

Indiana Professional Standards Board Standards for Teachers of Science

A Component of Indiana University's School of Education Unit Assessment System

IPSB Standards	Addressed/Evaluated	Source of Evidence	Criteria
<p><i>IPSB Content Standard 1</i> Understands central concepts, tools of inquiry, and history & nature of science.</p>	<p><i>IPSB Content Standard 1</i> <u>Core courses</u> taken in COAS¹</p> <p><i>Addressed:</i> Candidates study scientific inquiry as illustrated in the scenarios found in the <i>National Science Education Standards</i> and in M346/Q546, M446/Q506, & M411/M511</p> <p><i>Evaluated by:</i> M346/Q546, M446/Q506, & M411/M511 instructors</p>	<p><i>IPSB Content Standard 1</i> Before entry into program, completes required core science courses with minimum GPA of 2.5.</p> <p>In <u>M346/Q546</u>, <u>M446/Q506</u>, & <u>M411/M511</u> candidates</p> <ul style="list-style-type: none"> • Design inquiry lesson(s) for lesson sequences • Teach a science lesson as inquiry • Reflect upon effect of inquiry teaching on their students 	<p><i>IPSB Content Standard 1</i> <i>See:</i> Indiana Science Core, Content Standard 1</p> <ul style="list-style-type: none"> • Lesson Plan evaluation criteria • Teaching Critique evaluation criteria • KWL Reflection evaluation criteria
<p><i>IPSB Content Standard 2</i> Understands how students learn science & provides learning opportunities that supports students' intellectual, social, personal development.</p>	<p><i>IPSB Content Standard 2</i> <i>Addressed:</i> Candidates select, design, present and evaluate instructional opportunities that supports students' intellectual, social, and personal development M346/Q546, M446/Q506, M480/M550, & M411/511</p> <p><i>Evaluated by:</i> M346/Q546, M446/Q506, M480/M550, & M411/511 instructors</p>	<p><i>IPSB Content Standard 2</i> In <u>M346/Q546</u>, <u>M446/Q506</u>, <u>M480/M550</u>, & <u>M411/511</u> candidates:</p> <ul style="list-style-type: none"> • Prepare a cohesive sequence of instruction for use during student teaching, including a formative test • During student teaching they implement the designed instruction. • Reflect using a KWL in which they explain what they did, what they learned, and what they plan to do next time. 	<p><i>IPSB Content Standard 2</i></p> <ul style="list-style-type: none"> • KWL Reflection evaluation criteria

¹ A select committee of scientists and science educators spent a year identifying the “core courses” that should be taken by science major to insure that every student understands the central concepts, tools of inquiry, and the history and nature of science.

<p><i>IPSB Content Standard 3</i> Understands how students differ in their approaches to learning science & creates learning opportunities adapted to diverse learners.</p>	<p><i>IPSB Content Standard 3</i> <i>Addressed:</i> Candidates learn that those teachers who use a variety of instructional strategies cause more learning based on biology's tenet of individual uniqueness in biology courses, M346/Q546, M446/Q506, M411/511, & M480/550</p> <p><i>Evaluated by:</i> M346/Q546, M446/Q506, M-411/511, & M480/550 instructors</p>	<p><i>IPSB Content Standard 3</i> In <u>M346/Q546</u>, <u>M446/Q506</u>, <u>M480/M550</u>, & <u>M411/511</u> candidates:</p> <ul style="list-style-type: none"> • Complete KWLs as vidence of their thinking about this Standard and that they are ready to act. 	<p><i>IPSB Content Standard 3</i></p> <ul style="list-style-type: none"> • KWL Reflection evaluation criteria
<p><i>IPSB Content Standard 4</i> Understands & uses variety of instructional strategies to encourage students' development of conceptual understanding, inquiry skills, & scientific habits of mind.</p>	<p><i>IPSB Content Standard 4</i> <i>Addressed in:</i> M346/Q546, M446/Q506, & M480/550</p> <p><i>Evaluated by:</i> M480/550 instructors</p>	<p><i>IPSB Content Standard 4</i> In <u>M480/550</u>, candidates:</p> <ul style="list-style-type: none"> • Include a minimum of six different teaching strategies in their portfolios, and most have 8-10 different strategies. 	<p><i>IPSB Content Standard 4</i></p> <ul style="list-style-type: none"> • Student's Portfolios evaluation criteria
<p><i>IPSB Content Standard 5</i> Uses an understanding of individual & group motivation & behavior to create a learning environment that encourages positive social interaction, & active engagement in learning.</p>	<p><i>IPSB Content Standard 5</i> <i>Addressed/Evaluated by:</i> M446/Q506² instructor</p>	<p><i>IPSB Content Standard 5</i> In <u>M446/Q506</u>:</p> <ul style="list-style-type: none"> • See Syllabus, Assignments 3-12 	<p><i>IPSB Content Standard 5.1</i></p> <ul style="list-style-type: none"> • Lesson Plan evaluation criteria
<p><i>IPSB Content Standard 6</i> Understands & uses variety of communication techniques to foster enquiry, inquiry, collaboration, and supportive classroom interaction.</p>	<p><i>IPSB Content Standard 6</i> <i>Addressed:</i> In M346/Q546, M446/Q506, & M411/511 instructor model a variety of teaching strategies and styles and provide candidates opportunity to do so in the laboratory portion of the methods course. In</p>	<p><i>IPSB Content Standard 6</i> In M346/Q546, <u>M446/Q506</u>, & <u>M411/511</u>, candidates:</p> <ul style="list-style-type: none"> • Demonstrate a variety of teaching strategies and styles as they teach their science lessons. 	<p><i>IPSB Content Standard 6</i></p> <ul style="list-style-type: none"> • Teaching Critique evaluation criteria • Dilemma assignment evaluation criteria • CoRT Thinking Strategy evaluation criteria

