K-5 SCIENCE ADOPTION

Lake Washington School District

Board Study Session

March 4, 2019

Board Study Session: Overview

- LWSD Two-Year Adoption Process
- Composition of K-5 Science Adoption Committee
- Year One K-5 Science Adoption Work
- Year Two K-5 Science Adoption Work Completed to Date
- Remaining K-5 Science Adoption Work for the 2018-19 School Year

LWSD Two-Year Adoption Process

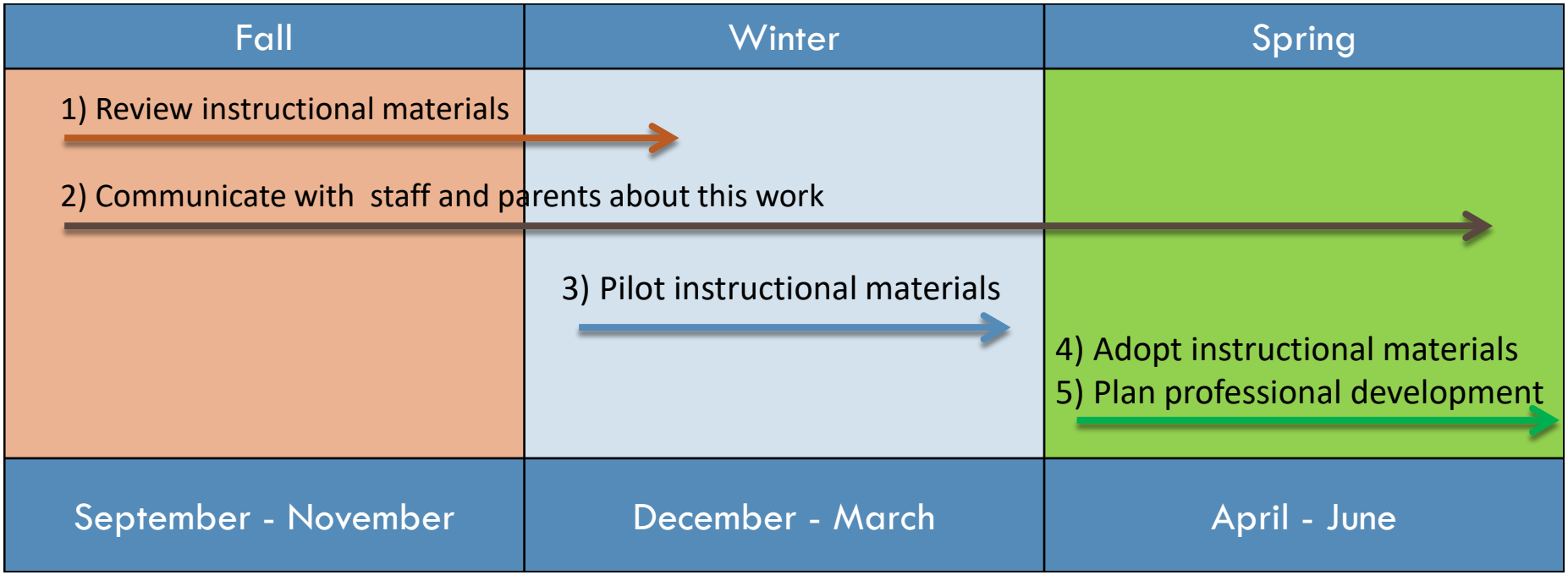
LWSD Two-Year Adoption Process

Year One: 2017-18

Fall	Winter	Spring
1) Review effective practice research →	2) Determine criteria for materials selection 3) Communicate with staff and parents about this work →	4) Develop curricula evaluation rubrics →
September - November	December - March	April - June

LWSD Two-Year Adoption Process

Year Two: 2018-19



Composition of K-5 Science Adoption Committee

K-5 Science Adoption Committee

- Includes teachers, administrators, community members, parents, and specialists
  - Schools from all learning communities
  - Balanced representation across K-5, including Special Education and EL
  - Specialists from Intervention, Professional Learning, Teaching and Learning, and Technology Integration Departments

