114-Lesson Plan

Topic: Relations and Functions – (Algebra 2 Linear relations and functions)

Big Ideas- Relations and functions show how variables interact, are displayed and applied in our world. What are they? What do they look like? What are they for?

Idaho State Standards addressed – (note- Algebra 2 is beyond Idaho math standards so I am utilizing the highest math standards in the state as they apply) **10.M.1.2.1, 10.M.3.1.1, 10.M.3.2.1, 10.M.3.3.1, 10.M.3.3.2, 10.M.3.5.1, 10.M.3.5.2, 10.M.3.5.3, 10.M.3.6.1, 10.M.3.6.2, 10.M.4.3.1, 10.M.4.3.2, 10.M.4.3.3, 10.M.4.4.1, 10.M.4.4.2, 10.M.4.4.3.**

Describe Lessons

 -reading- Reciprocal teaching linear models 2-1 (p.118)

 -writing- word problem roulette to summarize 2-3 (p.130)

To introduce relation, function, domain and range, the students will apply the reciprocal teaching to the words relation, function, and eventually domain and range which may be slipped to Frayer model. Word problem roulette will be used in the section on direct variation to help bring it all together.

Lesson One – Algebra 2, 2-1 Relations and Functions

Lesson Plan

 Overview (description of math content and literacy strategies in lesson)

This lesson is about relations and functions. The idea is to be able to differentiate between a relation and a function and the students will be using reciprocal teaching in showing their understanding of the text and a written prompt of the definitions on the whiteboard. The students will work towards the ability to create a function to represent a real-world situation and find a solution given parameters.

 Learning Objectives (content and language objectives)

The student will be able to differentiate between a relation and a function. The student will be able to graph relations and identify functions. The student will able to relate what they read and summarize and communicate that understanding as it regards to relations and functions.

 Idaho Content Standards - (note- Algebra 2 is beyond Idaho math standards so I am utilizing the highest math standards in the state as they apply) **10.M.1.2.1, 10.M.3.1.1, 10.M.3.2.1, 10.M.3.3.1, 10.M.3.3.2, 10.M.3.5.1, 10.M.3.5.2, 10.M.3.5.3, 10.M.3.6.1, 10.M.3.6.2, 10.M.4.3.1, 10.M.4.3.2, 10.M.4.3.3, 10.M.4.4.1, 10.M.4.4.2, 10.M.4.4.3.**

 Description

 Instructions given (verbal and written) – Students were directed to read the opening paragraphs on pages 55 and 57 of the Prentice Hall Algebra 2 text and to look at a summary written on the whiteboard. The class was informed that they would be better served by teaching something to each other than by my instruction alone. They were given two minutes to read through, then directed to teach someone next to them. After they were done, the other person would teach them the other concept (in this case, relation then function.) I then picked a student to relate what they learned and what they taught. I asked if any further clarification was needed at that point and no student indicated any need for further discussion. Examples were put up on the board and random students were called upon to describe why it was or was not a relation. After a few examples, the students indicated that they were ready to move on. I described a mapping process which was quickly absorbed and the students were then treated to a discussion on tiling and how it applies to a function. The students then began directed practice while I checked in with each as they progressed.

 (see materials turned in) and discussion was held on which better answered the instructions. Practice problems were then assigned and guided practice commenced.

Lesson Two – Algebra 2, 2-4 Direct Variation

Lesson Plan

 Overview (description of math content and literacy strategies in lesson)

This lesson is about direct variation and how one variable or item can change as another is changed. Ideas about independent and dependent variable must have been previously introduced. The students will show that they can identify direct variation, write variations in table and equation form, and graph variations. Students will demonstrate their knowledge through the use of word problem roulette and show that they can use direct variation as it pertains to a real-world problem. They will also share information this way with each other and be able to teach each other in any way they need.

