**Science Annual Review Meeting Minutes**

**Tuesday, March 10, 2015**

 The Science Annual Review Meeting took place on Tuesday, March 10, 2015 in the GCMS Elementary School Library. The teachers reviewed their curriculum pacing, as well as NGSS implementation. Some teacher also discussed ideas and concerns that they had about their curriculum. Those in attendance were: Carol Bierman, Josh Carter, Cheryl Hasenauer, Dale Hoogstraat, Justin Kean, Jenae Ladage, Mary Laughery, Cindy Petersen, Sharon Pool, Adam Schafer, Mark Ward, Dustin White, and Tammy Zehr.

**Kindergarten- Mary Laughery:**

A portion of Kindergarten Science curriculum is done daily during our calendar time when weather and seasons are discussed. 50% of our Reading curriculum is non-fiction books about animals that go along with our letter of the week. Building blocks, Legos and geometry kits are used to learn about engineering. In the spring, we have units that we learn about plants and the things they need to grow. We discuss forces and motion throughout the year. We also use the monthly issues of Science Spin from Scholastic as a supplement.

**First Grade- Cindy Petersen:**

We currently have our standards aligned with cross-curricular activities. Habitats have been the focus this year, and a study of rainforest is coming, which is the biggest, time wise. We have tied them into our reading.  Whatever ones we can't match we our stories, we have designed activities to fill in those areas.  We have borrowed from the second grade science text as well to help meet those goals. Monthly Science Spin issues as well as the Weekly Readers are used as teaching supplements for science.

Again, it just seems like the days fly by and getting to everything has been a challenge more and more each year.

**Second Grade- Tammy Zehr:**

With the new NGSS standards there is a lot more experimentation, making predictions, observations, drawing conclusions, and problem solving going on in second grade. The students are excited about science and want to do more and more experiments. The pace is working out fine, it is not as hectic as before and we have more time to spend on the common core standards and as well as other areas of science. Teachers are finding it more enjoyable too.

We bring science into our Daily 5 reading through non-fiction book studies a lot, as well as the weekly Time for Kids Magazine. We fill out maps and write reports on science topics. We bring it into our daily discussions. The students are being taught to use the science book and other non-fiction books as a resource for information. With more emphasis on non-fiction reading, science gets a lot more attention than before. Students work on reading and writing common core standards through science by looking at text features and illustrations, slowing the pace of their reading down to comprehend, describing connections between scientific ideas and concepts, increasing vocabulary, identifying the main purpose of the text, and locating reasons to support text while gathering information.

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**Third Grade- Jenae Ladage:**

The third grade teaches science as a separate subject, and the grade has implemented our updated curriculum.  We are working on the experiment, hands-on portion of NGSS.   We are trying to incorporate the scientific method as much as possible in these activities.  The students have a notebook where they take notes, and record information about the scientific method. We are also using our science text for Common Core non-fiction reading strategies. Pacing is still a challenge with all of our other changes and demands on time in our day.

**Fourth Grade- Cheryl Hasenauer:**

Our progress with our NGSS standards has been slower than we expected. We have only completed the Life Science portion of our standards and are now addressing our health unit. From here we still have Earth Science and an extensive Physical Science curriculum to complete. The curriculum is now activity-based, and the textbook is used as a guide.

One of the reasons for our slow progress is that we share the time allotted with Social Studies, and we are trying to accomplish both each week. I think another problem is that this type of instruction requires additional time, both in setting up activities and allowing students time to work. Also, our focus at the elementary this year is the Daily Five, which has lessened our time/energies for the other curricular areas.

We do have plans to meet again this summer to revisit our NGSS plans and see where we can cut back on Social Studies. Dividing our health curriculum (body systems) with 5th grade would also help with the time element.

**Fifth Grade- Dustin White:**

At 5th grade, we currently cover six chapters in our Science book for the science curriculum, and one to meet our requirement for health. At this point we have made it through four science chapters and our health chapter. We will also add a unit at the end of the year to meet our Standard for Engineering that is not in our science book. Scholastic News is utilized during Daily5 nonfiction to supplement the science lessons.

Currently, we are probably a little behind schedule with out pacing. It will be tough to fit everything in during the final quarter, but we may make it.

The most difficult portion of implementing the standards is knowing just how much detail to go into, but also answering questions that the students may have. I am not going to not answer a question that comes up just because it is a little higher-level thinking and may be covered next year.

**Sixth Grade- Shawna Pondel:**

Looking over last year's science scope and sequence, I have added and removed a couple of standards that need to be taught, are already taught, or need just an intro to that particular standard.

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*Pondel, continued*

I do a lot with the Structure and Properties of Matter.  According to our scope and sequence, they are introduced to this second grade, then fifth grade, taught in-depth at sixth grade, and not revisited again until high school. This is one of my largest units in science.

