Edge Hill university Logo Department of Primary & Childhood Education Lesson Sequences

This plan for a sequence of lessons should ensure clear progression in **composite knowledge** *through* **component knowledge**.

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| **Date:** Sept 2021 | **Class:** Year 2 | **Subject/topic:** Mathematics – Addition (bridging 10) |
| **Prior knowledge:**  *how does this lesson fit in with a sequence of lessons-what components have previously been taught?*   * Number Bonds to 10. * Augmentation – when a quantity is increased by another (adding on). * Aggregation - combining 2 or more quantities. * Addition of 2 numbers to 10. | | |
| **Composite learning:**   * By the end of this sequence of lessons, pupils will know about the addition of three or more single-digit numbers in the context of both aggregation and augmentation * By the end of this sequence of lessons, pupils will understand the importance of the laws of commutativity and associativity in the context of adding three or more numbers * By the end of this sequence of lessons, pupils will be able to apply written and mental strategies for the addition of three or more addends, using partitioning, commutativity and associativity. | | |

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|  | **Learning objective(s) [components]:** | **Outline of Learning Sequence:**  *Consider the role of the teacher, children’s steps in learning and adaptive teaching* | **Resources:** | **Evaluation:** |
|  | Addition of three addends | * Teacher to demonstrate practical & pictorial contexts of aggregation of 3 parts to 10. * Introduce general representations using three tens frames and part- part-part whole models to support connection between concrete, pictorial and abstract. * Children practise with different representations and written equations. | Tens frames | **Review augmentation with** |
| **Lesson 1** | can be described by an aggregation story with  three parts. | Counters Visual  representations of 3 | **(x,x,x).**  **All others achieved LO.** |
|  |  | numbers adding to |  |
|  |  | 10 or less. |  |
|  | Addition of three addends | * Children act out augmentation stories of 3 addends to 10. * Children connect practical representations with tens frames as story is told. * Teacher to model use of part-part-part-whole and writing of equation, check children can make the links between pictorial and abstract. * Model augmentation on a number line. * Children practise with blank number lines, either from scratch or choosing correct equation/ representation. | Tens frames | **All achieved LO either** |
| **Lesson 2** | can be described by an  augmentation story with | Counters  Blank number lines | **written or acting (verbally).** |
|  | a *‘first…, then…, then…,* | Visual |  |
|  | *now…’* structure. | representations of 3 |  |
|  |  | numbers adding to |  |
|  |  | 10 or less. |  |

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| **Lesson 3** | The order in which addends (parts) are added or grouped does not change the sum (associative and commutative laws). | * Introduce - ‘When we add three numbers, the total will be the same whichever pair we add first.’ And demonstrate with practical items (aggregation). * Demonstrate with augmentation story, swapping “thens” and “first”,   use a pictorial representation.   * NOTE – it is harder to understand changing order in augmentation than aggregation. * Transfer representations to pert-part-part-whole structures and number lines and ask children to identify what is the same and different. | Blank number lines Visual representations of 3 numbers adding to 10 or less (augmentation and aggregation). | **Issues with how to use blank number lines – revert to pre labelled ones.**  **HAPs needed more challenge.** |
| **Lesson 4** | When we are adding three numbers, we choose the most efficient order in which to add them, including identifying two addends that make ten (combining). | * Explore different ways of calculating the sum of three addends. * Make sure connection between context, pictorial and abstract is explicit by use of questioning and modelling. * Use tens frames, part-part-part-whole to build towards missing number sentences. * Promote depth using magic squares * Move on to totals greater than 10 in contexts, pictures, tens frames   building to “we can look for pairs of addends which sum to 10”.   * Practise with written equations and choosing which can use a “make 10” strategy. * Use stem sentences “ \_ plus \_ is equal to ten, then ten plus\_ is equal to \_” | Tens frames Counters Visual  representations of 3  numbers bridging 10 or less. | **LO achieved independently by all except (X,X,X,X) who achieved with my support and use of tens frames.** |
| **Lesson 5** | We can add two numbers which bridge the tens boundary by using a ‘make ten’ strategy. | * Teacher uses a real life context that children model on tens frames for the sum of 2 addends bridging 10, where partitioning of one number is used to make 10 ie 7 +5 = 7+3+2. * Model stem sentence ‘First I partition the : plus is equal to ’ • ‘Then plus is equal to ten…’ • ‘…and ten plus is equal to .’ * Working in pairs children explore other examples using tens frames and stem sentences. * Build towards missing number equations. * Some children will continue using concrete resources, encourage them to visualise the partitioning. * Some children can find answers in as many ways as possible. * To promote depth use < > | Tens frames Counters Missing number sentences  Blank number lines | **X,X,X,X still working within 10 with TA support.**  **LO achieved by everyone else and stem sentence completed either written or verbally.**  **HAPs successfully completed missing number questions and finding all possibility questions.**  **Did not get time to introduce**  **< and >.** |