DIRECTOR	
Dr. Jennifer Rose	Teaching & Learning
ADMINISTRATORS	
Lucy Davies	Rush
Ian Maver	Audubon & Kirk
Ryan Scott	Franklin & Rockwell
Megan Spaulding	Mann
TEACHERS	
Cody Aguirre	5th Grade, Redmond El.
Kathy Aslamy	4th Grade, Blackwell
Teresa Barber	4th/5th Grade Quest, Smith
Kimberly Beckwith	1st Grade, Frost
Abigail Bien	5th Grade, Blackwell
Mary Binder	Learning Center, Keller
Chris Carter	4th Grade, Baker
Monique Celeste	5th Grade, Audubon
Michelle Cody	2nd Grade, Franklin
Anne Cushman	Kindergarten, Rosa Parks
Ellen Drummond	2nd Grade, Twain
Susan Gabica	5th Grade STEM Program, Mead
Kayce Gehring	4th Grade, Barton
Kelly Gilbert	2nd, 3rd, 4th, & 5th Grade, Emerson K-12
Janel Hofmeister	1st Grade, Einstein
Dayle Ishii	5th Grade, Thoreau
Tammi Liberda	2nd Grade, McAuliffe
Shar Luck	1st Grade, Carson
Diann Mangan	5th Grade, Juanita
Marissa Meadows	3rd Grade, Wilder
Shannon Palermiti	2nd & 3rd Grade Quest, McAuliffe
Kristi Petereit	4th & 5th Grade Quest, Rosa Parks
Meredith Rapp	1st Grade, Rockwell
Barb Roy	3rd Grade, Discovery & Sandburg
Melanie Stevens	1st Grade, Mann
Christine Tucker	Kindergarten, Muir
Braelyn Williams	Kindergarten, Rose Hill
Damaly Wingert	5th Grade, Rush
Ashley Zednick	1st Grade, Keller
Suzanne Zeitz	5th Grade, Alcott
COMMUNITY MEMBERS	
Maggie Windus	Redmond Learning Community
SPECIALISTS	
Aubrey Dane	Technology Integration Specialist
Jennifer Driftmier	Professional Learning Coach
Alice Humphres	Teaching and Learning Specialist
Teresa Pellett	Teaching and Learning Specialist
Elyse Reynolds	Assistive Technology Specialist
Karen Ripley	Professional Learning Specialist
Nichole Rodriguez	Elementary EL Program Specialist
Hanna Seidler	Teaching and Learning Specialist

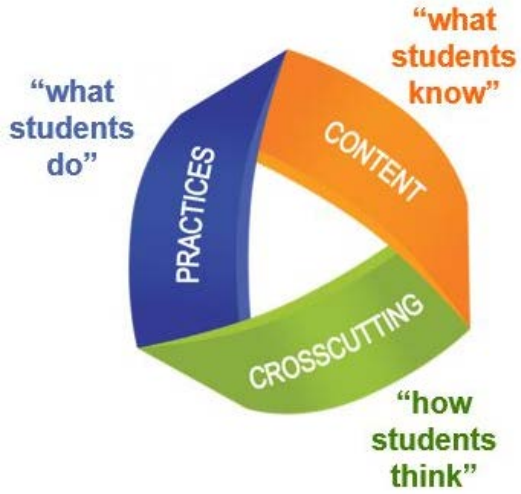
Year One K-5 Science Adoption Work

New Standards and Effective Practice

- Committee convened in 2017 and provided with an orientation to the scope of the adoption process
- Committee then learned about new standards and effective practice to inform development of curriculum evaluation rubrics
  - Next Generation Science Standards learning, including the instructional shifts of the standards
    - NGSS Appendix A
  - Framework for K-12 Science Education research review
    - National Research Council
  - University of Washington College of Education Partnership for Professional Learning
    - Ambitious Science Teaching; Dr. Kat Laxton

Next Generation Science Standards: NGSS

- Shifts in Science



  - **Three Dimensions**: Integrated within every performance expectation
  - **Coherence**: Science concepts and skills build coherently from K-12
  - **Focus**: Deeper understanding of content as well as application of content

