

INQUIRY LEARNING AT CONSORTIUM SCHOOLS

The NY Performance Standards Consortium embraces and supports an *inquiry-based* approach to teaching and learning as the core curricula in its member schools. Since the ultimate goal of inquiry-based (sometimes known as *problem based*) learning is to educate students to be self-directed, independent, life-long learners (Hung, et al., 2008), the Consortium regards each of its components as integral to its pedagogy.

1. “An instructional approach that provides students with the need to solve a problem.”
2. “A method of instruction that focuses on solving problems and problems.”
3. “An instructional approach that empowers learners to solve problems and apply knowledge to solve a problem” (Savery, 2008).

The unifying characteristic of inquiry-based learning is the responsibility for the learning process. The characteristics relevant to inquiry-based learning are (Savery, 2008; Savery, J.R., 2008):

1. The problems are open-ended and allow for free exploration.
2. Collaboration is encouraged.
3. Information is gathered and applied by the learners.
4. A closing analysis and reflection are essential. This includes a formative assessment.

5. Student assessments must be both knowledge-based and process-based.
6. The pedagogical base must be a problem-based curriculum and not one that is teacher-centered.

Sadeh, I. and Zion, M. (2009) have further clarified the first problem-based learning characteristic. There are three levels at which students can solve problems. The lowest level (structured inquiry) is teacher-directed where teachers provide the question to be solved as well as the prescribed procedure. At the intermediate level (guided inquiry) the students may choose a teacher-supplied question but devise their own research design. At the highest level (open inquiry) it is the students' responsibility to formulate the question, design the procedure, and find a solution.

One critical difference between the guided and open levels is the role of the teacher. In guided inquiry the teacher is both facilitator and source of information. In open inquiry the teacher is only the group supporter and facilitator. Researching information and engaging in higher order thinking necessary to solve the problem is therefore the students' responsibility (Savery, J.R., 2006).

The Consortium regards each of the above six elements as integral pedagogical components. In addition to demonstrating positive long-term effects on their self-directed, life-long learning skills and attitudes, the literature cites numerous studies that provide strong evidence that student-centered, problem-based learning significantly improves students' ability to develop critical higher order thinking and problem-solving skills compared with students in traditional teacher-centered classes (reviewed in Garicke, N., et al., 2022; Hung, et al., 2008; Karan, E., and Brown, L., 2022). Studies have shown that inquiry-based high school science students regardless of race (Wilson, C.D., et al., 2009) or who are low achievers with long histories of failure (Yerrick, R.K., 2000), reach significantly higher levels of achievement in knowledge, reasoning, and argumentation. Since teacher-centered classes typically emphasize coverage over depth, the typical means of evaluating student achievement is the standardized test. In a controlled investigation Stanger-Hall (2017) concluded that multiple choice standardized testing hindered critical thinking in introductory science courses. In lieu of traditional evaluation methods, case studies of secondary school problem-based teaching and learning have documented the powerful impact that performance-based assessments have made on students' intellectual skills (Darling-Hammond, L., Ancess, J., and Falk, B., 1995). Therefore performance-based assessment is the prime tool implemented to evaluate Consortium student achievement.