 2013 the WHS engineering team hosted its own robotics event, The VEX Seacoast Winter Classic, with over 50 teams competing from high schools all over New England. Funded primarily through fundraising efforts by parents the team has raised more than $5000 towards equipment and supplies over the past year and a half. For more information about the WHS engineering team please visit:

http://www.whsrobotics.tk/

Contributed by James Muthig, Winnacunnet Math and Engineering

FLIP YOUR CLASSROOM

If you transported a student from his classroom a hundred years ago to your classroom today, would he find it that much different? Put aside the modern materials and fancier presentation modes, he would know where to sit and where the teacher would stand. A good student would know to take notes and anticipate a test on the material in the near future. The 'sage on the stage' model of teaching has been a time-tested model used in educational institutions since time immemorial; is it time to rethink this stratagem?

That question formed the central tenet of my professional development this year. The idea is not to do away with the 'lecture', but to place it in another time and space. The time is after school and the place is on the web. This idea, I found, is not unique; many teachers have been trying this for years as it turns out, and it goes by a number of names such as, 'Flipping the Classroom' or 'Upside Down Classrooms'.

Can students more efficiently learn certain topics at home, on their own time and terms? Can teachers glean more time for inquiry-based activities given the ever dwindling and diminishing academic time given us? These are questions that I, and a few teachers here at Winnacunnet have been trying to answer beginning this year. But I cannot claim to have truly 'Flipped' my classroom, so the questions remain unanswered at this point, however initial responses have been good.

"I've used it a couple of times when I had to leave school early for a (soccer) game," said sophomore Catherine Shanky, a student in honors chemistry. "I thought it was very helpful; it covered what I missed in class. It's also very accessible. It's not like carrying a book around."

Students can access the videos from their laptops, iPads and smart-phones. Another student agreed he found using the videos to be a positive experience. "They're shorter, and definitely more visual than using the book," said sophomore Luke Janik. "Going to class is more hands-on, because we get to do labs."

To truly Flip a classroom requires the creation of a great deal of online material, (such as tutorials), for students to assess; creating, finding and organizing these resources takes a huge amount of time. So this year I have been focused on creating tutorials on an iPad using an app called Doceri, (some examples of these can be found on my webpage under 'eyeNOTES', http://nashchemistry.wordpress.com/ii-ap-chemistry/keynote/chapter-10-gases/). The transition process of 'Flipping a Classroom" is one I call 'Tipping a Classroom', an endeavor that 12 faculty members and I will explore this spring in a WHS-U iPad class.

One of the goals of this class will be to familiarize teachers with the use of the iPad, first as an interactive presentation tool for the classroom and then expand upon that knowledge to create a web presence for teachers to store digital lessons, tutorials, and educational materials for students to access online. Once teachers begin to incorporate digital teaching tools into their classrooms via the internet, a whole new means of gauging student success becomes available to the teacher. One of the grand aspirations of the Common Core Curriculum is to revolutionize the way we assess students. Called, 'Ubiquitous Assessment' by some, technology can be used in conjunction with the internet to provide a means of tracking the educational process of students from kindergarten through college.

For example, the number of times a student assesses a teacher webpage can be tracked including the amount of time he or she spends on the site can be observed. The number of times, for example, a student attempts to solve a problem can be measured as well as the variety of techniques he or she uses can be seen, potentially providing powerful insights into previously difficult qualities to measure such as creativity, persistence, and ability to confront and respond to failure.

A few colleges and universities have begun to develop and utilize this new territory of student learning in tandem with assessment. Most notably perhaps is the 'Open Learning Initiative' developed at Carnegie Mellon, (a short, 7min., informational video is at, http://oli.cmu.edu.), which demonstrates that such pie in the sky aspirations may be closer to reality than we think.

Contributed by Eric Nash, Chemistry Teacher at
Winnacunnet High School

Technology in Schools: Blended Learning

What is blended learning and how is it being used in SAU21 schools? Blended learning has been around for decades and it's growing in all of our schools. Blended teaching and learning involves the use of multimedia with instructional strategies in a powerful combination that can include real-time interactions for both students and teachers. It is face-to-face learning along with technology-based learning. According to U.S. Secretary of Education Arne Duncan, "The factory model of education is the wrong model for the 21st century. Today, our schools must prepare all students for college and careers and to do far more to personalize instruction and employ the smart use of technology".

Using technology to personalize instruction for our students assists with moving the one-teacher classroom to a student-centered classroom. It allows for immediate feedback to students whereas the teacher cannot be with each student personally every minute of the class. Technology provides the tools for students to explore, collaborate with others near and far, and continue to learn beyond the school day. The creation of personalized learning environments was listed as a top priority in the US Dept. of Education's *Race to the Top* competitions. The International Association for K-12 Online Learning describes Blended Learning as:
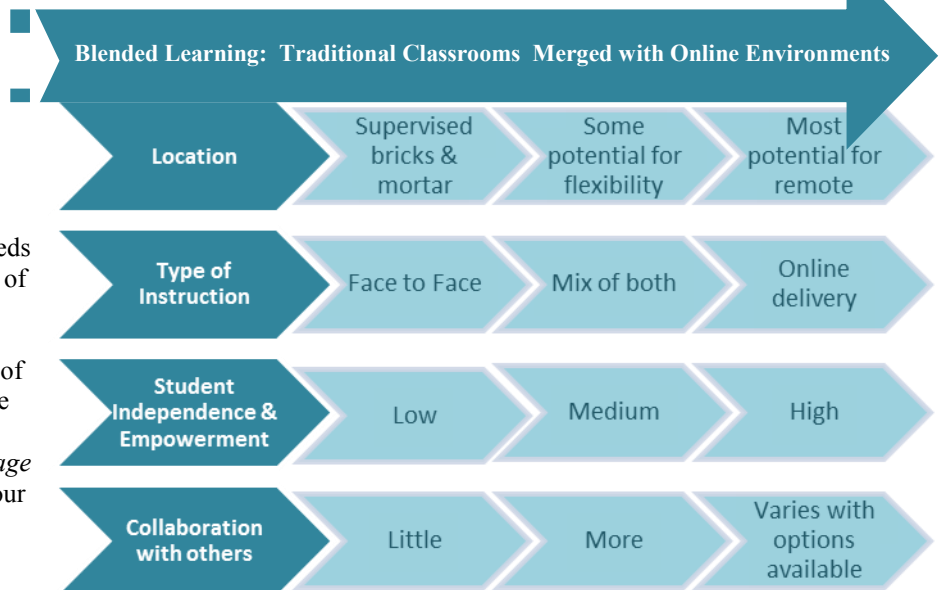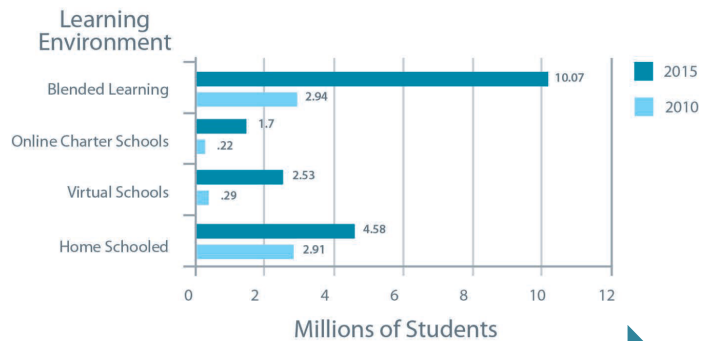
- A shift from lecture to student-centered instruction in which students become active and interactive learners
- Increases interaction between student-instructor student-student, student-content and student-outside resources
- Integrated formative and summative assessment mechanisms for both students and instructor

