MARYLAND STATE DEPARTMENT OF EDUCATION
Preparing World-Class Students

Lillian M. Lowery, Ed.D.
State Superintendent of Schools

200 West Baltimore Street • Baltimore, MD 21201 • 410-767-0100 • 410-333-6442 TTY/TDD • MarylandPublicSchools.org

TO: Members of the State Board of Education

FROM: Lillian M. Lowery, Ed.D. LMLowery

DATE: April 22, 2014

SUBJECT: Next Generation Science Standards (NGSS)

PURPOSE:

To provide information and an update regarding the implementation of the Next Generation Science Standards (NGSS) in Maryland

HISTORICAL BACKGROUND:

There is no doubt that science—and, therefore, science education—is central to the lives of all Americans. Never before has our world been so complex and science knowledge so critical to making sense of it all. When comprehending current events, choosing and using technology, or making informed decisions about one's healthcare, science understanding is key. Science is also at the heart of the United States' ability to continue to innovate, lead, and create the jobs of the future. All students—whether they become technicians in a hospital, workers in a high tech manufacturing facility, or Ph.D. researchers—must have a solid K–12 science education.

Process for Implementing Next Generation Science Standards in Maryland

The Maryland State NGSS Lead Team has provided continuous guidance and feedback throughout the development of Maryland's NGSS Planning and Implementation process. This team includes representatives from the PreK–12 education, special education, ELL, post-secondary education, and informal science communities. The Maryland Team has taken a leadership role in planning for implementation of the NGSS from the beginning. The members were recruited to develop recommendations regarding the work of implementation and transition that is occurring throughout the state.

In order to receive input from LEAs in the state subcommittees have been formed composed of classroom educators, supervisors, and higher education faculty from across the state to address implementation issues at each level: elementary, middle, and high. The elementary committee is in the process of developing recommendations on possible model lessons for the NGSS at this level. The middle school committee will make research-based recommendations for implementation of NGSS in Maryland middle schools. The high school committee will consider high school requirements, courses, and make recommendations for possible changes to COMAR 13A.03.02.04 Graduation Requirements for Public High Schools in Maryland.

In February 2014, a team composed of Dr. Finan, Dr. Johnson, Bill Reinhard, Tiara Booker-Dwyer, MBRT, Brian Raygor, Wicomico County, and Mary M. Thurlow were able to attend the first NGSS Annual Leadership Meeting in Atlanta, GA. The result of work done by this team is a Priority Report which includes:

- Establishment of a high level broad-based coalition including representatives from higher education and the business community that will partner with the leadership team and subcommittees.
- Monitoring district-level implementation using a simple district-level survey that will be distributed on a regular basis to science supervisors to complete and sent to superintendents, assistant superintendents and MSDE staff.
- Reviewing instructional materials and curriculum using the EQuIP Rubric and developing models for professional development e.g. MSDE College and Career Ready Conferences
- An updated more in depth timeline for Implementation

EXECUTIVE SUMMARY:

To date eleven states and the District of Columbia have adopted the NGSS, Maryland was the fourth state to adopt on June 25, 2013. The three attached documents provide an overview of the updated Maryland Planning and Implementation Timeline, the update form provided to LEAs by MSDE, and the NGSS Assessment Main Messages developed as a result of the NRC Board on Testing and Assessment Report released in December 2013.

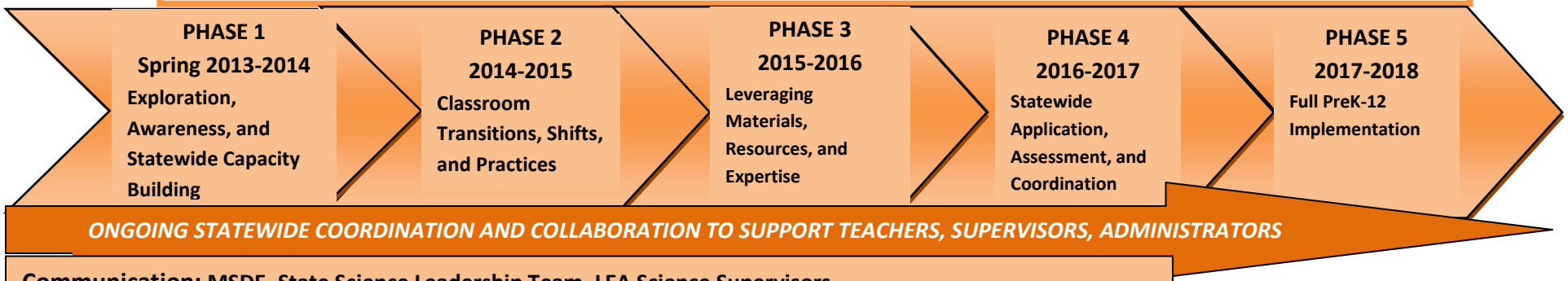
ACTION:

