Place Value Instructional Activities

Chapter 10 in your Purple Book – Teaching Number in the Classroom

Chapter 8 – Two-Digit Addition & Subtraction: Jump Strategies

Assessment/Instructional Activity		Materials
A8.1	Forward & Backward Number word sequences By 10s, on and off the decade	none
A8.2	Adding from a decade and subtracting to a Decade	writing book and pens/pencils
A8.3	Adding to a decade & subtracting from a Decade	writing book and pens/pencils
A8.4	Incrementing and decrementing by 10s on And off the decade	ten strips, four strips, etc, screen
A8.5	Incrementing flexibly by 10s and ones	see pg. 129-paper copy, 2 screens
A8.6	Adding 10s to a 2-digit number and Subtracting 10s from a 2 digit number	writing book and pens/pencils
A8.7	Adding two 2-digit numbers without Regrouping	writing book and pens/pencils
A8.8	Subtraction involving 2-digit numbers with And without regrouping	writing book and pens/pencils
A8.9	Addition and subtraction using transforming, Compensating, and other strategies	writing book and pens/pencils
I8.1	Leap Frog	game board (cd), spinners (cd), counters Or markers, paper clips, scrap paper
I8.2	Bead String with Ten Catcher	String of 100 beads, screen or tube
I8.3	Add or Subtract 11	Add or subtract 11 game board and spinner (cd), counters or markers, Paper clip
I8.4	Add to, or Subtract from, 49	Add or Subtract from 49 game board & Spinners (cd), counters or markers, Paper clip
I8.5	Calculator Challenge	Calculator for each individual or team, paper and pencil
I8.6	Jump to 100	hundred square, 2 paper clips, spinners,

		Markers or tokens, paper, pencil
I8.7	Jump from 100	hundred square, 2 paper clips, spinners, Markers or tokens, paper, pencil
I8.8	Target Number	Hundred squares, counters
I8.9	Walk-about Sequence	none
I8.10	Non-standard measurement plan	connecting cubes, string, adding Machine tape, items to measure

Chapter 9 – Two-Digit Addition & Subtraction: Split Strategies

Assessment/Instructional Activity		Materials
A9.1	Higher Decade Addition & Subtraction Without and with bridging the decade	base ten materials (popsicle sticks) and screen
A9.2	Partitioning & Combining Involving Two Digit Numbers	base ten materials (popsicle sticks) and screen
A9.3	Combining & Partitioning Involving Non-canonical Forms	base ten materials of 2 different colors two screens
A9.4	Addition Involving Two 2-digit numbers Without and with regrouping	base ten materials of 2 different colors two screens
A9.5	Subtraction involving two 2-digit numbers Without and with regrouping	base ten materials, screen
I9.1	Follow the Pattern	worksheets with number patterns
I9.2	Ten More or Ten Less	base ten materials, screen, whiteboard
I9.3	Counting by Tens	base ten materials, screen
I9.4	Add or Subtract Tens	base ten materials, screen, whiteboard
I9.5	Adding Tens and Ones Using Money	bills or coins, advertisements or pictures of items with their cost
I9.6	Screened Subtraction Task	base ten materials, screen, paper
I9.7	Split the Subtrahend (Multiples of 10)	base ten materials, screen, paper

***These ideas are from the participants in Course Two and are meant to give you ideas on how to stretch an activity to bring students to a deeper understanding of the concepts they are working on. They are intended only to provide you with some ideas on how these activities could be used to promote student learning – not a specific lesson plan. Remember to adapt to the needs of your student.*

Moving from Construct 0 to Construct 1

Emergent – looks at things as individual unit items, using count-by-one strategies, no particular significance on ten.

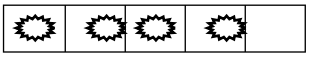
Intended learning-Develop a sense of 5 and 10

1. Naming/Visualizing Ten-Wise Patterns for 15-20 (IA.7.5) Page 114

2. Bus Snap (IA7.3) Page 113
   Emphasis on counting a 10 and adding on 1's

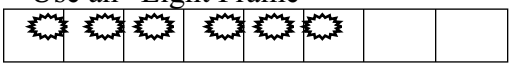
3. Using Ten-Plus Combinations (IA7.5) Page 114
   Emphasis on the 10's as a group

   Day 1:
   Use a "Five Frame" Flash different numbers



   Ask –"How many dots?" "How many empty squares?"
   "Can you show me the same on your fingers, using one hand?"

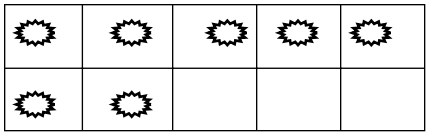
   Day 2:
   Use an "Eight Frame"



   Flash 6,7,or 8
   *Encourage use of 5 as a base 5+1, 5+2, 5+3

   Ask "How many dots/empty squares?"
   "Can you show mw on your fingers?"

