Data Transmission Relay

Participant Name:	**Miranda Fiacco**
District:	**Edwards-Knox Central School District**
Grade Level:	**5**
Subject/Course:	**ELA**
Cross-curricular Link:	**Students learn about data transmission while reinforcing paragraph structure.**
Approximate Time (IN MINUTES):	**60**

CONTENT AND SKILLS

Learning Objectives:

- Students will demonstrate an understanding of how data is structured and transmitted through a network.
- Students will apply their knowledge of paragraph structure (claim, proof, restated claim) to write a letter.
- Students will experience the challenges of transmitting and reassembling data accurately through a situational model.

Essential Questions (optional):

- How does a computer network send and receive information?
- Why is structure important when transmitting data or writing a paragraph?
- How does breaking data into smaller packets relate to organizing ideas in writing?

Students' I can statements . . .

- I can explain how data is broken into packets and sent through a network.
- I can create a structured paragraph using a claim, proof, and restated claim.
- I can work with my team to send and reassemble data in a way that makes sense.

How will you meet the needs of SWD and ELL/MLL students?

- Teacher will Check for Understanding at each step in the process.
- Teacher can provide sentence strips.
- Teacher can also provide pre-written claims, details, and conclusion statements that students can organize instead of writing a new paragraph.
- Teacher can give directions to send the individual sentences as their own packets and provide a template as a visual for the person reassembling the sentences.
- Teacher can provide visuals showing how packets are created and transmitted.

NYS COMPUTER SCIENCE AND DIGITAL FLUENCY STANDARDS

List all standards that authentically align (e.g., K-1.CT.4)

- 4-6.NSD.4 Model how data is structured to transmit through a network.
- 4-6.CT.3 Visualize a simple data set in order to highlight relationships and persuade an audience.

OTHER SPECIFIC STANDARDS (e.g., Content, SEL Benchmarks)
List all standards that authentically align
https://www.p12.nysed.gov/sss/documents/SELBenchmarks2022.pdf

- NYS.NG.ELA.5W2a: Introduce a topic clearly, provide a general focus, and organize related information logically.
- NYS.SELB.2C.2b. Engage in strategies to work effectively and cooperatively across lines of difference.

INSTRUCTIONAL PLAN
List the steps of the lesson, including instructions for the students.
Add and highlight Standard Indicator next to activity that aligns

1. Anticipatory set (10 minutes)
    a. Briefly review paragraph structure:
        i. Claim: The main idea of the paragraph.
        ii. Proof: Three supporting details or examples.
        iii. Restated Claim: A conclusion or rephrased main idea.
    b. Review key concepts of data transmission:
        i. Data is broken into packets for transmission.
        ii. Packets may arrive out of order but must be reassembled correctly.
        iii. The network controls the flow of packets.
2. Introducing Activity (10 minutes)
    a. Student Roles:
        i. Writer (Data Creator): Writes a paragraph using the practiced paragraph structure (claim, 3 details, closing statement)
        ii. Sender (Packet Creator): Cuts the paragraph into packets to fit through the slot.
        iii. Receiver (Reassembler): Reassembles the packets into the original paragraph.
    b. Rules for the activity:
        i. The Sender and Writer cannot tell the Receiver what to do or cross the walls to assist the Receiver. They can only encourage the Receiver and suggest strategies.
        ii. The teacher (representing the network) will deliver packets, possibly out of order.
        iii. **The goal:** make reassembly as easy and accurate as possible.
3. Activity (30 minutes) NYS.SELB.2C.2b.
    a. Writing the Paragraph (10 minutes) 4-6.CT.3 ELA.5W2a
        i. The writer will write a paragraph about a topic they know a lot about (ex. animal, sport, hobby), using the claim, details, and conclusion statement paragraph structure.
    b. Creating Packets (5-10 minutes) 4-6.NSD.4 4-6.CT.3
        i. The sender cuts the paragraph into packets that can fit through the slot in the cardboard wall.
        ii. Encourage creativity. Labeling or numbering packets is acceptable and a good form of error checking.
    c. Transmitting and Reassembling (10 minutes) 4-6.NSD.4
        i. The teacher delivers the packets through the slot in the other cardboard wall to the receiver.

ii. The receiver reads the pieces and reassembles the packets in the most logical order using the paragraph structure that has been practiced.

4. Closing Activity (10 minutes)
    a. Students will meet in their teams to reflect on the challenges and share out after:
        i. What made reassembling easier or harder?
        ii. How does this relate to data transmission in a network?
        iii. Discuss and list strategies that worked well for packet creation and reassembly.
        iv. How is structured data important in both writing and computing science?

Assessment:

1. Observe teamwork and cooperation.
2. Evaluate the reassembled paragraphs for accuracy and structure.
3. Exit ticket:
    a. Describe how the activity demonstrated data transmission.
    b. Share one thing they learned about both writing and networks.

SPECIFIC NEEDS: MATERIALS / RESOURCES / TECHNOLOGY

Add additional resources needed for this lesson such as instructional technology templates, images, videos, etc.

- Lined paper (for writing the paragraph)
- 2 Cardboard “walls” with a thin 1 inch long slot (representing the network's size constraints)
- Scissors (for cutting the packets)
- Tape (for reassembling packets)
- Pencils (for labeling packets)
- Sentence Strips (optional: used for differentiation for students with difficulty with handwriting)
- Paragraph Template (optional: used for differentiation for students with difficulty organizing writing)
- Pre-written paragraphs (optional: used for differentiation for students with difficulty composing longer pieces)

Optional Paragraph Writing Template

Name:_____ Date:_____

Topic Sentence: _____

_____

_____

Detail 1:_____

_____

_____

Detail 2:_____

_____

_____

Detail 3:_____

_____

_____

Closing Sentence: _____

_____

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