² Secondary Science Methods, a 5 cr. hr. course, is taught during the six weeks immediately prior to student teaching. The class meets for 3.5 hours on most days. On four days it meets for 7 hours. The instructor models a variety of teaching strategies and the candidates, often for the first time, experience a variety of strategies. The goal is to keep candidates engaged in learning and, if the instructor uses a variety of teaching strategies, the likelihood of candidates engagement is increased. Several of the assignments are completed by candidates working in groups and they receive a group grade for their efforts.

	<p>M446/Q505 the candidates are introduced to and demonstrate “Mind Captures”, Inquiry Laboratories, Demonstrations, Case History/Analysis, lecture, and using Dilemma statements in the teaching of science.</p> <p><i>Evaluated by:</i> M346/Q546, M446/Q506, & M411/511 instructor</p>		
<p><i>IPSB Content Standard 7</i> Plans meaningful instruction based on knowledge of science, students, community, science curricula, curriculum goals.</p>	<p><i>IPSB Content Standard 7</i> <i>Addressed:</i> In M446/Q506, Ausubel’s meaningful learning paradigm is discussed with the candidates. Cohesiveness is the major Ausubellian concept emphasized. Candidates are also taught to concept map</p> <p><i>Evaluated by:</i> M446/Q506 instructors</p>	<p><i>IPSB Content Standard 7</i> In <u>M446/Q506</u>, candidates:</p> <ul style="list-style-type: none"> • Prepare a cohesive sequence of lesson plans and present a written argument supporting their claim that their sequence of instruction is cohesive. 	<p><i>IPSB Content Standard 7</i></p> <ul style="list-style-type: none"> • Lesson plan evaluation criteria
<p><i>IPSB Content Standard 8</i> Understands & uses variety of authentic & equitable assessment strategies to evaluate, ensure continuous intellectual, social, & personal development of learners.</p>	<p><i>IPSB Content Standard 8</i> <i>Addressed/Evaluated by:</i> M446/Q506 instructors</p>	<p><i>IPSB Content Standard 8</i> In <u>M446/Q506</u>, candidates:</p> <ul style="list-style-type: none"> • Prepare an assessment plan containing authentic, equitable tasks. 	<p><i>IPSB Content Standard 8</i></p> <ul style="list-style-type: none"> • Assessment Plan evaluation criteria
<p><i>IPSB Content Standard 9</i> Reflective practitioner who evaluates effects of his/her choices, actions on others, and actively pursues professional growth opportunities.</p>	<p><i>IPSB Content Standard 9</i> <i>Addressed/Evaluated by:</i> M346/Q546 & M446/Q506 instructors</p> <p><i>Note:</i> Most candidates attend the annual meeting of the Hoosier Association of Science Teachers.</p>	<p><i>IPSB Content Standard 9</i> In <u>M346/Q546</u> candidates,</p> <ul style="list-style-type: none"> • Complete six KWL reflections during their early field experience. <p>In <u>M446/Q506</u> candidates:</p> <ul style="list-style-type: none"> • Reflect on a weekly basis, and complete a KWL for each lesson of their cohesive sequence of lessons. 	<p><i>IPSB Content Standard 9</i></p> <ul style="list-style-type: none"> • KWL Reflection evaluation criteria

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<p><i>IPSB Content Standard 10</i> Fosters relationship with students & their families, colleagues, and concerned others to support student learning & well-being.</p>	<p><i>IPSB Content Standard 10</i> <i>Addressed/Evaluated by:</i> M480/M550 instructors</p>	<p><i>IPSB Content Standard 10</i> During <u>M480/M550</u> Student Teaching candidates: • Call parents & participate in parent conferences. This is discussed in the seminar.</p>	<p><i>IPSB Content Standard 10</i> • Student Teaching feedback & evaluations</p>
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