Math - fractions

D e v e l o p i n g M a t h e m a t i c s A p p r o a c h Toward Effective Learning A calling that offers the opportunity to mold so many young lives, that we call teaching. It is a mission that can sometimes be overwhelming. When teaching becomes a little challenging than usual, we turn to programs and perspectives that are intended for children with special needs.

Visual Learning. Everyone has a left brain and a right brain and we all use both sides. But most of us use one side more than the other, this is called hemispheric dominance. The left side of the brain processes linear information: science & analysis, language, reading, math & logic and writing (Sobanski, 2002, p. 3). The right side on the other hand processes holistic information: visual input, emotion, artistic & 3-D sense, imagination & creativity and music & rhythm (Sobanski, 2002, p. 3). It is known that 75% of what we learn is from the sense of sight (Sobanski, 2002, p. 2). Equivalent fractions taught with visual aids, combine image and logical reasoning to get both sides of the brain working at the same time. This facilitates effective learning. Jessika Sobanski (2002) tells us some tips on creating a whole brain learning environment:

Learn in a relaxed environment. Allow your students to feel at ease in the classroom.

Learn in a multi-sensory environment by involving visual, auditory, and kinesthetic activities.

Use color! This stimulates the right brain and helps recall. Instead of the usual test papers, students can answer equivalent fraction questions in their coloring books.

Make sure you take breaks every hour.

Try to relate what you are learning to a bigger picture. The teacher can bring

pizza to class and show that 2/4 of a pizza is the same as ½ of it.

Active-participant Learning. The class proper operates in a way that learning is active and is propelled by adult guidance and by social influences of group interaction and teamwork (Ben-Avie, Ensign, & Haynes, 2003). Active-participant Learning allows the thinking process to be made visible so teachers can intervene to improve faulty or ineffective patterns in a meaningful way. Ben-Avie et al. (2003) in their book, How Social and Emotional Development Add Up, conducted an evaluation of a certain urban school district. Their findings tell us that higher mean scores in mathematics concepts and application skills can be achieved by the following:

Employ the active participant model in the classrooms and engage students in intellectual discourse. Divide your class into groups. Have one group answer the questions on equivalent fractions thrown by the other group. Reverse roles after one round of questioning. Be attentive to their answers and questions. Intervene in a respectful way when mistakes occur. Dialogue with them. You can ask bonus questions. The group that can answer your question gets the extra point.

Ask probing questions. You can ask your students “ What makes equivalent fractions the same?” This can be an assignment they can ponder at home. (Answer: When you multiply or divide both the numerator and denominator by the same number, the fraction keeps its value.)

Give positive feedback

Value students’ responses and questioning

Personalized Mathematics Lessons. What is relevant is not just math that is connected to students’ lives, but math that challenges students to see deeply into math, to get engaged in math. Personalized lessons let students

see the involvement of equivalent fractions in their daily activities. Ben-Avie et al. (2003) shows ways that teachers can effectively incorporate students' personal, out-of-school math problems into classroom math lessons. The following are examples to incorporate equivalent fractions to student's lives:

Introducing the concept. The teacher can ask a leading question to solicit examples from students. A question can go like " Can anyone share an experience wherein you thought you had more of something both you and your friend liked and ended up getting the same amount?"

Collecting Math Examples from the Neighborhood. Teachers can teach the students to be anthropologists who record instances of using equivalent fractions outside school.

Journals. Daily journal entries sometimes focus on mathematics experiences, such as that of equivalent fractions. Make them share this in class and make math problems out of the familiar situations. Students can revel at solving their classmates' problem instead of always having to solve textbook problems.

Comer Process. The Comer Process was designed by James P. Comer, an associate dean of Yale's School of medicine and founder of the Yale School Development Program. This process aims to build positive, communicative, and caring relationships with and among students to boost academic success. The Comer Process has three guiding principles (Ben-Avie, et al. 2003). Each guiding principle can be used to teach equivalent fractions:

Consensus means that loud or dominating students are not allowed to intimidate other students. Each student is allotted a time to share an out-of-school experience wherein he has used equivalent fractions. No one is to interrupt him while he does so.

Collaboration instead of competitiveness is the norm among students. Still group activity is encouraged. Games that involve equivalent fractions must be orchestrated in a way that no one is to be left out. Everyone must have a specific task in every game.

No-fault means that students are not blamed for being born into certain families or ethnic groups. Under no circumstances will racism be tolerated. All students must feel and be equals.

Mathematics is a very interesting subject. It takes a little creativity mixed with a passion for teaching to make a math class an activity to look forward to.

R e f e r e n c e

Ben-Avie, Michael, Ensign, Jacque & Haynes, Norris (Eds.). (2003). How social and emotional

development add up: Getting results in math and science education. New York and London: Teachers College Columbia University.

Sobanski, Jessika (2002). Visual math: See how math makes sense. New York: LearningExpress, LLC