High School Chemistry Curriculum Adoption

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5/16/23

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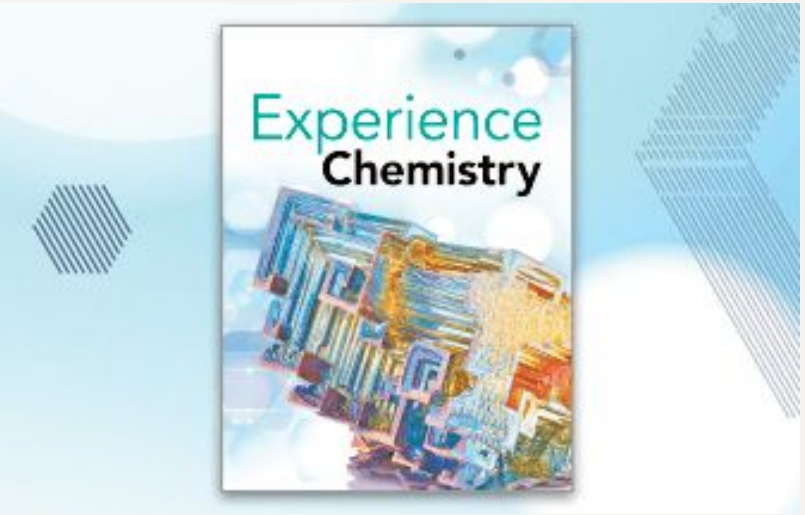
Purpose

We present our request to adopt **Savvas Experience Chemistry** as the core chemistry instructional materials for high school students.



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Presentation Outline

A. Consensus Process Description
B. Timeline
C. Prepare & Prescreen Phase (Process & Results)
D. Paperscreen Phase (Members, Process, Tools & Results)
E. Pilot Phase (Process, Tools & Results)
F. Recommendations (Process & Results)
G. Sample Experience Chemistry Lesson
H. Next Steps

A

Consensus Process

Initial Probe: A call for fist-to-five. All agree or keep talking about it.

Discussion: People with the lowest numbers share evidence that supports their objections, as well as possible solutions to overcome those objections.

When a solution appears to be emerging…

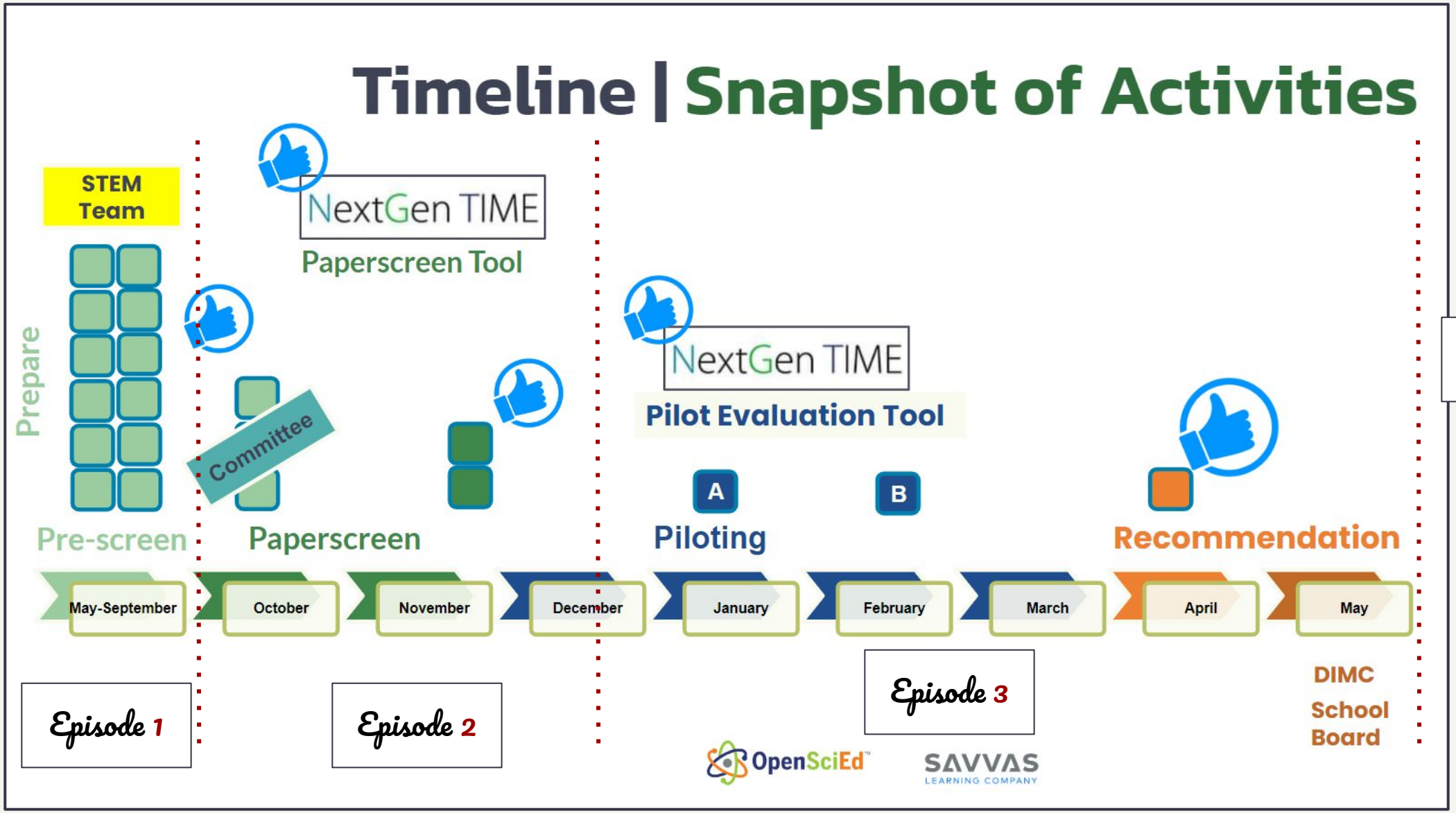
Consensus Probe: Another fist-to-five is called. If there are no fists then we have consensus and the decision passes.

