

Implementation Plan

Implementing the NGSS through newly selected instructional materials is a major undertaking and many educators would hope that the new materials would magically transform teaching and learning to be aligned with the NGSS. Yet the reality of the complexities and beauty of the NGSS require thoughtful and purposeful planning that enable districts to move from novice to expert in providing quality science education for all students.

The good news is that by conducting the four previous phases of the NextGen TIME tools and processes, districts have been collecting data that serves to inform the implementation plan. Fodder for the implementation plan is provided by the lessons learned in building a team; data from the strengths and limitations gathered through the Paperscreen; and, analyzing student work and teacher support from the Pilot.

Who should be involved in developing this plan? We recommend a team of leaders made up of a variety of stakeholders. Different points of view, while sometimes challenge to balance, allows for buy in and credibility. An important side-effect of this strategy is that more people in a wider range of roles are aware of the plan and can support it in a variety of ways.

What planning tools are available? There are many tools and processes available. If the district has its own tools and they align with the shifts required by the instructional materials, then use those.

NextGen TIME recommends revisiting the **Practice Profiles** used in the Prepare phase and the use of a planning tool called the **Program Elements Matrix (PEM)**. The PEM structure has been used for years by the K-12 Alliance and BSCS in work with districts. It is presented here because of its adaptability to align with implementing high quality science instructional materials.

The PEM is a matrix that features district-identified elements for the implementation of science instructional materials across a description of implementation from the status quo to the attainable goal. There are two basic rules in developing a PEM: the elements have to be of key importance to the purpose of the PEM, and the column descriptions have to indicate growth over time. The actual time frame for a PEM is dependent on the developers, but most districts work within a 3-5-year planning cycle. The PEM is a living document, meaning that it is reviewed yearly, with growth celebrated and non-growth analyzed for improvement. Lastly, PEMs can be developed at a large grain size for an entire program, or at a smaller grain size where a specific element is explored in depth.

Figure 1 is a blank PEM with possible column headers. Figure 2 represents a Program PEM that uses some of the elements from the Prepare Stage. Figure 3 represents a PEM that was developed by taking a program element (instruction) and making a specific PEM for that element by including sub-elements that define NGSS designed instruction.

Figure 1

Program Elements Matrix				
Elements	<i>Here We Are (Status Quo; Awareness)</i>	<i>Just for Starters (Beginning Transition)</i>	<i>Rolling Along (Intermediate Transition)</i>	<i>Reach for the Stars (Attainable Goal)</i>

Figure 2

Implementing XX Instructional Materials				
Elements	<i>Here We Are</i>	<i>Just for Starters</i>	<i>Rolling Along</i>	<i>Reach for the Stars</i>
Policies and Practices	Science priority at high school; marginal at middle school; not a priority at elementary school			Board policies and site based practices treat as a core subject
Instruction	Mostly lecture with conformational labs; some classrooms with student centered instruction			Students engage in phenomenon or problems using 3 dimensions to building understanding or solve problems
Assessment	District end of course for secondary Teacher choice for other grades			Classrooms use formative and summative to monitor and adjust instruction; students self monitor; common assessment for program
Professional Learning	1 day district wide Varies at site for PLCs			Job embedded professional learning; collaboration time; focus on student learning
Leadership	Instructional Materials Committee; District TOSA No other leadership			TOSA with core leadership team of teachers and administrators; site representation

Figure 3

Instruction using XX Instructional Materials				
Elements	<i>Here We Are</i>	<i>Just for Starters</i>	<i>Rolling Along</i>	<i>Reach for the Stars</i>
Phenomenon or problem based	Teachers teach topics that student might one day want to know/understand	Teachers use phenomenon as discrepant event	Teachers recognize and use phenomenon or problems to anchor student learning	Teachers recognize and use phenomenon AND problems to anchor student learning
3 dimensional	Teachers teach science as a body of knowledge to be learned with few instructional strategies	Teachers use a few dimensions at the holistic level (e.g. ask questions; plan and conduct an investigation) to make ideas accessible to students	Teachers use several of the dimensions at the element level and in conjunction with each other to help build student understanding	Teachers frequently implement three-dimensional, phenomena/problem-based instructional practices as exemplified in the NGSS
Learning environment	Teachers conduct class with little or no appreciation of student thinking and promotes a teacher-centered learning environment.	Teachers recognize the value of a student-centered classroom environment, but lacks the capacity to develop such an environment.	Teachers attempt to develop a learning environment that puts student thinking at the center of instruction.	Teachers successfully develop a learning environment that puts student thinking at the center of instruction.
Student to student discourse	Teachers directly question students; sometimes students question teacher	Teachers provide accountable talk stems to encourage students to share with other students	Students select their own accountable talk stems in dialog with other students	Students challenge other student thinking, based in evidence and reasoning
Student self-assessment	Teachers do not encourage students to reflect on or assess their own work.	Students experience limited opportunities for reflection and self-assessment	Students experience some opportunities for reflection and self-assessment.	Students experience on-going opportunities for reflection and self-assessment.

Action Plan

While the PEM sets the course for implementation, it does not include many details. In contrast the action plan specifies for each element in the PEM information described in the headers of the action plan below. Add rows as needed.

What: Events and Activities (description, number, dates/times)	Who is Responsible	Due Date	Done	Special Notes: Goals/Outcomes, Measures, Budget

Consider including details such as,

- Presenter(s)/Facilitator(s)
- Session Design
- Powerpoint
- Handouts
- Announcement/Advertisement
- Location
- Room/Seating Arrangement
- Session Supplies
- Special equipment
- Refreshments/Decorations/Prizes/Swag