NGSS Three Dimensions of Science

Science & Engineering Practices

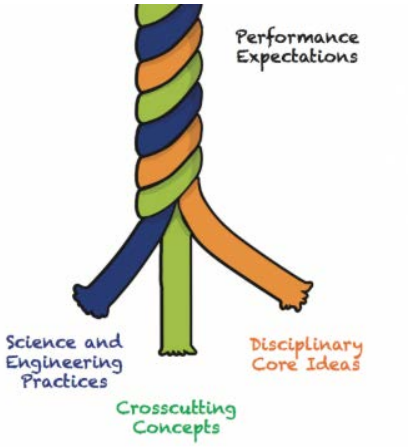
- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Disciplinary Core Ideas

- Matter and Interactions
- Motion and Stability
- Energy
- Waves and their Applications
- Molecules to Organisms
- Ecosystems
- Heredity
- Biological Evolution
- Earth's Place in the Universe
- Earth's Systems
- Earth and Human Activity
- Engineering and Design

Crosscutting Concepts

- Patterns
- Cause and effect
- Scale, proportion, and quantity
- Systems and System Models
- Energy and matter
- Structure and function
- Stability and change

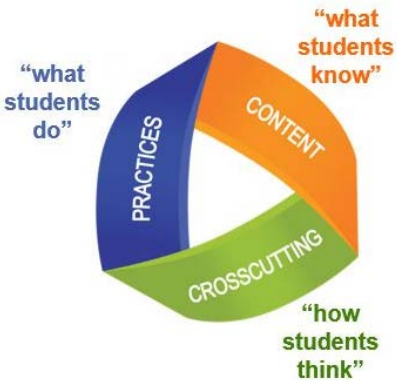


NGSS Elementary School

Standards for the Physical Science Disciplinary Core Idea "Motion and Stability: Forces and Interactions“

- **Kindergarten:** Analyze data to determine in a design solution works as intended to change the speed or direction of an object with a push or pull.
- **3rd Grade:** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- **5th Grade:** Support an argument that the gravitational force exerted by Earth on objects is directed down.

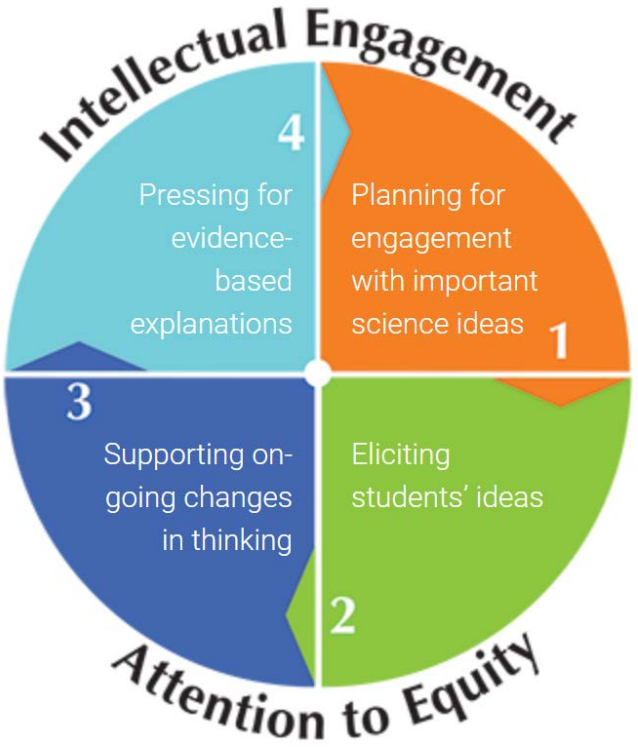
Physical, earth, and life science standards from the 12 Disciplinary Core Ideas spiral through the grade levels.



Effective Practice Science Instruction

"Ambitious Science Teaching"

