



Problem-Solving Approach to Teaching Math

At Renaissance Academy Charter School of the Arts we strive to educate the whole child. We do this through many approaches to learning, one being our Problem-Solving Math instruction. This approach to learning math presents the children with an opportunity to solve real-life math problems using their own reasoning. After the children work with the problem, they are encouraged to discuss their thinking. We believe that the Problem-Solving Math approach goes a long way in developing creative and critical thinkers. Which, in turn, prepares our children for the rigors of education and life. Furthermore, the children will develop problem solving skills that will transcend the math classroom. This is another cog in the Renaissance Academy machine to develop the whole child into a happy, healthy, and confident young person.

Steps in the problem-solving approach to teaching mathematics:

- Pose a realistic problem that can be solved using the math that is the objective for that particular lesson.
- Give students time in small groups (or individually) to solve the problem in whatever way makes sense to them.
 - While students are working, the teachers circulate the room, collecting data and making anecdotal notes.
 - As the teacher circulates it is important not to offer instruction, but rather ask students questions to help them think through how they are attempting to solve the problem and voice their thinking.
 - Some students will use the entire time solving the original problem. While other students will need to further challenge. Instruction should be differentiated accordingly.
 - As some groups or individuals find a solution, challenge them to find another way to solve the problem
 - As some groups or individuals find an alternative solution, challenge them to find as many ways as possible to solve the problem
- Bring the class together as a whole group to share some of the various ways of solving the problem.

- The teacher will identify students who can explain their solution to the class.
 - This step is natural differentiation as students get to discuss various methods that work for them and students who are struggling can hear and interact with these various solutions.
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- After a period of time in which students communicate their solutions, the teacher will then present *another* way of solving the problem. The new way (if it hasn't come from the students themselves) will make use of the mathematics that is intended to be taught during the lesson. This is the "direct instruction" phase of the lesson, allowing the teacher to explicitly show students a procedure, technique or algorithm.
 - At this point of the lesson, instruction continues based on the needs of the class. The teachers can begin to pull small groups, using the data collected during the student work time to provide those in need of additional support more explicit and scaffolded instruction. The rest of the students would engage in math tasks that support their current level of understanding. If the teachers feel as if the entire class could benefit from additional practice, a new word problem could be dispersed, beginning the process again.