

Date: April 16, 2017

Re: FY 2017 Career Development Grant

Superintendent Dusek,

I would like to thank the school district, school board and community for supporting my attendance at the National Council of Teachers of Mathematics Research Precession and Annual Meeting in San Antonio, Texas. Since there were over 1500 sessions to choose from in 6 days, it was necessary to have some criteria to focus my professional development. I focused on the following themes when selecting sessions to attend: Procedural Fluency, Financial Literacy, and Intervention Strategies. I would like to highlight four major "a-ha's" from the conference:

- **Procedural Fluency Highlight:** Jennifer Bay-Williams from the University of Louisville (<http://louisville.edu/education/faculty/bay-williams/>) presented a workshop on the pathways to procedural fluency in mathematics. She recommends that mathematics educators incorporate the following "Must Do's" when developing procedural fluency in their students:
 1. Develop concepts and procedures iteratively using a "back and forth" method that develops concepts from procedures and vice versa;
 2. Avoid the "rush" to fluency by incorporating a variety of reasoning strategies;
 3. Focus on the "when" and "why" by helping students strategize steps and explain the reasoning in worked examples;
 4. Compare problem sets and solutions methods; and
 5. Make connections explicit by using visual representations and making connections among various representations.

- **Financial Literacy Highlight:** There were a number of sessions that highlighted the benefits of a course titled "financial algebra." This course is offered across the nation as a mathematics option either after geometry or advanced algebra, depending upon the high school and the level of rigor in the course. Most high schools offer this course as an algebra-rich (yet still very practical) alternative to traditional offerings like pre-calculus and trigonometry courses. After attending the sixth and final session on this topic, I also learned that most schools only award elective (not math) credit for personal finance and business mathematics courses! There were three resources that I found particularly useful in understanding how this course offering could support our students in high school and in life:
 - On the Money: Math Activities to Build Financial Literacy: [https://www.nctm.org/Store/Products/\(eBook\)-On-the-Money--High-School-Mathematics-Activities-to-Build-Financial-Literacy-\(PDF-Downloads\)/](https://www.nctm.org/Store/Products/(eBook)-On-the-Money--High-School-Mathematics-Activities-to-Build-Financial-Literacy-(PDF-Downloads)/)
 - Financial Algebra Sample Course Description: http://www.mpsnj.org/UserFiles/Servers/Server_99480/File/Academics/Curriculum/K12%20Curriculum%20for%20District%20Staff/K%2012%20Math/Financial%20Algebra.pdf
 - Sample Financial Algebra Text: <http://ngl.cengage.com/search/productOverview.do?N=201+4294918395&Ntk=>

- **Intervention Strategy Highlight:** Research has revealed that females tend to have lower spatial skills than males, and these skills have been linked to mathematics achievement. One presentation discussed spatial visualization research and evidence-based interventions that promote gender equity and success in mathematics. The workshop highlighted specific strategies and techniques that a mathematics educator could use in developing spatial visualization in students, especially for low performing female students.
- Finally, attending the NCTM annual conference and research precession afforded me the opportunity to connect with other professionals who are interested in how to identify and fairly assess teacher disposition. During the research precession, I facilitated a workshop on teacher disposition from a historical, theoretical and practical viewpoint and engaged participants in a discussion about the practical applications of Wilkerson and Lang's (2007) *Disposition Assessment Aligned with Teacher Standards (DAATS)* model to gauge secondary mathematics teachers' dispositions toward problem solving. Participants practiced generating and discussing the observable behaviors, attitudes, and practices that are consistent with a mathematics teacher exhibiting a positive (or negative) disposition toward problem solving within Krathwohl and Bloom's Affective Domain Taxonomy. I believe that a mathematics teacher's positive disposition toward problem solving and students' productive dispositions toward problem solving are significant, beneficial factors in learning mathematics. I hoped to instill this in the workshop participants, and initial feedback indicated that this indeed resulted!

As a result of this career development grant, I was afforded the opportunity to learn from and give back to the mathematics education community at the national level. I also walked away with a number of interesting and innovative learning activities that could be applied in the mathematics courses that I teach at Homer High School this year. Thank you again for the opportunity to examine, explore and discuss current issues in mathematics education!

Sincerely,



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