The Gates Foundation suggests that Blended Learning provides:

- Access to high quality relevant and engaging content in a variety of forms
- More flexible class time and structure
- Ability to adapt to the learning needs of students
- Student access to multiple sources of instruction and assessment, and diagnostic tools to help direct the pace and format of their learning
- Capability for teachers to tailor their instruction and guidance to ensure progress and mastery for all students, with a focus on those who have historically been underserved

Online learning opportunities are growing every year and we face the challenge of meeting the needs of our students and teachers everyday. This issue of Curriculum Matters is purposely focused on the developing uses of technology in our schools and some of the issues we face to best meet the needs of our students. The following charts demonstrate the use of online learning in education and where and how it is predicted to grow. *It takes a Whole Village to Raise a Child* and our work together for all of our children is the most important work there is!

Growth of Online Learning in PK-12 US Students

Learning Environment

Learning Environment	2015	2010
Blended Learning	10.07	2.94
Online Charter Schools	1.7	.22
Virtual Schools	2.53	.29
Home Schooled	4.58	2.91

Millions of Students

Blended Learning: Traditional Classrooms Merged with Online Environments

Location	Supervised bricks & mortar	Some potential for flexibility	Most potential for remote
Type of Instruction	Face to Face	Mix of both	Online delivery
Student Independence & Empowerment	Low	Medium	High
Collaboration with others	Little	More	Varies with options available

Technology Directors Speak!

This Technology-rich issue of Curriculum Matters motivated an outreach to the unsung heroes of our schools ~ our Technology Directors and support staff! They are the man or woman behind the curtain that provide support for our technology use. Our teachers realize that our Tech Departments have a lot to keep up with as we advance our use for student learning. We hope you'll appreciate hearing about the technology challenges they face on a daily basis and their ideas in helping us to get better at what we do.

Planning for a robust wireless network is a fiscal challenge. It is vital for technology decision-makers to attend both national and regional conferences to begin to grasp the next potential wave of technology and augment the planning process to include these new innovations. "You never want to be the first or last to incorporate the new technology" according to Brad Greg at North Hampton. "We need to decipher what will work for our students and attempt to plan accordingly. We need to keep our heads up and continually look for a better way to incorporate new technologies in a fiscally conservative manner." Overall, our schools have managed to develop technology-rich environments over time, and the community has been supportive of the technology needs. As teachers and students blend technology in their learning, our schools are struggling to address the problem of band-width so one user doesn't prevent another's access. This is a growing problem that is compounded by aged hardwired and wireless systems. We want students to have technology and process skills that will allow them to succeed now and in their future endeavors. Fluctuating financial resources in our schools make it difficult to develop long-range strategies for implementation of "future technologies" that would repair our aged systems.

Providing Student Access: Having enough (current) technology accessible to fit the requests and needs of our classrooms is a continual process. With 3-5 workstations per classroom and 80+ notebooks (in one of our schools), students still outnumber devices roughly 2-to-1. We also face the problem of students' access to technology at home. As technology becomes more integrated into the curriculum, it will be a disadvantage to those who cannot access online material at home. Our curriculum practices have to provide support for all students.

Additionally, we must remain open and reflective when discussing the "various platforms" in the mainstream and those currently being developed. Our directors do believe that you "get what you pay for"… one school reports that the Apple OS and products have outlasted our PC-based products by several years. "In our K-8 school, it simply works better for us. The added software on these machines is a real plus. Although the initial cost of desktop or laptop PCs is lower than desktop Macs or laptops, the cost to maintain PCs over a 3-year period is much higher. The upkeep and maintenance of Apple products has been much quicker, easier, and cost-effective than PC. Two of the five SAU21 school districts are primarily Apple based.

As far as laptops vs. desktops go, obviously the advantage to have a laptop is the portability. One advantage of iPads over other tablets is ease of use. In comparison to a desktop computer, iPads have a smaller screen size and a screen-based keyboard, which can be an issue for the needs of some students (solved with external keyboard). Some of our schools have a variety of different devices that were purchased over time and do their best to support them through the network and classroom use. Zach Lamare at Lincoln Akerman comments, "when looking at devices on different platforms a few things need to be considered – 1) Is there a plan for how the device(s) will be used? 2) How will staff/students be trained for their use? 3) Will the Tech support staff be trained to maintain, manage, support these devices? A lot of people go out and purchase the latest and greatest products (hardware and software), and later stop and think "Wait, how am I going to use this?"

**Will iPads or tablets become a viable alternative to a laptop or desktop?**
We believe that the answer is slowly becoming a hesitant yes. As of now, students have managed (and backed up) folders that can be accessed from any machine in the school building. The iPads cannot do this at this time. The possible solution will eventually be cloud storage and computing. With most students under the age of 13, cloud storage is still problematic at this time. The answer in time might well be a 1-1 solution with an inexpensive tool and a more sophisticated wireless network.

Tablet technology can and will become customized to the user in a 1-1 environment. In the future students will use these devices in all grades to facilitate customized learning. Students, in part, will be able to direct their own learning more easily, due to the myriad and access of online resources. Textbooks with static, interpreted information will give way to multiple information sources that require students to synthesize and interpret. These higher order skills are required by the Common Core State Standards currently being infused into our curricula.

