

K-12 Science Instructional Materials Adoption 23-24

Rationale and Background

Rationale:

K-5 Adoption Process: For K-5th grade, this year's Science Curriculum Adoption process was approached differently from the last two Language Arts and Math adoptions. After two years of back-to-back big core curriculum adoptions, we heard from teachers, coaches, and administration that between the capacity of teachers and the amount of time spent teaching Science standards, the need for a full comprehension science curriculum was not needed. We have a comprehensive Language For All Program in the daily schedule at both elementary schools. This program not only supports our students who are emerging bilinguals and meets our English Language Plan, but it also provides language, Science, and Social Studies standards for all students. Embedded in our Language for All Program units is our Science curriculum, *Mystery Science*. This is an online curriculum that provides all students with access to science standards. It meets the state science standards as much as is needed and provides students with hands-on activities to engage with these standards. This curriculum is prepped by our ELL teachers, for gen education teachers, and it is co-taught as part of our program. After team feedback, it was determined that we should continue with this model and the use of this curriculum. The team recommends purchasing a 7-year, district-wide Mystery Science curriculum subscription. Mystery Science will continue to meet the K-5 Science Standards and our Language For All Program needs. This will be an independent curriculum adoption, as Mystery Science was not on the States approved curriculum list. Through collaboration with other districts seeking the same independent adoption and our Clackamas ESD, we completed the process to comply with all requirements for the recommendation to the school board.

6-12 Adoption Process: At the beginning of the 23-24 school year, in anticipation of the state approved secondary science curriculum adoption list (which was not approved until mid-October), Oregon Science Leaders (the state science educator consortium), Multnomah - Clackamas Regional Educator Network and ODE held multiple webinars preparing districts for science curriculum adoption as districts prepared to accommodate the fact that the state was reviewing many curricula that were not aligned with the current best practices as outlined by the Oregon State Standards. These state-wide collaboratives began to lay the groundwork as many districts throughout the state were preparing to conduct independent adoptions. Beginning in November of 2023, Jennifer Behrman (Director of Teaching and Learning) and Kate Dean (District Improvement Coach/TOSA) brought together secondary administrators and instructional coaches to begin the work of curriculum adoption for 6-12 science. This group reviewed historical data around science achievement - both proficiency levels of ELS and trends in state OSAS testing results, noting that our current secondary science instruction contained gaps. The group also discussed how the state approved curriculum list offered little to no secondary options that were truly aligned with the state standards/Next Generation Science Standards (NGSS).

On November 16, 2023, the Secondary Science Adoption Committee was convened, made up of 6-12 teachers, instructional coaches, and 6-12 administrators. The committee established an instructional vision aligned with the district's mission, vision, and values, Next Generation Science Standards, and the National Research Council's Framework for K-12 Science Education. Members also engaged in conversations about rigor, relevance, and engagement to ensure materials would best prepare all students with the baseline science knowledge and skills needed for college, career, and civic engagement. Finally, the committee previewed publisher scorecards from the Oregon Department of Education, EduReports, and the NGSS Design Badge Peer Review Panel. The committee came to consensus that the team would only review the middle school state-approved options and the high school open source options that utilized a 3-dimensional Anchoring Phenomenon unit model. Middle school team members used the provided NGSS-aligned district screening document to review both the OpenSciEd Middle School Science Curriculum and Imagine Learning's Integrated Twig Science curriculum. High school team members used the same screening document to review OpenSciEd High School Science Curriculum and the Portland Metro Stem Partnership Patterns High School Science Curriculum.

While the committee worked to review their top 2 curricula through December 2023, Kate Dean collaborated with other neighboring districts considering the same curricula through meetings organized by Clackamas ESD. This collaborative worked together to collect all information needed to conduct an independent adoption of non-state reviewed curricula with a focus on completing the state Instructional Materials Evaluation Tool for the OpenSciEd High School Curriculum. When completed, this work was then shared with all collaborating districts to use in their individual independent adoptions.

Prior to Winter Break, submitted screening documents from all parties showed overwhelming agreement in recommended curricula. A brief reconvening of the committee at the start of January, 2024 resulted in the decision to pilot the top choice for both EMS and EHS beginning in February, 2024. EMS piloted curricula in all grade levels while EHS piloted Chemistry and Biology units. Results from these pilots provided additional evidence in support of the top curriculum choices - feedback from teachers and students indicated that materials significantly improved student engagement and development of both science content and skill. At the end of March, 2024 the committee reached a final consensus and recommendation. During student-led conferences April 1st and 2nd, 2024, families and the community were invited to preview and screen the top choices at each level. Feedback indicated that families found the materials rigorous, engaging and relevant to both local and world topics.

