Abby Crowe

Differentiated Lesson Plan - Part One

**Setting:** I will be implementing my lesson in a one-on-one setting with Grace. Grace is an enthusiastic, kind, and curious first grader. Grace is eight years old and was adopted from Ethiopia. She has been living in the United Sates with her parents and three brothers for two and a half years. Grace was able to quickly learn English and has thrived. Her parents, who are both college graduates, support her in every way possible. I worked with her every Sunday in the fall on reading fluency. We have a routine in which we find a quiet place, like the library, Grace’s room, or the church conference hall to do our work. We will do the same for this lesson which focuses on Grace’s math skills in solving word problems by adding and subtracting.

**Data Pieces:**

* **Qualitative:** Grace is an extremely hard working, young girl. She always does her best. She is a perfectionist, so she takes her time and always makes her work look neat. She likes math because it is much easier for her than reading or writing because English is her second language. She enjoys playing games and going places with her family in her free time. She also likes to read Pete the Cat books.
* **Quantitative:** I gave Grace a pre-assessment (p. 6 & 7 of this document) I designed based on the standard MCC1.OA (Use addition and subtraction within 20 to solve word problems 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.). The pre-test contained two join result unknown, two separate result unknown, two join change unknown, two separate change unknown, two join start unknown, two separate start unknown, and two compare difference unknown word problems. There were a total of fourteen word problems that meet the standard’s expectations of using addition and subtraction to solve word problems within 20 with unknowns in all positions. I gave Grace the packet and read the problems out loud to her. I then observed her different strategies: writing equations, counting on, counting down, and drawing pictures. Grace got a score of 10 out of 14 or 71%. The problems she missed were the two join start unknown and the two separate start unknown word problems. From this data, I know that Grace has mastered result unknown, change unknown, and compare difference unknown word problems. Likewise, I know that she has not mastered start unknown word problems and needs more guidance.

**Analysis:** The lesson I am planning is based off of Grace’s ability to meet the skill targets. While she does not have a choice about the content – start unknown word problems, I want her to have a choice about how she will develop this skill. Offering choices is a way to motivate and interest students (Methods and Materials for Teaching the Gifted, 2009). For this reason, I will include a Tic Tac Toe board based on the multiple intelligences. Grace will be able to pick the activities that best meet her learning style. “Gifted students need the freedom to choose topics to study, methods to use in the process of manipulating and transforming information, the type of products to create, and the context of the learning environment in which to pursue their studies” (Maker & Nielson, 1996, p.120). Grace will get to choose different methods and different products to meet her to the ultimate learning target.

**Where do we start?**

**Standards:**

* MCC1.OA.1 Use addition and subtraction within 20 to solve word problems 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.
* *Skill targets*:

- Student will use addition and subtraction to solve word problems in which the start position is unknown.

-Student will build fluency with addition and subtraction problems in which the start position is unknown.

-Student will use multiple representations of numbers to solve problems.

**Environment:** Grace and I will be in a quiet place with no outside distractions. I will be working with Grace during part of the lesson and she will be working independently during part of the lesson. I will be there the whole time to provide guidance and support. Since it will just be the two of us, I should not need any management techniques other than keeping Grace engaged in the learning. The activities have been designed specifically for Grace. I have considered her interests in playing games and drawing.

**Resources/materials:**

* Tic Tac Toe board
* Word problems from the pre-test
* White board
* Dry erase marker
* Eraser
* Paper
* Pencils
* Crayons
* Life savers
* Puzzle pieces
* Variety of books

**Lesson Plan sequence:**

* **Mini-lesson:** I will start the lesson by reviewing how to solve addition and subtraction word problems when the start position is unknown. Here are the steps I will take:

1. Present Grace with the following word problem (all word problems taken from the pre-test): Abby had some suckers. Grace gave her 5 more suckers. Now Abby has 17 suckers. How many suckers did Abby have in the beginning?
2. I will then model how I can write an equation to show what I know. I will write

? + 5 = 17. Then I will explain that I wrote a question mark because I do not know how many suckers Abby had in the beginning, I wrote + 5 because I know Grace gave her 5 more, and I wrote = 17 because I know Abby has 17 suckers now. I will underline the information/proof in the word problem as I talk through it.

1. I will ask Grace how she thinks we can solve for the question mark. If she does not have any ideas, I will guide her to subtracting 5 (what Grace gave her) from 17 (the total) to see how many Abby had in the beginning. Then I will plug the answer into the equation to check it.
2. Then, I will let Grace try to do the other join start unknown word problem from the pre-test on her own. I will observe her to see if she underlines the information in the world problem, writes an equation, and then checks her answer. I will present her with the word problem: Hayden had some books. Her mom gave her 3 more books. Now Hayden has 9 books. How many books did Hayden have in the beginning?
3. I will now start this same process over with the separate start unknown word problems. I will present Grace with the word problem: Dad has some pens. Logan brought 3 to school. Now dad only has 7 pens. How many pens did dad have in the beginning?
4. I will then model how I can write an equation to show what I know. I will write

? – 3 = 7. Then I will explain that I wrote a question mark because I do not know how many pens dad had in the beginning, I wrote a – 3 because Logan took 3 away, and I wrote = 7 because I know dad has 7 pens now. I will underline the information/proof in the word problem as I talk through it.

1. I will ask Grace how she thinks we can solve for the question mark. If she does not have any ideas, I will guide her to adding 3 (what Logan took) to 7 (the current total) to see how many dad had in the beginning. Then I will plug the answer into the equation to check it.
2. Then, I will let Grace try to do the other separate start unknown word problem from the pre-test on her own. I will observe her to see if she underlines the information in the world problem, writes an equation, and then checks her answer. I will present her with the word problem: Mom has some socks. Dad took 9 socks from her. Now mom has 2 socks. How many socks did mom have in the beginning?