How do you maintain it all?
Schools have developed different systems depending upon their sizes and experience. Some have developed intranet solutions for support and maintenance where teachers, staff and administration can report a problem or get scheduled service through the local area network. At others, teachers send an email, make a phone call, or put a note in the Technology support mailbox. "Because we have been very proactive in updating the equipment and software, the need for repairs has been minimized. Repairs to equipment are done immediately upon notification in order to minimize down-time for teachers and students. If the cost of repairs for defective equipment exceeds the cost of replacement, the decision is replacement," according to Michael Porobuno at the Barnard School. Many schools have also set life limits for hardware; for example, a laptop that is 6 years old that requires a motherboard would be recycled or used for parts instead of repaired.

The above text was collated from the responses of three SAU21 schools' tech directors, although the concerns shared are mirrored in our other schools. Please read the other articles in this issue to learn about the many ways teachers and more importantly our students are using technology in their learning. We all know technology changes are short-term investments, but when you consider the number of users and the hours of their use, we would bet our lunch money that the *investment:use ratio* is better than that of the device you are currently using to read this! *Learn more about the National standards for Technology in Learning see: http://www.iste.org/standards*
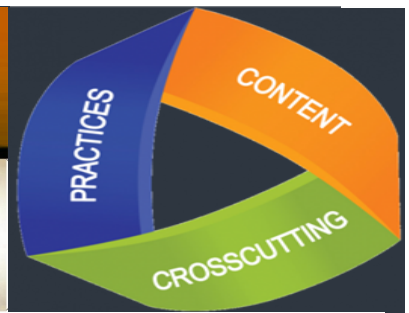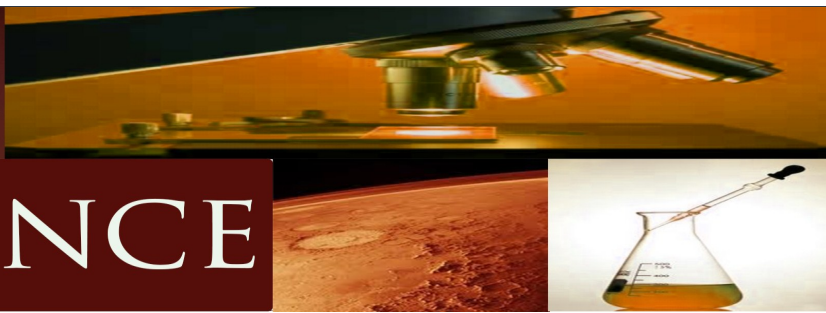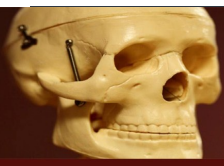
SCIENCE

The **Next Generation Science Standards** underwent a final review in January by experts and practitioners. SAU21 **science teachers** have been involved in the process and have been working on curriculum revisions to meet the new emphasis on *students learning science by doing science!* The final standard documents will be released in March, 2013. These standards offer National benchmarks for science literacy and increased expectations for student learning in science and engineering. Our NH Science Framework focuses on three content strands: Earth/Space, Life, and Physical Science with the Inquiry skills in a separate section with other unifying concepts. These concepts were seen by many as secondary to content knowledge.

The Next Generation Science Standards focuses on three areas of equal emphasis: Content, Practices and Cross-Cutting Concepts.

- **Content** includes the disciplinary cores as mentioned above but adds engineering, technology and applications of science.
- **Cross-Cutting Concepts** include important concepts for all areas of science: Patterns, similarity, and diversity; Cause and effect; Scale, proportion and quantity; Systems and system models; Energy and matter; Structure and function; Stability and change.
- **Practices** include inquiry and design principles. "Although engineering design is similar to scientific inquiry, there are significant differences. For example, scientific inquiry involves the formulation of a question that can be answered through investigation, while engineering design involves the formulation of a problem that can be solved through design."[1]

Overall, the new science standards encourage a thoughtful emphasis on content and skills that assist critical thinking, high impact knowledge, quantitation, and problem solving skills that support the Common Core State Standards. Students are expected to be able to design experiments and choose the best methods and tools to problem solve. This increasing emphasis on student ownership of science as a practice will drive curriculum to include more laboratory work as well as collaboration with peers. Our Science Vertical Team has worked on inquiry practices over the last year and a half with a focus on sharing their most successful practices. Projects, experimental design, and data analysis skills have been shared along with experiences that help students generate a healthy skepticism in their learning. Asking questions and designing investigations that generate results that inform solutions is at the heart of inquiry practices.

In terms of technology, our science teachers utilize an incredible range of multimedia sites and software that help students to understand relationships and view their world with an enhanced scientific mind. Students use electronic graphic organizers to help them observe and compare systems. Inspiration software is also used in schools to assist mapping relationships involving physical, life and earth/space concepts. Through the K-12 experience students grow in their use of electronic sensors as tools for scientific exploration. These sensors (i.e. thermistors, pH meters, light meters, photo gates, motion detectors, etc.) assist students in going beyond the realm of human perception to measure and record data at a precision level that would be difficult to obtain with indicator papers, handheld rulers or stop watches. Supported by laptop computers, these technological tools expedite data collection, so more time can be devoted to experimental design, analysis of results, and conclusions. As good research usually raises additional questions, access to empowered learning with modern tools helps our students to take their science learning into the future. For more info... see [1]**http://www.nextgenscience.org**.