Information for review and consideration of the updated plan for implementation.

http://www.nextgenscience.org/
http://www.nap.edu/catalog.php?record_id=18409

Attachments

Maryland Next Generation Science Standards Implementation and Planning Document



Communication: MSDE, State Science Leadership Team, LEA Science Supervisors		
Develop common messages	General Outreach on Shifts	Ongoing Consistent messaging

Statewide Capacity/Network Building: MSDE Programs; State Science Leadership Team; LEA Science Supervisors		
Identify existing expertise and gaps	Develop NGSS Support Networks	Ongoing Support of Leadership Network

Professional Learning: MSDE Programs, State Science Leadership Team, LEA Science Supervisors, Teachers, Administrators, Informal Educators			
Identify professional learning needs: teachers, administrators, and informal educators – LEA Progress Updates	Professional Learning designed for all Stakeholders: Regular Updates at Maryland BOE meetings; Briefings, and IHE	Professional Learning: Implementation for teachers and administrators at all levels at CCRC : Sessions – NGSS 101; EQuIP NGSS Rubric; Assessment; DL	Professional Learning: Implementation for Informal Educators and ongoing adaptation of Professional Learning

Instructional Practices/Shifts: MSDE, State Science Leadership Team, LEA Science Supervisors, Teachers, Administrators, Informal Educators				
Focus on the Framework to inform development of PreK – 12 Scope and Sequence which incorporates the Science and Engineering Practices	Continue to focus on equity (all students) and integrating the Science and Engineering Practices and Cross Cutting Concepts	Focus on the Integration of the 3 Dimensions (S and E Practices, Cross Cutting Concepts, and Disciplinary Core Ideas)	Instructional Shifts in place Statewide; development of Formative Assessments for use at varied levels	Assessments developed: beginning with classroom assessment and moving to monitoring (large-scale) assessment.

Instructional Materials and Curriculum: MSDE Programs, State Science Leadership Team, LEA Science Supervisors, Teachers		
Evaluate existing material using the EQuIP NGSS Rubric	Adapt existing materials and ongoing exploration of e-innovations	Evaluate newly developed material using the on an ongoing basis

Assessment: MSDE Programs, LEAs , LEA Science Supervisor, Administrators, Teachers		
Align existing State assessments with NGSS (to the extent feasible)	Focus on developing classroom formative assessment systems	Participate in multi-state assessment consortium with NGSS adopted states

Data: MSDE, LEAs , Administrators, Teachers		
Determine metrics to be tracked (e.g. course taking, student achievement) to inform instruction	Develop data collection plan for formative & summative assessments	Track and report science related data

Policy Shifts: MBOE, MSDE, Legislature		
Identify policy changes needed to implement NGSS (e.g. Teacher Certification, Teacher Evaluation, assessments)	Consideration of Alternate Pathways, Early College Admission Program, Approved CTE or Other	Piloting Assessments

NGSS Assessment Main Messages

1. **Assessment Tasks should allow students to engage in science practices in the context of disciplinary core ideas and cross-cutting concepts**
2. **Multi-component tasks that make use of a variety of response formats will be best suited for this.**
3. **Selected-response questions, short and extended constructed response questions, and performance tasks can all be used, but should be carefully designed to ensure that they measure the intended construct and support the intended inference.**
4. **Students will need multiple and varied assessment opportunities to demonstrate their proficiencies with the NGSS performance expectations.**
5. **A system of assessments will be required and should include classroom assessment, monitoring (large-scale) assessments, and indicators of opportunity to learn.**
6. **Classroom assessment should be an integral part of instruction and should reinforce the type of science learning envisioned in the Framework and NGSS.**
7. **Monitoring (large-scale) assessments will need to include as on-demand component and a component based in the classroom (classroom-embedded) in order to fully cover the breadth and depth of the NGSS performance.**
8. **Indicators of opportunity to learn should document that students have the opportunity to learn science in the way called for in the Framework and NGSS and that schools have appropriate resources.**
9. **Implementation should be gradual, systematic, and carefully prioritized, beginning with classroom assessment and moving to monitoring (large-scale)assessment.**
10. **Professional development and adequate support for teachers will be critical.**

Local Education Agency NGSS Progress Update

LEA: _____ **DATE:** _____

In preparation for periodic updates to be presented to the Maryland State Board of Education on the progress of the implementation of NGSS within the state of Maryland and LEAs, please provide information on the progress of your LEA's implementation plans. These updates will serve as information for the State BOE, the MSDE science office, and for LEAs to keep abreast of what other LEAs are doing to move NGSS forward. Additionally the documents will help focus discussion at BOE meetings and Science Briefings regarding progress being made and to illicit questions other LEAs may have based upon the updates. Please send the updates to Mary M. Thurlow at: mthurlow@msde.state.md.us.