At the sixth grade level, we are supposed to teach a lot of standards under Chemicals Reactions. As a team, we decided to have sixth grade introduce this standard by describing chemical reactions and their chemical and physical changes, while in seventh grade, they move to chemical formulas and equations.  We also changed PS1.B.3 to a seventh grade standard because it goes along with what Dale is teaching about chemical energy and storing energy. Again, it is showing it as being introduced in the fifth grade.

Forces and Interactions

I cover: Newton's Third Law of Motion, First Law, net force, speed/velocity, friction, Second Law, mass, velocity and acceleration.  Scope and Sequence says we introduce at kindergarten, third, and sixth grades, and not again until physics in high school.  PS2.B and PS3.A need to be removed on our scope and sequence outline for 6th grade, and PS3.B added to sixth grade.  PS3.C needs to be removed from sixth grade and added to seventh grade because it goes along with the kinetic energy that seventh grade teaches.

Structure, Function, and Information Processing

This is also one of the larger standards that I cover.  This covers the Cell Theory, cells of plants and animals, cell organelles, etc. Eighth grade continues this standard, but I do not believe it is done in seventh grade. (Another change)

Matter and Energy in Organisms and Ecosystems

I cover this standard at the sixth grade level.  Examples are: photosynthesis, respiration, populations of organisms, cytoplasm, mitochondria, and other topics.

Ecosystems: Interaction, Energy and Dynamics

Sixth grade discusses organisms and populations of organisms, and environmental interactions of both, compete, grow, reproduce, energy roles, water, carbon, oxygen and nitrogen cycles, food webs, consumers, decomposers, relationships between living and nonliving parts.

Earth's Place in the Universe
Sixth grade topics are as follows: earth-sun-moon and their patterns (lunar phases, eclipses and seasons, cycle of stars), scale properties of objects in the solar system, The Milky Way, solar system, which includes: the sun, planets, moons, asteroids all held by gravity, tides, earth's spin and tilt. We did models last year on the planets, this year we

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*Pondel, continued*

made planet brochures.  We wanted to give reasons why **you** should visit **our** planet safely.

Earth's Systems

We recently discussed and changed how this unit will be taught.  I will do an introduction of the water cycle (a little more than what fifth grade does, which I need to find out) and seventh grade will take over ESS2.C. I will continue to teach Weather and Climate, which includes: ocean conditions, ice, atmosphere, living things, weather patterns, ocean currents, and introduction of climate change.

Human Impacts on Earth

The following is covered in this section: water pollution, destroying natural habitats, causing extinction of species, the fact that as consumption of natural resources increase, so do the negative impacts on Earth, and again, climate change.

\*All of my standards are posted on my whiteboard each time they change.

\*\*I feel like I am getting through more this year, but with testing, it is going to put me behind again.

\*\*\*It's been nice meeting with Carol and Dale over the last couple of months.  We realized where we were teaching some standards twice so we were able to collaborate and move them around.

\*\*\*\*I have completed a pre/post test for the first semester and I also did a pre/post test for a chapter.  I compared scores and data analysis on how many percentage points they went up.

**Seventh Grade- Dale Hoogstraat:**

 This school year is the second year of implementing Next Generation Science Standards. Last year, we began making changes to what we teach at the different grade levels. I have divided up the three main topic areas: Physical Science, Life Science and Earth & Space Science, into smaller units such as Plants, Genetics, Energy etc.

 All three Middle School Science teachers met during the summer to discuss the curriculum and to insure all topics were being covered. We have recently met to continue this process and found that slight changes needed. We were seeing areas that were being duplicated and determined what level various topics should be stressed and which should be more of an introduction.

 In seventh grade, we have been utilizing all three of the textbooks available and supplementing with other material via the Internet and other sources. The textbooks are showing a lot of wear as they have been in use since 2006. Although they are nearly ten years old, much of the information is still pertinent and can be supplemented with outside resources as previously mentioned.

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*Hoogstraat, continued*

 A pretest and posttest was given on one unit. The results were as expected. Most of the students did very poorly on the pretest and the posttest was dramatically different, with the lowest grade being a C-.

 As of this time the seventh grade has covered units on Energy, Forces and Interaction, Plants, Genetics, and Water. We are currently studying the Geologic Time Scale/Fossils. We will be working on Plate Tectonics, Natural Disasters and Global Change in the future.

 Looking at the final nine-week period, the remainder of the required areas should be covered. The only concern is the amount of time needed to administer the upcoming tests later this month, and later in May.

**Eighth Grade- Carol Bierman:**

We are a little ahead of where we were last year. Currently, the eighth grade science class is working on a wetland debate. Students are encouraged to research their reasons and facts from a variety of credible sources, work together in teams and evaluate others presentations.

