VALLEY STREAM DISTRICT 30

the friendly schools

BOARD OF EDUCATION ANNUAL UPDATE
2016-2017

STRATEGIC PLAN, 2015-2020
ADOPTED JUNE 15, 2015

CURRICULUM: Science

Presented by: Christopher Colarossi

CORE SUBJECTS AND 21st CENTURY THEMES

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

LIFE AND CAREER SKILLS

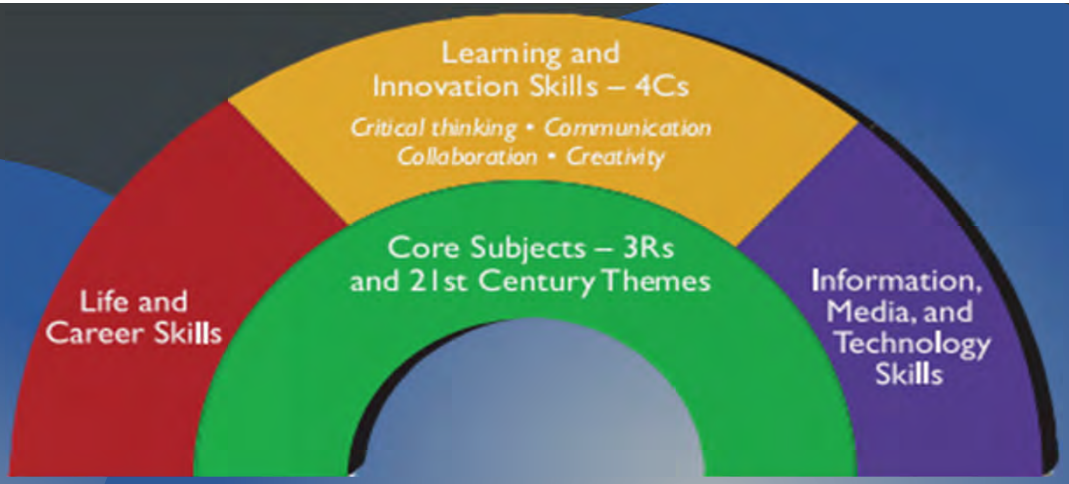
- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

LEARNING AND INNOVATION SKILLS

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

INFORMATION, MEDIA, AND TECHNOLOGY SKILLS

- Information Literacy
- Media Literacy
- ICT (Information, Communications and Technology) Literacy



21st Century Learning Objectives Area: Core Subjects & 21st Century Themes

Students will receive instruction and show grade appropriate growth in the following core subjects: English Language Arts, Arts, Mathematics, Science, and Social Studies as measured by local assessments.

In addition, students will extend their understanding of core subjects at much higher levels by weaving 21st century interdisciplinary themes (i.e., Global Awareness, Financial, Economic, Business, and Entrepreneurial Literacy, Civic Literacy, Health Literacy, Environmental Literacy into core subjects.

GOAL 1: "To enhance our core curriculum, enabling Valley Stream #30 students to develop 21st century skills that promote lifelong learning."

Process Objective *Phase: Implementing*	**Monitor K-6 Science curriculum implementation and its alignment to the Next Generation Science Standards with district-wide fidelity.**

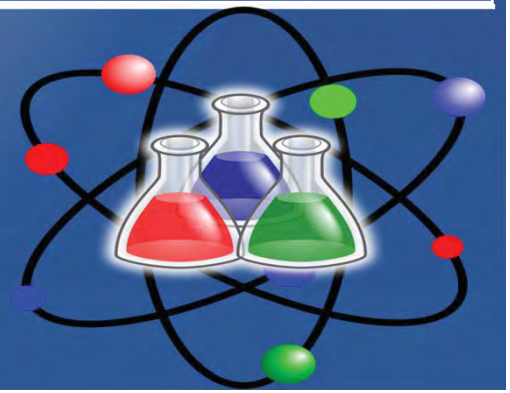
o Increase use of STEAM Aides to assist teachers with classroom lab set-up support

o Science Teachers will increase teachers' use of Science 21 assessments (i.e., test/rubric)

o Science Teachers and STEAM Aides will increase push-in support to Grade K's new curriculum

