Kindergarten Science Program Study Group

General Curriculum Committee Presentation
April 18, 2023
Howard Eakes, Acting Supervisor of Science and Assistant Supervisor Outdoor Education
Kathy Griffin, Coordinator of Early Childhood Programs
Amy Ryan, Curriculum Specialist in Elementary Science
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REQUEST

- The Offices of Science and Early Childhood request approval to form a kindergarten curriculum writing team to revise and update the current Kindergarten Science Program to fully align with the *Next Generation Science Standards*.

BACKGROUND

- **2015** – Early Childhood Office updated and GCC approved the NGSS aligned Kindergarten Science TUB (Thematic Unit Based) curriculum

- **Summer 2019** – Science Office led elementary curriculum teams in the review of curriculum which focused on identifying curricular gaps
  - Multiple kindergarten gaps were identified which warrant revisions to the curriculum
  - Developed NGSS alignment documents and potential curriculum plans
  - Several revision options were developed, including the consideration of commercially produced programs versus "in-house" rewriting

- **Fall 2019** – Science Office shared findings and potential revision plans with the Early Childhood Office and prepared for additional work for the Spring and Summer of 2020

BACKGROUND

- **Summer 2021** – A curriculum team was revived to review the work from Summer 2019 and to consider revision options
  - Reviewed NGSS alignment documents and potential curriculum plans from Summer 2019
  - Discussed the HCPS curriculum writing process
  - Previewed commercially produced programs from four publishers who have written NGSS aligned units

- **Fall 2021** – With GCC approval, a North Star Early Childhood subcommittee was formed to review and recommend science published programs to field test.
  - Reviewed five published programs and recommended two for field testing at 7 elementary school with 27 teachers initially participating:
    - Smithsonian Science from Carolina Biological
    - Inspire Science from McGraw-Hill
  - Schools (Teachers): North Harford (2), Red Pump (6), Youth's Benefit (4), Homestead-Wakefield (4), Churchville (3), Bakerfield (4), Hall's Cross Roads (4)

BACKGROUND

- **<u>Spring 2022</u>** – Field test ***Physical Science*** module from each program (27 teachers)
    - Smithsonian Science – *How Can We Change an Object's Motion?*
    - Inspire Science – *Make Things Move*
  - Conducted Science Walkthroughs to observe programs in action with students
  - Gathered teacher feedback through survey and held a teacher debrief to discuss data collected.

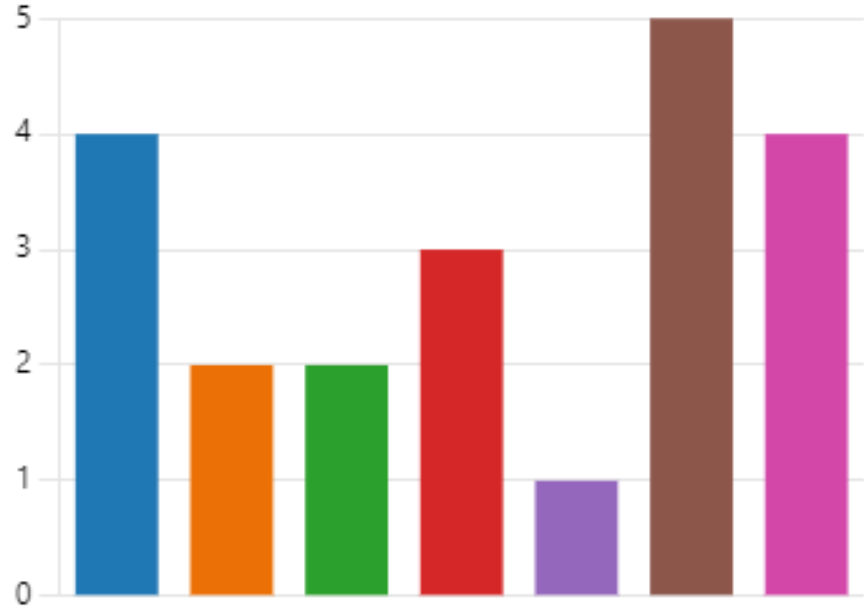
- **<u>Winter 2022-23</u>** – Field test ***Earth Space Science*** module from each program (24 teachers)
    - Smithsonian Science – *How can we be ready for the weather?*
    - Inspire Science – *Weather and the Sun*
  - Conducted Science Walkthroughs to observe programs in action with students
  - Gathered teacher feedback through survey and held an Early Childhood/Science Office debrief to discuss data collected to make an informed decision moving forward for kindergarten science curriculum

Findings - Field Test Schools

School - Select your school: (0 point)

More Details

Bakerfield	4
Churchville	2
Hall's Cross Roads	2
Homestead-Wakefield	3
North Harford	1
Red Pump	5
Youth's Benefit	4



Findings - Student Engagement

9. **Student Engagement:** How engaging were the lessons/activities for kindergarteners?

