



## **Content Area Standards Reference Guide**

### **What Are Content Area Standards?**

Content area standards reflect the knowledge and skills students are expected to learn in a given content area. Because these standards create a framework for teaching and learning, they articulate a trajectory for knowledge acquisition across all grade levels so student learning builds on prior knowledge, becoming more in-depth over time. By setting clear benchmarks for learning, content area standards provide guidance to teachers as they develop learning experiences. Additionally, these standards allow teachers to highlight students' progress towards learning goals, rather than relying on predetermined time and schedule factors (Rubin & Spady, 1984).

### **How Did Content Standards Develop?**

Standards-based education (also known as outcome-based education) has many roots, but the modern push to define what all students should know and be able to do began in the U.S. during the 1970s. During this era, an agenda for "back-to-basics" and minimum competency testing pushed educators to define measurable learning targets required of all students (Raizen, 1998). These initial efforts to define content-specific expectations were led by teachers and local school districts. Eventually, national organizations dedicated to the teaching of specific content areas began to identify content area standards. The first notable set of national content area standards was published in 1989 by the National Council of Teachers of Mathematics. These standards emphasized conceptual understanding and mathematical sense-making and were developed as a backlash to the algorithmic focus of the "back-to-basics" movement. The publication of these national mathematics standards influenced the development of other K–12 content area standards by state-level departments of education, school districts, and other subject-specific organizations (Ferrini-Mundy, 1998).

For two decades, states and school districts across the U.S. have identified content area standards to guide teaching and learning, with nearly every state and local school district adopting a standards-based education system by the year 2000 (Marran 2001; Tucker and Coddling 1998). Content-specific teacher organizations, the National Science Foundation, and the National Governors Association have all published sets of standards that serve as guideposts for state departments of education and writers of local standards and curriculum. While content area standards have many names (e.g. benchmarks, outcomes, goals, expectations, indicators, etc.), all are designed to make clear what knowledge and skills are most important for students to learn in a given content area.

## Why Do We Need Content Area Standards?

There are several reasons content area standards are developed and adopted. They include:

1. **Setting Expectations for Student Learning**  
Content area standards clearly describe what students need to know and be able to do, placing student learning at the center of schooling. By setting clear expectations for learning, content area standards offer a framework for teachers when designing teaching and learning experiences, and provide a means for students to set personal learning goals associated with academic success (Downing, 2005).
2. **Understanding Strengths and Gaps in Student Learning**  
Content area standards help educators understand and share information about specific strengths and/or gaps in student knowledge and ability, which can inform decisions to improve teaching and learning. This knowledge can help teachers differentiate instruction and thus meet the learning needs of all students (Wertheim & Leyser, 2002).
3. **Establishing Rigorous Expectations for Student Learning**  
The identification of content area standards provides a means to set higher expectations for student learning. With increasing demands in the job market for highly-skilled workers (Hanushek, Woessmann & Peterson, 2012), it is incumbent on state departments of education to ensure rigorous learning expectations. Rigorous expectations for learning ensure that students are prepared for postsecondary education and careers upon high school graduation.
4. **Providing Continuity and Setting High Standards in All Schools**  
Drawing from a common set of standards ensures that students who may change schools or classrooms do not miss or repeat particular content and stay on a trajectory towards college and career readiness (Kendall, 2011). As students are increasingly mobile (Ihrke, 2014), it is vital that schools develop curriculum from a common set of content area standards so students have equal access to an effective education regardless of their mobility.
5. **Promoting Educator Collaboration**  
Adopting a common set of content area standards allows teachers to collaborate on lesson planning and assessment development. This collaboration can result in more effective lessons, alignment between instruction and assessment, and can positively impact professional growth (Fabilliar & Jones, 2002).

## Content Area Standards in Nebraska

**Development process.** Nebraska Revised Statute 79-760.01 requires the Nebraska State Board of Education to "adopt measurable academic content

standards for at least the grade levels required for statewide assessment" (Academic Content Standards, 2015). The statute specifies that those standards shall cover the subject areas of reading, writing, mathematics, science, and social studies, and, that the State Board of Education shall develop a plan to review and update standards for those subject areas every seven years. The revised statute is effective as of August 30, 2015. In addition to the content area standards required by statute, the Nebraska Department of Education (NDE) developed content area standards for Fine Arts, Physical Education, Health Education, and World Languages, as well as course-based content standards for Career and Technical Education. Although not required by law, the standards provide schools a framework for ensuring quality teaching and learning for all content areas offered in Nebraska schools.

