**Science Education**

Subject Specific Items for PST Observation Tool

1. Using science standards and a variety of appropriate, student-centered, and culturally-relevant science disciplinary-based instructional approaches that follow safety procedures and incorporate science and engineering practices, disciplinary core ideas, and crosscutting concepts.
2. Incorporating appropriate differentiation strategies, wherein all students develop conceptual knowledge and an understanding of the nature of science. Lessons should engage students in applying science practices, clarifying relationships, and identifying natural patterns from empirical experiences.
3. Using engineering practices in support of science learning wherein all students design, construct, test and optimize possible solutions to a problem.
4. Aligning instruction and assessment strategies to support instructional decision making that identifies and addresses student misunderstandings, prior knowledge, and naïve conceptions.
5. Integrating science-specific technologies to support all students’ conceptual understanding of science and engineering.
6. Plan a variety of lesson plans based on science standards that employ strategies that demonstrate their knowledge and understanding of how to select appropriate teaching and motivating learning activities that foster an inclusive, equitable, and anti-bias environment.
7. Plan learning experiences for all students in a variety of environments (e.g., the laboratory, field, and community) within their fields of licensure.
8. Plan lessons in which all students have a variety of opportunities to investigate, collaborate, communicate, evaluate, learn from mistakes, and defend their own explanations of: scientific phenomena, observations, and data.
9. Implement activities appropriate for the abilities of all students that demonstrate safe techniques for the procurement, preparation, use, storage, dispensing, supervision, and disposal of all chemicals/materials/equipment used within their fields of licensure.
10. Demonstrate an ability to: recognize hazardous situations including overcrowding; implement emergency procedures; maintain safety equipment; provide adequate student instruction and supervision; and follow policies and procedures that comply with established state and national guidelines, appropriate legal state and national safety standards (e.g., OSHA, NFPA, EPA), and best professional practices (e.g., NSTA, NSELA).
11. Demonstrate ethical decision-making with respect to safe and humane treatment of all living organisms in and out of the classroom, and comply with the legal restrictions and best professional practices on the collection, care, and use of living organisms as relevant to their fields of licensure.
12. Implement assessments that show all students have learned and can apply disciplinary knowledge, nature of science, science and engineering practices, and crosscutting concepts in practical, authentic, and real-world situations.
13. Collect, organize, analyze, and reflect on formative and summative evidence and use those data to inform future planning and teaching.
14. Analyze science-specific assessment data based upon student demographics, categorizing the levels of learner knowledge, and reflect on results for subsequent lesson plans.
15. Engage in professional development opportunities in their content field such as talks, symposiums, research opportunities, or projects within their community.
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