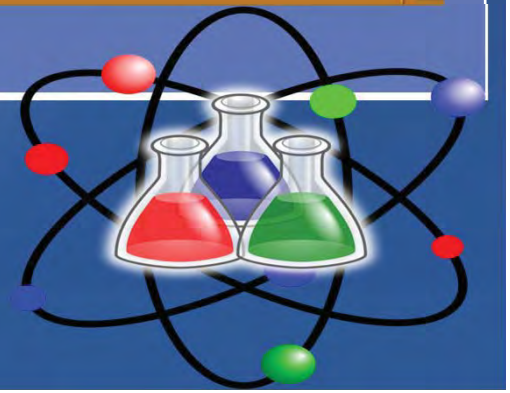
o Science Teachers will focus on push-in support in the following areas: Science State Assessment G4, live specimen labs, Science Fair G6 , and Science Research Studies G3-5-6 .

CIAC Strategic Plan Alignment Strategies



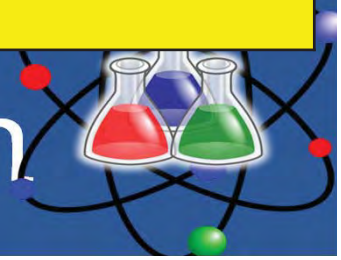
District Core Science Program

- SCIENCE 21 kits that have an integrated curriculum which align to the New York State Learning Standards for Mathematics, Science and Technology.
  - Students conduct investigations that explore physical, life, and earth science topics, in which their experiences build conceptual understanding from unit to unit and grade to grade.
- Staffing:
  - Science teachers: 1.5 FTE
  - STEAM aides: 3 FTE
- Push in Co-Teaching Model
- Resources:
  - Mobile Science carts
  - Perishables & non perishables
  - STEAM Kits, STEAM Challenges
  - Live specimen order with teachers
  - Science tools and equipment to support gr. 4



	Year 1: 16-17	Year 2: 17-18	Year 3: 18-19	Year 4: 19-20	Year 5: 20-21
K	Science 21"Update" Year (3) Program & NGSS PD (1) Grade-level NGSS PD	(1) Refresher Program & NGSS PD (1) Grade-level NGSS PD	(1) Grade-level NGSS PD	(1) Grade-level NGSS PD	(1) Grade-level NGSS PD
1	Science 21-NGSS Alignment (1) Grade-level NGSS PD	Science 21"Update" Year (3) Program & NGSS PD (1) Grade-level NGSS PD	(1) Refresher Program & NGSS PD (1) Grade-level PD	(1) Grade-level NGSS PD	(1) Grade-level NGSS PD
2		Science 21-NGSS Alignment (1) NGSS Program Alignment PD (1) Grade-level NGSS PD Grade 4 NYS Assessment	Science 21"Update "Year (3) Program & NGSS PD (1) Grade-level NGSS PD	Refresher Program & NGSS PD (1) Grade-level PD	(1) Grade-level NGSS PD
3			Science 21-NGSS Alignment (1) NGSS Program Alignment PD (1) Grade-level NGSS PD Grade 4 NYS Assessment	Science 21"Update" Year (3) Program & NGSS PD (1) Grade-level NGSS PD	Refresher Program & NGSS PD (1) Grade-level NGSS PD
4				Science 21-NGSS Alignment (1) NGSS Program Alignment PD (1) Grade-level NGSS PD Grade 4 NYS Assessment Grade 5 NYS Field Testing	Science 21"Update" Year (3) Program & NGSS PD (1) Grade-level NGSS PD
5					Science 21 Update Pilot (1) Grade-level NGSS PD Grade 5 NYS Assessment-"Possible"
6	Science 21-NGSS Alignment (1) Grade-level NGSS PD NGSS Textbook Review	iScience (3) Program & NGSS PD (1) Grade-level NGSS PD	Refresher Program & NGSS PD (1) Grade-level NGSS PD	(1) Grade-level NGSS PD	(1) Grade-level NGSS PD

NGSS Implementation Plan



Slide 5

1 Chris- Follow-up with Science 21 to find out Grades 2-5 update years. It is important that the chart reflects Grade 5's preparation for the state assessment

Roxanne France, 4/27/2017

K. Forces and Interactions: Pushes and Pulls

Students who demonstrate understanding can:

K-PS2-1. **Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.** [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.]

