**Tiger Academy Charter School – Lesson Study (2014-2015)**

**Part One: General Information**

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| **Subject:** Math  | **Other Participants:** J. Didier, B. Cobbin, C. McWhite, J. Aikens |
| **Facilitator:** Ms. Fuller | **Recorder:** Ms. Aikens |
| **Teachers:** R. Hughes, C. Braude, L. Stark, and R. Howard  | **Approx. Implementation Date:** 5/05/15 to 5/08/15 |
| **Topic:** First and Second Grade **-** Finding unknown whole numbers  |

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| 1. **Background Information**
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| 1. Goal of the Lesson Study Group:
	* 1. Tiger Academy students will be open-minded, inquisitive, persevering, mathematical risk-takers who see/think/talk math and who use mathematical standards to drive their understanding ever forward while enjoying the journey.
2. Narrative Overview of Background Information:
	* 1. Lack of perseverance
		2. Often asks for help rather than explore for themselves
		3. Afraid to take risks
		4. Not in the habit of thinking and speaking mathematically
		5. Inconsistent use of mathematical practices
		6. First Grade – two distinct level in each classroom (high/low)
		7. First Grade – low in Numbers and Operations (64% below) and Measurement and Data (72% below)
		8. Second Grade – Low in Numbers and Operations (91% below) and Measurement and Data (69% below)
		9. Algebraic Thinking Finding the Unknown – First Grade 1.OA.1 and 1.OA.8;

Second Grade – 2.OA.1  |
| 1. **Standards Addressed: (Please give brief descriptions as well as standard numbers and grade level.)**
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| **MAFS.1.OA.4.8** Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = [] – 3, 6 + 6 = [].**MAFS.2.OA.1.a** Determine the unknown whole number in an equation relating four or more whole numbers. For example, determine the unknown number that makes the equation true in the equations 37 + 10 + 10 = \_\_\_\_\_\_ + 18, ? – 6 = 13 – 4, and 15 – 9 = 6 + \_\_\_\_\_. |
| 1. **Unit Information**
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| 1. Name of Unit: N/A
2. Goal (s) of the unit:
3. How this unit is related to the curriculum:
4. Instructional sequence for the unit:
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| 1. **Lesson Information**
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| 1. Name of the lesson: Into the Unknown…
2. Goal(s) of the lesson:
	* 1. Students will correctly solve to find the unknown whole number in an equation relating four or more whole numbers.
		2. Student will make sense of the equation and persevere in solving them.
		3. Students will verbally articulate what they have learned utilizing accountable talk.
		4. Students will keep notes and articulate what they have learned in their math journals.
3. How this lesson is related to the lesson study goal:
	* 1. According to our needs analysis we noticed some deficiencies in both first and second grade, this lesson directly reflects the data.
		2. Based on teacher observations we noticed that our students lack proficiency in the area of Numbers and Operations, this lesson teaches students about unknown addends.
4. Process of the lesson study (Lesson Outline): See lesson plan template
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| **Representative assessment items: What should a student be able to do as a result of this lesson? Objective (Please include solutions.)** |
| 1. Students will correctly solve to find the unknown whole number in an equation relating four or more whole numbers.
2. Students will make sense of the equation and will persevere in solving them.
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| **How is this topic related to standards or objectives in earlier and later courses or lessons?** |
| **Related First Grade Standards****MAFS.1.OA.4.7** Understand the ***meaning of the equal sign***, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.**MAFS.1.OA.1.1** Use addition and subtraction within 20 to solve word problems (1.) involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and ***equations with a symbol for the unknown number to represent the problem*** (1.) Students are not required to independently read the word problems.)**MAFS.1.OA.1.2** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and ***equations with a symbol for the unknown number to represent the problem***.**Related Second Grade Standards****MAFS.2.OA.1.1** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and ***equations with a symbol for the unknown number to represent the problem***. |
| **How will students think about this topic? What misconceptions might they have?**  |
| 1. Students may believe that the first two numbers on the left of the equal sign must equal the first number on the right.
2. Display 37+10=? + 16; Possible misconceptions: The answer is 16.
3. Possible misconceptions: Students may not correctly add 37+10 and may need review.
4. Possible misconceptions: If a student says that both sides are equal, revisit the equal sign as a balance.
5. I'm going to start 11 and 10 more is 21, 31, 41, are my sides equal yet?

Student responses: Yes or no.Possible misconception- if a student says yes, point out that the sides still aren't equal. Show there are still ones left on one side.1. Misconceptions- Students may think that both sides are not equal because they can only see that one side has base ten blocks. Remind them that we used the SAME blocks, and didn't add or subtract any, making both sides equal to 58.
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| **What language issues (vocabulary, etc.) are relevant to this lesson?** |
| **beginner****apprentice****practitioner****expert****equal****equation****unknown****whole number** |