The middle school science teachers have met several times including before school started refining, coordinating and discussing as a group. We have had a lot of collaboration with the new standards, and it has been a big help.

This year we have tried to add more student work to portfolios in eighth grade. Pretests were given at the start of the year with an item analysis. Posttests will be given at the end of the year as well as the item analysis of those results. Results will be used to determine teaching practices for next year. I have posted the standards in the classroom this year. Mrs. Gard has been in three of the eighth grade science classes. She has been an excellent source for students needing extra help. Also she has contributed to class with outside sources. We are watching an eagle webcam in the extra minutes between classes and during the day. Mrs. Gard is a big help and does an excellent job.

Mr. Schafer shared some books with the eighth grade class this year, which was very helpful, and appreciated.

We should be able to finish all standards this year. A concern is the time it will take out for testing.

**High School- Josh Carter:**

I don't believe that the NGSS standards affect special education students any differently than they do general education students. I think they have had a positive impact on forcing all students to think and explore more in their learning rather than just remember certain points of information for a test. There is resistance to asking them to think critically, but hopefully that will improve, as the process is implemented in grades K-12. I feel like the concepts are more interconnected which helps students to build off of prior knowledge and helps them retain things better. Overall, I think the NGSS

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*Carter, continued*

standards & their DCI's have had positive impact on student learning. There has been a positive result of providing reteach and retest for the students.

**High School- Adam Schafer:**

Standards with the classes they are most covered in:

PS1 - Chemistry, Chemistry 2, Physical Science

* Chem 1- We start very slowly with standards, but hit quite a few at a low

 level towards the end.

* Chem II- Steady pace with high level of understanding for each, with a lot of labs included in the study.

PS2 - Physics I, Physics II, Physical Science

 The circuits unit has not been taught previously, due to lack of supplies. But they

 will be ordered this year, so that the standard can be covered during the 2015-2016

 school year.

PS3 - Chemistry 2, Physics 2, Physics 1, Chemistry

* Many students struggled with the more abstract ideas
* These are a work in progress; will to be able to implement more/more easily as we move towards a more performance-based learning classroom.

PS4- Physics 1, Physics 2, Chemistry 2

* The technology components are not implemented much, but will be easier to do once we have more application focus.

ESS1- Astronomy, Earth Science, Physics 1

* Any standards tied to Earth Science are out, because this year, Astronomy is being taught this year, as well.

ESS2- Astronomy, Earth Science, Physics 1

* Any standards tied to Earth Science are out because the course is not being taught.

ESS3 – Astronomy, Earth Science, Physics 1

* Any standards tied to Earth Science are not covered.

ETS1 - Physics 2, Physical Science

* Standards are fit in when possible, but rarely are they

 directly attacked.

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*Schafer, continued*

 Due to the science course rotation, Physics II is not being taught this year, but will take place next year. The course is application-based, and is built on activity.

So far, pacing is not much of a problem, and is getting better as we move towards a more unguided approach. I would say one of the main things that slow us down is the amount of reteaching in chemistry. Going over basic concepts is not out of the norm, but we have to go over very basic material for the students. I know it is covered and probably covered very well; however, retention of the material from previous classes may factor in.

One concern is that of retention like Mrs. Pondel discussed with Forces and Interactions, where concepts are taught in the sixth grade, and then not revisited again until Physics I. A lot of reteaching must occur in a case such as this. Also, the format for NGSS is application based.

**High School- Mark Ward:**

NGSS implementation is a work in progress.  It is akin to two steps forward one step back.  For the last few summers I have re-organized the topics and chapters to try and cover things more sequentially and this summer I will be making minor changes as usual.

The standards are good and some of my material fits the mold but there have been a lot of trial and error activities and some of those need to be replaced for next year.  Reteach/retest will be modified for next year. The reteaching certainly takes time, but it adds to retention.

My biggest concern is whether the students are getting challenged at the lower levels so I can build on that challenge when they enter high school. Right now I am finding the students still want cookie cutter type things and struggle to think outside the box or assimilate information. Eventually, as the students encounter inquiry-based learning at the earlier grade levels, they might get more comfortable with the process.

**High School- Elliott Hasselbring:**

Working with NGSS has been a good experience, however it also comes with its difficulties. I use a lot of MyCaert lessons or use lessons similar to what Mycaert has, and they are all aligned to NGSS.

I have been rearranging lessons and trying to put them in better order so that students can assimilate information better but, like Mark, I am also having problems with students thinking outside of the box and linking that information to previous information or similar information from another unit.

The standards themselves are good and with MyCaert I have been able to link everything to them, but the process of working with the kids to try and get the understanding down has allowed me to do new things. As with anything new there has been a learning curve with trial and error activities.