Learning Science
by Doing Science!
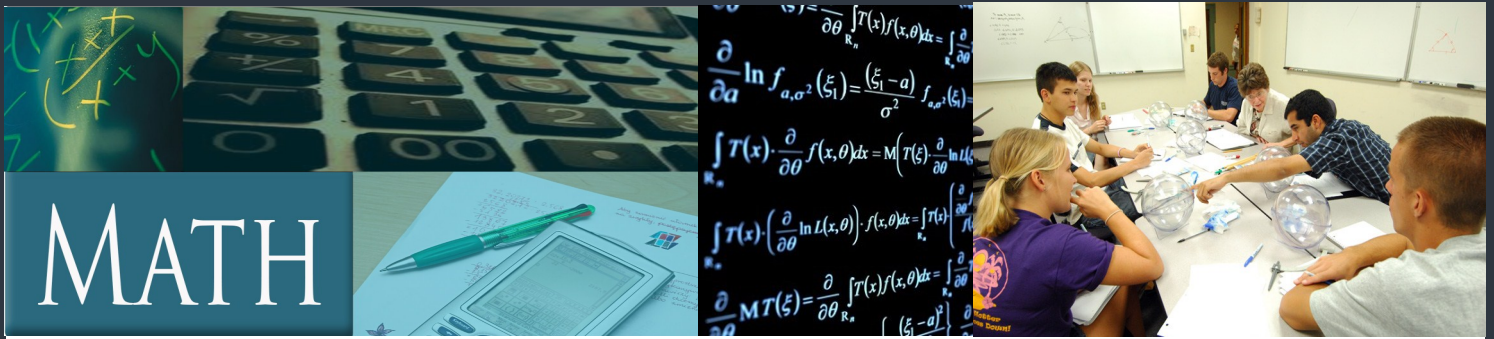
MATH

The Mathematics Vertical Team is working on a rubric to use within Performance Pathways that would assist in establishing clear and common expectations between schools, and help to document a student's growth over time using Common Core State Standards. The rubric will be piloted with a few students from each sending school to inform our discussions about the instrument's use and the criteria by which we judge growth in mathematics. Performance Pathways is an online secure system maintained by the state of New Hampshire that provides a conduit of information as students move from grade level to grade level and between schools. This online tool allows teachers the opportunity to view the past NECAP, NWEA, and other historical assessments of their students that have been uploaded by schools. This information can help teachers to understand the challenges of their students and help them to personalize interventions that can help students to grow in their learning.

As a vertical team we also sought opportunities to bring students together to do math! We are going to plan a day to use "24" which is a math game that uses basic operations and order of operations to get to the number 24. We are currently working on the details of the day, but tentatively scheduled it for the end of May, 2013. The goal is to bring students together to do math and have a common shared experience across the SAU. We are looking forward to involving our 8th graders in math while they also get to know some fellow class-mates in the other districts that will also go to Winnacunnet High School.

We expect the Common Core Standards to be challenging and to this end look to develop the teaching and communication tools necessary to improve our students' learning and skills with online assessment strategies. Successful activities being shared by team members include websites such as Math Illuminations (http://illuminations.nctm.org/), the CCSS Toolbox (http://www.ccsstoolbox.com/parcc/PARCCPrototype_main.html) and the Smarter Balanced Assessment Consortium (http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm).

Professional Learning

This winter, the work of the SAU 21 Professional Learning Committee (PLC) has focused on our continuing efforts to modernize Professional Learning and foster closer collaboration between the SAU 21 Schools. The staff has continued to train and grow in the use of My Learning Plan (MLP) and we have received much positive feedback on the changes it is bringing across the district. Additionally, the District Catalogue and Calendar features of MLP have helped to grow cross-district Professional Learning collaboration opportunities. All these efforts support the SAU 21 goal of improving student learning and achievement.

Team Rooms are another feature in MLP that help foster teacher collaboration on curriculum and student learning. These rooms allow teachers to pose questions, share ideas and files and engage in ongoing online conversations without all of the logistics that face-to-face meetings require. The Team Rooms will be particularly invaluable as SAU 21 Educators work to understand and implement the new Common Core Standards.

As we move forward this spring, and towards the rewrite of the Professional Learning Master Plan for next year, we will be looking at ways of supporting teachers as they reflect on various Professional Learning activities. This will include training on writing S.M.A.R.T Goals (**S**pecific, **M**easurable, **A**ttainable, **R**elevant, **T**imely) to improve student achievement and success, as these types of goals clarify exactly what growth is targeted and the measures used to determine if the goal is achieved.

The members of the SAU 21 PLC are Daniel Singer, Chair of the Committee, from North Hampton, Anne-Marie Grigus, Seabrook Elementary, Denise Morrill, Seabrook Middle School, Stephanie Robinson, South Hampton, Amy Middleton, Hampton Falls, Jamie Marston and Karen Schweizer, Winnacunnet High School and finally Barbara Hopkins and Paula Cushman representing the SAU #21 Office. Staff should consult the MLP Calendar for upcoming Professional Learning activities and speak with their PLC reps if they are having any issues with their MLP portfolios.

Language Arts

The National Council of Teachers of English (NCTE) recognizes that "technology has increased the intensity and complexity of literate environments," and suggests that 21st century learners "possess a wide range of abilities and competencies… literacies (that) are multiple, dynamic, and malleable." NCTE identifies skills our students need to develop to be successful 21st century learners:

Develop proficiency and fluency with the tools of technology
Build intentional cross-cultural connections and relationships with others
Design and share information for global communities that have a variety of purposes
Manage, analyze, and synthesize multiple streams of simultaneously presented information
Create, critique, analyze, and evaluate multimedia texts
Attend to the ethical responsibilities required by complex environments

The literacy demands of the 21st century inform the ways that teachers both instruct and assess these learners. In SAU 21, ELA teachers have begun to address the needs of these 21st century learners in the ways they use technology to instruct, assess and create information. In turn, students are expected to do the same and use many technology tools to create meaning, demonstrate understanding, collaborate and communicate with their peers, teachers and the larger community.

Throughout the SAU technology is utilized in many different ways in the Language Arts classrooms. In Seabrook, for example, students often create Prezis, Animotos, Wordles, and PowerPoints, for reports. Classrooms are equipped with SmartBoards that are used for interactive class work and videos on the background of current study topics and units. Students use the computer lab and common areas outfitted with computers to support writing and researching.

In North Hampton, 8th grade students have access to a laptop cart, which enables teachers and students to integrate technology into many aspects of teaching and learning. Students document their learning throughout the year and across disciplines while building a digital portfolio, research on their inquiry projects, and the application of knowledge and skill during the writing process. Teachers use technology for instruction, enrichment, and a variety of formative and summative assessments of content knowledge and skill. Each trimester in Language Arts, students use the laptops to record a prepared and practiced read aloud of a piece of their own writing and of an author they admire with an explanation of why they chose both of these pieces to highlight. Prompts include noticing by comparing and contrasting, writing style, word choice, figurative language, genre, technique, sentence structure, theme, or any other personal connection. This is a chance for students to read as writers and write as readers, while feeling connected to authors that inspire them. They use our reading workshop time and a quiet space to independently record these pieces and then they put them in a digital drop box for the teacher to listen to. The teacher then can use these recordings as ways to assess a student's reading fluency, text complexity, comprehension and growth over time. They can also talk about what the teacher and student notice in their bi-weekly reading conferences. The students then put these in their digital portfolios and at the end of the year they listen to them to observe and record personal growth as a reader and writer over time.