K-PS2-2. **Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.*** [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
- With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)

Analyzing and Interpreting Data
Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Analyze data from tests of an object or tool to determine if it works as intended. (K-PS2-2)

Connections to Nature of Science

Scientific Investigations Use a Variety of Methods
- Scientists use different ways to study the world. (K-PS2-1)

Disciplinary Core Ideas

PS2.A: Forces and Motion
- Pushes and pulls can have different strengths and directions. (K-PS2-1),(K-PS2-2)
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2)

PS2.B: Types of Interactions
- When objects touch or collide, they push on one another and can change motion. (K-PS2-1)

PS3.C: Relationship Between Energy and Forces
- (NYSED) A push or a pull may cause stationary objects to move, and a stronger push or pull in the same or opposite direction makes an object in motion speed up or slow down more quickly. *(secondary to K-PS2-1)*

ETS1.A: Defining Engineering Problems
- A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. *(secondary to K-PS2-2)*

Crosscutting Concepts

Cause and Effect
- Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2-1),(K-PS2-2)

Connections to other DCIs in kindergarten: **K.ETS1.A** (K-PS2-2); **K.ETS1.B** (K-PS2-2)

Articulation of DCIs across grade-levels: **2.ETS1.B** (K-PS2-2); **3.PS2.A** (K-PS2-1),(K-PS2-2); **3.PS2.B** (K-PS2-1); **4.PS3.A** (K-PS2-1); **4.ETS1.A** (K-PS2-2)

Common Core State Standards Connections:

ELA/Literacy –

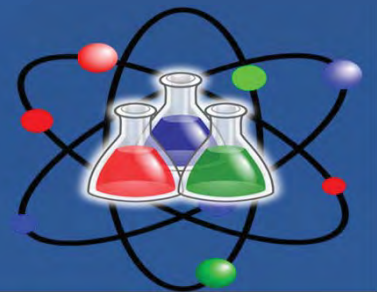
RI.K.1	With prompting and support, ask and answer questions about key details in a text. *(K-PS2-2)*
W.K.7	Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)
SL.K.3	Ask and answer questions in order to seek help, get information, or clarify something that is not understood. *(K-PS2-2)*

Mathematics –

MP.2	Reason abstractly and quantitatively. *(K-PS2-1)*
K.MD.A.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. *(K-PS2-1)*
K.MD.A.2	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. (K-PS2-1)

Standards with a purpose 3-dimensional learning Fundamental shift

NGSS Standards



LESSON 1: May The Force Be With You!
Grade K Unit 2

Unit Essential Question: How do different magnitudes of force (strength) affect the way things are pushed, pulled or change direction?

This lesson directly addresses the Science and Engineering Practices: Analyzing and Interpreting Data; Asking Questions and Defining Problems

Procedure:
-The teacher will have children engage in purposeful experimentation with the movement of a bottle cap. ENGAGE, EXPLORE

-The teacher will facilitate a "closed-eyes" push scenario to elicit the Science and Engineering Practices for this lesson

-"As scientists, we will sketch our observations." EXPLORE, EXPLAIN
Gentle and strong momentum with pushes and pulls will be evaluated.