\*If Grace does not seem to understand how to solve join and separate start unknown word problems after the mini-lesson, I will provide additional support and instruction before moving on to the work time.

* **Work time:** I will present Grace with the Tic Tac Toe board (on p. 5 of the document) and explain that all the choices will help her develop fluency in adding and subtracting to solve word problems in which the start is unknown. I will explain that different activities match different styles of learning and she can choose any three in a row to complete. Grace will work on these activities independently, but I will be there if she needs support or guidance.
* **Closing:** To close the lesson, I will ask Grace to write two word problems (one join start unknown and one separate start unknown). I will then ask Grace to solve the problems so that she can make a key. Finally, I will ask Grace to write down the most important steps (Read problem, underline information, write equation, solve, check answer) to solving word problems. I will give her the challenge of using these materials she created to teach her family how to solve word problems using addition and subtraction when the start position is unknown.

**Assessment:**

* Formative: I will be observing Grace throughout the whole lesson since it will be taught one–on–one. I will take notes about her thinking and use this information to guide future instruction. I will intervene immediately if I see that Grace to getting off course.
* Summative: I will make copies of the materials I am asking Grace to create in the closing of this lesson. Then, I will use Grace’s work to gauge the effectiveness of my lesson.

**Tic Tac Toe**

Directions: Choose 3 in a row to complete.

|  |  |  |
| --- | --- | --- |
| **Intrapersonal**  Think about these problems.  \_\_\_ + 5 =10  15 – 7 = \_\_\_  3 + \_\_\_ = 11  How are they different? Solve each one and explain how you solved them. | **Linguistic**  Write a letter to your best friend explaining how you would solve this word problem:  Grace has some grapes. Her mom gives her 4 more grapes. Now she has 10 grapes. How many grapes did she have in the beginning? | **Interpersonal**  Imagine that your friend sees the following equation and is very confused:  ? + 6 = 13  Write about how you would explain this to your friend. |
| **Musical**  Write a song about how to solve word problems when you do not know the start number. | **Naturalistic**  Pick any item around you. Use the items to create your own word problem in which the start number is unknown. | **Spatial**  Use life savers to solve these world problems:  Logan has some stickers. Micah gives him 4 more stickers. Now Logan has 12 stickers. How many stickers did he have in the beginning?  Mom has some movies. Dad borrows 8 movies. Now mom only has 9 movies. How many movies did mom have in the beginning? |
| **Bodily-Kinesthetic**  Act out the following word problem:  Grace had some puzzle pieces. She took 4 puzzle pieces away and put them in the blue chair. Now she only has 7 puzzle pieces. How many puzzle pieces did Grace have in the beginning? | **Logical-Mathematical**  Write a word problem to match this equation:  ? + 11 = 18 | **Artistic**  Create a drawing to represent the following word problem:  Jacob had some books. Grace hid 3 books under the bed. Now Jacob only has 6 books. How many books did Jacob have in the beginning? |

**Pre-test Score: 10/14**

MCC1.OA.1 Use addition and subtraction within 20 to solve word problems 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.

**Join result unknown:**

Grace has 8 dollars. Logan gives her 4 more dollars. How many dollars does Grace have now? Grace immediately wrote the equation 8 + 4 = 12.

Micah has 10 cookies. Mom gives him 5 more cookies. How many cookies does Micah have now? Grace immediately wrote the equation 10 + 5 = 15.

**Separate result unknown:**

Jacob had 11 legos. He lost 4 legos. How many legos does her have now? Grace immediately wrote the equation 11 – 4 = 7 after counting down from 11.

Dad has 6 chips. Grace eats 3 of dad’s chips. How many chips does dad have now? Grace immediately wrote the equation 6 – 3 = 3 after counting down from 6.

**Join change unknown:**

Grace has 5 candles on her birthday cake. How many more candles does she need to add to have 10 candles on her cake? Grace counted on from 5 up to 10 and wrote 5 + 5 = 10.

Jacob had 9 baseball cards. Micah gave him some more. Now he has 13 baseball cards. How many baseball cards did Micah give him? Grace counted on from 9 to 13 and wrote 9 + 4 = 13.

**Separate change unknown:**

Mom has 13 lipsticks in her purse. Grace takes some. Now mom has 10 lipsticks in her purse. How many lipsticks did Grace take? Grace drew 13 squares and crossed them out until she had 10 left. She wrote 3 as her answer.

Micah has 4 basketballs. Logan hid some. Now Micah has 2 basketballs. How many basketablls did Logan hide? Grace drew 4 squares and crossed them out until she had 2 left. She wrote 2 as her answer.

**Join Start unknown:**

**X** Abby had some suckers. Grace gave her 5 more suckers. Now Abby has 17 suckers. How many suckers did Abby have in the beginning? Grace guessed 10. She was confused and frustrated.

**X** Hayden had some books. Her mom gave her 3 more books. Now Hayden has 9 books. How many books did Hayden have in the beginning? Grace guessed 4. She was confused and frustrated.

**Separate start unknown:**

**X** Dad has some pens. Logan brought 3 to school. Now dad has 7 pens. How many pens did dad have in the beginning? Grace guessed 6. She was confused and frustrated.

**X** Mom has some socks. Dad took 9 socks from her. Now mom has 2 socks. How many socks did mom have in the beginning? Grace said she did not know.

**Compare difference unknown:**

Grace is 8 years old. Micah is 4 years old. How much older is Grace than Micah? Grace counted down from 8 to 4. She wrote 4 as her answer.

Jacob has 11 cookies. Logan has 7 cookies. How many more cookies does Jacob have than Logan? Grace counted down from 11 to 7. She wrote 4 as her answer.