In South Hampton, middle school students integrate technology into many aspects of their Language Arts experience. Students use Google Drive for writing, and share documents with classmates and teachers for feedback and assessment. In 7th and 8th grade, students create individual blogs to showcase their work and communicate with their peers. As they create their blog using Blogger, they learn how to design a blog, create a post, add widgets and links, insert images, upload videos, adjust HTML code, comment appropriately to other blog posts, and use technology responsibly. Students write Readers Response Blog posts weekly on their independent reading and read and comment to a peer's letter monthly. Students set up a virtual bookshelf of their reading books on Shelfari and post that to their blog as well, establishing themselves within a community of readers. Students use iPads to research and create surveys to collect data as they write persuasive letters. They learn about productivity apps as they try out Evernote, and LiveBinder. Probably the most popular technology project this year at Barnard School was creating Digital Book Trailers using iMovie. Students identified a central theme or conflict on which to focus their book trailer. Choosing images, music and text to powerfully dramatize their book, they crafted two minute book trailers to hook readers. They posted their completed trailers on their blogs.

Technology is used to both assess and provide feedback. Online grading portals allow students and parents to review performance. Google Drive comments allow teachers and peers to give immediate feedback on writing. Lino-it, an on-line sticky note bulletin board, also gives students an easy and fun way to provide feedback. The comment section of student blogs allows students to talk about reading. Shared LIVEBinders and Evernote enable teachers to add to student resources as they research topics.

The continual use of technology allows teachers and students to become more comfortable with these essential 21st century tools. While students are adept consumers of social media, their knowledge does not always extend to using technology to create meaning, demonstrate understanding, collaborate and communicate with their peers, teachers and the larger community. It is our job as 21st century teachers to help guide them in the appropriate use of these tools and show them the ways they can make them deeper thinkers and life-long learners. Teachers in our SAU are working towards meeting NCTE charge to create "active, successful participants in this 21st century global society."

Contributed by Sara Casassa, Barnard School & ELA Vertical Team Member

Reading / literacy

Social Studies

What's Hot?

 "Close reading" or "reading closely" to comprehend deeply. This means that a few pieces of text are read and reread in real depth over a longer period of time and applied to a variety of contexts and other texts. Doing so uncovers layers of meaning to deepen comprehension and allow students to grow intellectually as they construct meaning for themselves. The focus is on a more analytic stance: with depth of understanding and intellectual work expected. *(See "Reading Closely to Comprehend Deeply" by Nancy Boyles.)*

What does instruction in close reading include?

Rich literary conversations/ text-centered discussions and thinking.

Explicit instruction, scaffolds, models, think-alouds and other support in how to read thoroughly and methodically. Summarizing text as it is read, asking oneself questions about text and answering those questions, visualizing, and monitoring comprehension, among others.

Focus on observing, comparing, analyzing, synthesizing and evaluating information from **multiple sources** (a fable and an article, a poem and an essay, so on).

Identifying the big picture, especially **themes** (the "lesson" is what the character learns; the "theme" is what we learn), as well as making summaries along the way.

Vocabulary knowledge of both depth and breadth to include figurative language, multi-meaning words, meaningful word parts, and domain-specific words and phrases.

Rereading of texts.

Reading with the eyes of a writer to analyze **the craft and structure of text**. This includes identifying informational, narrative, and persuasive text structures. It also includes literary elements such as point of view, tone and voice, effective use of words (including figurative language and linking words), sentence fluency, repetition, foreshadowing, showing-not telling, and more.

**Contributed by Carol Dugan, Reading Teacher
Barnard School, South Hampton**

The Social Studies Vertical Team met this year to analyze and prepare for the transition to common core standards. This work included writing the Common Core Standards for reading and writing in student-friendly language. Discussions focused on making the standards accessible and purposeful for both students and teachers.

The Social Studies Vertical Team is developing an effective method for students to self evaluate their progress related to Common Core Standards. We started by focusing on the writing standards involving creating and supporting an argument. We are working to create a document that allows students to identify growth, set goals, and inform teachers of areas for individualized instruction. The intention of the document is to be able to identify development of Common Core skills over time. The team will try different formats and ways of implementing this self-evaluation and discuss the effectiveness of the various formats.

Although the team is currently focused on the Common Core, they are utilizing many of the same types of tools used by Language Arts teachers and others. The global access to news, museums, and other cultural/governmental sites provides real time opportunities for students to access primary/secondary literature and integrate multimedia sources. Students use this information to distinguish among fact, opinion, and reasoned judgment in a text and draw their own conclusions. These support the Common Core State Standards for Literacy in History and Social Studies:

Integration of Knowledge and Ideas

CCSS.ELA-Literacy.RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

CCSS.ELA-Literacy.RH.6-8.8 Distinguish among fact, opinion, and reasoned judgment in a text.

CCSS.ELA-Literacy.RH.6-8.9 Analyze the relationship between a primary and secondary source on the same topic.
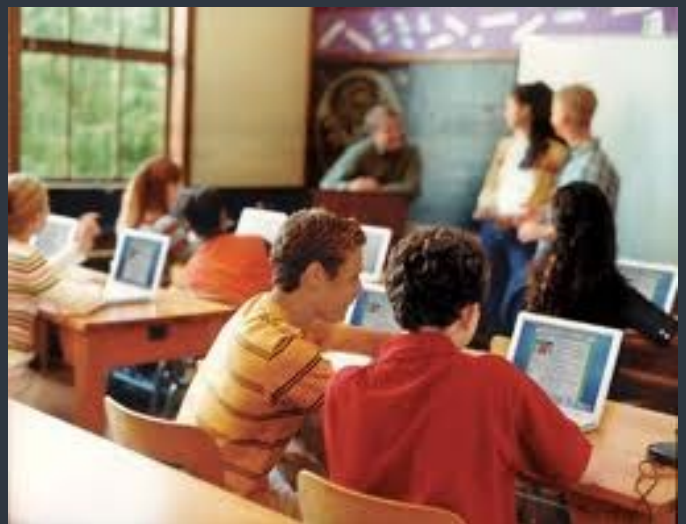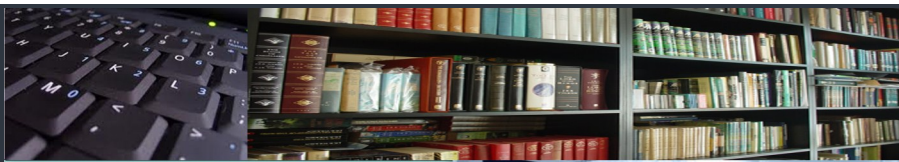
Library / Media