-Ask the question: What kind of force did I use to move the cap?
To answer the question, you can look at the data or evidence of the push.
Students conduct 3 or 4 closed-eyes pushes (What kind of force did I use?) and answer the question based on the data. "The cap moved far so I used a strong push."
-"Where else can we find this type of force?" EXTEND, EVALUATE

Professional Development

NGSS	Science 21	Alignments/ Enhancements
Standards: 2-LS2-1 2-LS2-2 2 LS4-1	Brief descriptions of the lessons Students will be able to... Unit 3 Lesson 1.1 - observing seeds and bulbs Lesson 2 - How does a seed or bulb grow and change Lesson 3 - What do we want to find out about the crayfish Lesson 4b - How do we set up a suitable home for our crayfish Lesson 5 what can we see when we look at our animals Lesson 6 What body parts can we identify on our animals	Are the Dimensions covered within the lesson(s)? If not, where can we enhance the lesson(s)?
Engineering Practices: • Make observations to collect data • plan and conduct an investigation		Aligned ✓ Enhancements needed: Comparisons of seeds and the types of plants they grow (from BOCES ESP kit)
Disciplinary Core Ideas: • Some plants depend on animals for pollination • plants depend on water, light and air to grow		Aligned ✓ Enhancements needed: lessons on interdependence of plants and animals or plants and insects
Crosscutting Concepts: • Sort and classify organisms • Events have causes that generate observable patterns		Aligned ✓ Enhancements needed: observing a different type of animal that goes through a life cycle (frogs, butterflies)
ELA/Math CCLS: Use tools strategically Draw a picture + bar graph		Aligned ✓ Enhancements needed: Measurement lessons from BOCES ESP Kit 5