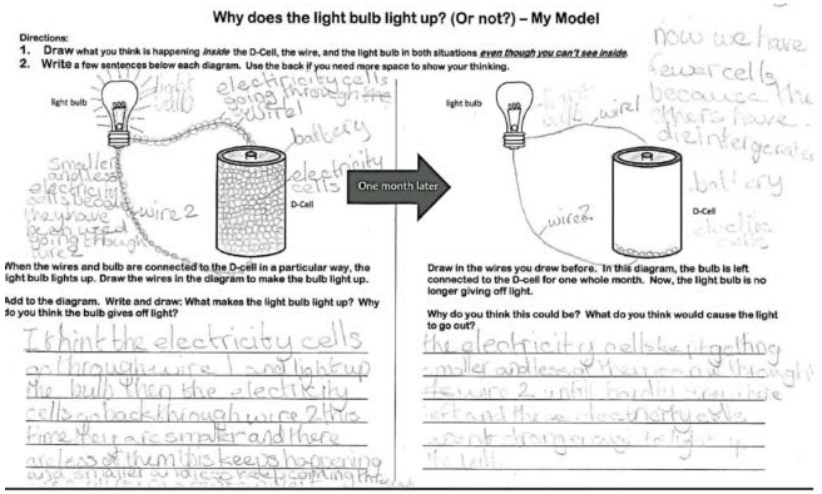
- Set of NGSS aligned instructional practices
- Developed through collaboration between teachers and researchers
  - 15 researchers from 5 universities
- Trainer: Dr. Kat Laxton
  - Ambitious Science Teaching development group research team member

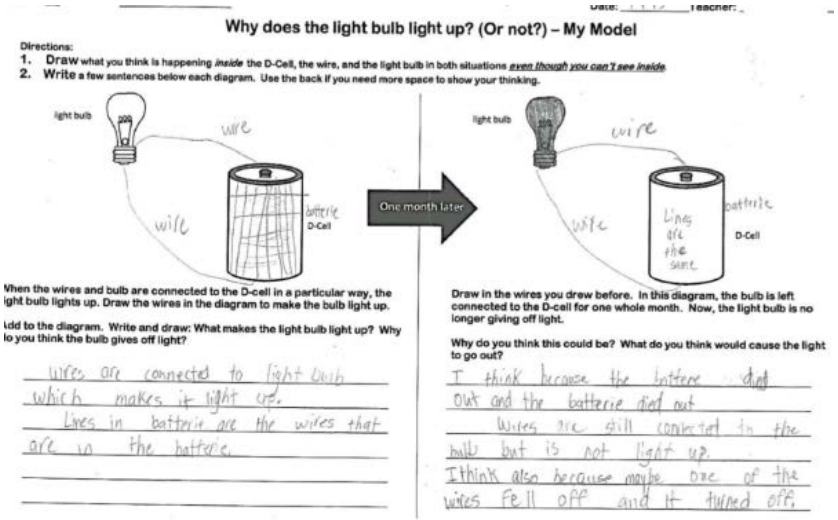


Ambitious Science Teaching Example

4th Grade Circuits Unit

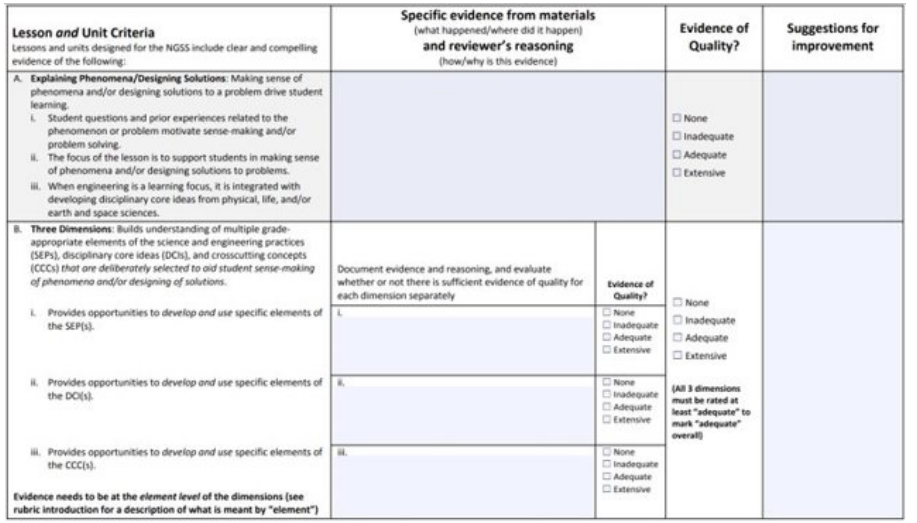
- **Phenomenon:** Flashlight in a drawer stops working.
- **Unit Question:** Why would a flashlight eventually stop working if it were accidentally left on?
- Student discourse and modeling are the main strategies used within the unit.





