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**Cohort A**

**Ed 322**

**October 25, 2013**

**Common Core Math Lesson Analysis**

**Lesson Learning Goals**

*What are the main ideas students are supposed to understand through this lesson?*

**Students are suppose to understand the relationship between numbers in different number operations without calculating the answers**

The goal of the lesson…

**The goal of this lesson was to make students focus on the relationship between different numbers that are related to number properties and different types of equations. The teacher wanted the students to think about the relationship of the numbers without calculating the numbers.**

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| **Time/Clip** | **Teacher/Student Actions** | **Evidence Related to Lesson Learning Goal(s)** |
| 2:23 | Fact families help me to calculate the equation | A student suggested to use fact family strategy |
| 3:02 | 5+7 =12  Is it True or false?  What did you do? | Student A:I split 7 to 5 and 2. Then I did 5+ (5+2) = 12  Student B- I took one off the 7 and gave it to the other number because 6+6 = 12 |
| 4:-00 | Is it true or false?  21+39=50  Anybody saw it in a different way?  How does this connect to the problem? I’m just not understanding. | One student tried to answer the problem but he changed his answer or mind and did not give the answer in the first time  30+20=50, but it equals 60…  One girl said she thought it was 50 at first time, but she rethought about her glance and when she calculated it wasn’t true  Chris: I rounded the number. Add 39 to 21 and subtracted 1 from 21. That is doing nothing because 0+1 = 1-0… He said it’s just a random equation… (He looked confused with this answers) |
| 9:00 | Are these numbers reasonable  To equal to 237?  What do you mean by that that the numbers are too small?  You are saying that 2 digit numbers cannot be more than 188. Anybody disagree or agree with that? I don’t know if this is true or anything. Why would or not?  So using that role, if you saw two digit numbers and answer that it was larger than 200, could you say right away it was false? | Student A: you have to have bigger number because the answer is bigger than double digits..I don’t know.. I don’t think they are bigger number  Student B: I knew that those 2 two digit numbers cannot be more than 188.  The highest two digit number you can have is 99, and 99 and 100 is 199… |
| 11:50 | Can you figure out in your head without calculating, without adding this.. try to see the relationship of the numbers… Are these problems TRUE or FALSE?  33+38= 32+27  What strategy?  Anybody without calculating?  What changed from 32 to 33?  How about the other side?  So is it true or false? | A: I think it’s true because if you add… I think it’s true. because  A: Doing calculation  B: 32 to 33 difference is 1  B: Increased by 1  B: minus 1  Students: True |
| 16:00 | 41+6= 40  T: Is anybody seeing anything that can help us figure out this?  After you round it what did you do?  T: Anybody do different way?  T: What did it told you?  T: by figuring out what was changing that the other side was bigger than the other>  Anybody have anything to add? | A: Rounded  B: I did the relationship with numbers. From 41 to 44, you added 3 ad from 32 to 36 you add 4  B: one side is bigger and more than another  C: They are two different numbers and you can’t just say that you can cancel it |
| 18:00 | T: did anybody see it in different way?  Equation: 41+36 = 44+32  T: so you mean you saw what was changing from 36 to 32 and what was changing from 41 to 44?  What did you see changing?  Did that seeing as still false?  Or why dod you still use that is being false?  The change is bigger in 44+32 than the other side | A: I did +3 and -4 because 36 to 32 is minus 4  Because 36 to 33 is add 3  A: minus 4 |
| 20:00  22:40 | 29+56 = 27+58  T: think about it for second..  T: anybody have something?  T: What do you see?  So trading strategy?  29- 7 gives you 27?  So I f were going to do that what would you take from this 9 and do the same on the both sides?  Anybody do this without calculation and just the relationship of the numbers?  T: So you mean you notice the relationship between these two numbers?  Anybody notice the relationship between numbers?  A relationship?  T: you are saying that you had 58 take away 2 = 56?  27+2 =29?  What would both sides be equal to here?  True or false? | A: It’s true because you know that the tens are the same an you add 9 and 6 and take one from …  A: If you minus 1 from 29, then +1 to 56, ten you get 27 and 58 which is same as the other side  A: You take 1 from the 9 and add to 6 and it becomes 57 and 28… no never mind…  A: 2  B: 56 and 57 ….if you added… (Does it in his head...)  I just thought it was true  C: I notice that 29 and 58 (I notice the ones are 1 number a part)  C: Yes...  D: I knew that 29 were 2 more than 27. 56 were 2 less than 58.  E: since that’s +2 and -2 it will be true because it equals the sides |
| 25: 47 | T: Let’s see if you can figure out challenge problem.  No calculating... I want you to think about what we talked about here...  8+4 = \_\_\_\_ + 5  Anybody disagree?  Is anybody noticing something?  T: It’s a number sentence  T: Interesting | A: I would put 7 in the box because 4 is less than 5 and 8 is 1 more than 7.  Students are silent  A: That there either going up or down 1  B: I notice that every time one arrow to other +1 and other arrow says minus something  C: All the problems that we done equals something..Something..  D: Each time, 7 is 1 less than 8, so automatically I know that the box was going to be 1 less than the other number |
| 30:02 | T: talk to your shoulder partner and talk about what you think about this problem  T: anybody have an idea what number is missing?  T: how did you guys come up with 31?  T: so you calculated  Equation: 53+\_31\_\_ = 49 +35  T: so you had to figure what number +4 equals 35?  Anybody see it that way? Who saw Mattie’s way? | A: 31  A: 40 +30 is 70  B: I disagree because 49 is -4 less than 53, so if its 4 less than you need 4 more to the other side. |