Our goal is to have 100% consensus but we may need to modify our process if consensus can't be reached.

0 Block | 1 Dislike | 2 | 3 | 4 | 5 Strong Support

B

Timeline | Snapshot of Activities



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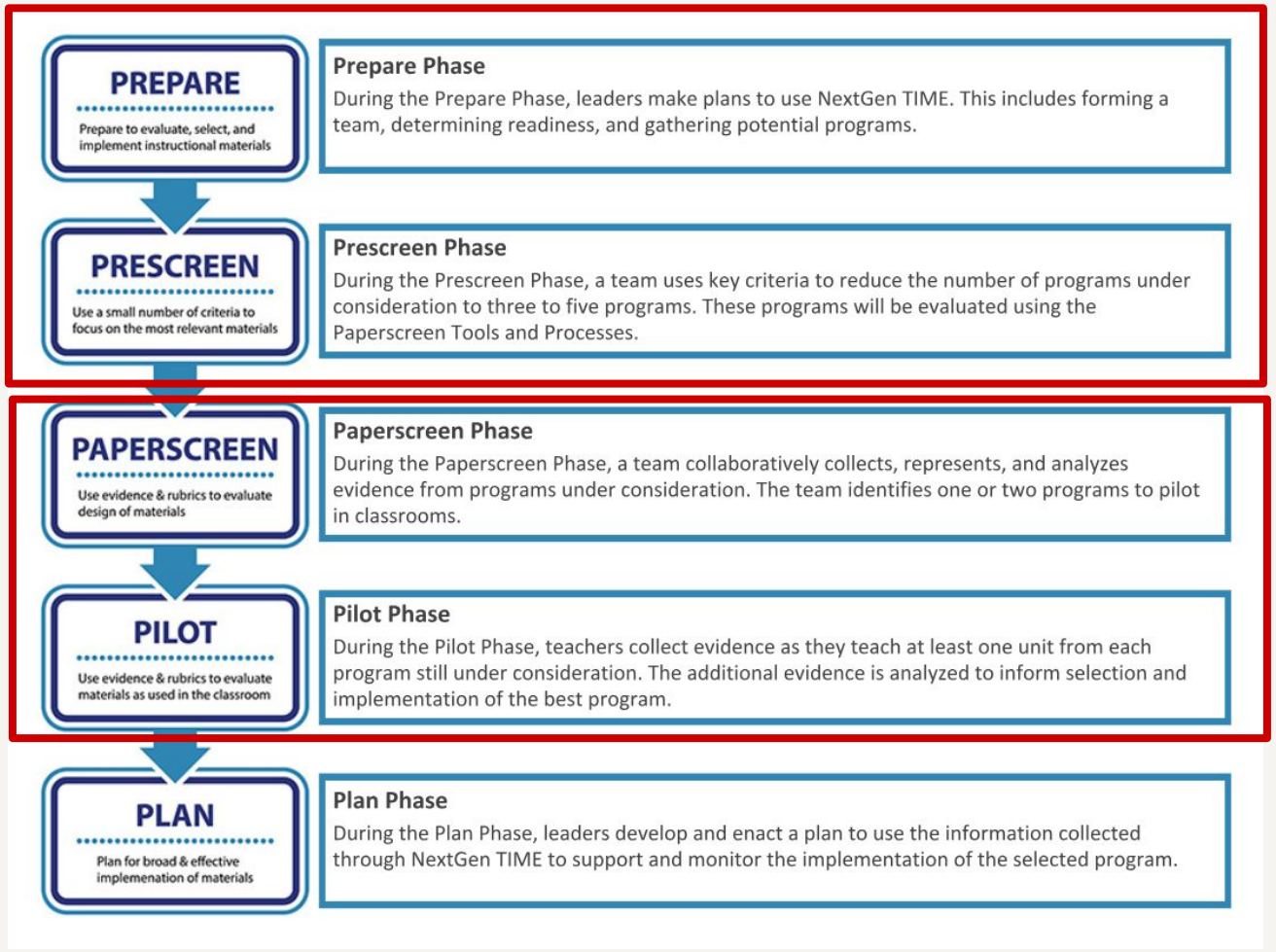
Process Overview

