# Curriculum-Embedded KOI

**by Robin Puryear**

The Kingore Observation Inventory (KOI) has been implemented for approximately a decade in one mid-Atlantic school to more effectively identify their underrepresented, underserved populations. Building on the success of that implementation, this article discusses how they embedded the KOI in their curriculum to affect teacher practice and improve instruction. The school division is comprised of a diverse population of approximately 233,370 people residing in urban, suburban, and rural areas. Approximately 63% of the population is categorized as Caucasian and 37% of the population is categorized as African-American, American Indian, Alaska Native, Asian, Native Hawaiian, Pacific Islander, Hispanic or Latino. The school division implemented the KOI in conjunction with multiple criteria, including but not limited to ability tests (CogAT and NNAT), achievement tests (Stanford), teacher checklists, and parent checklists. While continuing KOI implementation, the division has observed increases in their recognized gifted population as detailed by their division reports and summarized in the chart that follows.

| School Year | Male | Female | American Indian/ Alaska Native | Asian | African American | Hispanic | Caucasian | Native Hawaiian/ Pacific Islander | Multi-Racial | Disadvantaged |
|---|---|---|---|---|---|---|---|---|---|---|
| 2011-2012 | 160/ 1,442 11% | 143/ 1,325 11% | 0/ 6 0% | 15/ 74 20% | 25/ 903 3% | 19/ 184 10% | 219/ 1,417 15% | 0/ 3 0% | 25/ 180 14% | 29/ 1,021 3% |
| 2012-2013 | 230/ 1,403 16% | 238/ 1,401 17% | 1/ 6 17% | 23/ 86 27% | 44/ 882 5% | 26/ 207 13% | 338/ 1,420 24% | 0/ 5 0% | 36/ 198 18% | 70/ 1,105 6% |
| 2013-2014 | 261/ 1,460 18% | 261/ 1,425 18% | 0/ 6 0% | 30/ 79 38% | 54/ 932 6% | 36/ 267 13% | 339/ 1,419 24% | 0/ 3 0% | 29/ 179 16% | 67/ 1,169 6% |

Number of second grade students who were found eligible for gifted services by gender, ethnicity, and socioeconomic, correlated to the state's statistics and reports regarding enrollment:

(http://www.doe.virginia.gov/statistics_reports/enrollment/fall_membership/index.shtml)

During the 2012-2013 academic year, a division elementary gifted education specialist concluded that equitable recognition of underrepresented students increased with teachers

Kingore, B. (2016). *The Kingore Observation Inventory* (3rd ed.). Austin, TX: PA Publishing.

trained in observation and differentiation. The decision was made to embed components of the KOI into a STEAM and concept-based (Erickson, 2002) second grade science curriculum, which incorporated problem-based learning (PBL) and creative problem solving (Renzulli et al., 2009) while also adhering to state standards of learning.

The Plant-a-Palooza curriculum is designed to expose all students–particularly students identified as potentially academically gifted–to multiple strategies developing the concept of relationships and the process of scientific investigation. The curriculum embedded several KOI activities, such as two-frame cartooning, perspective maps, and problem solving with shapes, that the division second grade teachers are expected to maintain in a KOI Portfolio Assessment file for their students. These activities afforded instructors extended opportunities to elicit and evaluate student use of Advanced Language, Analytical Thinking, Meaning Motivation, Perspective, Sense of Humor, Sensitivity, and Accelerated Learning (Kingore, 2001).

During the spring of 2013, a second grade teacher trained to use the KOI process and the elementary gifted education specialist who designed the materials piloted the curriculum. Throughout the course of the pilot, positive qualitative observations were noted, particularly in the case of Julie (pseudonym), an English Language Learner (ELL) from Vietnam whose responses are used as examples in this article.

The first lesson is comprised of three pre-assessment sessions wherein students are pre-assessed on their knowledge of plants and the process of scientific investigation as well as their understanding of the concept of relationships. In lesson two, students learn the attributes of scientists as well as the skills and processes scientists utilize to conduct scientific investigations, including making observations, asking questions, designing and conducting experiments, creating meaning, and publishing results. Two-Frame Cartooning (Kingore, 2001) is embedded in this lesson. Lessons three and four further acquaint students with relationships by focusing on examples and non-examples of that concept. These lessons emphasize interactions within relationships and extend students' knowledge of such interactions within relationships as depicted in a terrarium. Lessons five and six afford students the opportunity to conduct hands-on scientific investigations with flowers and/or plants to apply the relationships between the seeds to the roots and the seeds to the stem, leaves, and flower/fruit/vegetable.

During lessons seven and eight, students create and evaluate designer plants, extending their knowledge of relationships between the elements of an ecosystem. In lesson nine, students complete a Perspective Map (Kingore, 2001) pertaining to the relationships between the elements of an ecosystem. Lessons ten, eleven, and twelve again engage students in conducting hands-on scientific investigations that emphasize the relationships between the seeds being examined and the utilization of the microscope as well as the relationships between the seeds and the constants and variables to which the seeds are exposed. Students develop a