Curriculum Evaluation Rubrics

1. EQuIP: Educators Evaluating the Quality of Instructional Products



Lesson *and* Unit Criteria Lessons and units designed for the NGSS include clear and compelling evidence of the following:	Specific evidence from materials (what happened/where did it happen) and reviewer's reasoning (how/why is this evidence)		Evidence of Quality?	Suggestions for improvement
A. **Explaining Phenomena/Designing Solutions**: Making sense of phenomena and/or designing solutions to a problem drive student learning. i. Student questions and prior experiences related to the phenomenon or problem motivate sense-making and/or problem solving. ii. The focus of the lesson is to support students in making sense of phenomena and/or designing solutions to problems. iii. When engineering is a learning focus, it is integrated with developing disciplinary core ideas from physical, life, and/or earth and space sciences.			☐ None ☐ Inadequate ☐ Adequate ☐ Extensive	
B. **Three Dimensions**: Builds understanding of multiple grade-appropriate elements of the science and engineering practices (SEPs), disciplinary core ideas (DCIs), and crosscutting concepts (CCCs) *that are deliberately selected to aid student sense-making of phenomena and/or designing of solutions.*	Document evidence and reasoning, and evaluate whether or not there is sufficient evidence of quality for each dimension separately	Evidence of Quality?	☐ None ☐ Inadequate ☐ Adequate ☐ Extensive **(All 3 dimensions must be rated at least "adequate" to mark "adequate" overall)**	
i. Provides opportunities to *develop and use* specific elements of the SEP(s).	i.	☐ None ☐ Inadequate ☐ Adequate ☐ Extensive		
ii. Provides opportunities to *develop and use* specific elements of the DCI(s).	ii.	☐ None ☐ Inadequate ☐ Adequate ☐ Extensive		
iii. Provides opportunities to *develop and use* specific elements of the CCC(s).	iii.	☐ None ☐ Inadequate ☐ Adequate ☐ Extensive		
Evidence needs to be at the *element level* of the dimensions (see rubric introduction for a description of what is meant by "element")				

2. PEEC: Primary Evaluation of Essential Criteria for NGSS Instructional Materials Design

Claim	Evidence	Sufficient evidence to support the claim?
The disciplinary core ideas are presented in a way that is scientifically accurate and grade-level appropriate.		☐ None ☐ Inadequate ☐ Adequate ☐ Extensive
Teacher materials make it clear how each of the three dimensions *builds progressively over the course of the program* in a way that gives students multiple opportunities to demonstrate proficiency in the breadth of the performance expectations addressed in the program.		☐ None ☐ Inadequate ☐ Adequate ☐ Extensive
Each unit builds on prior units by addressing questions raised in those units, cultivating new questions that build on what students figured out, or cultivating new questions from related phenomena, problems, and prior student experiences.	*What to look for as evidence:* *For each of the units, look at the transitions into and out of the units. Are the units linked together from a student's perspective?*	☐ None ☐ Inadequate ☐ Adequate ☐ Extensive

Developing Standards Alignment Rubric

Publisher:		Date:	
Level/Grade:		Reviewer Name:	

Alignment to the Next Generation Science Standards (After using the Standards Alignment Checklist)		Not Found	Low	Marginal	Acceptable	High
1.1	Provides flexible opportunities for students to develop proficiency on each of the **content area performance expectations** (PS – Physical Science, LS – Life Science, ESS – Earth and Space Science, ETS – Engineering and Technology and the Application of Science)					
Evidence:						
1.2	Provides flexible opportunities to use specific elements of **science or engineering practices** to make sense of phenomena or design solutions. (□ Asking Questions and Defining Problems; □ Developing and Using Models; □ Planning and Carrying Out Investigations; □ Analyzing and Interpreting Data; □ Using Mathematics and Computational Thinking; □ Constructing Explanations and Designing Solutions; □ Engaging in Argument from Evidence; □ Obtaining, Evaluating, and Communicating Information)					
Evidence:						
1.3	Provides flexible opportunities to construct and use elements of the **disciplinary core idea(s)** to accurately make sense of phenomena or design solutions. (PS – □ Matter and Its Interactions; □ Motion and Stability: □ Forces and Interactions; □ Energy; Waves and Their Applications in Technologies for Information Transfer. LS – □ From Molecules to Organisms: Structures and Processes; □ Ecosystems: Interactions, Energy, and Dynamics; □ Heredity: Inheritance and Variation of Traits; □ Biological Evolution: Unity and Diversity. ESS – □ Earth's Place in the Universe; □ Earth's Systems; □ Earth and Human Activity. ETS – □ Engineering Design.)					
Evidence:						
1.4	Provides flexible opportunities to construct and use specific elements of the **crosscutting concept(s)** to make sense of phenomena or design solutions. (□ Patterns; □ Cause & Effect; Scale, □ Proportion, & Quantity; □ System & System Models; □ Energy & Matter; □ Structure & Function; □ Stability & Change)					

