Part 1: E-Learning Module Proposal

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Introduction:

Through this online course, students will be able to enhance their knowledge and skills in long division using a strategy known as the "Big 7" to strengthen their skills for the standard algorithm. When collecting and analyzing data for the last several years across the district, division is an operation which is a weakness and in particular long division in fourth graders. Learners come to fourth grade knowing basic skills of dividing a whole number into parts with concrete or pictorial models. The next step is learning to divide larger numbers with the standard algorithm and moving away from the concrete or pictorial models.

To achieve success in long division, vocabulary is introduced for long division. A strategy known as the "Big 7" will be taught to give background knowledge and build schema to explain why the process of long division works to break up a dividend into parts by a divisor. Following "Big 7" will be lessons covering the standard algorithm with word problems. Overall, fourth graders should know when to use a certain operation(s) with fourth grade word problems.

What is known is that students are good at concrete and pictorial models to solve a division problem. What ought to be after the online course has completed are students dividing by utilizing the standard algorithm. With the video and practice, students will be able to save time by utilizing playback or change the speed of the video to efficiently use time to help them correct what misconception they might have and the ability to correct on their own.

Instructional Goal, Sub-Goals, and Objectives:

Instructional Goal: The learner will be expected to use strategies and algorithms, including the standard algorithm, to divide up to four-digit dividend by a one-digit divisor.

Sub-Goal 1: The learner will be able to solve a long division problem using a strategy known as the "Big 7" by breaking down the place values in the dividend to divide with the divisor.

After completing this lesson learners will be able to:

- **Objective 1.1:** deconstructing the dividend by place values such as with expanded form.
- **Objective 1.2:** use mental math to divide a compatible number.
- **Objective 1.3:** recognize when to stop to add because the remainder is less than the divisor.

Sub-Goal 2: The learner will be able to solve a two-digit by one-digit long division problem utilizing the standard algorithm.

After completing this lesson learners will be able to:

- **Objective 2.1:** decide what place value to start dividing from using multiplication facts.
- **Objective 2.2:** subtract the multiplication fact from the dividend.
- **Objective 2.3:** make a decision of when to stop because the difference is smaller than the divisor.

Sub-Goal 3: The learner will be able to solve a three-digit by one-digit long division problem utilizing the standard algorithm.

After completing this lesson learners will be able to:

- **Objective 3.1:** decide what place value to start dividing from using multiplication facts.
- **Objective 3.2:** subtract the multiplication fact from the dividend.
- **Objective 3.3:** choose when to pull a number down from the next place value in the dividend.
- **Objective 3.4:** make a decision of when to stop because the difference is smaller than the divisor.

Sub-Goal 4: The learner will be able to solve a four-digit by one-digit long division problem utilizing the standard algorithm.

After completing this lesson learners will be able to:

- **Objective 4.1:** decide what place value to start dividing from using multiplication facts.
- **Objective 4.2:** subtract the multiplication fact from the dividend.
- **Objective 4.3:** choose when to pull a number down from the next place value in the dividend.
- **Objective 4.4:** make a decision of when to stop because the difference is smaller than the divisor.

Intended Audience:

The intended audience is for forty-one fourth graders at Hilltop Elementary School, who will be learning how to divide utilizing the standard algorithm when division is the operation in a word problem.

Students at Hilltop Elementary School are new to the building as it is our inaugural year. They find this to be exciting in nature as we set a tone and build new traditions throughout the building this school year. The fourth graders are nine to eleven years of age. Fifty-six percent are boys and forty-four percent are girls. Thirty-four percent are economically disadvantaged and qualify for free or reduced lunch. They come with varying levels of math skills, but in third grade they were taught to divide dividends up to 100 using strategies including pictorial models, arrays, area models, making equal groups, or recall multiplication facts. Twenty-eight percent are diagnosed with ADD or ADHD. One student has narcolepsy. Fifteen percent are dyslexic and attend a dyslexic class during math time four days a week. Most of these students were in kindergarten the school year we were learning from home for the last fourth of the school year. This module will not only benefit the current forty-one fourth graders in my grouping for the 2023-2024 school year but also the rest of the grade level and future fourth graders for years to come.

Learning Context:

The online course will be taken within the math classroom at Hilltop Elementary School. The classroom in which students will complete this online course is where they learn both math and science. Each student will utilize a Chromebook, paper, and pencil when completing this course. A constraint will be

that the students are used to talking with their shoulder partners and/or table partners to think through and talk aloud to solve problems when first introduced to a new strategy. This will be something new for them to try out by playing back the video or slowing it down. Also, they will need to be trained prior to this lesson to slow down the video on YouTube.

The learning community at Hilltop Elementary School is supportive of teachers furthering their education. Hilltop Elementary School is also supportive of finding ways to serve their students so that they learn in a way that best supports the students knowledge and ability to become successful. Our district's motto is "It Matters to this One," meaning we are not going to leave any student behind in their pursuit to become the best person and student they can be. Staff will find a way to serve the community to support our learners and make a difference to support their learning needs.

Summary:

Through this online course, the focus is teaching fourth graders how to complete a long division problem. The online course will take place on Canvas with four lessons. Lesson one is the introduction to division along with "Big 7," lesson two the learner will be able to solve a two-digit by one-digit problem, lesson three adds a place value to solve a three-digit by one-digit problem, and lesson four adds another place value for four-digit by one-digit long division problems. Each lesson will have questions for the learners to solve about what they learned from that particular lesson. By the end of this course, fourth graders will have gained the skills to complete a long division problem, up to four-digit by one-digit, utilizing the standard algorithm.