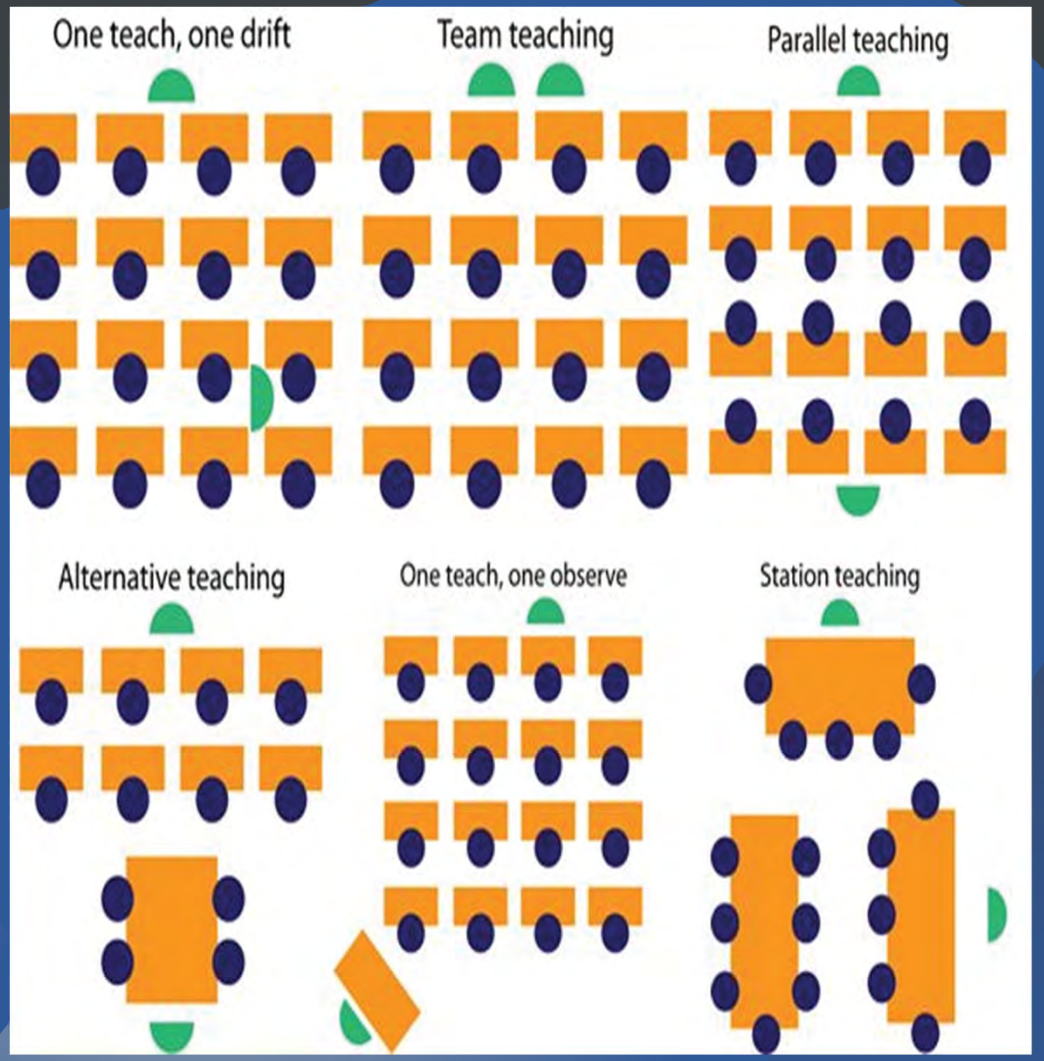
NGSS & Science 21 Alignment

Science Teacher

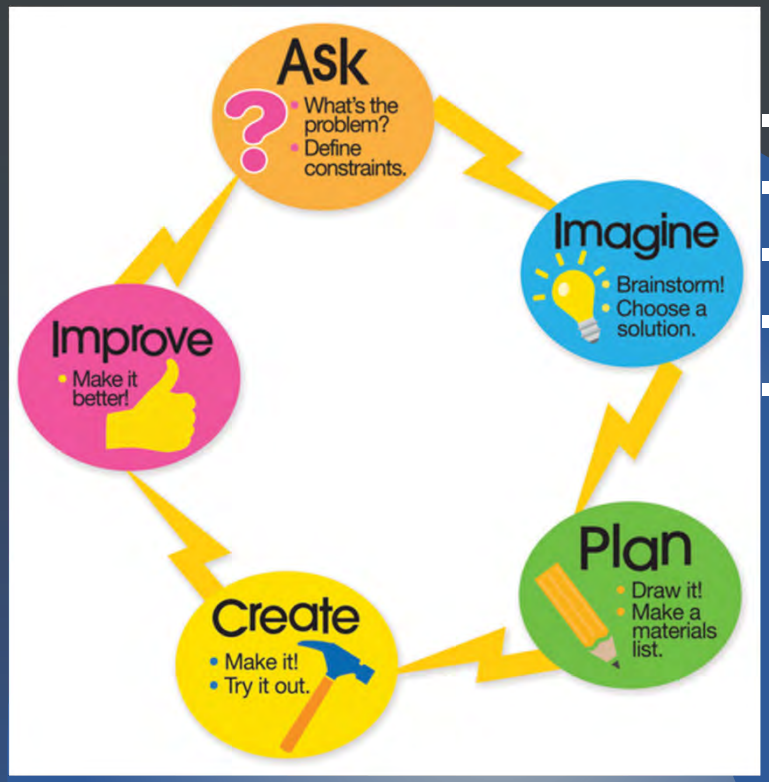
- Push-in Lab Co-Teaching Model- Grades K-5
- Refining schedule and scope & sequence
- Assessment Administration & Scoring
- Science Fair Planning - Grade 6
- Ecology Population Study (Aphids)- Grade 3
- Investigating Living Things Hermit Crabs (1st) Crayfish (2nd)

STEAM Aide

- Push-In Lab Materials Support- Grades K-6
- Science Kits Inventory- Grades K-6
- STEAM Challenge Wednesdays- Grades K-6

