

LCUSD Next Generation Science Standards (NGSS) Implementation Plan



Vision Statement

All students will engage in 3 dimensional and inquiry-based learning through the successful implementation of NGSS which will help us shape students' analytical minds, foster growth mindset and develop scientifically literate students who can solve problems in their local and global communities.

Mission Statement

Over the next five years, all TK-12 grade students in LCUSD will engage in three dimensional learning of NGSS and achieve growth in their scientific inquiry of the natural world with the collaboration of teachers and the involvement and support of our parents and the community.

Core Values

- The Next Generation Science Standards establish the vision for learning science and engineering for all students through routine practice of the 3D Learning Model.
- Science education should guide all students to think, discover, question, and apply scientific practices and concepts to real-world problems through the four science domains: Earth and Space, Physical, Life, and Engineering.
- All stakeholders (students, parents/caregivers, educators, and community members) will support the implementation of NGSS as we focus on finding solutions and using resources to meet the needs of all learners.
- As committed stakeholders, we embrace continuous improvement for students, teachers, and administrators through meaningful collaboration and ongoing professional development.

LCUSD NGSS Implementation Plan					
Element	2015-16	2016-17	2017-18	2018-19	2019-20
Instruction (Teaching and Learning)	TK-6 teachers teach in thematic units, not necessarily on a daily basis. Some teachers use hands on labs and projects others use the textbook as the main resource for instruction. 7-12 teachers use a discipline specific model and provide instruction on a daily basis, except on block days. Not every teacher uses a science notebook as a learning tool.	All TK-6 teachers integrate science into their ELA and Math instruction. Lessons reflect their understanding of the integration of CCSS in NGSS. All TK-12 teachers focus on the instructional shifts, especially the introduction of phenomena. All TK-6 teachers use notebooks or digital notebooks to document student learning. All 7-12 teachers require that students write scientific arguments (CER).	All TK - 6 teachers teach science regularly and use notebooks to record student learning. All TK-12 lessons reflect their understanding of the NGSS and the three dimensional learning. All TK-6 teachers identify grade level specific NGSS standards and collaborate with colleagues to share instructional materials and projects. Field trips will be aligned with grade level specific standards.	Teachers create and deliver lessons aligned to the three dimensions and performance expectations of the NGSS. They use the Biological Science Curriculum Study (BSCS) 5E Instructional Model, integrating the three dimensions of the NGSS. Student notebooks/digital notebooks are used as learning tools.	Teachers' instruction is closely aligned to NGSS. All lessons demonstrate evidence of teachers' understanding of NGSS, the three dimensional learning and interdisciplinary approach, integrating ELA and math when applicable. Students use their notebooks as a powerful learning tool demonstrating skills and knowledge of scientifically literate citizens.
	TK-6 teachers have not received any formal professional development on NGSS. A few teachers have attended workshops. Four teachers are part of the NGSS implementation committee and had training on NGSS. 7-12 teachers have received training on instructional strategies aligned with NGSS. Several 7-12 teachers have attended conferences. Five 7-12 teachers are part of the NGSS committee and had training on NGSS. Teachers, along with site/district administration, will decide which teaching model to use next year and beyond (Integrated vs. Discipline specific in 6-8 grades and 3 or 4 course model at the high school).	TK-5 teachers and administrators will gain initial exposure to NGSS and understand connections to the CCSS. TK-5 teachers will begin to learn the instructional shifts, especially understanding phenomena as a shift in teaching and learning. They will familiarize themselves with the guiding principals of the framework, and the anatomy and architecture of performance expectations of the NGSS. 6-12 teachers and administrators will focus on lesson case studies, observe model lessons aligned with NGSS, and hold discussions on the implementation of scientific and engineering practices in their instruction.	TK-5 teachers and administrators will deepen their understanding of NGSS. They will understand how teaching and learning look different in the NGSS from science content standards. They will be able to identify each of the dimensions connected to performance expectations, and will be able to describe what Science and Engineering Practice and Crosscutting Concepts would look like in their classrooms. 6-12 teachers and administrators will receive training in the integration of engineering practices into their lessons. They will use teacher planning time to create lessons aligned to NGSS and share successful practices with one another. Earth Science will be integrated in the core sciences.	TK-5 teachers and administrators will identify content that has been added to their grade level standards due to NGSS and receive training in those content areas. In addition, they will receive training in Science and Engineering Practices. Teachers will use planning time and collaboration time to design lessons and units aligned to the three dimensions and performance expectations of the NGSS. TK-5 teachers will learn how to use the Biological Science Curriculum Study (BSCS) 5E Instructional Model, integrating the three dimensions of the NGSS. 6-12 teachers will collaborate with colleagues in designing and implementing lessons. 6-12 teachers and administrators will receive training in assessments aligned with NGSS. Collaboration time will be used to modify existing assessments to align with NGSS.	TK-12 teachers will work together to design and deliver instruction aligned to NGSS curriculum and assessment. They will implement formative and summative assessments aligned to NGSS, create pacing guides, and implement NGSS-adopted curriculum. 6-12 teachers will use planning and collaboration time to redesign Physics and Biology course curriculum to align with NGSS and appropriate grade level expectations.