   Day 3:
   Use a "Ten Frame"



   Flash different numbers and ask questions
   Always have a 5 to keep that base-6, 7,8,9,10
   Eventually establish <u>10</u> as another base

   Day 4:
   Memory Game – p. 78
   Use dot cards and numerical cards to create matches.

Moving from Construct 1 to Construct 2

Tens and Ones – Ten is treated as something constructed out of ten ones, but one ten and ten ones do not exist for the student at the same time.

1. 100 Square Activity (IA6.3) Page 91
   - Day 1: Hundreds chart and snap cubes. On a given number place counter. Place 10 cubes in FNWS. Place counter on ending point. Repeat with other numbers. Reconstruct cubes to a group of 10.
   - Day 2: Same as day 1 but use transparent counters.
     *Variations: Start on decade, BWNS, multiples of 10, use 101-200 chart, 1-25 chart, 1-50 chart.

2. Double Decker Bus Flashes-Activity (IA7.1) Page 105
   - Day 1: Ten-plus combinations
     Observe and count 10 on bus
     Flash 10+2, 10+5, 10+7
   - Day 2: Have students show arrangements of 10-20 people on bus and explain.
   - Day 3: Extend number of rows of 3 groups of 10

3. "Build the Number" Appendix 1-page 1 in Teacher's Manuel (cards 1-50)
   - Day 1: Draw a number card and build number on abacus
   - Day 2: Build number and add 10
   - Day 3: Build numbers with sticks and bundles

4. Five and Ten Game (IA7.6) Page 116
   - Day 1: Roll colored-dice (0-3) and build 2-diget numbers.
   - Day 2: Roll one dice build 2-2diget numbers to add
   - Day 3: Brain Fry

5. FNWS and BNWS by 10's (IA8.1) Page 126
   - Day 1-Begin with bundles of 10 on the decade screened.
   - Day 2-Remove 1 bundle at a time moving backwards unscreened.
   - Day 3-Do above process but screened (fwd and bkwd)
   - Day 4-Repeat steps 1 and 2-screaned and off decade.

6. Bead String with 10 Catcher (IA8.2) Page 136

Day 1-Begin with groups of 10 on the string-unscreened-then add on the decades

Day 2-Repeat day 1 going backwards, unscreened

Day 3-Repeat day 1-screened

Day 4-Repeat 2 (bkwds)-screened

Day 5-Use off decade numbers

7. Add or Subtract Tens (IA 9.4) Page 152

Day 1-Using bundled sticks, unifix cubes, base 10 blocks, etc., students will identify increments of 10-unscreaned (using decade numbers).

Day 2-Repeat day 1 but screened.

Day 3-Students identify increments of 10 using non-decade numbers-unscreened.

Day 4-Repeat day 3-screaned.

*Note: When moving from Construct 1 to Construct 2, the process is essentially the same but the manipulatives should be varied.

Moving from Construct 2 to Construct 3

Tens and Ones with materials – Tens is treated as a single unit while still recognizing that it contains ten ones. Students use one of the following with materials – jump strategy, split strategy, split-jump strategy

1. Leap Frog (IA8.1) Page 134

Day 1: Play game using 100's chart for the support.

Day 2: Play game using number.

Day 3: Play game using number line for support.

Day 4 & 5: Play game without additional learner support.

2. Jump to 100 (IA8.6) Page 139

Day 1: (+ version) Use 100 chart and empty number line for support.

Day 2: (+ version) Try mentally explain to partner who records, then check using day 1 strategies.

Day 3: (- version) Repeat as day 1
Day 4: (- version) Repeat as day 2
Day 5: Try both +, and – without supports

3. Adding 10's and 1's using Money ((IA9.5) Page 153

Day 1: Use 10 dollar and 1 dollar bills to add the cost of two items.

Day 2: Same as day 1

Day 3: Challenges students to figure the cost of the 2 items using mental math. *Students may check using 10 dollar and 1 dollar bills.

Day 4 and 5: Same as day 3

4. Leap Frog (IA8.1) Page 134

Day 1: Play game (Allow students to use bundling sticks)

Day 2: Play game (Allow bundling sticks and empty number line)

Day 3-4: Play game and only use empty number line.

Day 5-7: Play game using no support materials (bundling sticks/number line)

5. 10 More or 10 Less (IA9.2) Page 151

Day 1: Use bundling sticks to add 10 (no screening) and mult. of 10.

Day 2: Use same materials as D1 but screen the first group of sticks.

Day 3: Show student initial grouping and ask them to add or subtract 10 or a multiple of 10. Show them second grouping and screen both groups. (This will move them away from using materials).

Day 4-5: Add 10 or take away 10 using no materials.

6. Walk About Sequences (IA8.9) Page 141

Day 1 and 2: Play game using a number chart.