Two of the major topics of discussion at recent Vertical Team meetings have been eBooks and creating a common standard for the use of Novelist. These are both tools which are accessed via the Internet. All SAU21 schools have EBSCO and access to the Novelist product. Two levels of this product are available and have many uses for both students and teachers. The most common use is identifying what to read next in terms of student interests and reading abilities. The team decided that **"Students will be able to determine what they would like to read next using Novelist, by the end of 4th grade."** Inherent in this goal is the ability to verify the availability of the title they choose within their school library or their town library. Novelist is not customized to the collection of any one library and so suggested titles must be searched against the respective school database (Destiny). If a student is determined to reach beyond the community sources they can use the state library system and request an interlibrary loan (ILL) via their public library. Most libraries prefer to have a parent place this request, in case the book is lost, as someone responsible must pay for the book and the funds are then transferred to the library which loaned the book.

Novelist allows the student to type in the name of a book they have enjoyed and suggests up to nine (9) possible "read-a-likes." In addition, it lists the characteristics of the book they read and thereby allows the student to choose among them to tailor their search for a new title. This works particularly well when the suggested books are not immediately available in the school or public library. Certainly a library might also have the requested title available as an eBook and the student could then access it via their home computer or a reading device. Students can also gain access to Overdrive with their public library patron number and those books can be borrowed for 1-2 weeks and read or listened to on the student's own computer or device (Nook, Kindle, iPad, or an MP3 compatible player).

eBooks are a growing topic as various libraries have accessed this medium in different ways. At Seabrook Middle School, the books are available via Follett Book Shelf which is found on their Destiny site. At North Hampton School, there are currently 56 eBooks available and while four providers are represented, Linda Sherouse has been able to secure the same login and password for all of the books. More than half of these titles were a gift to the students of her school. All of the titles are listed in the NHS Destiny catalog and can be linked to from there or from the North Hampton eBoard.

Ideally all of these tools, eBooks and Novelist, are usable on any device which uses the Internet. However some eBooks require Flash, a program which is not available on iPads. One of the eBook companies has found a "work around" and now they are reaching out to other vendors to make their eBooks work on iPads.

While students' ability to use Novelist can easily be assessed, the use of an eBook is often a very private thing, as would be the reading of a print book. As eBook collections increase, student knowledge of this new tool will need to be refreshed, frequently.

Sue Harter at Seabrook Middle School has 7th graders creating book trailers for their favorite books. Students have the choice of using either Animoto or Photo Story. They will start by putting together a plan for their book trailer which will include an outline of characters, setting, and any objects they want to include. After selecting images they will create a storyboard for the images and text and then add music. Finished book trailers will be posted on the Media Center webpage and on Destiny Quest.

Clearly, technology is a tool today for all students and it is seen as a vital part of any Library Media Center. Just as a pencil with an eraser has always been a tool, students of the 21st century see computers as a seamless part of their toolbox for everyday living both in school and out of school.

Physical Education

Members of the Physical Education Vertical Team met this winter to discuss journaling and conferencing in PE classes. This is just one way the PE curriculum can assist in supporting the Common Core Standards. The team discussed how conferencing and journaling is working at the North Hampton School. In this school, student's conference with one of the PE teachers regarding their fitness test results, the rationale for the tests, and establish a SMART goal for the student to improve their results for the next performance period. Students will be participating in Fitness/Conditioning as part of their PE class rotations. This also occurs at Winnacunnet High School where students participate in fitness two days per week and skills three days a week during their Freshman PE class. The freshmen also keep journals in this class with the expectation that this is part of their PE grade. The team identified access to technology as a limiting factor to advance these systems. A vision for SAU21 students is to build the online charting software, such as the Fitnessgram (personalized system) as a mechanism for students to focus on their personal health and fitness throughout their school experience.

Seabrook Schools recently obtained funding for the Fitnessgram system through the Safe Routes to School grant. It will be used for students to track their personal fitness over time and allow for larger scale summary reporting of student activities such as walking or riding their bicycles to school. The team further discussed how it would be nice to be able to integrate technology and substantive writing into our PE classes using devices such as iPads. This would provide students access to maintain their fitness data in the Fitnessgram portfolio and generate the data charts that inform their goal setting and journaling. This integration of physical fitness, setting personal goals, and reflecting on performance (fitness) generates interest especially with those students who do not like to write or feel that writing is not a part of PE. Technology is a way to spark their interest and we will continue to work towards fitness with technology and Common Core integration as we advance our programs in the future.

For more information about the Fitnessgram please see http://www.fitnessgram.net/fitnessgram9/

KEEPING KIDS HEALTHY
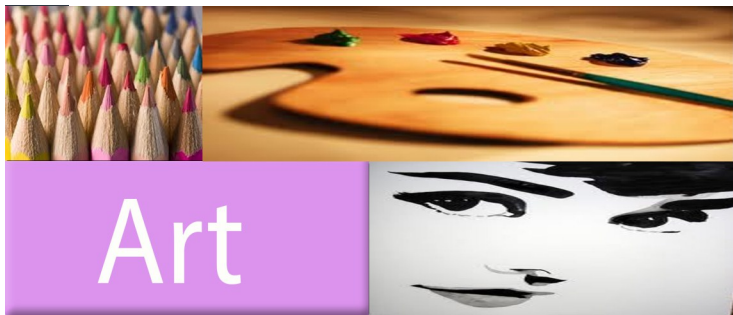
Art

The Art Vertical Team continues to finalize the new curriculum document which has been the convening task between our schools. When asked about the technology use, the most common response was with multi-media access and graphic design. At Winnacunnet, students use the computers to produce color references for paintings and pastel drawings. They use Photoshop to enhance color, sometimes using the students' own photos for landscapes/seascapes etc. We will enlarge/shrink when needed to format a size. Students will work directly from laptops at times to get better quality images and they can zoom in and out for details and to observe the color easier. Some of our kids put the images on iPads as well. We have PowerPoint's for instruction pulling up art historical references and demonstration information. Students make Power Points to teach each other. Online museums and artist websites now offer field experiences that would have been impossible before. Online tutorials through websites and YouTube bring students additional resources that can extend classroom learning experiences. We use technology to make charts, word process, calculate. We use tech. all the time everyday in every class in any manner of ways. Technology is a tool for us along with the traditional sighting and measuring techniques, T squares, cropping L's, easels etc. All constitute the tools students use to enhance observational skills and creative problem solving/ideation. That being said, the coaching of individual student skills is still at the heart of their teaching. Challenging students to interpret and create pushes for a symphonic expression of heart, mind and soul that stirs emotion and motivates response. If you have been to a recent Art Show of our students' work, you know exactly what we mean.