NextGen TIME

Episode 2

Episode 3

Episode 4



Gist: **Survey** publishing market for options and **gather** materials

Gist: Establish **criteria**, **evaluate** each and **narrow** to top options.

Gist: Form **committee**, establish **criteria**, **evaluate** and **narrow** to top two options

Gist: **Teach** one unit from each top candidate, **collect**, **score** evidence. **Evaluate** & **recommend** top choice.

Gist: Participate in formal implementation training with embedded district supports

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Adoption Committee

Member	School
Erin Fosler	Hazen HS
Susan Hoover	Hazen HS
Larry Mosko	Lindbergh HS
Richard Pemble	Renton HS
Rebecca Swanson	Renton HS
Anthony Asé	KEC*
Ivan Flores	KEC*
Mitchell Smith	KEC*
Robert Ettinger	KEC*

Instructor	School
Carol Coad	Hazen HS
Haley Panerio	Hazen HS
Robert Cockerham	Renton HS

Instructors **attended trainings**, **collected evidence**, **piloted programs** and **shared their preferences**.

Members **attended meetings** & **trainings**, **collected evidence**, **scored metrics**, **piloted programs*** and **came to consensus***. District staff participated in all tasks except those marked (*).

Metrics were based on NextGenTIME language

Foundations

- Presence of Phenomena/Problems
- Presence of Three Dimensions
- Presence of Logical Sequence

Student Thinking

- Phenomena/Problems
- Three-Dimensional Conceptual Framework
- Prior Knowledge
- Metacognitive Abilities
- Equitable Learning Opportunities

Student Progress

- Three-Dimensional Performance
- Variety of Measures
- Student Progress Over Time
- Equitable Access

Teacher Support

- Phenomenon/Problem Driven 3-Dimensional Learning
- Coherence
- Effective Teaching
- Support for Students with Diverse Learning Needs
- Support to Monitor Student Progress

Program

- Unit-to-Unit Coherence
- Progressions of Learning Across Three Dimensions
- Program Assessment System
- Program Consistency

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Additional RSD Metrics

- Assessment and Grading Supports
- Usability & Preparation

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Programs for the **Paperscreen** Process (Ep. 2)

Three curricular candidates were selected for the committee's review.