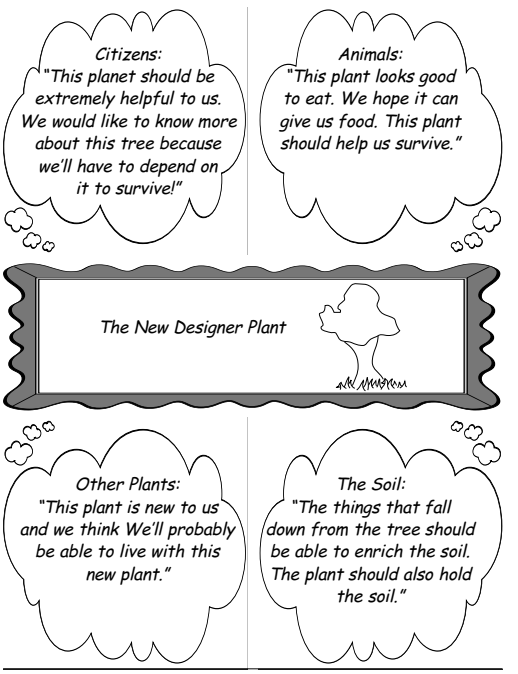
design brief during lesson thirteen, creating a container for their designer plant that incorporates Problem-Solving with Shapes (Kingore, 2001). During lesson fourteen, students participate in a Socratic Seminar focused on the genetic engineering of crops, and during lesson fifteen, students complete three post-assessment sessions that formatively assess their knowledge and understanding of plants, the process of scientific investigation, and the concept of relationships.

As students created and described a life-sustaining designer plant in lesson seven, Julie, our second-grade student example, described her plant in the following way. Relative to the other student responses, her explanation was evaluated as indicating Advanced Language, Analytical Thinking, Meaning Motivation, Perspective, and Accelerated Learning.

"My designer plant is called 'Amazing Food Tree.' This will help people survive because food grows on the tree. Pears, apples, oranges, bananas, carrots, and corn grow on the tree. Toast grows on the tree because wheat grows in the tree so when the wheat is naturally processed there's toast in place of the wheat. Ice cubes and ice cream are on the tree because ice is stored in the tree so when an ice cream or ice cube goes through the natural flavoring process it pops out the tree for people to eat. Fish is on the tree because there's a large bowl filled with water and the long roots of the tree grab the fish so the fish comes up the trunk and into the bowl. All the fish aren't poisonous. Eggs grow on the tree because hens are in the tree and when they lay eggs, the eggs come up through the trunk and out to the place they're supposed be. Coffee is on the tree because the tree grows coffee. Beans also grow on the tree because they slowly make their way out of the middle of the tree. Another interesting (thing) about the tree is that you can eat the leaves. The tree relates to humans because it allows humans to survive. The tree also lets animals survive without bothering their ecosystem."

In lesson nine, students completed a Perspective Map that afforded them the opportunity to share what citizens, animals, other plants, and the soil might each think of the new designer plant. While this particular activity was designed to elicit Perspective, Julie's sample was evaluated as also indicating the characteristics of Advanced Language, Analytical Thinking, Meaning Motivation, and Accelerated Learning. During this activity, Julie completed her Perspective Map as the example shows.

**Figure 6.11: Perspective Map**




Kingore, B. (2016). *The Kingore Observation Inventory* (3rd ed.). Austin, TX: PA Publishing.

Kingore, B. (2016). *The Kingore Observation Inventory* (3rd ed.). Austin, TX: PA Publishing.

The learning opportunities afforded by this curriculum enabled all students to stretch their thinking and extend learning achievements. In some instances, the results helped adults to recognize emerging talents. Specifically in Julie's case, her KOI portfolio from her kindergarten year denoted "ND" (No Data) because she enrolled towards the end of that academic year. Her first grade portfolio for gifted recognition was assessed at 5/8 (63%). Once fully immersed in the concept-based, STEAM-based curriculum in which KOI learning experiences were embedded, Julie's portfolio evaluation evidenced a positive increase. Her portfolio culminated with a score of 8/8 (100%) in second grade. She was identified as academically gifted at the end of her second grade year, supporting Kingore's finding that differentiation should be continuous and consistently provide multiple open-ended, higher-level learning opportunities as underrepresented, high-aptitude students are more likely to be recognized after two to three years of academic opportunity (Kingore, 2016).

Positive qualitative observations and educators' academic conversations noted throughout the piloting of this curriculum correlate well with the conclusion that the KOI serves as a valid component in a multiple criteria, multifaceted identification process. In fact, Julie's teacher stated that the KOI helped her understand "how gifted children think, how to discern between ability and achievement, and how to tier questions." The pilot concluded that this curriculum and the KOI accurately assist with the recognition of underrepresented, underserved students who exhibit emergent talents or advanced aptitude.

The curriculum continues to be available to all teachers in the division and can be accessed via the division's intranet. Due to the rigor involved, the curriculum is of greatest interest to educators seeking excellence rather than simplicity. Those interested in learning more about the curriculum are invited to contact the designer of the curriculum at rpuryear@odu.edu.

## REFERENCES


Davis, G. A., Rimm, S. B., & Siegle, D. (Eds.). (2011). *Education of the gifted and talented* (6th ed.). Upper Saddle River, NJ: Pearson.

Erickson, H. L. (2002). *Concept-based curriculum and instruction: Teaching beyond the facts.* Thousand Oaks, CA: Corwin Press.

Kingore, B. (2001). *The Kingore observation inventory (KOI)* (2nd ed.). Austin, TX: P A Publishing.

Kingore, B. (2016). *The Kingore observation inventory (KOI): Equitable practices to recognize and differentiate for high ability* (3rd ed.). Austin, TX: P A Publishing.

Renzulli, J. S., Gubbins, E. J., McMillen, K.S., Eckert, R. D., & Little, C. A. (Eds.). (2009). *Systems & models for developing programs for the gifted and talented* (2nd ed.). Mansfield Center, CT: Creative Learning Press.