Health Education

The Health Vertical Team met in February to discuss the survey that they are sending out to all of the schools in the SAU regarding the Health curriculum and how it is being delivered in the schools. In 2011 both Health and PE teachers completed the Health Education and Physical Education Curriculum Analysis Tools as a measurement of our curriculum alignment to National Standards. This helped us to target areas in need of improvement. At that point we realized a need to expand the survey to include school nurses, guidance counselors, social studies teachers, and others who embed health education within the fabric of their respective areas. That survey is being readied for March, 2013.
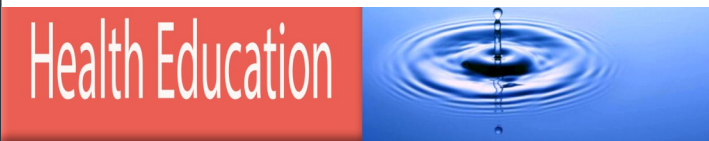
MUSIC

At Winnacunnet High School, students have been using SmartMusic for a few years. This program allows students to record themselves playing or singing an assigned music excerpt and receive immediate feedback on the computer screen. Correctly performed notes are green, while incorrect notes or rhythms are red, and un-attempted notes remain black. This enables and supports individual student progression towards mastery. When students are satisfied with their performance, they "submit" their recording to their teacher as evidence of their achievements. The teacher can then view a screenshot of the correct and incorrect notes while listening to an mp3 recording of the student's submission. The teacher also has the option of overriding the grade if he/she believes the computer grade is either too low or too high. While the teacher is entering a grade for the submitted example, he/she can also write comments to the student about their performance. The student will be able to read the comments the next time they log on to the program.

In addition to using SmartMusic as an individual assessment tool, students can also use the program as a practice aide. In this situation, the student can adjust numerous parameters of the excerpt, including the tempo, the starting and ending points, and whether their part is played by the computer as they are playing or if they will only hear an accompaniment. All of this aids the teacher in individualizing instruction for all students. It is also a great motivational tool, as it is much more fun to have an accompaniment to play/sing along with as students are practicing.

There are a few obstacles to achieving full implementation of the program. Since SmartMusic is internet based, it requires a reliable network with enough capacity. It is also challenging to find class time to offer all students an opportunity to record their assignments in a timely manner. In an ideal world, all students would have a home CD (currently available for $35) to be able to practice at home and even submit their assignments from their home computer. It would also be easier if all of the sending schools could incorporate SmartMusic into their instructional practices so that music students would already be familiar with using SmartMusic when they arrive at Winnacunnet. We realize that this is not feasible for some schools, primarily due to a lack of time in the schedule. Despite the obstacles, we have been very pleased with the student progress we have observed thanks to the SmartMusic software.

There are many other types of software and apps being used in our SAU21 K-8 schools. They include the SmartMusic software, Finale Notepad and on iPads apps: Garage Band, Do Re Memory, Rhythm Cat, Treble Cat, and Meet the Orchestra.

In this issue focused on technology use, there are a number of programs that support our students. There are assistive technologies that support students' communication needs such as Dragon Speaks, which has grown as a useful tool for children and adults of all abilities. Additionally, some of our speech and language teachers use the Clicker 6 Reading and Writing tool for students who have difficulty with language expression and learning. Software like this can be used in several different ways, as an educational tool for language development and early literacy or for written expression. It has become a valuable tool for students who need repetition as well as structured lessons. Teachers also use a variety of apps on the iPad for students who have speech and language needs. "We find them to be a solid adjunct to therapy lessons, and the technology piece keeps students interested and engaged." according to Director Karen Frisbie at the North Hampton School. Some favorites are Articulation which helps children with feedback on particular letter sounds, Picture the Sentence (sentence memory and formulation) and Feel Electric (learning about facial expressions and emotions).

Both special and regular education teachers also shared that iPad apps are used periodically for alphabet learning, letter and sound id and sight word recognition. Many of the apps are being used for math (i.e. FlashToPass) to reinforce number skills with Preschool and Kindergarten students. Apps are used in Preschool for language development, concept learning, early number concept and alphabet learning. The children are highly motivated when using apps on the iPads. The apps provide immediate feedback with both verbal and visual reinforcement for language and articulation practice. Scoot-Pad is another smart app that supports reading and math skills by adjusting to the students' needs as they respond. As students interact, the software gauges the target areas that are most difficult and repeats exercises to improve student exposure and ultimately their success. Proloquo is being used successfully for Applied Behavior Analysis (ABA) instruction in learning language to communicate.

Reading teachers are also using technology to enhance student interests and comprehension with reading. Nola Joyce of Lincoln Akerman shared the following regular uses of technology for student learning:

- Youtube videos - enhance comprehension of unfamiliar concepts encountered by students while reading informational text

- Google searches - locate more information for interesting facts encountered while reading, to expand knowledge

- Images searches to help visualization skills

- iPad apps for sight word practice, to provide another medium for sight word exposure

- Literacy-based iPad apps - to add sound, color, sense of fun and enjoyment of reading & learning
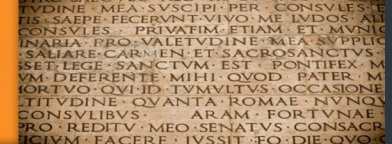
The SAU21 World Language teachers continue to work on the access to learning languages as students matriculate in our different schools. Most of our K-8 schools have just one World Language teacher and Spanish is the language that all of our K-8 students have varying access to. That exposure spans multiple grade levels in some schools but in others is confined to the upper levels of middle school. Teachers use technology to connect students to the language and culture. Digital resources give students direct access to the people of various countries and dialects of their regions. Observing the interactions of people help students to understand facial and body language attributes of the culture. Also free and lowcost Apps like MindSnacks, Duolingo, Busuu, and Babbel assist students with vocabulary and language practice.