<p>Curriculum (Resources and Materials)</p>	<p>K-6 teachers use the existing textbook as their main resource and supplement with other materials when needed. 7-12 teachers use the existing textbook as well as other supplemental materials.</p>	<p>K-12 Science instructional materials will be adopted by the State Board of Education. Some teachers will review and pilot NGSS aligned materials and resources. All teachers will review and use supplemental materials to align their instruction with NGSS. TK-6 teachers will inventory lab resources that are available at each site and organize them by grade level. TK-12 teachers will identify and obtain needed lab resources. Two extra-duty, Coordinator positions will be created to promote/increase community partnerships and support extracurricular science activities and events.</p>	<p>TK-12 teachers will review and utilize NGSS aligned supplemental materials and resources. If NGSS aligned textbooks are available, teachers will consider adoption or to continue piloting and using other available resources. 7-12 teachers will identify laboratory needs and obtain materials. At the TK-6 level, there will be one Paraprofessional I Lab Aide on site every day to maintain and set up labs. At the 7-12, there will be a Paraprofessional I Lab Aide on site two days per week to support Physics and Biology.</p>	<p>TK-12 teachers will utilize newly adopted materials and resources to provide instruction. They will continue to use any other supplemental materials and resources.</p>	<p>Consistent and rigorous NGSS aligned materials and resources will be available to all teachers and used in all classrooms district wide.</p>
<p>Assessment</p>	<p>K-6 teachers use assessments from the textbook as well as design their own using other resources. They have not used common assessments in Science. 7-12 teachers design their own assessments. 5th, 8th, and 10th grade students take a standardized test (CST) in April.</p>	<p>Statewide standardized pilot test will be administered for early adopters. TK-6 teachers will create and share formative and summative assessments to measure student learning. 7-12 teachers will create formative assessments to measure students understanding of Scientific and Engineering Practices and Crosscutting Concepts.</p>	<p>Statewide standardized field test will be administered. Sample items will be used to expose teachers and students to NGSS assessment format. TK-12 teachers will create and share formative and summative assessments aligned with NGSS.</p>	<p>Statewide standardized operational tests will be administered. At the 5th grade level, K-5 grade level standards will be assessed. At the 8th grade level, 6-8 grade level standards will be assessed. At the high school level, four content area standards will be assessed. Teachers will share assessments, labs, and performance tasks that reflect the format of the operational test items and will analyze the results in grade levels and PLCs to guide instruction.</p>	<p>Standardized state assessments in the 5th, 8th, and high school will be administered and will measure student understanding of NGSS in all grade levels. Teachers will share assessments, labs, and performance tasks with colleagues to be administered throughout the year to evaluate student learning and to prepare them for standardized assessments at the end of the year.</p>

<p>Community & Parent Engagement</p>	<p>At TK-6 parents are actively engaged and provide after school enrichments (Science Olympiad, Science Fair, docents, guest presenters, GATE after school opportunities, Robotics, Coding, parent and community volunteers from JPL, etc). At 7-12 level parents are engaged through GATE gatherings, Science Olympiad, Science Fair, Institutes for the 21st Century, Engineering Club, Robotics, JPL internships, community volunteers during STEP, etc.)</p>	<p>Share with the community the NGSS Implementation Plan as well as the Science Pathways that will be implemented at LCHS. Establish business partnership with JPL and invite parents in the field of science to integrate their presentations with classroom instruction. Science Fair, Makers Fair, or Science Olympiad, and Engineering and Robotics competitions/projects reflect student understanding of NGSS and serve as evidence of community/parent involvement. Two extra-duty, extra-pay Science Coordinator positions will be created to promote/increase community partnerships and to support extracurricular science activities and events. Teachers will inquire if parents have any knowledge in the area of science and are able to support science and engineering practices in the classroom.</p>	<p>Establish more partnerships with businesses/parents in the field of science and engineering to integrate their presentations with classroom instruction. Science Fair, Makers Fair, or Science Olympiad, and Engineering Robotics competitions/projects reflect student understanding of NGSS and serve as evidence of community partnerships. LCHS counselors and administrators communicate with colleges and universities regarding the Science Pathways and the impact on student achievement.</p>	<p>Continue to engage parents and the community in the implementation of NGSS through a variety of lessons, events and after school enrichment opportunities. Continue to communicate with colleges and universities regarding the Science Pathways and the impact on student achievement.</p>	<p>Continue to engage parents and the community on the implementation of NGSS through a variety of lessons, events and after school enrichment opportunities. Continue to communicate with colleges and universities regarding the Science Pathways and the impact on student achievement.</p>
<p>Budget/ LCAP</p>	<p>LCAP and budget support District Professional Development (PD) on NGSS. The Educator Effectiveness Fund has been used for 7-12 PD.</p>	<p>LCAP and budget support NGSS through funds for professional development, 2 Science Coordinator stipends and 4 Paraprofessional I Lab Aides, materials for transition, and teacher planning time.</p>	<p>LCAP and budget support NGSS through professional development, vertical articulation, 2 Science Coordinator stipends and 4 Paraprofessional I Lab Aides, teacher planning time and the purchase of resources and materials.</p>	<p>LCAP and budget support NGSS through professional development, vertical articulation, 2 Science Coordinator stipends and 4 Paraprofessional I Lab Aides, teacher planning time and the adoption of science textbooks.</p>	<p>LCAP and budget support NGSS through professional development, vertical articulation, 2 Science Coordinator stipends and 4 Paraprofessional I Lab Aides, teacher planning time and the adoption of science textbooks.</p>