Seven teachers working in Oswego County classrooms made up the Entergy Team this year. Math, Science, and Technology (MST) is the focus of our work. Teachers connect career aspects to these curricular areas and make the experiences hands-on and "real-world." Professional development is also a priority in addition to student learning.

Entergy Corporation continues to be extremely supportive and collaborative each year to our project. Staff members from Entergy were active participants as well as observers in classrooms. They attend each activity with enthusiasm and leave with new experiences, the hope to return and to participate again, and some fun stories!   I am happy to note that we have received funding for our 9th year of work. Entergy's funding and participation has gone a long way to helping our teachers in their classrooms; much of which could not be accomplished without their generous support.

Each year I thank Dr. Marcia Burrell and Dr. Barbara Beyerbach for supporting me in Project SMART. I have been with them for "quite some time" and I continue to grow and expand my horizons through their guidance.   I look forward to a long relationship with them and with Project SMART and I again thank them for everything they have done for me!

Sincerely,

Sue Witmer

Each year we begin our year with our team members looking at what the needs are for the new students in their classrooms. They ask themselves these questions to start the process: What are these particular student's needs? What areas of curriculum do they lack knowledge? How would this/these problem(s) best be addressed? What is this particular group of students bringing to the table? The answers to those questions shape the activities, events, and field trips for their students for the school year. The team also contemplates his or her professional development as it is a vital role in their success in the classroom.

This year our work included the examination of the Common Core Learning Standards (CCLS) to improve student learning. The Entergy Team developed activities and units of study to directly tie into the CCLS. Our team participated in a workshop on this topic and received Lucy Calkin's book, Pathways to the Common Core.

There were many examples of collaboration at different levels in the projects this year:
- One of our team members tried to "get more of the building involved in utilizing the materials I was purchasing" and to build "a resource for teachers to use at multiple grade levels." He ended up with over 50 other students from other classes using his

materials and said the "collaboration between 4th and 5th grade students was nice to see."

- Teachers attended professional development sessions in Albany for further clarification on the CCLS and the shifts, the Technology Conference at SUNY Oswego, a College Board Pre-AP workshop, the ESRI International Educational GIS User's Conference in California, the National Science Teachers Association Conference in Texas, as well as other workshops and courses.
- Three of our team members worked together on an initiative with a SUNY Oswego professor and his Graduate Assistants. The focus was on integrating technology in the classroom and looking at student comprehension. The graduate students involved have written a paper on this work and hope it will be published.
- A middle school music teacher is teamed up with a professor on the SUNY Oswego campus. Their collaboration has resulted in field trips to campus as well as SUNY Oswego undergraduate students working with students at the middle school. The focus is on real-world application of music skills, such as recording and creating music, and making the connection to a college, college curricular programs, and the professional music recording industry.
- A member of this team was nominated by a parent for the Senator Patty Ritchie Excellence in Teaching Award for 2013 and was awarded $500.00 for classroom tools and technology.
- Most of our team members look forward to further collaborations outside of their school setting to secure additional certifications to enhance their teaching.

All of our team members ramped up the technology use in their classrooms this year. Students appear to respond to new ways of learning by way of technology and we certainly see the increase in use in everyday life in our society.

- One teacher reported that "the ability to organize information in "written form", specifically in multiple paragraphs, increased by 65%" after students used graphic organizers on iPads "to plan, and then apply, their thoughts in a logical sequence." He also reports a 21% increase in ORF on DIBELS.
- In an area 4th grade classroom, the teacher sees that her "students enjoy and look forward to learning new topics through the use of technology." "I see students that are eager to pick up an iPad and explore "and they "wanted to participate in group projects because they wanted the opportunity to use the iPad."
- This same teacher looked at STAR data and "found a median gain of 63 points in student growth after analyzing the Reading Growth Report."
- Another teacher on this team looked at STAR data as well and "found the median gain of 69 points in growth." She notes that "I notice that students become more engaged and increase their creativity in the classroom, which prepares my students with 21st century skills." She used iPads extensively in her 6th grade classroom and sees benefits of improved behavior and increased motivation and sees "a greater effort in the learning process." These thoughts were echoed by another elementary teacher.
- WeDo Lego kits were also used this year. Some of our team members connected with a SUNY Oswego professor who showed them how to program these kits using a computer. After looking at their classroom data, they found that "students who used

the iPads to create a creature using the Lego's had better comprehension" (as opposed to when they used pictorial Lego directions only).