The Nebraska Department of Education uses a consistent process to develop and revise content area standards. The goal of this process is to develop K-12 content area standards that, when mastered, would allow a student to succeed in entry-level, credit-bearing postsecondary coursework without the need for remediation. The collaborative writing process utilizes the expertise of Nebraska educators and includes representation from all stages of Nebraska's educational system (i.e. early childhood education, K-12 education, and postsecondary education). The department ensures that the educators reflect all sizes of schools and all parts of the state. In addition, representatives from the regional Educational Service Units (ESUs) are included as part of the writing teams. The development process includes opportunities for feedback from business and industry representatives as well as local community members, parents, school administrators, and educators not part of the writing process.

Upon approval by the Nebraska State Board of Education and pursuant to Nebraska Revised Statute 79-7601.01, school districts have one year to adopt the state-approved content standards or adopt standards deemed as equal to or more rigorous than the state-approved content standards in the subject areas of reading and writing (English Language Arts), mathematics, science, and social studies (Academic Content Standards, 2015). School districts are encouraged to adopt the state-approved standards in other content areas (Fine Arts, Physical Education, Health Education, World Languages and Career and Technical Education) within one year of being adopted by the State Board of Education.

**Structure.** Nebraska has content area standards in a wide variety of subjects. While these standards have unique characteristics that capture aspects particular to each subject area, the standards have a consistent structure that allows educators, parents, and students to easily make sense of their organization. This is particularly advantageous at the elementary level, as this consistent organizing structure allows teachers to move seamlessly across content area standards when creating lessons and units that address more than one subject area.

To ensure that the standards for each content area are well-organized and internally coherent, NDE articulates a construct that guides the overall structure of the content

area standards across subjects. While not all of the state’s content standards documents currently reflect this two-tier structure, the scheduled standards’ updates will result in the consistent formatting of all standards documents:

**Standards.** At the highest level of generality, Nebraska’s content area standards include a set of broad, overarching content-based statements that describe the basic cognitive, affective, or psychomotor expectations of students. They reflect long-term goals for learning.

**Indicators.** Under each standard are indicators, which further describe what a student must know and be able to do to meet the standard. Indicators are performance-based statements that provide educators with a clear understanding of the expected level of student learning and guidance. Indicators provide guidance for an assessment of student learning

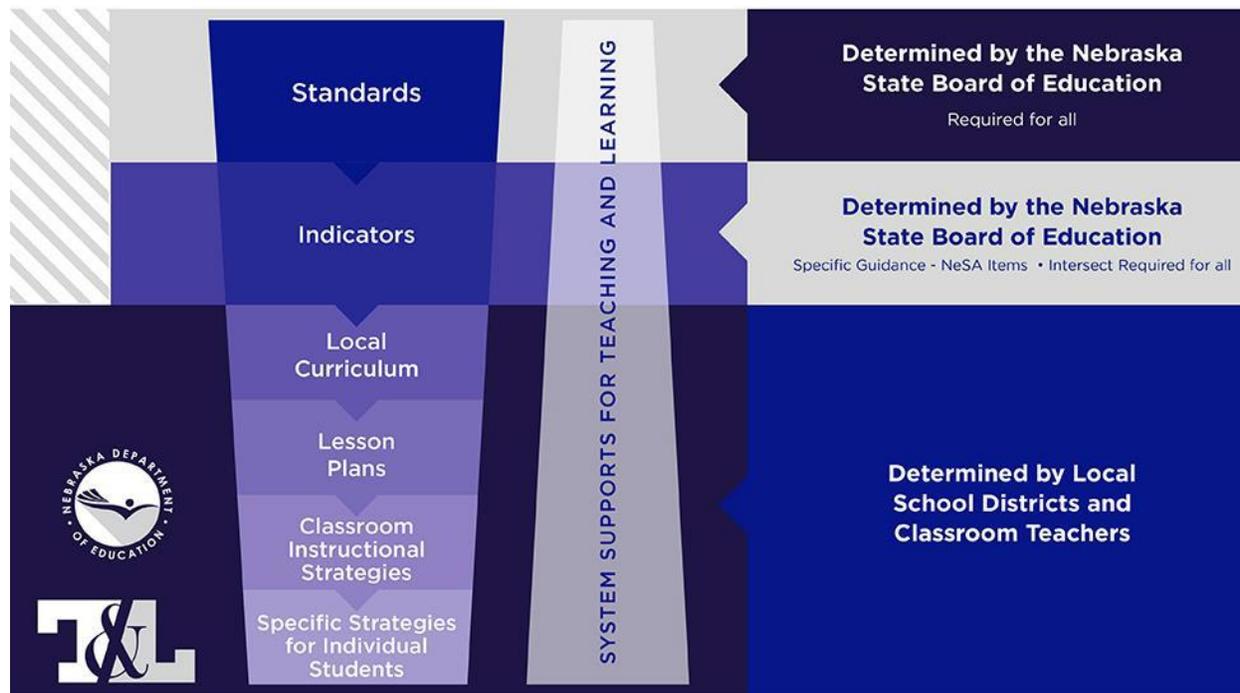
**Content Area Standards vs. Curriculum.** The Nebraska content area standards describe the knowledge and skills that students should learn, but they do not prescribe particular curriculum, lessons, teaching techniques, or activities. Standards describe *what* students are expected to know and be able to do, while the local curriculum describes *how* teachers will help students master the standards. A wide variety of instructional resources may be used to meet the state content area standards. Decisions about curriculum and instruction are made locally by individual school districts and classroom teachers. The Nebraska Department of Education does not mandate the curriculum used within a local school.