During our extensive examination, we addressed the need for quality science instructional materials that provide both rigor and relevance through engaging, student centered instruction. Teachers wanted well-organized materials, support for differentiation and engaging anchor phenomenon based units that incorporated the use of all science and engineering practices.

Below is a list of how the resources addressed the assessed criterion:

Alignment to the Oregon Science Standards:

- All three levels of science instructional materials address the disciplinary core ideas as outlined in the state standards.
- Oregon Instructional Material Evaluation Tool (OR-IMET) Summary states that Mystery Science partially meets all criteria for K-5, TWIG Science, and OpenSciEd both meet all criteria for 6-12.

Alignment to the NGSS Science and Engineering Practices and Cross-Cutting Concepts:

- Materials consistently and explicitly integrate all of the disciplinary core ideas, science and engineering practices, and crosscutting concepts that meet the full intent of grade-level and/or grade-band standards by the end of instruction
- Materials explicitly align with the nature of science and the intersection of those understandings with science and engineering practices, disciplinary core ideas, and crosscutting concepts (NGSS: Appendix H).
- Materials include meaningful connections across disciplines to create learning opportunities for greater depth and complexity to address relevant engineering, scientific, and societal challenges (i.e. STEM, mathematics, social science, language arts, health, career connected learning).

Instructional Supports and Alignment to Estacada School District Essential Learning Standards:

- The curriculum aligns and integrates with grade level Essential Learning Standards
- Materials include instructional strategies for supporting unfinished learning from prior grade levels and extensions for students who are ready to deepen their understanding of grade-level content
- Materials are designed to allow a teacher to differentiate content and varied modes of communication within lessons, tasks, or other activities for students.
- Materials provide scaffolds to support students from special populations in their regular and active participation in scientific learning (i.e. students who are multilingual, students experiencing disabilities, and/or students identified as TAG).
- Materials include relevant topics of student interest and strategic access to authentic contexts and tools that give students the freedom to make connections to their experiences, goals, and interests. Additionally, materials support the value of science as a sensible, useful, and worthwhile subject.
- Materials include opportunities for student-driven learning sequences through questions and discourse that center students' lived experiences as they relate to the phenomenon and/or problem.

Digital materials and technology components

- Digital materials are designed to allow teachers the ability to adjust and adapt documents and other included resources to meet student needs.
- Professional learning resources to support educator's use of the materials

- Digital materials provide strategies to inform all partners—including students, parents, or caregivers—about the program and suggestions for how they can help support student progress and achievement.

Assessment:

- Provides multiple assessment types, both digital and non-digital formats, accessible to all students
- Frequent oral, written, and group formative assessments allow teachers to provide ongoing feedback to drive instruction.
- Includes summative assessments and performance tasks
- Materials include performance tasks that show clear and full alignment to science standards and reflect the 3D focus by including the disciplinary core ideas, crosscutting concepts, and science and engineering practices present.
- Performance assessments allow students to work with relevant science phenomena, engineering design problems, and authentic audiences.

Materials to Purchase for Full Implementation:

- K-5 Mystery Science: digital platform access for K-5 classrooms for seven years
- 6-8 Twig Science: grade 6-8 seven year student pack (consumable journal and digital platform license), grade 6-8 seven year Spanish student pack, grade 6-8 Teacher Pack (includes teacher edition bundle, journal answers bundle, card set and module supports), 2 individual science kits
- 9-12 OpenSciEd: equipment kits for Biology (5 unit kits), Chemistry (5 unit kits), Physics (6 unit kits)

Proposed Training and Professional Development Plan:

- 6-8: Introduction to 3-Dimensional Learning 3 hrs, Getting Started with Twig Science 3 hrs, Follow-up coaching sessions during the first year of implementation 9 hrs
- 9-12: OpenSciEd Curriculum Launch Summer 3-day workshop, OpenSciEd Implementation Webinar 6 hrs, Community of Practice Check-In sessions during first year of implementation 3hrs

Needs for Ongoing Professional Development:

- Inservice time to allow for professional development
- Instructional coaches at each level will provide ongoing training and professional development to teachers throughout the year as needed.