Science at the Elementary Level

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Understanding science helps students appreciate and relate to the world around them.

Science Teaching Philosophy

I believe that:

- Teachers should value students natural curiosity and interests and build upon them
- Science learning and teaching should be based on student directed inquiry through active involvement in investigations and "hands on, minds on" activities
- Teachers should address misconceptions and explore student's prior knowledge
- Teachers should create experiences for their students that will create patterns and explanations in science learning
- Students will create explanations and knowledge through their inquiry and experimental learning
- Emphasis should be placed on the scientific process skills and the scientific method
- Science lessons should be engaging and allow the students to work collaboratively and cooperatively with each other

How I will teach Science…

-I will use the EPE chart and I-AIM model to plan science lessons in order to include inquiry skills.

-I will use "hands-on, minds-on" experiences in order to provide real life contexts for students.

-I will incorporate rubrics in order to assess my students in various forms, gaining rich information about their understanding of scientific concepts.

-I will guide and support students so they can reach the explain and apply portions of the I-AIM model.

-I will be sure that my activities are ones that enhance learning and think about them after I am clear about what I want students to learn and what they are going to be assessed on.

-I will incorporate group work that is organized (providing jobs for students) in order to promote both cooperative and collaborative learning.

Summary of Inquiry Project

•Issue: Students' inability to communicate with each other without going through me

•Inquiry Question: How can I help students build on each others' ideas and talk with each other during science talks instead of always being the director who is in the middle of the science talk responding to each student's comment?

•Intervention: Modeling was key in my students success. Speaking prompts were also important ("I agree / I disagree"). I provided students with many opportunities to pair and share. Encouraging more discussion and less recitation format throughout this intervention.

•Hypothesis: If I engage students in modeling and guided practice with regards to effectively talking with a partner, then students will be able to engage in independent practice allowing them to agree, disagree, and problem solve with a partner.

Inquiry Project Conclusions and Implications

•Data/Conclusions: Overall, the data showed that more students were able to communicate with their partners without so many clarifying questions and were able to apply talking prompts / techniques. I felt that students began to feel more comfortable with "pair and share" discussion and relied on me less and less as they continued to discuss.

•Implications: However, I feel like students definitely need more experience with the pair and share format of discussion. Students needed more opportunities to practice in order to really understand what good conversation sounds like within the pair and share setting. In the future, I feel this discussion format needs to be in place and begin in the beginning of the year and stretch through all content areas. It is crucial that students get enough experiences using the language presented to them within this inquiry project.

First Days of School…

Routines and Rules:

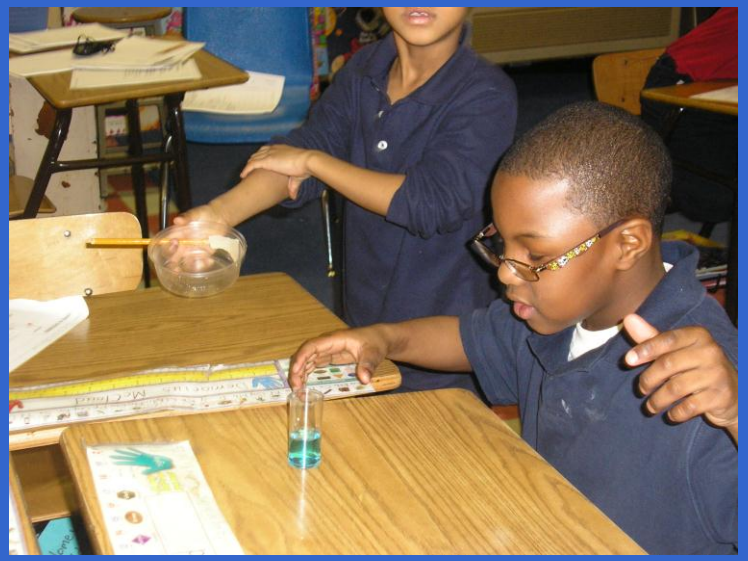
- Small group work will be a routine because this type of instructional format will be presented to students in the beginning of the year
- Assigning students jobs when they work will be a routine they will follow as well as a rule to complete their job in each task
- A rule will be to not fight over materials when working together or engaging in whole class experiments
- Science safety rules will be hung in the classroom
- Science will occur often (a rule for myself!)
- Students will be assessed using both formative and summative assessments (a rule for myself!)

Establishing a science learning community

- Understanding what my students bring to learning science (knowledge about scientific concepts, ways of interacting, cultural experiences, special needs)
- Having clear and well established relationships with my students, clear expectations, and norms in the beginning of the school year
- Getting to know my students and their conceptions they have in and about science, understanding the cultural resources students bring to science learning, and knowing what special needs they bring to learning science

Determining Students' Science Funds of Knowledge

- Careful observation in the classroom, especially during small group work and "free time"
- Engaging in classroom discussions where I will solicit stories, experiences, and ideas from my students
- Participating in community events to gain knowledge about my students
- Engaging students in interviews and conversations alone as well as with their families
- The goal is for me to begin early in order to try and understand students' family knowledge and experiences, the community surrounding them, popular culture, interactions with peers, and their talents and interests



Addressing Individual Student Science Learning Needs

- Differentiating content, process, and/or product for students depending on their learning needs
- Being sure that I consider students' readiness, interests, and learning profiles
- Varying levels of support (whole group, small group, pairs, individual)
- Multiple and varied resources are employed to appeal and support all students and their individual science learning needs

- Being aware of the pacing (additional repetition and guided practice may be needed for some)
- Allowing the assessments created to look different according to students' individual learning needs – ongoing assessments needed
- Grouping students in a way that will support their learning best and varying these groups (flexible grouping)

Looking Ahead…

After my two week unit where I was challenged to plan and teach an inquiry based model, I realized that this is the only way to really teach science effectively. I plan on continuing to challenge myself to create units using the I-AIM structure to enrich the learning of my students. I hope to continue in professional developments in order to better my science teaching in the future.