Chemistry Curricula Options

- **OpenSciEd**
- **Biozone**
- **Experience Chemistry (Savvas)**

Paperscreen Metrics & Results

Component	OpenSciEd	Biozone	Savvas Experience Chem
ST1 Phenomena/Problems	**3.40**	1.83	**3.58**
ST2 Three-Dimensional Conceptual Framework	**3.70**	2.20	**3.80**
TS2 Coherence	**3.10**	2.00	**3.90**

Pilot Evaluation Tool Metrics

#	Component	OpenSciEd	Exp Chem
1	ST1 Phenomena /Problems	3.3	4.3
2	TS1 Phenomenon-/Problem Driven Learning	3.8	3.5
3	ST2 Three-Dimensional Conceptual Framework	3.5	3.8
4	SP1 Three-Dimensional Performance	2.8	3.8
5	TS2 Coherence	3.8	3.8
6	ST3 Prior Knowledge	4.0	4.0

#	Component	OpenSciEd	Exp Chem
7	ST4 Metacognitive Abilities	3.0	3.3
8	ST5 Equitable Learning Opportunities	2.3	3.8
9	TS4 Support for Students with Diverse Learning Needs	3.0	4.3
10	SP2 Variety of Measures	3.0	4.0
11	SP3 Student Progress Over Time	3.0	4.0
12	RSD1 Assessment and Grading-Supports	2.8	4.0
13	RSD2 Usability & Preparation	3.3	3.3

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Equity Metric (ST5)

- Materials ensure that **all students, including those from nondominant groups and with diverse learning needs, have access to the targeted learning goals and experiences**, including
  - ❑ **appropriate reading, writing, listening, and/or speaking alternatives for students** who are English language learners, have special needs, read below the grade level, or have high interest and have already met the intended learning goals.
  - ❑ **culturally relevant contexts and examples or supports** that help students connect to the context or examples.
  - ❑ **opportunities to cultivate interest and confidence as scientists and engineers.**
  - ❑ **provides access and supports for students at a variety of levels of mathematical understanding**

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3.8

OpenSciEd™

2.3

Three Dimensional Conceptual Framework (ST2)

Materials include learning experiences that **help students to build scientifically accurate understandings and abilities** through opportunities for students to

- ❑ • **link prior knowledge** to negotiated new understanding and abilities.
- ❑ • **use reasoning to connect grade-appropriate** SEP, DCI, and CCC **elements**.
- ❑ • **ask and answer questions** that link learning over time.
- ❑ • **negotiate new understandings and abilities** by comparing their ideas, their peers' ideas, and ideas encountered in the learning experience(s).
- ❑ • **apply their understandings and abilities in a variety of ways.**

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Student Survey Results – By Pilot

Q No	Question	Avg O	Avg S
Q1	I had the opportunity to act as a scientist (e.g. ask questions, develop and use models, plan and carry out investigations, analyze and interpret data, and construct explanations	3.51	3.42
Q2	I was able to explain phenomena and solve problems that are relevant to me and/or my community	3.18	3.14
Q3	I used what I already knew or what I had already experienced in my learning in this unit	3.16	3.33
Q4	The hands-on activities helped me to understand chemistry concepts.	3.44	3.40
Q5	I was able to show my learning in multiple ways	3.14	3.15
Q6	I enjoyed learning using these instructional materials	2.73	2.97
Q7	Overall, my experiences using these instructional materials helped me learn science	3.05	3.16
	Overall	3.17	3.23

OpenSciEd	Scale	1	2	4	5	
SAVVAS	Scale	1	2	3	4	5

Figure 1. Average scores of student surveys (organized by Pilot curriculum)

