

Components of a Strong School-Wide Numeracy Plan

"...Quantitative literacy is not so much about mathematics and democracy as about the democratization of Mathematics." (ETS, Anthony Carnevale)

1. **Numeracy is important.** Numeracy or quantitative literacy should be a priority for all mathematics educators. The advances in science and technology require that all citizens in today's world to be able to understand and reason mathematically at a higher level than ever before in order to function economically, professionally and socially.
2. **What is numeracy?** Numeracy is not a curriculum but rather about pedagogical practices and should be taught across disciplines where the context is provided, which is so important for quantitative literacy. Mathematics instruction is about abstract non-contextual skills and procedures. "Numeracy is not so much about understanding abstract concepts as about applying elementary tools in sophisticated settings"(Steen, 2001, p. 108). The acquisition of mathematical skills and numeracy skills are linked complementary aspects but neither develops automatically alongside the other. Topics should be integrated whenever possible rather than being taught in isolation. It is essential to both that teachers focus on students understanding concepts rather than rote memorization of skills.
3. **Student engagement and collaboration around open ended contextual problems.** Students should be encouraged to discuss and analyze challenging problem solving situations and data. They should develop a sense of ease and proficiency with data and problem solving through experience, engaging open-ended problems or activities, and collaboration with peers. Developing numeracy skills should include developing "Habits of Mind" such as an increase in student perseverance, logical thinking, curiosity, and confidence.
4. **Relevancy:** To better engage students in numeracy, select problems, activities, and instruction that relate to the students frame of reference. "Tune in" to students lives and interests in order to find out what they find relevant and why, then design instruction so that it is more engaging to students. Struggling students are more motivated when they feel the activities are intrinsically interesting or beneficial to them.
5. **Use of RtI to address the needs of the struggling learner.** An RtI model of intervention should consist of targeted instruction based on assessment data. Students should be assessed frequently and the level of need for intervention determined. Materials used for intervention should be research based and delivered in the appropriate setting for the identified student need. Avoid providing students with strategies or tricks that allow them to bypass the mathematics and numeracy
6. **Technology component.** Numeracy programs should use technology as both an instructional tool and an instructional topic. Calculators should be used as a tool for developing skills in related to data analysis and representation, communication, critical thinking, and problem solving. Calculators are only as accurate as the user and in order for it to work properly the operator needs a deep understanding of concepts.

Components of a Strong School-Wide Numeracy Program

1. School-wide community understanding of what is quantitative literacy and recognition of how it is used in their class. Pg. 128 or 129 (poster)
 - a) This includes a parent education component
2. Students should develop
 - a) comfortableness and proficiency with quantitative data.
 - b) "Habits of Mind" related to numeracy.
 - c) Real-world, contextual problem-solving where they are not afraid of the unknowns.
3. Mathematics Teachers understand that:
 - a) Quantitative literacy should be a priority for all mathematics educators.
 - b) Should focus on having students understand concepts instead of rote memorizations and procedures.

As a school the following strategies need to be in place"

- a) Collaborative Leadership and School Capacity (including vertical teaming)
- b) Strategic Use of Assessment
- c) Professional Development to Support Numeracy
- d) Instructional Practices to Improve Student Achievement
- e) Intervention to Improve Student Achievement.