TEACHING GIFTED STUDENTS HIGHER ORDER AND CRITICAL THINKING SKILLS

AN INTERVIEW WITH DONA MATTHEWS AND JOANNE FOSTER

Michael F. Shaughnessy
Eastern New Mexico University
Portales, New Mexico

#1 - Gifted children obviously are different learners than average students. In general, how should teachers instruct them?

With respect, we want to challenge your terminology here, Mike. We resist categorizing children as 'gifted' or 'average', and prefer to think in terms of students' individual learning needs, recognizing the enormous individual and developmental diversity that results in many pathways to gifted-level achievement. That being said, yes, there are children who are so advanced relative to their age peers in a given subject area at a given point in time that they absolutely do need a different approach to instruction. Individual developmental differences cut across many areas, including the cognitive, social, and affective domains.

In general, teachers who work with exceptionally capable learners need flexibility, ingenuity, perseverance, and sensitivity. They need to be good observers and listeners who can adapt their teaching to their students' varying learning needs, altering their instructional approaches with changing circumstances. The right match can be achieved if teachers learn as much as possible about gifted-level development, support and tap into children's interests, respect their capabilities and intelligences, stay attuned to their needs, and attend to their own needs for engagement in the teaching/learning process. Teachers who are excited about learning are the ones who are best able to nurture high-level development in their students.

We discuss the nature of gifted-level learning and optimal programming strategies in considerable detail in *Being Smart about Gifted Education*, 2nd edition (2009), and there are several other good sources available. In particular, for instructional techniques we draw readers' attention to the comprehensive curriculum model developed by Joyce

VanTassel-Baska and her colleagues at the Center for Gifted Education at the College of William and Mary, an evidence-based subject-specific approach to differentiating curriculum for high-ability students. Another great approach is the work that Carol Ann Tomlinson and her colleagues have done with the parallel curriculum model.

#2 - Is there a "best" way to teach higher order thinking skills? What are the pedagogical concerns relative to this?

Teachers who engage regularly in asking open-ended questions that challenge their students' higher order thinking skills – their capacities for analysis, synthesis, application, evaluation, critical, and creative thinking-- will encourage their students to develop those skills, in the context of learning about history, geography, English literature, math, and every other subject area. Contrary to what educators once believed, the many kinds of higher order thinking skills—including metacognition, deductive reasoning, creativity, critical thinking and others—are best taught in the context of content domain mastery, rather than as separate skills. Children should be taught good habits of mind, including higher order thinking skills, in ways that evolve naturally from and are integrated into curriculum-based reading and resources. They can be encouraged to go beyond basic content knowledge, and go deeper and broader in their thinking processes through guided inquiry that involves a flexible approach and ongoing communication. Both the content-based curriculum and the parallel curriculum models that we mention in response to your first question provide excellent systems for educators who want to learn how to do this well.

#3 - There is a massive amount of information out there. How do we teach gifted kids to sift through this data and separate the "wheat from the chaff"?

This is a very important question, but again, with respect, we're going to begin by challenging your framing of it. This is not particular to gifted education or to a gifted category of learner: in an increasingly knowledge-based economy and technologically sophisticated world, it is essential that *all* students learn the critical thinking skills

involved in sifting through the massive amount of information now available, and figure out what is valuable, accurate, and useful.

There is a lot written about this topic, and we can't begin to do it justice here, but can say that learning to distinguish facts and opinions and perspectives that are valid and reliable from those that are less so takes a lifetime. Parents and teachers can start that process by providing good information sources wherever possible, and by modeling the critical habits of mind that are required to make distinctions about the relative value of different sources. Perhaps most importantly, from the very early years on, adults should be paying close attention to children's comments, and asking them questions that challenge them to think about their sources and defend their opinions. When a child expresses an opinion that an adult knows to be wrong, or suspects might be wrong—say, that dogs are healthier if they are vegetarian--, the parent or teacher might ask why the child thinks that, and listen respectfully to the child's description of the source ('I heard it on TV'; 'My friend Bobby told me'; 'Sami's dog is a vegetarian and you should see her fur! She's really healthy.') The parent could then express that they have questions about this idea, and ask where they might find out for sure, leading to a discussion about different kinds of information sources. Depending on the child's age and degree of interest, this could become a quick encyclopedia or internet search, or a thorough investigation of many sources. In either case, it provides the adult with an opportunity to model what it looks like to think critically about the massive amount of 'information' available, and then to question sources.

As young people get older, there are many other ways to help them develop critical thinking skills including the ability to assess the validity of information sources. In an increasingly media-influenced society, it is particularly important to help children pay critical attention to the impact of media images, including the ways that advertising can seduce people into wanting to buy certain things—a certain kind of make-up or slimming product or car, for example— in order to achieve a certain media-created image. Children who learn to think critically about their information sources make much more intelligent voters when they reach adulthood, and are able to make more intelligent decisions about most aspects of their lives.

#4 - Bloom's Taxonomy of Educational Objectives is often cited as the most important tool for teaching higher order thinking. How can teachers best employ Bloom's Taxonomy in their instruction?