### Nebraska Content Area Standards:

- Agriculture, Food, and Natural Resources
- Business, Marketing, and Management
- Communication and Information Systems
- English Language Arts
- Fine Arts
- Health Education
- Health Sciences
- Human Sciences and Education
- Mathematics
- Physical Education
- Science
- Social Studies
- World Languages
- Skilled and Technical Sciences

Figure 1 (below) provides a model that shows the flow of how learning goals are established through Nebraska content standards and are then addressed through indicators and multiple levels of local curriculum decisions.

**Figure 1: Content Area Standards and Curriculum in Nebraska**



The top two tiers of this model—standards and indicators—are identified through Nebraska’s collaborative process of bringing educators and experts together from across the state; they provide goals for learning in each content area throughout a students’ K–12 education. At the local level, districts select or develop a curriculum that best meets the expectations of the content standards and indicators, as well as meets the unique needs of students and families in the local community. Curricula is selected at the local level and can vary significantly from school to school. Most curricula include pacing guidance, lesson plans, and instructional resources/materials (e.g. textbooks, etc.) to guide the organization and planning of units and lessons across the school year.

The third tier of this model, which encompasses classroom instruction and individual student needs, illustrates the increasingly critical role of teachers. Teachers know best the instructional strategies, approaches, and types of help that will support the particular needs of their students. Guidance and data provided by formative, summative, authentic, and diagnostic assessments help teachers identify gaps in student knowledge and skills. The identification of these learning gaps allows teachers to adapt their lessons and best help students learn the required content.

### High-Quality Content Standards

Because the Nebraska content area standards provide the framework that guides instructional decisions at the local level, their quality is very important. Drawing from the

research-base of human cognition, motivation, and teaching/learning, NDE identified criteria that describe the characteristics of high-quality standards. Throughout the writing process, NDE ensures that standards and indicators meet these expectations. The characteristics NDE identified for quality content area standards are (1) measurable, (2) appropriately challenging, (3) connected, (4) clearly worded, (5) scaffolded, and (6) specific. These characteristics are described further in the sections that follow. Appendix A includes a checklist for standards and indicators.

**Measurable.** By describing the knowledge and skills for student learning, content area standards help determine what students have learned and what they still need to learn. Standards provide benchmarks against which student progress toward learning goals can be measured. Thus, it is crucial that content area standards describe measurable content (Izumi, 1999). Content area standards which are generally stated may help introduce or frame the topics for student learning, but do not adequately help teachers plan instruction. Teachers need a clear sense of what students must know and be able to do in order to measure their progress. Likewise, high-quality area content standards must be constructed in a manner that allows students to demonstrate this knowledge and skill. When writing measurable content area standards, the following criteria are considered:

- *Purposeful verbs communicate clear expectations.* The use of clear, actionable verbs within standards and indicators is necessary to ensure that they communicate the intended expectation for student learning (Landgon, 1999). Taxonomies of Learning, such as Webb's Depth of Knowledge (Webb, 1997) and Bloom's Taxonomy (Anderson & Krathwohl, 2001), help categorize verbs into levels of cognitive difficulty, which can help standards writers ensure high levels of thinking.

