High Level Questioning and Cognition in Advanced Curriculum

The quality of questioning used throughout a curriculum unit is a critical component for increasing the rigor and sophistication of a classroom learning experience. As a professor of gifted education, I frequently remind education students of the potential to further challenge high-ability students through purposeful use of high-level questioning. As I visit my university teacher candidates and provide specific feedback regarding their classroom practice, I ask them to reflect upon their use of questioning in the classroom, what they noticed about their students’ responses, and if the answers were at the cognitive level expected. Classroom application of quality questioning practices is the difference between delivering good versus great curriculum. Responding to sophisticated questioning requires the learner to move beyond knowledge-based responses toward higher level thinking, cognitively considering how to carefully articulate reasoned thoughts into higher level answers.

Ratcheting up the rigor of curricular questioning is an intensive task for educators requiring in-depth knowledge and understanding of academic content, effective instructional use of questioning, and evaluation/assessment of student responses. Samuel Johnson said, “There cannot be a precise answer to a vague question.” Learners generate better answers when confronted with better questions.

An Example
Consider the increasing complexity of the four questions within the following example, relevant to Social Studies content when the United States of America entered the First World War (WWI) about 100 years ago.

Q1: What year did the United States enter WWI?
Q2: What were three major contributing factors that influenced the decision for America to enter WWI?
Q3: How did each of the three contributing factors identified influence Congress’ declaration of war?
Q4: How did America’s involvement in the First World War change the United States’ foreign policy and international activity?

As can be seen here, Q1 will give a quick answer while Q2 requires the student to synthesize readings and discussion as well as prioritize possible answers. Q3 ties the previous answers to the U.S. system of government requiring students to integrate understanding from a previous lesson or unit. Q4 requires speculation and consideration of how the current situation developed and advanced from the past.

Another four questions example follows for Science/STEM content:

Q1: What is a magnet?
Q2: Why does a magnet work?
Q3: Why does a magnet work?
Q4: What other ways could harness magnetic forces?

Now let’s consider the flow of this second set of four questions. While Q1 has a common answer, Q2 forces contemplation of how the principle from Q1 (north-south pole) acts on something else (another magnet, iron shavings, etc.). Q3 builds cognition to an application level while Q4 is open-ended for evaluation or creativity and allows the student to develop individual research skills through the library or internet in reading further about current magnetic applications (e.g., MRI-magnetic resonance imaging, the maglev train, etc.).

Well-written curriculum should include not only the posing of thought-evoking questions but also activities to teach and engage students in learning how to ask questions. Through classroom discussion and student-led activities, students’ cognitive processing can be ignited to not only contemplate the content but to also ask inquiry-based questions about the content. Having students ask questions combining academic content with social and emotional awareness adds complexity. For example, did the students’ answer to Q3 consider the emotional aspects of the sinking of the RMS Lusitania? A teacher can also encourage students to ask and explore specific emotional questions related to a situation or unit of study. To encourage further reflection upon their response, consider asking students a follow-up question for further exploration and consideration when providing timely and specific graded feedback.

Teacher-designed questions often dominate classroom conversation. Students need to be taught how to develop questions so that they can further their knowledge about topics of interest and practice asking quality questions. Considering the flow and increasing complexity with the above sets of questioning examples, a curriculum writer and a classroom teacher should also plan for students to pose questions to deepen the learner’s understanding of the content. To do so, students can be asked to pick part of an answer that they would like to learn more about and write questions that dig into that specific content.

Teaching students how to form their own questions and contribute to a classroom discussion with provocative queries can also lead to generating spirited, higher-level intellectual discourse. By asking contrary questions to the information presented, students can ponder a variety of ideas. Creative and divergent questions can even be generated through varied use of instructional techniques such as SCAMPER and Creative Problem Solving (CPS), in which the instructional prompt is applied to stimulate the formation of new questions.

continued on page 19
able to brainstorm responses that ask them to look at things from different perspectives, they develop the empathy needed to consider and combine multiple viewpoints. If they are able to offer their thoughts freely, they engage in the risk-taking that is needed to share new and different ideas.

Reference

**special populations**

continued from page 12

support and share the message about specialized services
- Provide opportunities to allow students to demonstrate their giftedness in front of their peers (school programs, bulletin boards, class presentations, competitions, etc.) to increase their self-esteem
- Empower students with self-advocacy skills so that they can play an active role in determining what kind of instruction and activities are most effective for them

As our school districts improve efforts to identify and provide services for diverse gifted learners, the identification of ethnically diverse students with disabling conditions should also improve. To help with these talent search efforts, educators are encouraged to look more deeply at students who have been labeled with special or disabling conditions to determine if there are students within these groups who may also have high potential in a particular content area. These 3E students deserve attention for their gifts as well as the support needed to address their special needs.

References
Rivera, J. (Sept 2016). This bias may be hurting your gifted or 2e kid. www.jadeannrivera.com/implicit-racial-bias/

**References**

Choosing sophisticated curricular resources as a critical consumer of educational materials is essential. Consider the following elements of a curriculum unit and if these question components are present:
1. Additional Extension/Enrichment questions that provide more complexity,
2. Varied questions touching on all cognitive levels of learning and understanding,
3. Guidance and suggestions for how questions within the curriculum can be modified and adapted to be more complex as needed.

Enhancing opportunities for students to develop high-level questions is an important element in advanced curriculum design and delivery. Critically contemplating the use of questioning in the curriculum has the potential to enhance the critical thinking opportunities presented to students through advanced questioning. Educators should review the questioning sets in classroom curriculum for sufficiently advanced cognitive levels and increase the challenge level by evaluating and revising questions.

**Taking the Creative Leap**

continued from page 3

...able to brainstorm responses that ask them to look at things from different perspectives, they develop the empathy needed to consider and combine multiple viewpoints. If they are able to offer their thoughts freely, they engage in the risk-taking that is needed to share new and different ideas.

**Reference**

**Socially Scientific**

continued from page 10

...technology (and its closely related kin, Augmented Reality) is a viable career path for innovators in the STEM disciplines. So, enthusiastically embrace, use, and rejuvenate your science class in 360 VR.

**References**

**Curriculum Corner**

continued from page 11

...Choosing sophisticated curricular resources as a critical consumer of educational materials is essential. Consider the following elements of a curriculum unit and if these question components are present:
1. Additional Extension/Enrichment questions that provide more complexity,
2. Varied questions touching on all cognitive levels of learning and understanding,
3. Guidance and suggestions for how questions within the curriculum can be modified and adapted to be more complex as needed.

Enhancing opportunities for students to develop high-level questions is an important element in advanced curriculum design and delivery. Critically contemplating the use of questioning in the curriculum has the potential to enhance the critical thinking opportunities presented to students through advanced questioning. Educators should review the questioning sets in classroom curriculum for sufficiently advanced cognitive levels and increase the challenge level by evaluating and revising questions.

**Additional Reading**

**References**
Rivera, J. (Sept 2016). This bias may be hurting your gifted or 2e kid. www.jadeannrivera.com/implicit-racial-bias/