Not only is Bloom's Taxonomy of Educational Objectives enormously useful in teaching higher order thinking but it's also extremely useful for differentiating instruction for learners of varying abilities. As with critical thinking, there is a lot written about this topic, and we can't begin to do it justice here, other than to affirm its value as a practical framework that gives teachers some guidelines for providing advanced exploration and skill development to students who are ready for that. Teachers can use this taxonomy to offer their students choices in the learning and assessment opportunities they provide, starting with the basics of knowledge and comprehension which all learners are expected to demonstrate, and working through the taxonomy as appropriate to a specific learner's interest and ability in a specific subject or topic area. By providing meaningful opportunities for analysis, synthesis, application, and evaluation as appropriate to the learner and the situation, a teacher can effectively differentiate curriculum-mandated topic areas for a variety of learning levels.

 # 5 - Scientific thinking is crucial for students who will be seeking further education in medicine, dentistry and the like. What should teachers be doing in terms of teaching scientific thinking?

The foundation of all learning is domain-specific content mastery. From there, and as that develops, children need to acquire scientific habits of mind and skills, including drawing hypotheses, analyzing data, recognizing patterns, and developing recommendations based on solid evidence. They need to learn how to organize their notes, collect and compare information from a variety of different sources, make inferences, and manage their time wisely. Students should also be encouraged to honor their own curiosity and sense of wonder, learn how to take sensible risks, and capitalize on opportunities to combine vision, logic, and inquiry in ways that are new and exciting. Curiosity-driven and informed exploration combined with effort is what leads to

expertise and, sometimes, to new discoveries. Children should be encouraged to find the joy that comes from creating order from chaos.

Adults can encourage scientific thinking—in the form of curiosity about the way the world works, followed by investigation and discovery—from very early days on. When a child drops something, for example, an adult might ask why the object fell down instead of up, and help the child begin to generate possible hypotheses for that, and then think about ways to find out for sure what the answer is. Similarly, when children ask questions of their own ('Why is the sky blue?' 'What do fish eat?' 'What's that cup made of?'), an adult who wants to support the development of scientific thinking will take those questions very seriously, and help the child investigate the answers rather than give the answers to him.

#6 - Do you see classes in philosophy having any importance for gifted children?

Philosophy is a search for wisdom, and learning how to think carefully and critically is the foundation for wise decision-making. This is important for all children, but is particularly important for those who are deeply concerned with big questions like "What is justice?" "What is beauty?" "What is the right thing to do?" "What is real?" Philosophy classes taught by well-trained teachers can help children figure out ways to approach ethical dilemmas, make sound judgments, and take appropriate action. Communities of inquiry can provide an excellent place for this learning, classrooms where the emphasis is on listening carefully, thinking and communicating clearly, and respecting others' points of view. This is an approach that has been developed systematically by the Institute for the Advancement of Philosophy for Children (http://cehs.montclair.edu/academic/iapc/). These classes provide a meaningful vehicle for teaching inductive and deductive reasoning skills, in the context of addressing big questions with relevance to children.

#7 - In terms of math, is there a "best way" to teach for example, statistics or calculus?

As with other subject areas, there isn't so much a "best way" to teach mathematics (or any subdomain of mathematics such as statistics or calculus) as there are some good practices and principles to keep in mind. Math can be taught systematically but creatively, using a broad range of instructional approaches. One of the important principles to keep in mind is that more than with other subject areas, the mathematics curriculum must usually be accelerated before it can be appropriately enriched. The pacing, level, and reasoning required should be appropriately matched to the learner's competence level; that is, instruction should be targeted just enough beyond the student's current level so as to be both challenging and attainable with appropriate scaffolding.

Another important principle (as with all subject areas) is to pre-assess students to determine where the curriculum can be compacted and differentiated. Once a student has demonstrated content mastery in any one area, a teacher can integrate more complex demands into the curriculum. A third principle is to emphasize mathematical concepts rather than using simple computation or formulaic approaches. Learning tasks should promote the use of higher order thinking skills, inquiry, technology, and multiple solutions.

Teachers can find innovative materials and resources for mathematically advanced students by consulting with colleagues and experts, and there are also many good online resources available. For a review of some of these, go to the "Links" page of www.beingsmart.ca.

#8 - Does emotion have any role in the education of gifted children?

The cognitive and emotional dimensions of our lives are intertwined. While avoiding the term 'gifted children', but acknowledging that some children do have advanced learning needs, we know that it is important to pay attention to both gifted learning needs and a child's social and emotional development. Giftedness is about exceptionality from the norm, and so, quite predictably, many advanced learners feel "different." The fact of being different than others can feel lonely and make a child feel that there is something wrong with her. Alternatively, and sometimes simultaneously, it can lead to positive emotions such as happiness, pride, and a sense of achievement.

Curriculum that helps children become self-aware and understand their emotions in the context of their social interactions, aspirations, interests, and lives can help them manage their feelings about giftedness, their experiences, and any uncertainties or insecurities they might have. Open, honest, sensitive responses to children's questions and concerns help them understand and accept the nature of their exceptionality, and feel less vulnerable. Christy Folsom has done some interesting work integrating cognition and emotion; see Teaching for Intellectual and Emotional Learning, an approach that has been successfully applied to gifted education: http://www.tielinstitute.com/index.html

#9 - Many gifted children learn to "problem solve" almost by intuition or insight. Do we need to provide direct instruction?