At the high school, World Language teachers work with the K-8 teachers to assess student facility with language and recommend a starting level at the high school. Since several languages are available at the high school, the following brochure (designed by a Winnacunnet student) shares some of the considerations incoming students might make in choosing the language they would like to study. Some students choose more than one!

For more information on the Alignment of Foreign Language learning with Common Core, please see http://www.actfl.org/news/reports/alignment-the-national-standards-learning-languages-the-common-core-state-standards

Why Take A Language?

SPANISH
- Knowing Spanish will improve your employment opportunities
- A growing amount of the U.S. speaks Spanish
- It will enhance your travel experiences to Spanish speaking countries
- Spanish is a gateway to learning other languages
- Most of our continental neighbors speak Spanish

LATIN
- 60% of English vocabulary comes from Latin, it will help with SAT scores
- Learning Latin will improve your knowledge of Mythology
- Careers such as doctors and lawyers require extensive knowledge for Latin based vocabulary
- You should study Latin if you are interested in Ancient Rome

FRENCH
- French is spoken by 250 million people on 5 continents
- French is the second language of the internet
- France is the world's major tourist destination
- French is one of the two official languages at the Olympic Games
- French is the official language of Canada, a major trading partner of the United States

Assessment Scales: Are We Speaking the Same Language?
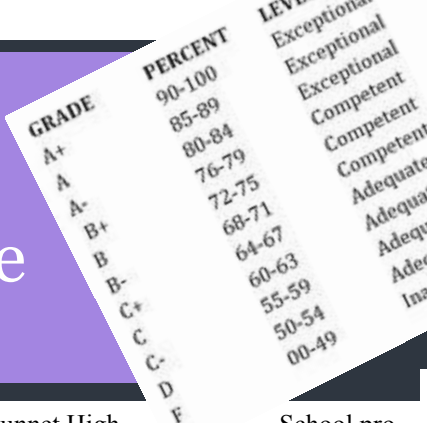
The embedded professional development at Winnacunnet High School provides opportunities for teachers to learn which improves their knowledge and skills as teachers and sometimes as a whole school initiative. In one project this past fall, English teacher, Shannon Davenport Clifford chose to research and compare the various assessment scales at use at the high school and certainly prolific across schools throughout the world. Why, you might ask? We can't hope to be effective educators unless we can clearly communicate learning expectations to our students…and also to each other. In order to do that, we need to speak the same language. But we don't. In fact, as she researched, she discovered that the idea of *mastery* was communicated using 8 different scales in the same school.

Ms. Clifford reported that "Some of the verbiage is similar, but some of it is actually contrary. *Mastery* in one class might be reported by using an "A." The same "*mastery*" in another class could be a 95%, or a "5" or even a "4" on a standardized test, or "exemplary" using a school-wide rubric. There are many reasons, some quite valid, for having so many assessment scales. However, as a school, we have the power to decide to use language that best correlates with New Hampshire's educational governing body."

5-Exemplary
This means the student is significantly above grade level in that graded category.

4- Advanced
The student is above grade level in that graded category.

3- Proficient
The student is doing work that is on grade level. Exactly what they should be doing.

2-Progressing
The student is doing work that is slightly below grade level in that graded category. Improvement is needed.

1-Unsatisfactory
The student is doing work that is significantly below grade level. Much improvement is needed in that area.

You should only be concerned if you see 2's and 1's on the report card.

To that effort, she concluded that the WHS rubrics for learning expectations be changed from a 1-5 scale to a 0-4 scale. We need to communicate as clearly as we can when it comes to student assessment. If we continue to use both scales, how will we know when a 5 means mastery or when a 4 does? How can we hope to internalize these values if they aren't consistent? And if teachers can't internalize their meanings, how can we expect students and their parents to do so? The other argument for this change is that mathematically, giving a student a 1 for *no evidence of mastery* can seriously skew a student's grade. Assigning the value of zero for *no evidence* better aligns with the rubric's intent. But on a 100% scale a zero can seriously change a students' achievement while the students' learning might actually be much higher. These discussions have been infused by other researchers across the country. According to tips offered by Dr. Robert Marzano's *Formative Assessment & Standards-Based Grading* (2010):

When tracking student progress using formative assessment, a 0 should not be used for a missing or incomplete assignment.
A score of 0 is never recorded in the gradebook if a student has missed an assessment or has not completed an assignment. Many assessment researchers and theorists have addressed this issue in some depth (see Reeves, 2004; Guskey & Bailey, 2001). Briefly, no score should be entered into a gradebook that is not an estimate of a student's knowledge status for a particular topic at a particular point in time.

At the classroom level, any discussion of assessment ultimately ends up in a discussion of grading. Not only are teachers responsible for evaluating a student's level of knowledge or skill at one point in time through classroom assessments, they are also responsible for translating all of the information from assessments into an overall evaluation of a student's performance over some fixed period of time (usually a quarter, trimester, or semester).This overall evaluation is in the form of some type of overall grade commonly referred to as an "omnibus grade." Unfortunately, grades add a whole new layer of error to the assessment process.

Marzano, R. (2010). *Formative Assessment & Standards-Based Grading*(p. 15 & 85). Bloomington, IN: Marzano Research Laboratory.

As with most research, Shannon came away from her research with many more questions than answers. "Here are a few: How does one assess a student's mastery of competencies using percentages? How can students hope to understand their own grades when reporting scales are so inconsistent and muddled? Are there really 101 different levels of mastery for each assignment? Can a teacher explain the difference between an essay that "earns" a 72% versus a 73%? (And shouldn't that teacher be able to if she is going to use those values?)."

Adapted from an article contributed by Shannon Davenport Clifford, English Teacher at Winnacunnet High School

Editor's Note: *This conversation continues to take place nationally, but it is through the dialogue of staff that our schools learn to resolve differences into agreed upon standards for our students. As a parent, teacher or business owner might reminisce about the traditional 100% scale used throughout their educational experience, today educators need to know more than a percentage. We look for ways to track where a student is today and where they need to grow for tomorrow. What might be high quality outcomes to one person could be mediocre to another. The use of examples, criteria, or standards of excellence help us all to understand the expectation goals and communicate the strategies that help our students to achieve them. That describes some of the valuable work our teachers share across SAU21 on a daily basis as we strive for excellence with all of our students.*