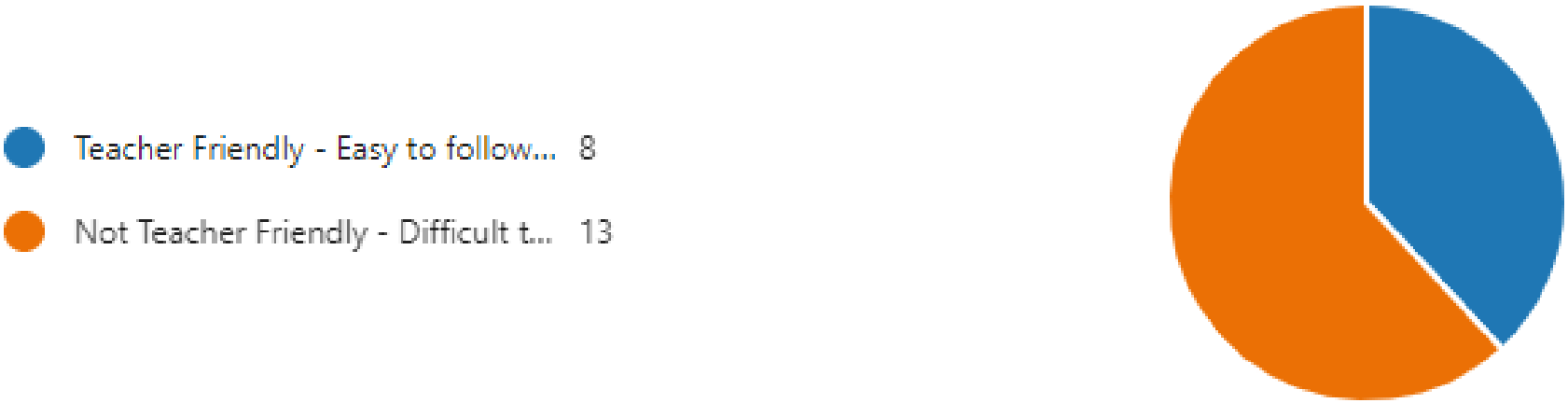
More Details Insights

Very Engaging	3
Engaging	6
Somewhat Engaging	10
Minimally Engaging	2

Findings - Digital Resources

11. **Digital Resources:** Digital resources were: (0 point)

More Details



Findings - NGSS Shift in Teacher Knowledge

12. Personally, did the program **shift your thinking** in how to teach science in kindergarten considering the *Next Generation Science Standards*?

More Details

Yes	4
Somewhat	10
No	7

Teacher Reflection on NGSS Shifts

- It somewhat shifted my thinking. It made me realize **it is ok not to have an answer or the correct answer.** Students observe in their own way and generate their own ideas even if it is not the direction me as a teacher feels it should go.
- **Having students question their thinking and the exploration** of pictures, videos, and activities **gave students a chance figure out the answer** without just telling them.

Teacher Reflection on NGSS Shifts

- It was a tough shift to let the students give examples and ideas that "I thought" could possibly be incorrect or off target. For example: *How did the pole get wet on one side?* Rather than correcting their ideas or showing doubt, **it was so beneficial to see the children correct their OWN thinking in the follow up lessons**. That was **hard for me at first but** I felt it was **empowering to the children**.

Findings - TUB vs Published Program

14. **TUB vs Program:** Would you prefer to teach this program over the current TUB Unit?

More Details

Yes	5
No	11
Maybe	5

Teacher Reflection on Field Tests

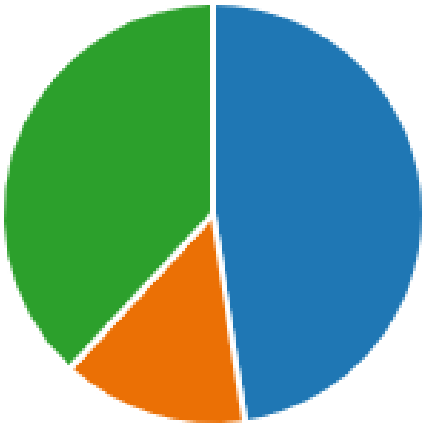
- Through this experience, I can see how **science should be more hands on and engaging**. The programs that we piloted **were not the answer**, but maybe **a view into another way**. The programs do not support teachers in the planning and preparation.
- I had really hope to find a program that we could replace our units with. I liked both of them, but I guess I have **mixed emotions now that I have used them in practice**. My challenge is **that neither program really got the students engaged** and was **a lot of teacher talking, video, and paper tasks** of sorting cards, or **filling out a workbook**. (original curriculum writer)

Key Survey Results - Ranking Winter 2023 Kindergarten Field Test

	HCPS TUB Unit REWRITE	Smithsonian Science (Carolina Biological)	Inspire Science (McGraw-Hill)
Ranking 1	14	0	7
Ranking 2	7	11	3
Ranking 3	0	10	11

Findings - Potential Curriculum Writers

Yes	10
No	3
Maybe (depends on the dates/ti...	8



18 + 2 = **20 potential committee members**

ADDITIONAL ACTIONS
(pending GCC approval)

- **Spring 2023:** establish a curriculum writing team to include key stakeholders that have had science training in NGSS and 5E lesson structure to fully align the kindergarten science TUB units.

- **Summer 2023 - Summer 2024:** curriculum writing team will revise the kindergarten science TUB units into four units – Earth Space Science, Physical Science, Life Science and Engineering.

- **September 2024:** seek GCC approval for updated curriculum and next steps to include kindergarten science professional development

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