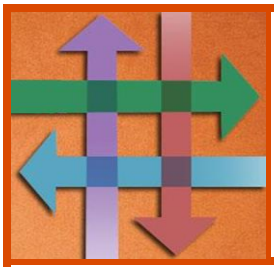

IT WORKED!

Teaching for Understanding Using Story Problem Routines in K-2 and Utilizing Counterexamples

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Many teachers believe that they are helping students by teaching them shortcuts, gimmicks, and keywords. It is important to teach students to understand a problem and not just apply a trick. Over the past two years we have worked to develop an understanding of problem types in the primary grades and utilize a story problem routine. Key words have plagued the math classrooms for decades. An over generalization of keywords causes misunderstanding and confusion for students. They are applying a gimmick that doesn't work 100% of the time.

Professional development continues to be delivered across the county and at individual schools that relates to developing teacher understanding about the importance of moving away from a keyword approach to teaching students how to conceptualize the problem. Teaching students to analyze a contextual problem, visualize the action in the problem, model, and apply a strategy requires an understanding of problem types by teachers. Teachers must be able to understand the language of a problem type, how to write them, and most importantly how to help kids model the problem in flexible ways.

Even though teachers in every school received professional development on this topic, there are still schools that have refused to let go of the key word approach to instruction related to addition and subtraction story problems. They tell kids things like "more" means to add, and other statements that are not always true. However, these teachers continue to get the same result; students are not successful with problems that are more complex in nature, have multiple steps, or involve more difficult language.

Recently, I was visiting a school and working with a team of second grade teachers. We were discussing how to teach students about addition and subtraction problem types and apply strategies to solve problems. The teachers quickly went to key words. I was shocked. I felt sure that we had moved passed this as a county.

I decided to ask them how well that approach had worked for them. As I suspected, they said that they had students who were struggling because of language issues and students who could not break down the problem. So, I decided that I needed to pull out the resources from the latest professional development and work through it with the teachers. The resources included information on problem types, a story problem routine bookmark, a story concept map, and problems that do not "fit" the keywords approach. As we worked through some of the sample problems the teachers began to understand how their approach had hindered their students' understanding. We then discussed the pedagogical approach of utilizing visualization, a noticing and wondering strategy, and a story frame to identify the action (change) and to model the problem. It was important to also make sure they had a clear understanding of the need to move from concrete to representational to symbolic and not jump too quickly to the symbolic representation in isolation.

Primary teachers understand, from a language arts point of view, how to decompose a story into its parts. Sometimes trying to apply language arts strategies to story problems is what teachers can understand. They get the idea of beginning, middle, and end. They also understand finding the action. Where teachers get hung up is in the language of the problem when it does not fit a typical pattern. They need to utilize visualization, hold discussions about the language of the problem and the situation, act out the problem, map it, and then model the problem concretely. These are more appropriate strategies to get kids talking about the language in the problem.

This means that these are the strategies that we need to focus on because it is important in developing student understanding and strengthening their problem solving skills. Using counterexamples to dispel the belief that gimmicks, key word, and tricks are successful strategies enables teachers to see that teaching a trick does not work and actually hinders students' ability to think flexibly and problem solve.

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