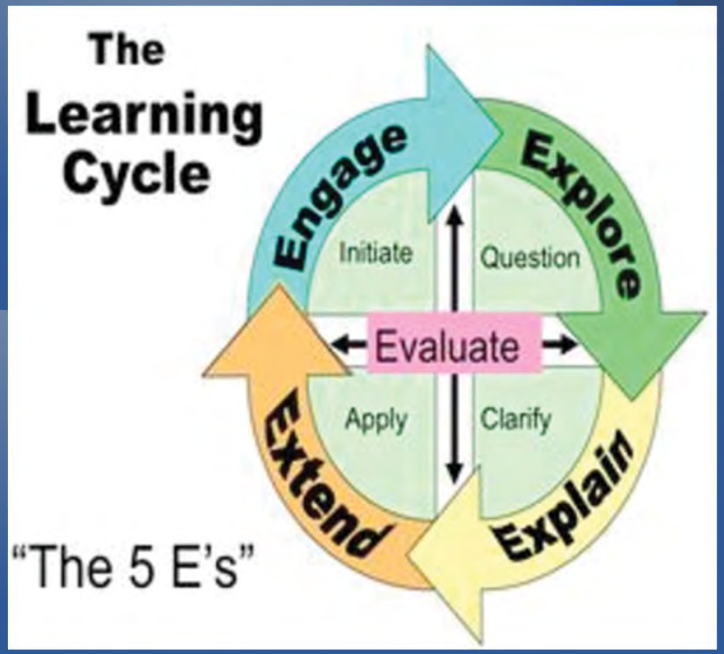


Push-In Support



- (3) STEAM Aides
- Curriculum Work Summer
- Push-In model
- Challenges : K-6 provide the activities
- Goal:
  - Increase assistance to classroom teachers
  - Increase student inquiry and use of the engineering design process using the 4 C's (communication, collaboration,