- Teachers feel that using iPads in their classroom helps to "close the gap for those students that don't have iPads" or other technology in their homes. One teacher had a classroom where approximately 30% of her "students do not have internet access at home. The iPads allowed every student to put their hands on technology."
- After using the iPads for a writing project, the "average class score was a 3.4." A score of 3 means standards are met and 4 means there is a deeper understanding regarding the standards.
- In one classroom, the following is the Star Math data reported: "average grade level for the class in September was 2.6 in math. In June the average for the class was 4.8. The students showed 2.2 years of growth this year. All 21 students in the class showed growth. 14 students showed more than a full year's worth of growth. 6 students showed more than 2 years' worth of growth." The ELA data for this classroom also showed similar results.
- A teacher said "It was exciting to watch them learn and grow" and that they are "proud of their accomplishments" as learners after she integrated technology into her daily classroom routine and feels it helped her teach the CCLS.

Strides are made in classrooms without the use of technology as well.

- Scholastic's <u>Science World</u> magazine was used in an area high school science class to improve reading/writing skill. The analysis shows "an average increase of .81 points on a 4 point scale. This teacher writes that "The class average increase is notable since writing is a difficult exercise for many in these classes. This class is made up of students with learning difficulties who she characterizes as "reluctant writers."
- Graphing was looked at in this same classroom as it's an "essential skill and aligns with the new CCLS." She writes that the analysis showed "an average increase of 1.81 points on a 4 point scale across the class. This is significant!"
- Participation in citizen science programs were targeted in one classroom to make connections to the CCLS. The teacher in the this case feels that work in these programs make sense as "students get an opportunity to apply what they have learned, become exposed to large-scale research and get involved with projects that they can continue on with after Biology class and the school year is over." His class participated in World Water Monitoring Challenge (WWMC), the Cornell Lab of Ornithology eBird and Project FeederWatch.
- This teacher found that aligning to the CCLS was easier "when you have a mission upon which to rally" and his mission was citizen science. He found that "the communication component of the CCLS was definitely as much of a highlight to this project as learning about birds or water quality testing."
- This same teacher talks about one of his students who has "a hard time with school" and this student's response when taking care of a bird feeder. He and his student became engaged in content outside of the academic classroom and the teacher saw "a major positive impact on a student's attitudes and aptitudes." He tells of his students having to report back to the class on their observations and what they learned and says, "These are skills that go beyond the standard high school biology

curriculum" and "contribute to lifelong learning…" He feels "that for the first time in my 12-year teaching career students truly applied their understanding."

Many students give feedback to their teachers on a daily basis which helps teachers assess their lessons, projects, and events.

- After using Lego's in science lessons, comments included: "Can we do science first?" "Can we work with the Lego's during our recess?" "I love science."
- iPads are certainly popular and students gave many comments: "Using Raz Kids on the iPads helped me improve my reading. And now I know what to do to get a job." "iPads helped me this year because they helped me learn my math facts. Also, it made it so much easier to get research for my biography, animal, and career project."
- In music classes at an area middle school, there was mixed feedback at the end of a long project ranging from it was "exciting to make a song" to they "didn't like making their own song – too hard" to they would like to "have smaller projects " and more work with instruments" and "liked learning about protocols." While not all comments are positive, this type of feedback is still valuable to the teacher. This teacher writes that she is "left with questions" and that with the focus on technology and not so much about musical elements that she "would like to change this." Seeing and understanding the need to change or adapt lessons for the future is certainly important.
- This same teacher writes, "…I often walk a fine line between teaching musical elements and teaching technology. I need to find a way to get the students to internalize what they have learned with each new project."
- A high school biology teacher who focused on citizen science stated that he is impressed "that students want to find other programs in which they can make observation and then submit their findings."
- His students "agreed or agreed strongly that "I would participate in a citizen science program outside of class if I found one that interested me" 1043% more than non-participating students. The numbers say it all – 76.7% positive responses for participants and a lowly 8.0% for others. In other words for approximately every 10 participants that wanted to do more citizen science there was only one student that did not participate in class. I would have to say that this is quite the positive review and a strong (and clear) statement by students indicating that they want their education to include more of these style of instructional programs."
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Each teacher on this team continues to grow and learn and to excite and motivate their students. Additionally, great work continues between our team members, SUNY Oswego faculty and staff, Entergy Corporation, and other teachers, personnel, and administrators in the public school setting. One school principal was so taken with what the teacher was doing that she purchased 12 more Lego kits for the school and another administrator authorized the purchase of more math programs! This collaboration not only serves the individuals who are directly involved, but also serves the greater community by building long-term relationships.