IU: THE LEARNERS, THEIR ENVIRONMENT, AND THE INSTRUCTIONAL GOAL

OVERVIEW

Math is used everywhere in the world whether it is from getting change back at a store, calculating a tip at a restaurant, or doubling a recipe for a cake. Most basic math used in daily interactions stem from the basic ideal of a part and a whole. When we refer to a fraction, decimal, or percent, we are referring to a part of a whole unit. The understanding of a part and a whole relationship involving fractions, decimals, and percents are predominately what most math used in everyday life is based on. Without the fundamental knowledge of proportionality of the relationship in a part and a whole, individuals may spend more than they should, be overcharged in situations or make poor decision regarding their financial future.

Many adults after graduating from high school, college, and even law or medical school may still struggle with the concept a part and whole relationship. It is a very difficult concept to grasp especially for those who struggle in math throughout school. Knowing adults struggle with this so much, we can only imagine how much students in middle school struggle to grasp this understanding in addition to everything else they must learn in the mathematics classroom.

Because this is such a large foundational mathematical problem, it has such a large impact on humans of all walks of life. The following instructional unit will be based on alleviating some of the confusion and employing many pictorial and interactive models to make understanding become a reality.

The TAKS test is just around the corner and the current mastery of this skill is only at 40%. This instructional unit will be beneficial for the teacher in the 7th grade math classroom. It will be beneficial by having a prepared lesson ready for a student to easily maneuver and learn independently. It will also be beneficial for the student to be able to see visually how it all fits together as the basic understanding of a part and a whole. Once this concept is understood, most other 7th grade math to be learned in the state of Texas will be that much easier and mastery of this skill should be achieved at 80% or higher.

The instructional unit will be available online so anyone can access it at anytime from anywhere. It will be free, re-usable, and open to the public as well. This is a potential solution and learning opportunity to a real world problem that many can utilize from a student to an adult. The main resource needed to complete the unit will be a computer with internet access, ability to play basic videos and view photos found online, listen to audio, and display graphics. It will be recommended for each student to be prepared with headphones, pencil, paper, and printer but not required. There are no foreseeable constraints to the instructional setting.

LEARNING ENVIRONMENT

LEARNING CONTEXT
The learning environment context for the instructional model will take place in front of a computer. It may be in a computer lab, in the public school setting, or an individual stand-alone computer at home. The computer must have internet access, ability to play basic videos and view photos found online, listen to audio, and display graphics. It will be recommended for each student to be prepared with headphones, pencil, paper, and printer but not required. There are no foreseeable constraints to the instructional setting.

SKILL APPLICATION CONTEXT
The performance context will be students completing a standardized TAKS test to demonstrate understanding as well as the ability to use in daily life. During a TAKS tests students are seated quietly in single file rows until testing has been completed. In daily life, students may use this knowledge altering recipes, calculating a
discount on their purchase, or determining how much more pizza to order based on the amount already eaten at a pizza party. The unit will be set up as self-paced which will enable a slower learner to take their time, stop and go back as well as ask questions as needed. A faster learner will be able to complete then continue with other classroom work to be done.

**INTENDED AUDIENCE**

**DEMOGRAPHICS**
The intended audience will be 7th grade students at AP Solis Middle school in Miss Knisely’s Team 7-4 math classroom. There are approximately 80 students who will be instructed at some point or required to complete this instructional learning unit. The age of the students is between 12 and 14 years old. They are predominately Hispanic Mexican American students who come from economically challenged homes. The majority of the students are English Language Learners and Spanish is their first language. There are approximately 40 girls and approximately 40 boys in the intended audience.

**MINIMAL SKILLS & KNOWLEDGE NEEDED**
The minimal skills needed to participate will be the knowledge of basic mathematical terminology such as fraction, decimal, percent, ratio, proportion, etc. It is assumed that all students know how to add, subtract, multiply and divide at a 7th grade mathematical level. All students have been exposed to these concepts throughout the school year as well as in 6th grade but have not mastered the concept yet. The motivation level is not too high amongst 7th graders to learn math. The way this unit will be setup will be motivating to them because it will be engaging visually, they will be using computers which they love, and those who demonstrate mastery will have their names put into a drawing to have a lunch party with the teacher. The preferences and learning styles of the students all vary, but predominately success is seen more when it is interactive, online, visual, and offers incentives.

**OVERARCHING INSTRUCTIONAL GOAL**

The learners will be able to master items on the 7th grade math TAKS test dealing with the relationships of a part and a whole and how they are applied in the real world.

**SPECIFIC GOAL**
The 7th grade students in Miss Knisely’s math class will demonstrate their understanding through verbal and standardized testing, of the relationship between parts and wholes mathematically by completing an interactive unit demonstrating relationships among fractions, decimals, percents, ratios, and proportions.

The specific goal consists of students individually accessing the online instructional unit and completing at their own pace. The goal is to allow the unit to take 30 minutes from beginning to end, although if more time is needed, it will be granted. There will be other units prior to and after this specific learning objective that can be completed as needed. Each unit will focus around other mathematical concepts that are difficult to understand by the average person of any age.

The layout consists initially of students seeing and learning the importance to understand this concept. There will be many pictorial and visual representations of common real world problems that the students can relate to so they can see the relationship of a part and a whole between fraction, decimals, percents, etc. There will be an interactive quiz to measure success. The students will then take the TAKS test on April 27th and results will be returned by June 1st. The real measure of learning can be seen through these two assessments.
EXPLANATION OF GOAL TO SELECTED TARGET AUDIENCE MEMBERS

The goal for the unit and the instructional ideas were presented to 4 - 7th grade math students. These students are not fans of math but anything to get them on the computer and a potential gift or incentive, they are on board. Initially, there were no incentives included in the instructional unit. After feedback of the students, it was realized an incentive will be needed for 7th grade students to get excited to complete a mathematical online component and try their best.

SUMMARY

Mathematics is one of the subjects that you either like or you don’t. Some are good at it and some are not. With extra and differentiated instruction, it is believed that an overall concept of relations of a part and a whole will help most if not all grasp a better understanding of the concept. As we know, this is not just a problem for students in middle school but for adults of all walks of life. This seems to be an ongoing difficult unit to teach and to learn. With proper planning and justification, the learning unit should prove to be a success for 7th grade students in Miss Knisely’s classroom at AP Solis Middle School in Donna, Texas. The success of the learning unit will be measured through a quiz at the end of the lesson online, verbal interaction with the instructor in class from time to time, as well as the final assessment of the TAKS test in April, 2011. Mastery is currently at 40% and this unit is expected to double the mastery by the TAKS test to 80%.