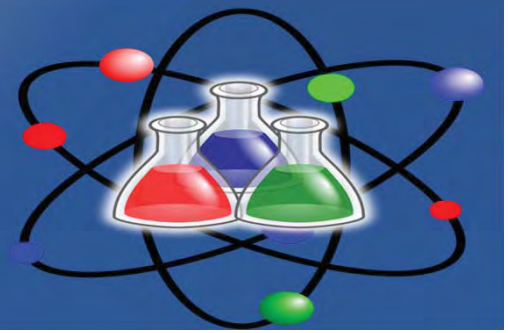
STEAM Challenge Wednesdays

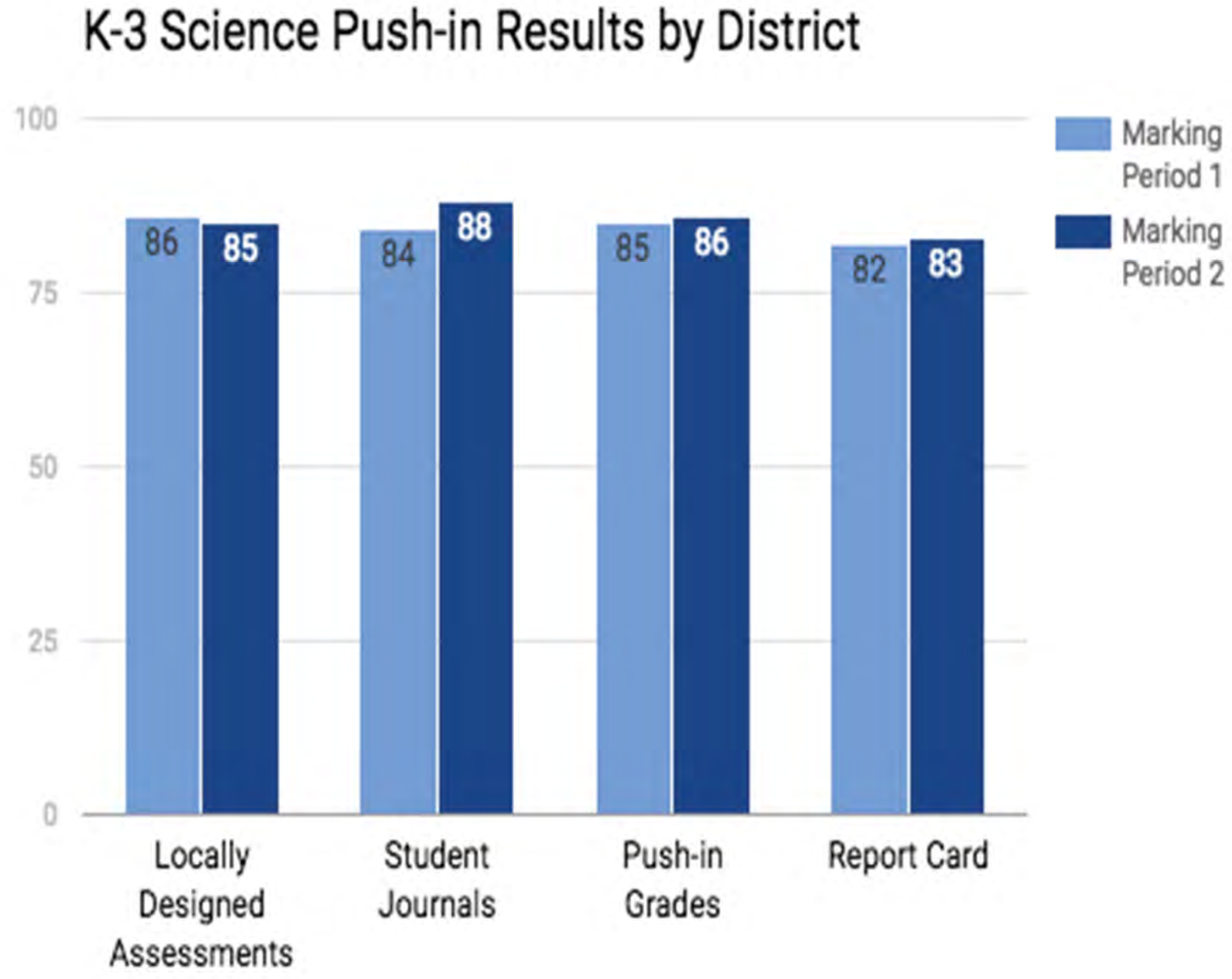


Assessment Plan

GOAL: To provide opportunities for our students to demonstrate their scientific reasoning and understanding

- Local Assessments: Student Journals, Push-in written, Push-in performance, Teacher observations (tools: rubrics and data trackers)
- NYS Assessment 4th grade will change to 5th grade in 2021