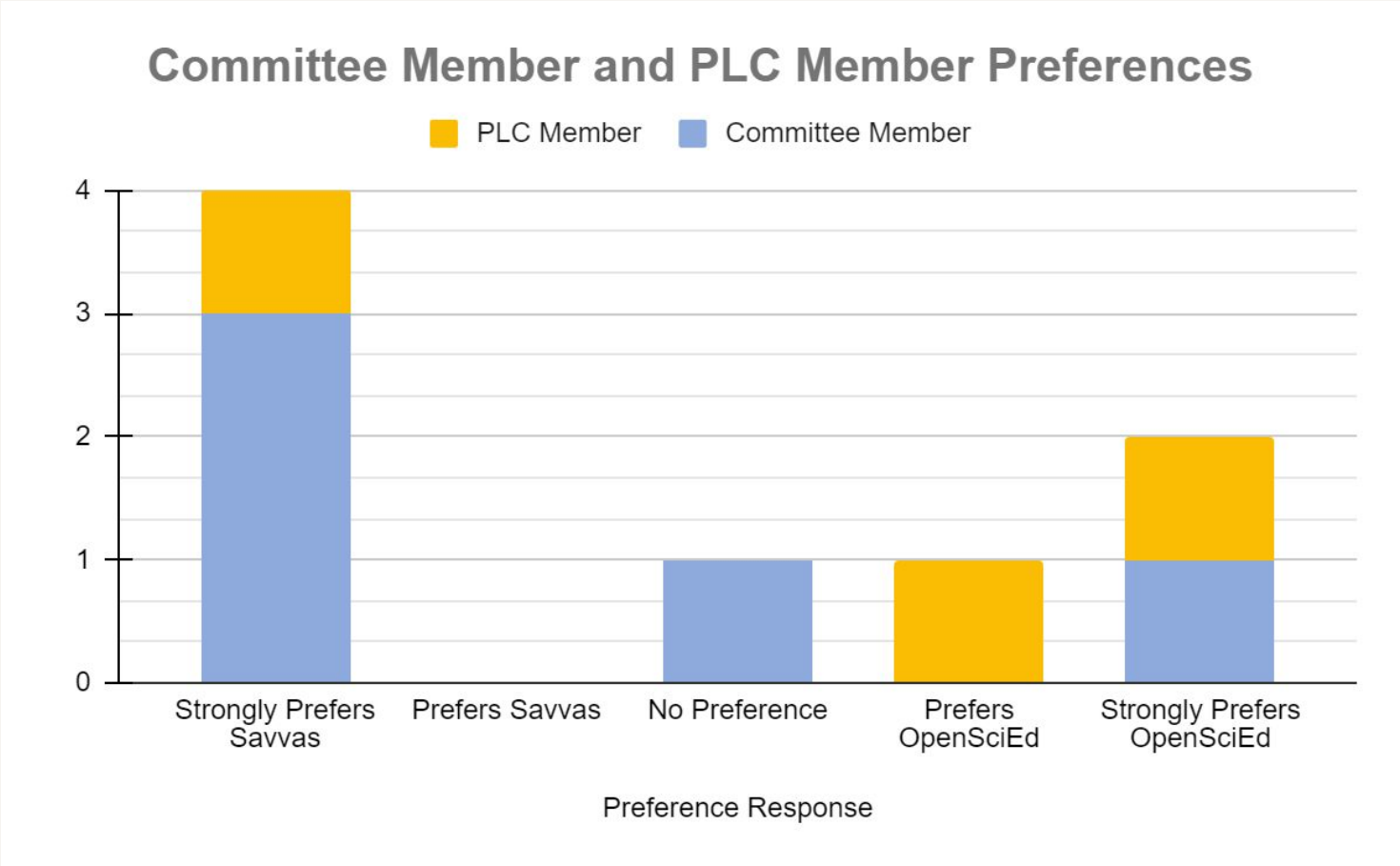
Student Survey Results – By School

School	Avg Q1	Avg Q2	Avg Q3	Avg Q4	Avg Q5	Avg Q6	Avg Q7	Overall	No
Hazen HS	3.43	3.24	3.09	3.26	3.01	2.69	2.98	**3.10**	121
Lindbergh HS	3.38	3.17	3.50	3.69	3.27	2.77	3.08	**3.26**	48
Renton HS	3.84	3.06	2.98	3.64	3.34	2.80	3.18	**3.26**	50
								Total	**219**

School	Avg Q1	Avg Q2	Avg Q3	Avg Q4	Avg Q5	Avg Q6	Avg Q7	Overall	No
Hazen HS	3.11	3.01	3.25	3.14	2.97	2.73	2.86	**3.01**	153
Lindbergh HS	3.69	3.31	3.46	3.51	3.12	3.00	3.28	**3.34**	67
Renton HS	3.76	3.26	3.36	3.76	3.51	3.40	3.60	**3.52**	85
								Total	**305**

