

Who is Victoria Hibbs?????

1) Any Questions?

2) Creating a safe place

- The most important first step with a student is making them feel that being with you is being in a safe place. They need to trust you to reveal their weaknesses. Patience is extremely important. Build rapport, be a partner. And using humor is very effective.
- Your approval cannot depend on their understanding the material. Your approval is a result of them being there, and asking all the questions they need to.
- It has to be OK for them to say they don't get it.
- Wait for them to answer questions....this can take a long time, several seconds. While you're waiting, think of a hint. If you feel they don't know, or they've said so, say "Would you like a hint?" and go through the process a second, sometimes a third time.
- Students should never allowed to call themselves or their errors "stupid" or "dumb" or anything like that. Instead, encourage them to use words like "careless" (if it's true) and make it safe for them to say "I don't know". That atmosphere of safety can be created by:
- If **you** honestly don't get something, like not understanding exactly what a teacher is asking, or (unbelievably) the math itself, it is really good, really a powerful thing to say so to the student. Always admit when you've made an error. This is a wonderful opportunity.
- Try to avoid saying "right, but ...". Don't be afraid to say "Well, no, that's incorrect." Say it with empathy, not at all critically. However, it is very valuable to understand a student's errors. Ask "How did you get that?" before telling them the right way. It will help you to understand how the student learns.
- Take responsibility for a student not getting your explanation.
 - Did I answer your question?
 - Did my explanation work for you?
 - Avoid "Do you understand?"
- Be sensitive to when they are still perplexed and say something like "I sense you still aren't happy/comfortable with this." Create the opening.
- Almost never say "this is easy". Try "I know you can get this". Acknowledge that the material is difficult. (Even though it probably isn't difficult for you...)

3) How Kids Seem to Learn, Helpful Tutoring Strategies

- **Do less showing, more having them do it.** (And I do know how difficult this is!!!)
- Most people learn math by having the experience of writing it, of writing out the correct solutions to problems, writing notes, etc. I always give the "speech" fairly soon after I begin to work with somebody: "Mathematics is a written language, with it's own grammatical structure and punctuation. If you can write it, read it and speak it correctly, it will often tell you what to do next."

- Algorithm vs. concept: Most math educators believe that explaining the concept is the essential first step to learning a topic. My experience has caused me to strongly believe the opposite. The algorithm, the written steps are key. Most often I find that students can understand the concept after they've had the experience of writing it out correctly. I often start by dictating an example as they write, symbol by symbol (I say "let me talk you through it"), and then let them try one or two. Often they still need a little help the second and third time, and by the fourth, they're doing it on their own. At this point, the concept is more easily understood.
- When you dictate steps, be super specific about correct symbols.
- It is very important to understand that there is a huge disconnect between understanding the teacher and being able to do the problem.
- Nodding of the head doesn't mean they understand. "I need to see you do it to make sure." or "Let's see if I've made it possible for you to do some problems." Address the difference between understanding and doing.
- Part of your job is to figure out many ways to explain. Analogies are helpful. Sometimes you need to go back to an easier version of an idea, and work forward. Questioning the student to try to get them to figure it out isn't usually the best way if they are confused. Many math teachers do this, it's not a good strategy. Just tell the student.
- Assumptions
 - Ex: Carbon with circle meaning with H (a teacher)
 - Ex: Percent decay Vs: decay factor, not explaining the difference (from a textbook!)
 - Ex: "reverse the process" I meant substitute into the other side of the formula, the student thought I meant trade the components of the two formulas. ($r_1+r_2 = -b/a$ and $r_1*r_2 = c/a$ became $r_1 + r_2 = c/a$, etc.)
- Sometimes a student will say "I just don't get anything", and you will need to tease out what the problem is. Try questions like "What's the first thing you don't get?" and "What's the first problem you can't do?"
- Self-correcting is a very effective learning strategy, and great for eliminating careless errors.
- Sometimes it's helpful to rule out the wrong thing "It might seem like this is right, but here's why it doesn't work." Using counter examples is helpful.
- Developmental differences
- Helping with memorization, how memory works.
- How memory can be disrupted.
- Recreational math.

4) More on "Math is a Written Language"

- Examples of correct punctuation:
 - Correct use of "=". Part of a problem doesn't equal the whole problem, equations don't equal each other.
 - Multiplication dot, decimal point.
 - Parentheses

- Details and structure of writing
 - De-emphasize mental math; doing it in your head is not a badge of honor, getting the right answer is more important and more likely if you write down the details.
 - Page layout, clean visual field
 - Writing on lines
 - Graph paper
 - Skipping lines!!!!
 - Enough room
- Read their work very carefully

Specifics

Adding/subtracting integers. Sometimes teachers and books are....deluded.
 What does "simplify" mean?
 Difference between an expression and an equation.
 Fraction bars.
 Division by zero.
 Point nine repeating.
 Math notebooks, organization.

Notes

Tutoring is not only about doing HW or test prep, it's about learning how to learn so that you never need a tutor again.
 Reading a math or science textbook is a different skill than reading a history text or a novel.
 Math anxiety.
 Keeping records on your students so you know what to do when they "have nothing to do".
 "Why do I have to learn this?"
 Dangers of "doing it your own way" "saying it in your own words".
 Leaving parts of problems behind
 Understanding wordy instructions: sometimes better to do problem with tutors help, then go back and read the instructions.
 Often a good idea to go back and re-read instructions after completion and during a problem