This question reflects one of the popular—and dangerous!--misconceptions about giftedness. As with good study habits and other skills associated with high achievement, highly capable learners can often get along quite well to a fairly high level at school before they have to work at systematic problem-solving, and by then they have missed some important learning opportunities, as well as having developed some bad habits of mind. The child who has coasted by on the basis of a strong vocabulary and good expressive language skills, and has never had to learn how to write a good essay, can find herself floundering when she gets to the end of high school.

So, yes, we do think that advanced learners, like all learners, need direct instruction in problem solving. Some students learn effective problem solving skills more quickly than others, but even they need to learn how to identify good problems, recognize and eliminate their misconceptions, apply skills and information learned in one context to another, and recognize logical consistencies and inconsistencies in their arguments. Teaching such skills both implicitly and explicitly—by modeling, encouraging the sharing of ideas, showing students how to plan, monitor, and evaluate their own work—helps students discover and capitalize on their areas of strength, develop their problem solving abilities, and, ultimately, design and implement better solutions than they can do on their own, when left to their intuitive or insightful devices.

#10 - Gifted kids seem to categorize and process information more rapidly. How does this aspect figure into daily lesson plans and instruction?

Speed of processing varies by subject area, and people who know more about a certain area can usually categorize and process information faster in that domain. However, it is important to realize that advanced learners are NOT always fast thinkers, even in their area of advancement. Some learners are faster thinkers than others, and some are slow and thoughtful in their approach to new ideas or information.

For children who are advanced in a certain subject area, and who can also categorize and process information quickly, the classroom teacher can move ahead more rapidly, and also look for alternative activities that make learning more interesting and that stimulate a deeper level of thinking and discussion. This is a place where Bloom's Taxonomy can provide the teacher with a way of thinking about higher order applications of the content being covered. Where a child is well beyond the work being covered, the teacher should think about other forms of differentiating the curriculum, including acceleration.

#11 - What are the main curricular issues involved in the teaching of gifted?

The main issue is one of finding a good match between an individual learner and an educational curriculum. On the opening page of *Being Smart about Gifted Education* (2009), we refer to giftedness as "an individual differences phenomenon," and then go on to define giftedness as exceptional subject-specific advancement that requires educational adaptation, arguing that the most important curricular objective in gifted education is to find a suitable learner-learning match. In order to do that, the various stakeholders in the learning process—teachers, parents, administrators, and students— should think about the range of available learning options (the various kinds of acceleration, enrichment, special classes, online learning, community opportunities, museum classes, etc.), discuss them openly, listening to one another, and working together to find the best match for the individual learner at a given point in time. This includes considering motivational, emotional, social, behavioral, and developmental factors, as well as educational and

cognitive concerns. When all is said and done, the" main curricular issue" is to ensure that learning options are flexibly targeted to a child's special learning needs.

#12 - How can we involve parents in the teaching of thinking, or at least the improvement of thinking skills?

Educators can help parents understand that it is parents who listen thoughtfully to their children, respond meaningfully to their questions, and ask reflective and challenging questions of their own, who teach their children to be curious, to pay attention to the world around them, and to make good sense of what they encounter. Parents who read and think and discuss ideas at high levels are simultaneously modeling and fostering good thinking skills. Parents help their children appreciate the importance of taking time to reflect by being reflective themselves, and by giving children the time and opportunities they need to think about what they are doing and why. Parents nurture their children's thinking skills when they model thoughtful decision-making processes; demonstrate the power of inquiry; show pleasure in debate, controversy, and puzzlement; encourage dialogue about real-world events; challenge one another's opinions in respectful ways; engage in problem–finding as well as active problem-solving activities at home; value opposition; engage in reflection; and invite questions, independent thought, and creative expression in various forms.

#13 - What role will the internet play in the enhancement of thinking skills over the next few years?

In spite of some of the controversial aspects of technological advances, it is because of the internet, and all of the gadgets and websites available for virtual interaction, that more young people are involved in more text-based activities than ever before. They are reading, writing, arguing, and connecting on facebook, twitter, blogs, e-mail, and various kinds of online information sites.

At best, the internet enables people to connect on a global scale, facilitates collaborative learning and partnerships, and constitutes a vast source of information and

interactive possibility. Its apparent limitlessness—containing endless contradictions and alternative opinions on every topic under the sun—is a provocation to learn to think critically. People who want to make effective use of the internet must learn how to discriminate documented fact from opinion and from belief, and how to tell a trustworthy source of information from a bad one. Joseph Renzulli and Sally Reis have developed a computerized strength assessment system and internet-based enrichment program for developing giftedness and talents, the Renzulli Learning Systems (http://www.renzullilearning.com/default.aspx).

Used wisely, the internet can be a transformative tool that enables people to communicate effectively with each other, work together productively, and participate in dynamic exchanges, inspiring and igniting inquiring minds, and transforming our understanding of gifted education.