**Examples:**

- |                                      |                                       |
|--------------------------------------|---------------------------------------|
| <u>Not Measurable</u>                | <u>Measurable</u>                     |
| – Demonstrate an understanding of... | – Compare the branches of government. |
| – Build knowledge of fractions.      | – Count to 120 by ones and tens.      |

- *Instructional strategies and learning opportunities are used to teach content area standards. They are not included in the content area standards.* Content area standards highlight the knowledge and skills that instructional experiences are designed to teach, rather than describe the experience itself. Descriptions of how the learning experiences are designed are part of the curriculum and instructional decisions, which are made at the local level.

**Examples:**

- |                                   |  |
|-----------------------------------|--|
| <u>Does not measure learning</u>  | <u>Measures learning</u>                     |
| – Read in class daily.            | – Read grade-level texts with comprehension. |
| – Visit museums to study fossils. | – Explain how fossils are formed.            |

- *Content area standards create expectations for consistent assessment of student learning.* In some cases, inconsistent measurement of a content area standard might result from language that describes degrees of performance (e.g., students *begin to*, or *creatively* perform a task) or how often students perform a skill (*occasionally*).

**Examples:**

*Promotes inconsistent measurement*

- *Use some correct spelling.*
- *Begin to sound out words.*
- *Frequently use maps to locate geographical areas.*
- *Creatively mold 3D sculptures using mixed-media and tools.*

*Promotes consistent measurement*

- *Correctly spell common sight words.*
- *Decode the initial sound of words.*
- *Use maps to locate geographical areas.*
- *Mold 3D sculptures using mixed-media and tools.*

When no consistent baseline for performance is established, teachers do not share a common understanding of what “creatively” looks like or how often “frequently” represents. Such language is more appropriate for rubrics that describe multiple levels of performance. In cases when a skill is developed over multiple grade levels, content area standards should identify the prerequisite knowledge and skills that students need to learn before they can advance to a more complex skill.

**Appropriately Challenging.** Ensuring that content area standards are appropriately challenging is key when setting high expectations that are developmentally appropriate. Standards must build in complexity so that by the end of grade 12, students are prepared for postsecondary education and the workforce. At the same time, it must be considered that students—especially young children—develop skills and conceptual understandings at different rates (National Scientific Council on the Developing Child, 2007). Indicators must be carefully sequenced to meet the rigor within the context of typical human development.

Standards and indicators outline the level of thinking that is appropriate for the content and expected developmental level. The degree of rigor in content area standards typically builds over time, yet even young children are capable of in-depth analysis of topics that are very familiar to them. When addressing the academic performance of U.S. students on international assessments, authors of the Third International Mathematics and Science Study (Schmidt, McKnight, & Raizen, 1997) state that the U.S. “preoccupation with breadth rather than depth, with quantity rather than quality, probably affects how well U.S. students perform in relation to their counterparts in other countries” (p. 2). To avoid this pitfall, content area standards must identify only the content that is critical for students to learn, and students should be required to apply critical thinking to that content.

Moreover, content area standards often include a subset of process skills. These skills describe processes that students use to think critically, apply learning, solve problems, and conduct investigations or research. Mastery of these skills is associated with greater student engagement and higher academic achievement (Cobern, Schuster, Adams, et.al., 2010; Harlen, 2000). Embedding process skills within standards and indicators ensures that these processes are considered when developing instructional strategies and practices. In Nebraska, process skills are often represented by the Nebraska Career Readiness Standards. The knowledge and skills within the Nebraska Career Readiness Standards are embedded within all content area standards highlighting a true intentionality to develop “college and career ready standards.”

In addition to the Nebraska Career Readiness Standards, content areas may have an articulated set of content-specific process skills essential to student learning and understanding. While there is substantial overlap between these content-specific process skills and the Nebraska Career Readiness Standards, some skills are unique. For example, in science, an essential skill is asking questions for science and defining problems for engineering. This skill aligns with the Nebraska Career Readiness Standard “Applies Appropriate Academic and Technical Skills” but is specific to science. As such, it is important that content area standards identify and articulate these content-specific skills within their standards.