Scale	1	2	4	5		
Scale	1	2	3	4	5	

Figure 2. Average scores of student surveys (organized by Pilot curriculum)



(3) three Committee members strongly prefer **Savvas**

(1) PLC member prefers **Savvas**

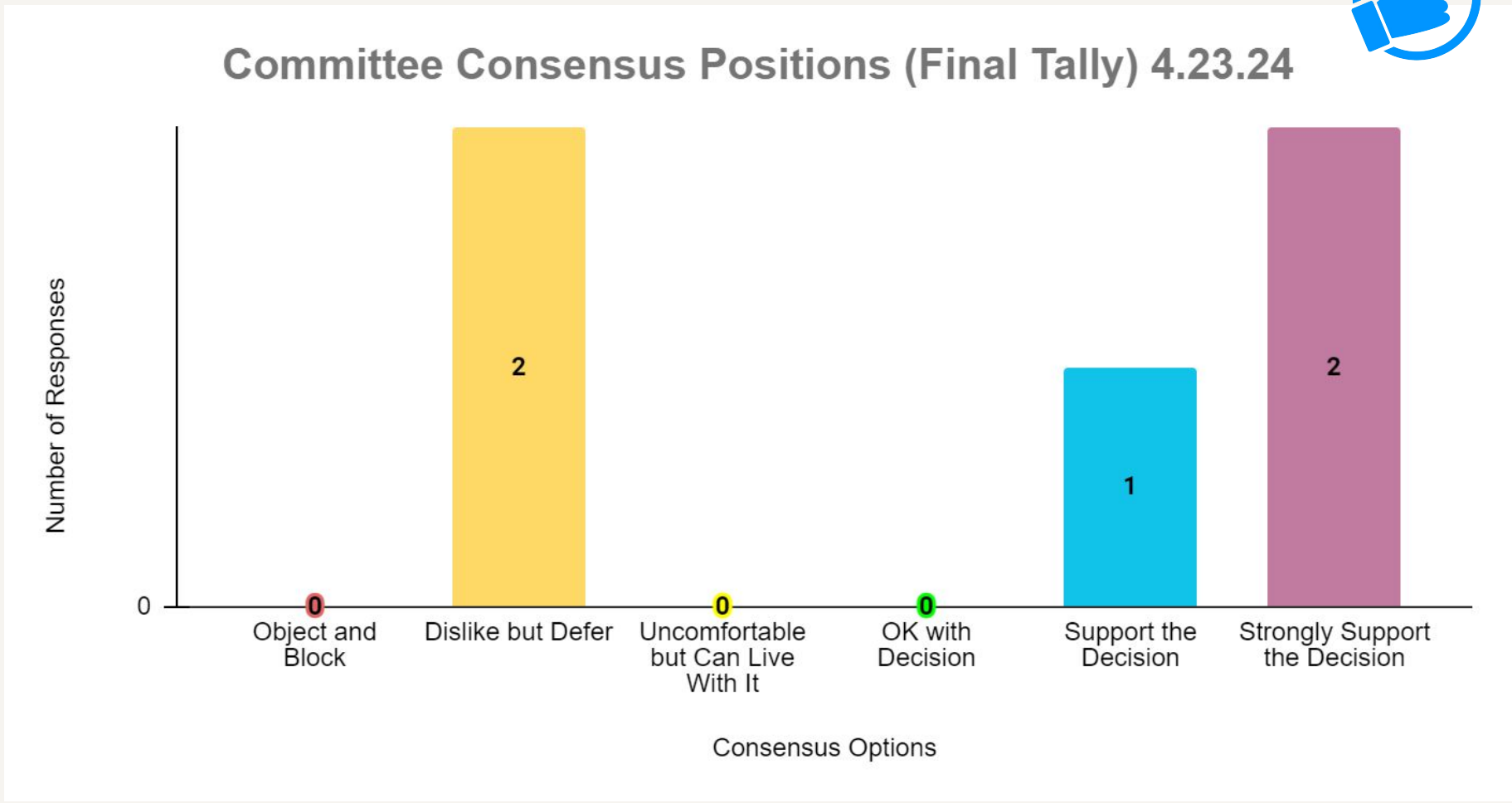
(1) Committee member has no preference

(1) PLC member prefers **OpenSciEd**

(1) Committee member strongly prefers **OpenSciEd**

(1) PLC member strongly prefers OpenSciEd

Savvas - Pros	OpenSciEd - Pros
• Lots of teacher support structures • Students more engaged and curious • Students engaged in science practices • Connects to real world phenomena, but less phenomenon fatigue • Investigations, assessments more varied and adaptable by teachers • Easier to catch up students when absent • Easier to translate into multiple languages • Better meets the needs of students at my school • Will serve as a strong foundation for bridging toward a more inquiry-aligned practice • Provides a good blend of supports for teachers as individuals and as collaborators	• Accessible to more students • Real world connections • Lots of teacher support structures • OpenSciEd has something that all students (regardless of career and college plans) can take away • Requires less math pre-knowledge



- I object & block the decision but will work to find a solution
- I dislike the decision but will defer to the group
- I'm uncomfortable with the decision, but can live with it
- I'm okay with this decision
- I support the decision
- I strongly support the decision

Consensus Level	Tally
0	0
1	2
2	0
3	0
4	1
5	2

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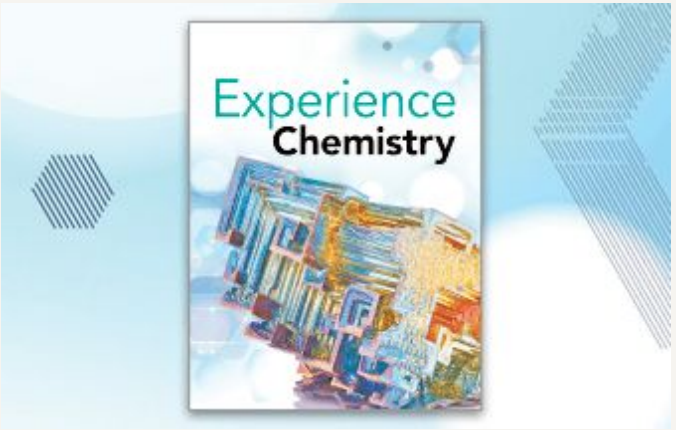
Recommendation