**Lesson Learning Goals (restate from the front)**

**Analysis of Student Learning**

*1. Did the students make progress toward the learning goal(s)? (Before responding to 1a, be sure to write about this question.)*

Yes, student made progress toward the learning goal. In the beginning of the lesson, students were calculating the math problems and gave an explanation and strategies to the teacher of how they got the answers or come up with the particular strategies. However, the teacher guided students to think about the “relationship between the two numbers” and tried to press students to think about the “Relationship” part and leaving students to think where they were. As the teacher guided students’ thinking the way she wanted them to think, about half of the class was thinking “relationship” of between numbers rather than actually “calculating” the equations. This was a big progress and it made towards the learning goal.

1. *What evidence do we have that student made progress toward the learning goal(s)?*

About ten different students in the class were participating throughout the whole lesson. These students were answering and sharing their strategies the whole time. When the teacher asked a guiding questions like “How do we know that?” “Can you explain it more?” “Do you disagree or agree?” while the students were participating. So the students who participated started to explain their thoughts and answers more clearly than the first try.

1. *What evidence do we have that students did not make progress toward the learning goal(s)?*

Throughout the whole lesson, I did not see every single one of student participated. I saw some yawning students and heard whining like “ah…” This tells me that these students (who did not even put their hands up or participated in the lesson) that they were either bored or did not get what the rest of the class was doing. Also, I do not see any assessments at the end of the lesson besides the teacher commenting, “You guys did a really good job on this activity.”

1. *What evidence is missing?*

The evidence of assessment is missing. The teacher did show some of formative assessment in the class, but it was not enough to determine of rather everyone in her class got the “relationship thinking of numbers” correctly through the activity. Also the evidence of some of the students who could have already knew the “relationship thinking” vs. “does not know the relationship thinking” was missing. Lastly, the summative assessment was missing since the video clip was cut off after 35 minutes of the whole lesson. The result of summative assessment is important evidence to the teacher since it shows who got meet the goal of the lesson and who did not.

*2. Which instructional strategies supported students’ progress toward the learning goals and which did not?*

The teacher asked different types of questions that helped the students to meet the learning goal. The teacher used initial eliciting of students’ thinking, probing students’ answers, focusing students to listen and respond to others’ ideas, supporting students to make connections, guiding students to reason mathematically, and extending students’ current thinking questions. These questions were very important to this particular lesson. Without these types of mathematical reasoning questions, the students would not have met the learning goal or went closely to the learning goal. Also, the teacher set up an safe environment so that the students can feel safe and talk about their strategies in front of other students. There was no “wrong or right” answers and students did not feel left out or isolated in the activity.

**Alternative Strategies**

*What alternative strategies could the teacher use? How do you expect these strategies to impact students’ achievement of the lesson learning goal(s)?*

The teacher could have made them do “talk in pairs” more often than just wait until one or two students to volunteer to answer the question. In this way, the teacher can eliminate students who don’t participate or answers the questions. She can also walk around and hear what they say and choose the 5 steps of guiding / choosing/ presenting method to the class. For example, “I heard something from your table; can you please tell us what you were sharing?” This way student who did not participate or does not want to participate will have equal chance to talk about it.

*If any evidence of student learning is missing, how could the teacher collect that evidence?*

The teacher could collect missing evidence by giving them assessment or do some anecdotal records while students do “share thinking.” It is important to have these two evidence since teachers are busy checking and asking questions during instructional time. After the lesson, the teacher can go over the anecdotal record and check and see who did not get to answer the question or meet the learning goal. That way the teacher can plan and make sure to give the students who did not get to participate of next lesson. Also, the assessment results can help the teacher to collect who get the lesson and who did not. This is an easier way to collect data and modify the lesson the other time.