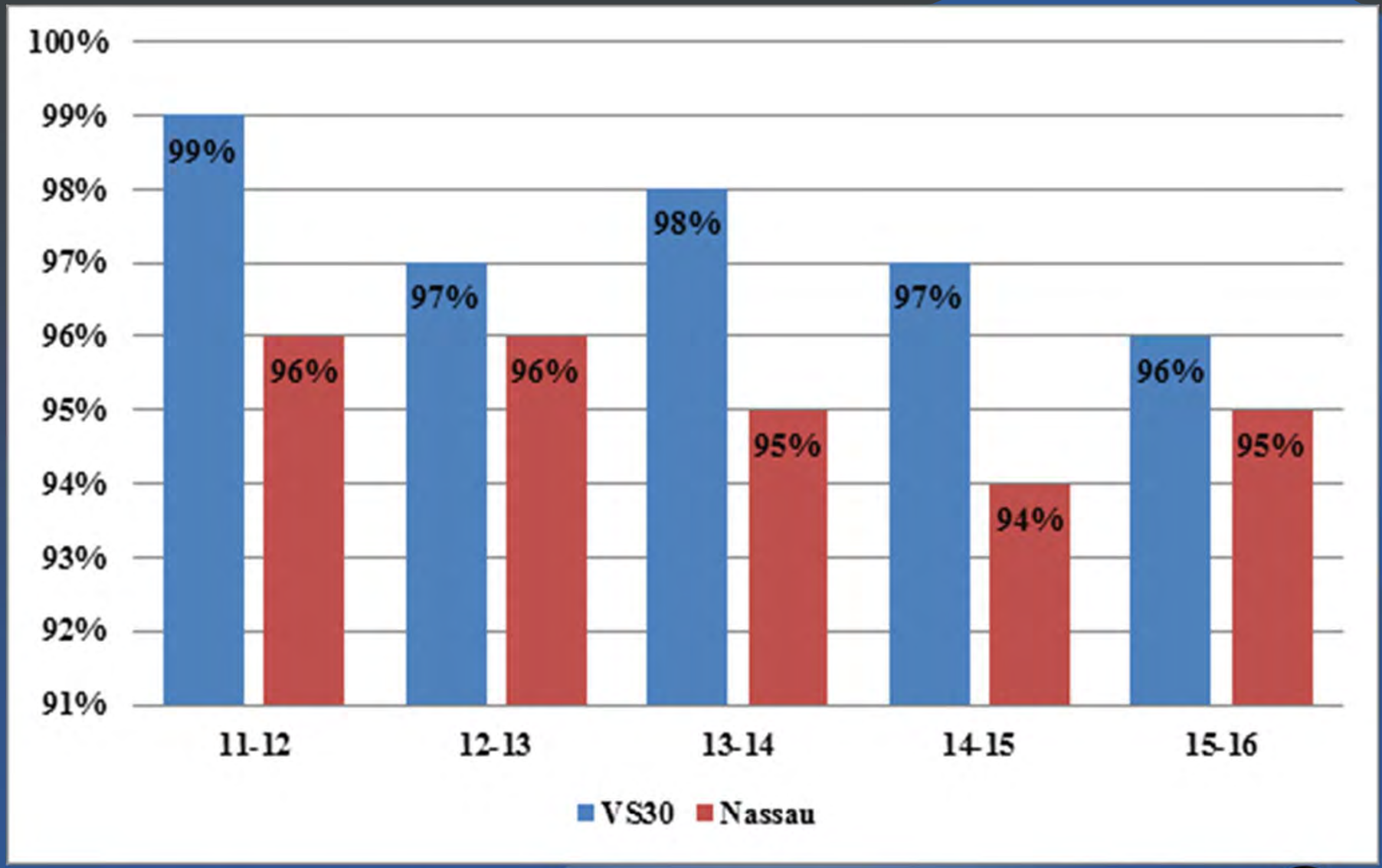



K-3 Science Push-in Results by District
100
75
50
25
0
86
85
84
88
85
86
82
83
Marking Period 1
Marking Period 2
Locally Designed Assessments
Student Journals
Push-in Grades
Report Card

Slide 13

2 Include the % in the bars...makes it easier to read
Roxanne France, 5/2/2017

3 Change Results to Proficiency. Am I reading this correctly...students in grades K-3 on average scored 80%...What assessment was used for push-in Grades? Does the assessment have a name? Change Student Journal to Student Journal Rubric . Ok report card is not translating well on this chart may need a separate chart. Which will show the % of student falling in Level 1-4.
Roxanne France, 5/2/2017

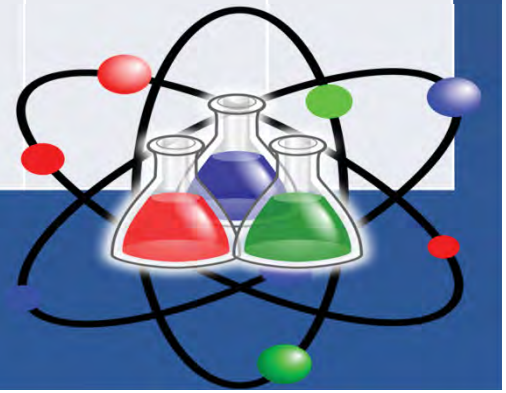


District Grade 4 Science Performance Trend Analysis

How are we doing?

Students will receive instruction and show grade appropriate growth in the following core subjects: English Language Arts, Arts, Mathematics, Science, and Social Studies as measured by local assessments

Process Objectives	Strategies	Met	Partially Met	Did Not Meet
Monitor K-6 Science curriculum implementation and it alignment to the Next Generation Science Standards with district-wide fidelity.	4	100%		



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