We ask for approval to purchase **Savvas Experience Chemistry** instructional materials for the next 7 years with continued support.



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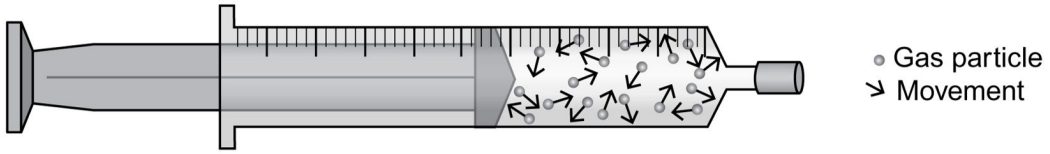
Sample **Savvas Experience Chemistry** Lesson

MODELING

Model the Combined Gas Laws

Your class is doing an investigation studying a sample of gas contained in a sealed syringe. The figure shows the starting condition of the apparatus. Three scenarios are used to model the relationships between pressure (*P*), temperature (*T*), and volume (*V*).

1. The syringe is heated to increase *T*. The plunger is allowed to move freely.
2. The plunger is moved to reduce *V*. *T* remains constant.
3. The syringe is heated to increase *T*. The plunger is held in place.



Develop and Use Your Model

1. **SEP Develop Models** Use the space to draw models of the apparatus in Scenarios 1, 2, and 3. As you develop your models, consider the following:
   - Each model should show the position of the plunger, the molecules, and their motion to explain any changes in volume, temperature, and pressure.
   - The syringe is sealed, so the number of gas molecules is constant.

What we will do:

- Develop and use models to show gas particles in three scenarios.

What we will figure out:

- Use your models to construct explanations of the end points of each scenario
- Use what you know about how *gas pressure*, *temperature* and *volume* relate to each other.

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Next Steps

- DIMC and School Board Approval
- Print teacher and student materials
- Update Scope and Sequence with teacher input
- Summer Initial Use Training on in August
- Continue professional learning supports through the school year and beyond