Developing Effective Practice Rubric

1.0 Category/Theme: Student Centered		Not Found	Low	Marginal	Acceptable	High
1.1	Lessons are student driven and responsive to where students are.					
Evidence:						
1.2	Le					
Evidence						

2.0 Category/Theme: Student Accessibility		Not Found	Low	Marginal	Acceptable	High
2.1	Ideas are included for scaffolding at all levels of knowledge.					
Evidence						
2.2	Le					
Evidence						

3.0 Category/Theme: Authentic Science		Not Found	Low	Marginal	Acceptable	High
3.1	Authentic and purposeful lessons that can be anchored with phenomena or design problems.					
Evidence						
3.2	Id					
Evidence						

4.0 Category/Theme: Instructional Supports		Not Found	Low	Marginal	Acceptable	High
4.1	Learning targets clearly stated (i.e. "I can" statements).					
Evidence:						
4.2	Supports for student discourse and collaboration (questioning probes, sentence stems, listening stems). Effective questioning strategies for the teacher.					
Evidence:						

Developing Assessment Rubric

Assessment refers to how well the curriculum materials align with our system of proficiency and current research on effective practice in assessment.		Not Found	Low	Marginal	Acceptable	High
System of Proficiency						
1.1	The available assessments address Next Generation Science Standards.					
Evidence:						
1.2	For each assessment there is a range of performance levels from 2 to 4					

Assessment refers to how well the curriculum materials align with our system of proficiency and current research on effective practice in assessment.		Not Found	Low	Marginal	Acceptable	High

Evider

1.3	**Methods of Assessment**					
1.6	Multiple formative and summative assessments are provided. Includes pre-assessment, self-assessment, and peer-assessment.					
Evidence:						
1.7	There are multiple assessment formats (e.g., performance assessments/labs, constructed response/essay, use of data etc.) with a variety of responses and student choice (ideas/examples listed).					
Evidence:						
1.8a	Assessments are adaptable and available electronically. Assessments are editable and exportable (Word, Excel) for a variety of users.					

Developing Digital Resources Rubric

1.0	Digital Resources	Not Found	Low	Marginal	Acceptable	High
1.1a	Digital resources can be accessed by teachers from home (including phones/tablets) and school (online and offline access available).					
Evidence:						
1.1b	Digital resources can be accessed by students from home (including phones/tablets) and school (online and offline access available).					
Evidence:						
1.2	Digital resources include an electronic version of the student and teacher materials.					
Evidence:						
1.3a	Digital resources are easy to access and navigate for teachers.					
Evidence:						
1.3b	Digital resources are easy to access and navigate for students and parents.					

Developing Organization & Design Rubric

1.0	**Organization & Design** refers to how well the curriculum materials are organized for the teacher to effectively and efficiently implement with students.	Not Found	Low	Marginal	Acceptable	High
1.1	The curriculum is logically organized and coherent. Concepts are fully and consistently developed. Design principles of the curriculum are explained. Pacing guide may be included.					
Evidence:						
1.2	Teacher materials include teaching tips and potential student misconceptions. Examples of student work. (Guiding questions)					
Evidence:						
1.3	Teacher materials include supports for differentiation, including for ELL, Safety Net, SpEd, and enrichment. (Leveled texts/templates/organizers)					
Evidence:						
1.4	Teacher materials make it clear how each of the three dimensions are vertically aligned.					
Evidence:						

