BEST PRACTICES & PEDAGOGY FOR TEACHING SCIENCE IN THE AASD

BUILDING UNDERSTANDING

Increase	Decrease
1. Providing challenging and stimulating opportunities for ALL students to learn science 2. Focusing on student understanding and use of scientific knowledge, ideas, and inquiry processes to make informed and responsible decisions 3. Building on students' prior knowledge to foster conceptual change 4. Sharing responsibility for learning with students by supporting a classroom community with cooperation, shared responsibility and respect 5. Providing opportunities for scientific discussion and debate among students 6. Understanding and responding to individual student's interests, strengths, experiences and needs 7. Fostering growth mindset; mistakes are an essential part of the learning process	1. Providing opportunities that favor certain groups of students 2. Focusing on student acquisition of information 3. Providing direct instruction regardless of student's prior knowledge 4. Having the teacher be solely responsible for the learning 5. Focusing on recitation of acquired knowledge 6. Treating all students alike and responding to the group as a whole 7. Identifying students as skilled/unskilled based on single, high-stakes assessments

PROMOTING INQUIRY

Increase	Decrease
1. Implementing inquiry as the essential strategies for learning science 2. Interpreting and analyzing evidence for developing or revising an explanation 3. Using science as means for communicating, defending and explaining 4. Student collaboratively grouped to: ask questions, defend conclusions, analyze and synthesize data 5. Developing scientific arguments and explanations by applying the results of experiments 6. Utilizing public communication of student ideas and work to classmates 7. Providing appropriate scaffolding to support the success of all learners, including but not limited to: - visual cues - direct instruction of general academic and science specific vocabulary - sentence frames, etc.	1. Implementing inquiry as a set of processes 2. Getting an answer for the sake of getting an answer 3. Exploring without purpose and using experiments based on recipes 4. Analyzing and synthesizing data without defending a conclusion 5. Obtaining a conclusion from an investigation without any application of the results 6. Having private communication of student ideas and conclusions with teacher only 7. Expecting student to work without proper background and academic supports

ASSESSING SCIENCE LITERACY

Increase	Decrease
1. Teachers and students will continuously assess student understanding of the AASD standards through multiple measures 2. Assessing what students understand and *are able to do* in science 3. Using assessments for providing students with timely and quality feedback 4. Using assessment data in order to drive and adjust instruction	1. Only assessing students' recall of factual information at the end of the unit, chapter, or term 2. Assessing what students have memorized 3. Assessing students without any quality feedback 4. Assessments are used without any reflection on instructional practices

IMPLEMENTING THE CURRICULUM

Increase	Decrease
1. Selecting, adapting, and implementing curriculum in a consistent scope and sequence across the district 2. Curriculum that emphasizes active and extended scientific inquiry 3. Learning disciplines (physical, life, earth sciences) in a current and relevant context 4. Studying a few fundamental, unifying science concepts in-depth 5. Studying science as both an application of concepts and a process of inquiry 6. Connecting science to other content areas ● In connecting science to other content areas, it should not be replaced by those content areas within the process.	1. Inconsistently following curriculum scope and sequence 2. Curriculum dominated by presentations of scientific knowledge through lecture, text, and demonstration 3. Studying disciplines (physical, life, earth science) in isolation 4. Broad coverage of disconnected science topics 5. Separating science knowledge and science process 6. Treating science as a subject isolated from other school subjects or placing science into other content areas without any separate focus science time

Updated April 23, 2018