Guidance for the Iowa Core Standards
Cognitive Complexity Report

Background Information

Since 2005, Iowa has been on a multi-year journey to invigorate our education system. One of the foundational elements of this effort has been the Iowa Core (formerly the Iowa Model Core Curriculum and Iowa Core Curriculum). A common thread throughout the development and evolution of the Iowa Core has been a desire to set challenging, rigorous learning expectations for Iowa's students. Accomplishing this goal requires defining the concept of "academic rigor."

The issue of rigor is frequently approached from the perspective of cognitive complexity/demand. Cognitive complexity/demand, as it applies to the Iowa Core, is defined as "what students are expected to do with topical/conceptual knowledge," where topical/conceptual knowledge refers to "topics and information that student are supposed to learn" (Niebling, Roach, & Rahn-Blakeslee, 2008). In other words, cognitive complexity/demand is the type of thinking students need to be engaged in with the subjects and ideas they are learning about in their coursework.

The purpose of this study was to obtain cognitive complexity/demand codes for the Iowa Core standards in Literacy and Mathematics that could be imported into the Iowa Curriculum Alignment Toolkit (I-CAT). The I-CAT is a free, web-based tool that allows teachers to enter reflections on what they taught relative to the Iowa Core Standards. The I-CAT can be used as a teacher reflection and feedback tool, as well as part of local decision making about curriculum review and revision. Having cognitive complexity/demand codes in the I-CAT will allow teachers to reflect and get data-based feedback on the extent to which what they teach, influenced by how they teach it, aligns with the Iowa Core along the cognitive complexity/demand dimension. Webb's Depth of Knowledge (DOK) framework was used to assign cognitive complexity/demand codes to the Iowa Core standards. Webb's DOK goes from lower- to higher-order thinking skills in this manner: DOK 1 = Recall, DOK 2 = Skills and Concepts, DOK 3 = Strategic Thinking, and DOK 4 = Extended Thinking.

Guidance

The Executive Summary and Full Report are available for anyone to read and use. The following points should be kept in mind when reading and using these documents:

1. The purpose of the report is to summarize the results of the study, not to train the reader on how to use cognitive complexity/demand information. Information and training beyond the contents of the report are likely needed for educators to successfully use the DOK codes to successfully implement the Standards.
2. Since the completion of the cognitive complexity/demand study, the DOK codes have been imported into the I-CAT. Training materials, along with the I-CAT, have been piloted and revised and are now ready to use. Districts need to contact their Area Education Agency (AEA) to schedule a training session in order to access and use the DOK information in the I-CAT.
3. The full set of K-12 DOK codes for Literacy and Mathematics is forthcoming, in multiple formats, for use outside the context of the I-CAT.
4. For things like instructional content, instructional materials, or assessment to be considered aligned with a standard, the DOK must meet or exceed the DOK of the Standard.