 Learning Objectives (content and language objectives)

Students will be able to write and interpret direct variation equations. Students will be able to model real-world examples as direct variation and be able to interpret information and find solutions to problems. Students will work on their vocabulary and share understanding with their peers. The students will then share that information and see examples shown to the class as a whole. Students will then be further reinforced in their learning this way.

 Idaho Content Standards - (note- Algebra 2 is beyond Idaho math standards so I am utilizing the highest math standards in the state as they apply) **10.M.1.2.1, 10.M.3.1.1, 10.M.3.2.1, 10.M.3.3.1, 10.M.3.3.2, 10.M.3.5.1, 10.M.3.5.2, 10.M.3.5.3, 10.M.3.6.1, 10.M.3.6.2, 10.M.4.3.1, 10.M.4.3.2, 10.M.4.3.3, 10.M.4.4.1, 10.M.4.4.2, 10.M.4.4.3.**

 Description - Instructions given (verbal and written)

Students were shown how to write and read direct variations in equation and table format. They were told and shown on the board various examples. Random students were called upon to show that they understood. Students were then shown demonstrations of how to determine the constant of variation and work was done on samples in class on the board by the instructor with students giving feedback and direction. Proportions were covered just before giving the students a handout on a tree height problem (another problem was on the handout, but time did not allow for its inclusion). (This handout was given with examples of students work.) Students then worked the problem in groups of three. They were instructed not to write (they all want to do math that way and see an answer.) They were then given time to write a part of the problem and hand it off to someone else in their group till all had given a part and written a part. After this was done, the students then presented their findings upon the board. Two examples were given

**114-Lesson Reflection**

**LIMSST Project Literacy Lesson Reflection Form**

Date of Lesson: \_\_\_\_9/24/2007\_\_\_\_\_\_\_

Relations and Functions, Algebra 2

**Lesson Title/Topic Areas:**

**Literacy Strategies Used:**

(Please discuss what literacy strategies you embedded in this lesson. What were your goals in using these strategies?)

I utilized reciprocal teaching as a way of introducing the subject. I had the students read about the two ideas of relations and functions. They had to read and communicate the idea to another thus reinforcing the idea. I chose this particular strategy for use at the beginning of a section as they would be more likely to be able to understand the ideas involved. This also allowed for a much faster movement through the materials and conserved time for other uses in learning the subject.

**Student Response to the Lesson:**

(Was the strategy effective? Were students able to read/write as needed in this lesson? What attitudes were displayed? How did specific

 students and/or the class do? How did the literacy strategy aid in developing student understanding of the topic? Cite specific evidence from the samples of student work)

The students handled the idea very easily and they expressed to me that they were happier to move more quickly and at what they felt was their pace through the material. They were a first apprehensive about the reading parts, but once they realized they understood and could express their understanding to what they felt was a small audience and not the whole class at first (like when they are called on), they felt better about the whole thing. They were also much more confident after that so that they could talk to the whole class knowing they wouldn’t look stupid. One student was just happy that it wasn’t me talking the whole time.

**Lesson Reflection:**

(What worked well with this lesson? What challenges did you encounter in this lesson? Would you change certain aspects of the lesson or the questions that you asked? How does this influence future lesson planning?)

The reading worked better and I think it allows for more reading assignments without the complete rolling of the eyes by all of the students. It also worked great in moving faster through the material. I’m sure what I really need to do is create better reading (translate create to steal) material for more frequent use because most text reading is dull and uninspiring and has a stigma attached to it by the students.

**Relationship to Previous Instruction:**

(Have you taught this lesson/topic prior to the LIMSST project? If so, how did your teaching of this lesson differ from what you taught before? How did students’ reactions to this lesson differ?)

I have taught it before and it always came off as a bit more dull and tedious. I know it took longer and while understanding was there, I believe that this method allowed for more complete understanding, recognition on my part and more time for further instruction. Students were very receptive as this didn’t change their routine, but changed the method which apparently they are very receptive to do.