Year Two Adoption Work Completed to Date

Year Two: Timeline of Activities

August	September-October	November-December	January-March	April	May	June
Request for samples	Committee evaluates possible curricula	Committee narrows choices to top 2 for piloting	Committee pilots 2 curricula Parent information meeting and curricula available for review at district office	Committee evaluates pilot and selects curriculum Committee submits recommendation to IMC	IMC recommendation to School Board School Board review	Planning and preparation for implementation

Ongoing professional learning for all elementary teachers throughout year 2

Reviewing Materials

Request for Samples: Criteria

- ✓ Aligned to the Next Generation Science Standards
- ✓ Included resources for:
  - ✓ instructing all students
  - ✓ differentiating instruction for students requiring intervention as well as enrichment
- ✓ Included digital resources
- ✓ Available by June of 2019
- ✓ Also considered supplemental STEM resources

Reviewing Materials

- Additional considerations
  - Use in neighboring districts
  - Organizational (NSTA, OSPI, PSESD) recommendations
  - Committee member recommendations
- 12 different curricula identified

- ❑ Amplify Science
- ❑ Building Blocks of Science 3D (Carolina)
- ❑ Elevate Science (Pearson)
- ❑ STEMScopes
- ❑ FOSS
- ❑ Exploring Science (National Geographic)
- ❑ Inspire Science (McGraw Hill)
- ❑ KnowAtom
- ❑ Mystery Science
- ❑ Science Dimension (Houghton Mifflin)
- ❑ Engineering is Elementary
- ❑ Bring Science Alive! (TCI)

Reviewing Materials - First Phase

Structured, evidence-based evaluation of each program using the five alignment rubrics:

- Subcommittee reviews with rubric
  - Individuals score curriculum
  - Calculate group averages

	Person	Amplify	Building Blocks	Elevate Science	EiE	FOSS	Inspire Science	KnowAtom	Mystery Science	Nat Geo	Science Dimensions	STEMScopes	TCI
NGSS Alignment	1	25	27	19	0	13	28	9	21	33	10	28	17
	2	31	28	17	0	15	8	14	21	32	22	28	16
	3	30	28	16	0	13	8	10	14	32	13	27	27
	4	29	27	14	1	17	7	10	14	32	12	26	15
	5	20	23	33	0	14	8	12	18	32	1	32	13
	6	31	19	28	33	22	9	15	21	24	15	30	19
	Average	27.67	25.33	21.17	5.67	16.13	13.50	11.67	18.17	30.83	13.29	28.00	17.83

- Subcommittee discuss findings with evidence from rubrics
- Group discuss findings with evidence from rubrics
- Vote and narrow to top 4 curricula

Reviewing Materials - First Phase

- Rubric scoring categories:
  - Not Found, Low, Marginal, Acceptable, High
- Results from compiled averages
- Top 4 identified

- **Amplify Science** (Amplify)
- **Building Blocks of Science 3D** (Carolina)
- **Elevate Science** (Pearson)
- **Exploring Science** (National Geographic)

Reviewing Materials - Second Phase

- Department directors provided additional indicators for committee to use when reviewing materials that would ensure access and learning for all students:
  - Intervention Services
  - Special Services
  - Highly-Capable Services
  - Equity, Access, and Opportunity Services
  - Narrow to two finalists

- Committee used indicators to review programs and then selected 2 for pilot:
  - Amplify Science
  - Building Blocks of Science 3D (Carolina)

Common Elements in Pilot Curricula

- Kit based
- Student centered
- STEM aligned
- Hands-on, problem/phenomena based
- Accessible to all learners
- Differentiation strategies and resources embedded

AmplifyScience

Building Blocks OF SCIENCE 3D

Concurrent Professional Learning

- Release time and after school to learn about K-5 NGSS during the Adoption Process
  - Primary and intermediate teacher from each school supporting adoption and implementation
    - Trained in NGSS practices/shifts and in Ambitious Science Teaching
- LEAP Training
    - All 4th and 5th grade teachers in August
    - Three Wed. LEAP modules facilitated by Adoption Committee and NGSS Cohort for all schools
  - Differentiated learning
- Monthly Teaching and Learning Newsletter

Remaining Work for the 2018-19 School Year

Reviewing Materials - Pilot Process

- Piloting two finalist programs
  - Adoption members using materials in classrooms
  - Additional teachers trained and piloting materials
  - All pilot teachers piloting both programs