Day 3: Play game without materials

Day 4: Play game without materials and focus on numbers within the decodes

Day 5-7: Play game the same way as day 4 and extend beyond 100, if appropriate for the group.

7. Page Double Decker Busses (IA7.1) Page 111 - Using 10 plus combinations (Modified)
(2 copies each Double Decker Busses/Child; Place value Blocks or Craft Sticks; Number Cards >10 to 75 -Modify-Adjust as needed)

Day 1: Place 10 cards randomly in a line. Have each child choose 2 cards. Students build the numbers on the two bus mats and find the total.

Day 2: Continue as day 1 - Change to subtraction, Use 1 bus mat each child takes 2 cards and makes sure they use the larger card 1st.

Day 3: Continue with larger numbers using Addition and subtraction

Day 4: Continue Activity - Use 2 cards each person, Allow building the 2nd number with place value blocks or sticks (12+**11**…….=28)

Day 5: Take away the place value blocks and busses. Use cards - Add whiteboards - Use jump strategies or split strategies Continue as needed.

8. Bead String with 10 Catcher (IA8.2) Page 136

Day 1: Adding on without a cover (decade) example: 46 -add roll a 6 -add

Day 2: Use a cover-Same as day 1 (paper towel tube)

Day 3: Explain thinking and use an empty number line (ENL)

Day 4: Both numbers greater than 20 for Add-ons

9. Leap Frog (IA8.1) Page 134

Day 1: Play game-use base 10 blocks or sticks to create numbers.

Day 2: Same as day 1, but only build 1 number.

Day 3: Play with no base 10 blocks

Day 4: Try Leap Frog B

Moving from Construct 3 to Construct 4

Tens and Ones without materials. Ten is treated as a conceptual structure that is available in the absence of materials. Student uses on of the following strategies – jump strategy, split strategy, split-jump strategy

**Regardless of the activity, moving from Stage 3 to Stage 4 requires that the student solve, and explain problems in more than one way (flexibility). In addition, students need to recognize which strategy is more efficient.

1. Count Around (IA3.1) Page 40

Students count at varied intervals, forward/backward, Across decades in the hundreds

- Student could create their own board by changing the numbers on the spinner or changing the title. (Ex. Add or subtract 23)

2. Leap Frog (IA8.1) Page 134

   Use spinner B and other spinners that are not decade numbers - Ask students "Is there another way" OR "Is this the most efficient way"

3. Add or Subtract 11 (IA8.3) Page 137

   Can use the same spinner as above activity
   Student could create their own board by changing the numbers on the spinner or changing the title. (Ex: Add or subtract 23)

4. Split the Subtrahend (IA9.7) Page 154

   Option 1

   Day 1 Model for whole group Addition problems only (revise spinner)

   Day 2 Play game in pairs Addition problems only

   Day 3 Play game in pairs Addition and subtraction

   Option 2

   Day 1 Use numbers that don't require regrouping (i.e. digits in ones' place on the board go up to 6 and go up to 3 on the spinner)

   Day 2 Use numbers that would require some regrouping (i.e.the spinner will now have numbers that go up to 6 in the ones' place)

   Day 3 Use many numbers that require regrouping

   Day 4 Play with a partner who must solve the problem a different way – no manipulatives

5. Calculator Challenge – Jump Strategies (IA8.5) Page 138

   Day 1 Use numbers that can be achieved by jumps of ten (with addition). Also use mental math to check answers. Ex 54+___=74

   Day 2 Use numbers that require jumps of more than 10. Ex. 53+___=74

   Day 3 Use subtraction problems.

6. Follow the Pattern (IA9.1) Page 151

   Day 1 Have students explore addition patterns such as 3+4, 13+4, etc.

   Day 2 Have students explore subtraction patterns

   Day 3 Use larger number that bridge the decade.

7. Split the Subtrahend (A9.7) Page 154

   -80-20=60, 80-20-1=59, 80-21=…
   -Ask students: "Is there another way?" Encourage jump strategy

Moving from Construct 4 to Construct 5

Facile with structuring numbers to 100 – tens and ones are flexibly treated as conceptual structures. Student is able to choose from a range of mental strategies to solve 2 digit addition and subtraction problems

1. Number Words and Numerals to 1,000
   - A. Number Word Before, Number Word After
     239, ____, 241
   - B. Numeral Track

269			272

2. Incrementing and Decrementing by Tens-Page 151

   (IA9.2) A. 126 **136** 146 "Ten before and ten after"

   (IA 9.1) B. "Follow the Pattern" 276-8=268 → 266-8=258

3. Incrementing and Decrementing by Hundred
   - A. "100 Before, 100 After"
   - B. "Follow the Pattern"
   - C. "Count at by 100's

4. Adding/Subtracting 3-digit Numbers

   "Adding 100's, 10's, and 1's using Money"
   "Screened Addition or Subtraction" (IA9.6)
   Base 10 Blocks
   Demo/Practice "Jump Strategy"

   363-121=