Identify the timeline your LEA may have developed regarding implementation of the NGSS:

List any past and future NGSS implementation events with teachers, parents, and/ or Local School Board designed to support the implementation timeline in your LEA:

What successes has your LEA experienced in the implementation process in the past months since state adoption?

What obstacles and/or challenges has your LEA encountered in the implementation process?

What question(s) would your LEA like to pose to the other LEAs and MSDE?

Please list any NGSS related resources (PPTs, tools, one-pagers, etc) that your LEA has developed that you would be willing to share:

NGSS Information can be found on our LEA at:

NGSS Implementation Update

"A Goal Without A Plan Is Just A Wish"

Maryland State Department of Education
Division of Curriculum, Assessment, and Accountability
Office of Science

Maryland and the NGSS: Where have We Been?

Defining our aspiration

Maryland's implementation plan

- is a living document that will change over time;
- will be used to help structure and guide more detailed planning, especially as many areas are still under transition (e.g., science assessment, teacher evaluation, accountability).

Maryland's Preliminary Timeline for Implementation of *NGSS*

Preliminary Timeline for NGSS Implementation Facilitated by MSDE

Critical Elements and Action Steps	Timeline				
	2013-14	2014-15	2015-16	2016-17	2017-18
Develop a PreK-12 scope and sequence/course guidelines that align and support implementation of NGSS					
Research appropriate high school science course sequences					
Provide instructional models consistent with NGSS Performance Expectations					
Provide technical assistance with implementation in the LEAs.					
Full PreK-12 Implementation • All NGSS scope and sequence in place in all school systems • Local curricular documents aligned to state documents (and NGSS)					

Maryland and the NGSS: Where are We along the Preliminary Timeline?

Develop a qualitative rubric that asks rigorous questions about the stages of implementation to determine the likelihood of success of a given component:

- ✓ Identify the ideal role for MSDE, revisit the kind of role the state has historically played vis-à-vis local education agencies
- ✓ Capacity-building
- ✓ Coordination
- ❑ Funding
- ✓ Monitoring

Maryland and the NGSS: Where are We Now?

First NGSS Annual Leadership Meeting

The result of work done by the team that participated in this meeting is a Priority Report which includes:

- Establishment of a high level broad-based coalition including representatives from higher education and the business community that will partner with the leadership team and subcommittees.
- Monitoring district-level implementation using a simple district-level survey that will be distributed on a regular basis to science supervisors to complete and sent to superintendents, assistant superintendents and MSDE staff.
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Maryland Stakeholders

Develop a cadre of stakeholders and an engagement strategy

Critical Maryland Stakeholders

- **Students**
- **Teachers**, teachers unions, and **professional associations of science teachers**;
- Parents and parent associations; school counselors; school administrators and their professional associations
- LEA Superintendents, **Assistant Superintendents**, and **curriculum staff**
- **Maryland State Board of Education members**
- State legislators, particularly chairs of education committees and appropriators; and Governor, including education policy advisers
- **State science supervisors; State leadership teams**
- **Public and private institutions of higher education, particularly schools of education**
- **Informal science education providers**
- Civil rights organizations, philanthropic organizations and other third-party advocacy groups
- Business community (e.g., chambers of commerce, local STEM industry leaders); STEM organizations and networks
- Workforce development organizations and agencies
- Scientific community

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NGSS Assessment Main Messages (continued)

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Maryland and the NGSS: Where are We Going?

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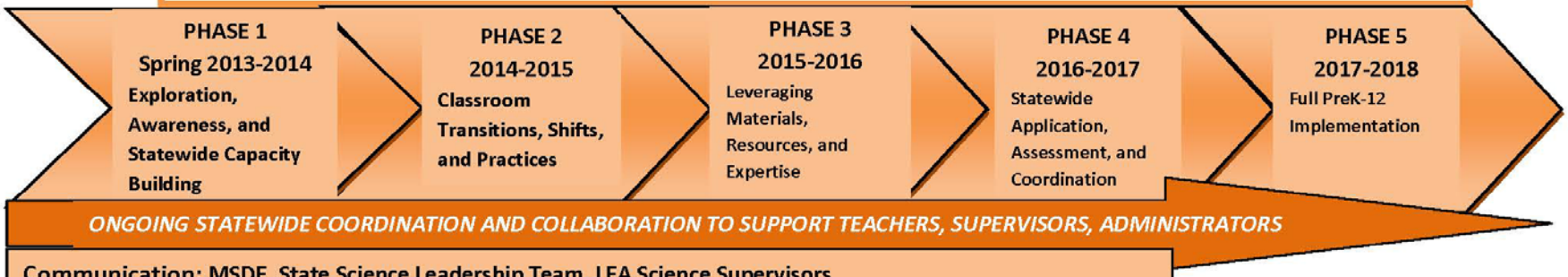

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