**Connected.** Student learning is most effective when it connects knowledge and skills to related topics and real-world applications. A person truly comprehends new information by being able to “connect the new to the known” and determining the information’s importance (Keene & Zimmerman, 1997). Additionally, deeper understanding is developed when individuals are able to better process information when they connect new information to other knowledge or experiences (Beane, 1996; Brooks & Brooks, 1993). This deeper understanding develops when students make connections across content areas (Blumenfeld & Krajcik, 2006).

While many cross-content linkages will be made within the local curriculum, content area standards should support those connections. For example, science standards must not require students to apply mathematics skills that are not yet required by the math standards for the same grade or level. Similarly, literacy skills are required across all content areas. The literacy learning progression should be considered when developing standards in other content areas. For example, science standards may require students to write about scientific investigations. To support this learning expectation, the English Language Arts standards should include organizational patterns that students apply when producing informational-type writing products. Understanding the connections across content areas and the progression of knowledge and skills within a content area will allow standards writers to write content area standards that are connected to other content areas.

Embedding the knowledge and skills within the Nebraska Career Readiness Standards is also an effective way to make connections between content area standards and authentic workplace skills. These connections and links embed opportunities for students to develop career readiness skills while learning the knowledge and skills in content area standards (Share & Rogers, 1997).

**Clearly Worded.** Content area standards must effectively communicate what students should know and be able to do (Izumi, 1999; Lerner, et. al, 2012). The language used within standards and indicators should be clear. Language that is unclear or vague cannot communicate directly the content that should be taught and learned. To help clarify standards, optional examples within parentheses (sometimes expressed as an “e.g.”) may be included to provide clarity around learning expectations. Clearly worded content area standards begin with action verbs that identify the level of cognitive demand expected of students. Standards and indicators should be written concisely and include only one expectation within a single indicator. Including more than one expectation within an indicator may confuse readers as to the intended focus and may confound assessment if a student demonstrates mastery on the only part of the indicator. For example, an indicator that requires students to demonstrate balance and endurance during physical activity may be problematic if a student has balance, but not endurance, or vice versa.

The language used in content area standards should also be free of word or expressions that are difficult for educators to understand (Rutherford & Boehm, 2004). Technical terms should be avoided; if technical terms are used, a glossary should be provided. Content area standards can, and perhaps should in some cases, use technical terminology to explicate accurately and precisely what students should know and be able to do. However, when technical terms are used, they should be explained in such a way that they can be understood by those who do not have a technical background in the field.

**Scaffolded.** Indicators in the Nebraska content area standards scaffold student learning by sequencing connected knowledge and skills across grades so that students build and deepen understanding and ability over time. In other words, the content included in content area standards represents a learning progression that builds as students move through the educational system. Scaffolded standards help students make new connections with prior learning, support research-based learning progressions, and help teachers differentiate instruction for individual students.

Scaffolding the knowledge and skills that students learn through a careful sequence of indicators encourages them to make new connections with their prior learning. Previous studies illustrate that people learn by making such connections (Brown & King, 2000; Kostons & Werf, 2015) and that students are able to attain higher levels of understanding when they connect prior and new knowledge (Planas & Nelson, 2008; Vygotsky, 1978). When standards effectively scaffold student learning they reflect

the relationship between categories of information that help students make connections and create the schema.

Indicators provide a clear progression—sometimes called “learning trajectories”—across grade levels and course sequences, and they provide guidance about how children learn specific knowledge and skills (Smith, Wiser, Anderson, & Krajcik, 2006). When appropriate, indicators should increase in complexity and depth over multiple grades to ultimately meet the level expected by the overarching standard statement. It is important that indicators never exceed the level of demand described in the standard, as the standard reflects the highest level required of all students.

To effectively scaffold student learning—or support students in attaining the goals identified in the overarching content standards—indicators differentiate specific knowledge and skills that students learn at different times. When indicators are virtually the same within two or more sequential grades or courses, they do not provide meaningful instruction or assessment information for teachers. For example, when indicators are duplicated rather than scaffolded, it becomes unclear whether the content’s first appearance in the standards is intended for introduction or for mastery, and whether its subsequent appearances in the standards are intended for mastery or for review. Content that is repeated without a clear indication of how the knowledge or skill builds in complexity increases the overall number of indicators, which tends to make standards documents unfocused and cumbersome.

