# Engineering by Design NEWS

February/March, 2014 Edition

Welcome to the fourth issue of EbD News, (Grades 3 and 4), Verona's Science, Technology, Engineering, Mathematics Elementary newsletter. The engineering students are learning about the principles of scale and proportion. **Scale** is defined as an increase or decrease in an object's size while **proportion** characterizes comparative relation to the object's changing size. Dimension changes by the same measure each time.

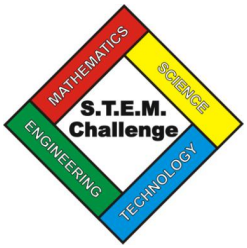
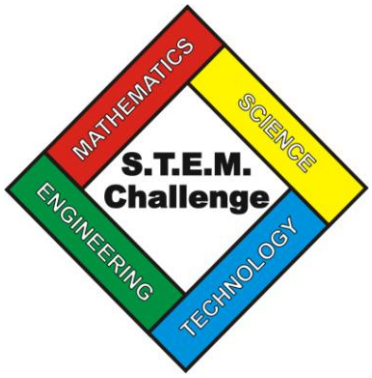
Our scholars are completing a number of activities in order to gain a working knowledge of this concept. Centimeter graph paper was suitable for the first activity. A 2cm x 4cm rectangle, increased in scale three times, would appear as 4cm x 8cm, 6cm x 12cm and 8cm x 16cm. Multiplying centimeters by an equivalent amount maintains the rectangle's proportional integrity. Following this exercise, the engineers are increasing a 2-D airplane on a large sheet of mural paper by four scales, (1:4). Precise measurement and preserving proportion as scale increases is essential. Finally, they will form collaborative teams in order to design a 3-D airplane utilizing multiple sheets of centimeter graph paper. The students will employ the (EDP) Engineering Design Process. EDP ensures the successful design of new and improved products through the Identification of the problem to be solved, brainstorming solutions, assessment and testing for possible design flaws, accounting for constraints and presenting the product for final evaluation.

In review, STEM is a well thought out approach that emphasizes student-centered, collaborative learning. Authentic experiences may promote meaningful engagement in real-world applications of learning. To be successful during EbD/STEM learning experiences, students need to be able to move beyond fact based cognitive tasks and gain a foundational understanding of the context which enables high-order thinking skills. Engineering design is primarily about problem solving and developing solutions.

In addition, elementary computer technology facilitators Mrs. Jackie Giannuario, Mrs. Jennifer Hogan and Mr. Nick Klose are offering online activities to our 3rd and 4th grade students that support the goals and objectives of our engineering program.

**EbD….** Problem **solving for the 21st century!**

Sincerely,

Dr. Larry "Doc" Siegel

Instructor, EbD/STEM