- Additional information being collected during pilot window
  - Student feedback
  - Parent and community feedback
  - Teacher feedback
  - Evaluation
  - Cost

Community Engagement: Communication

Lake Washington School District

ABOUT US | SCHOOLS | PROGRAMS AND SERVICES | HELP | GET INVOLVED | 2019 LEVY

Academic Support | Accelerated Programs | Business Services | College and Career Readiness | Communications | Construction | Curriculum & Instruction | Facilities | Health Services | Human Resources | Innovation | Opportunity and Equity | Preschool | Safety | Special Services | Student Services | Summer Programs | Sustainability | Technology | Transportation

HOME > PROGRAMS AND SERVICES > CURRICULUM & INSTRUCTION > CURRICULUM REVIEW AND ADOPTION

Curriculum Review and Adoption

Determining which curriculum will be taught to our students includes an adoption process whereby:

- An adoption committee consisting of a diverse group of pare
  and teachers with subject matter expertise is formed
- Standards are reviewed by the adoption committee
- Screening criteria are created by the adoption committee
- Curriculum materials are reviewed by the adoption committe
- A recommendation for curriculum materials is made by the a
- A public review of the adoption committee's recommendatio
- The Instructional Materials Committee reviews the materials
  and makes a recommendation to the Board
- The Lake Washington School District Board takes action on t

The adoption process is on a timeline. Curriculum by subject-area
from the curriculum adoption committees are below.

The current list of adopted curriculum is revised yearly: Elementa

Instructional Materials Committee (IM

The Instructional Materials Committee recommends instructiona
must vote to adopt specific curriculum for the district.

The list of materials to be reviewed at IMC meetings is posted here. If you have questions, comments or wish to appeal any of the materials, contact the Curriculum Office at 425-936-1316.

Next IMC Meeting: TBA

- Previous Meeting Minutes

K-5 Science

Elementary teachers, administrators, and community members will be using rubrics developed last year from current research on effective practice in elementary science instruction that is in alignment with the Next Generation Science Standards (NGSS) to evaluate possible curriculum materials. The committee will be reviewing and piloting materials this school year in order to recommend a new curriculum for adoption in spring 2019.

K-5 Science Curriculum Adoption Committee Members

- K-5 Science Curriculum Adoption Committee Meeting Agendas and Summaries

Dyslexia

HIV and AIDS Curriculum

Community Engagement: Communication

- January 2019:
  - Parent Letter
  - Information shared at parent conferences
- February - March 2019:
  - Parent/Community Information Night
  - Connections: Update on adoption access and link to digital survey link

Community Engagement: Input Meeting

Parent/Community Night held on March 20 from 7:00-8:00 in the Board Room

Opportunity to:

1. Learn about the adoption process and programs being considered
2. View curriculum materials
3. Provide input on finalist programs

The Adoption Committee will review written feedback collected during meeting to inform final recommendation

Community Engagement: Public Review

Policy IIAA-R Public Review of Instructional Materials

It is the intention of the Lake Washington Board of Directors to provide an opportunity for public review of instructional materials prior to action by the board. The following procedure will be used to implement the intention of the board.

At least two weeks prior to action, the Administrator of Curriculum shall post IMC submissions on the district's website and shall make available during regular office hours at the Resource Center those materials recommended for adoption by the IMC.

Appendix C, Public Review of Materials, will be available on which public comments can be provided. The completed forms will be distributed to the Board for their consideration.

Committee Recommendations

- Committee will rubric evaluation scores, feedback from pilot and community engagement to inform a final recommendation.

- Recommendation forwarded to Instructional Materials Committee and to Board in May

Continued Professional Learning

- Professional Learning Department providing opportunities for teachers to learn more
  - Ambitious Science Teaching Book Study
- Potential summer learning for elementary teachers
- Planned 2019-2020 LEAP trainings for elementary teachers
- 2019-2020 Newsletter updates and resources

Planning for Implementation

- Adoption committee, pilot teachers and curriculum specialists will plan for new curriculum implementation in the 2019-2020 school year

- Collaborate with multiple departments to ensure implementation is supportive of student learning