Traditionally, indicators indicate the grade or course in which the knowledge or skill is intended to be mastered. However, teachers can determine that a student is performing at a higher or lower level in relation to a specific knowledge or skill by referring to the progression of learning described in the standards (Clements & Sarama, 2004). Teachers can then use the learning progression evident to scaffold and differentiate instruction, ensuring that each indicator is mastered by students before they move onto the next piece of knowledge or skill that builds on attained learning (Guskey, 2007).

**Specific.** Specificity addresses whether the language used in standards and indicators is detailed enough to be accurately interpreted. If the language of an indicator does not adequately specify the knowledge or skills that students need to learn, it cannot be consistently assessed and aligned with instructional approaches. To determine whether an indicator is adequately specific, two questions might be asked:

1. Will teachers know what students should know and be able to do?
2. Will teachers know what students have learned previously in order to develop an instructional approach that meets the needs of each learner?

The content described in content area standards should also be of a consistent or similar grain size—that is, readers should be able to anticipate how large or small a scope of content will be addressed in any one indicator (Marzano & Kendall, 1997). When the level of specificity is inconsistent, the purpose of the standards becomes less clear. If one indicator describes knowledge or skills that would take a student several weeks to master, and another indicator describes knowledge that would just take minutes to learn, the document becomes unwieldy to users who seek to consult it as they plan a unit or lesson.

## Summary

As described, Nebraska places an emphasis on developing content area standards that are measurable, appropriately challenging, connected, clearly worded, scaffolded, and specific. When content area standards have these qualities they provide the guidance needed for local school districts and educators to build effective curricular programs that provide students with the education they need to be successful in postsecondary education and the workplace.

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## Checklist for Standards and Indicators

<p><b>Measurable</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Do the standards and indicators start with an action verb at the appropriate level in the relevant learning domain (cognitive, affective, or psychomotor)?</li> <li><input type="checkbox"/> Can an assessment of learning be designed from the indicator?</li> <li><input type="checkbox"/> Do the standards/indicators emphasize <i>what</i> students will learn or demonstrate as opposed to <i>how</i> they will learn or demonstrate?</li> </ul>
<p><b>Appropriately Challenging</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Are the standards and indicators developmentally appropriate for the intended group of learners?</li> <li><input type="checkbox"/> Do the standards and indicators prepare students for higher levels of thinking, feeling, or doing?</li> <li><input type="checkbox"/> Are the standards and indicators written at the highest level of thinking, feeling, or doing for the intended group of learners?</li> </ul>
<p><b>Connected</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Are the standards and indicators connected to future learning?</li> <li><input type="checkbox"/> Have the Nebraska Career Readiness Standards been embedded, when appropriate?</li> <li><input type="checkbox"/> Do the standards and indicators allow for connections to other content areas (e.g. English Language Arts, Mathematics, etc.)</li> </ul>
<p><b>Clearly Worded</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Do the standards and indicators start with an action verb?</li> <li><input type="checkbox"/> Are the standards and indicators written concisely? Is consistent language used?</li> <li><input type="checkbox"/> Does the writing of the standards and indicators follow appropriate conventions of writing and grammar?</li> <li><input type="checkbox"/> Does each indicator include only one topic or thought?</li> <li><input type="checkbox"/> Has the use of multiple topics or thoughts in one indicator been avoided (e.g. double-barreled statements)?</li> </ul>
<p><b>Scaffolded</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Does the content in the standards and indicators reflect a content-based learning progression?</li> <li><input type="checkbox"/> Does the content in the standards and indicators build off of previously mastered content or concepts?</li> <li><input type="checkbox"/> Is the content in the standards and indicators a prerequisite for future learning?</li> <li><input type="checkbox"/> Is the learning progression free of gaps?</li> <li><input type="checkbox"/> Does the verb level the standard reflects the highest level of thinking, feeling, and doing (i.e. The verb level of the indicator should not supersede the verb level of the standard)?</li> </ul>
<p><b>Specific</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Do the indicators provide a benchmark for identifying student mastery of the standard?</li> <li><input type="checkbox"/> Can the standard/indicator be made less ambiguous or less obscure?</li> <li><input type="checkbox"/> Are the standards and indicators measurable?</li> </ul>