

**Teaching the Right Skills for a New Age
Through Inquiry-Research Projects
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Students must develop five “skill sets” if they are to be prepared for continuous learning in this new age:

- 1. Curiosity: *Asking questions, formulating problems and challenges.***
- 2. Information Literacy: *Searching for and processing information and data***
- 3. Thoughtfulness: *Thinking deeply and flexibly***
- 4. Application: *Drawing conclusions, applying learning***
- 5. Communication: *Communicating effectively.***

Together, these five skill areas form an “Inquiry” or “Research Based” Instruction model for teaching and learning. They provide the common skill threads for powerful research-inquiry projects that enable students to investigate important, interesting, essential questions or problems; search for, collect and process information and data; think logically and creatively; synthesize and apply learning; and communicate frequently and effectively orally, in writing and by other means. Content area and interdisciplinary projects are key vehicles through which these skills are regularly and continuously taught, learned, and developed in ever more complex and sophisticated ways.

In a 21st century curriculum, powerful research-inquiry projects should be implemented at every level because of a project’s importance in developing all of these skills. Beginning with kindergarten (perhaps even pre-school) and ending in the senior high school year, students should complete at least one “inquiry/research” project at each grade level that incorporates these five skill areas. In other words, districts, schools, and teachers should make a commitment to include at least one inquiry/research project at every grade level.

For example, in kindergarten, a teacher might suggest a number of different areas for students to explore and inquire about, such as “animals and pets”. Students could then choose a specific animal to research, or pick a number of animals to study together (e.g. lions and tigers).

Let’s say that one student picked “dogs” as a topic to study. What questions about dogs might students research? Examples include “What are the different types of dogs?” “What foods do dogs eat?” “How do you keep dogs healthy?” and “Where do different dogs live?” Then a teacher might take a trip with students to the local library (a good way of introducing the library to kindergarten students) to find books that have information about their topic and that answer their questions, such as books about dogs. The books

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are charged out to the students, and then read to and discussed with students by volunteers, parents, and/or teachers. Some materials for young children could even be found on the Internet if computers are available (a good introduction to search tools). Once books or other materials are found, and information is known, students can then write or dictate their questions on posterboard and also demonstrate what they have learned that answer their questions through drawings, dictations, or by other means. These can be shared orally with other students in the classroom and posted around the classroom or in the hallways to share what they have learned with others in the school.

As projects are conducted and developed at every grade level, the five skill areas are taught and learned with ever more complexity and sophistication. Search criteria and the collection and processing of information and data can become more and more complex, with greater emphasis on information reliability, importance, note-taking skills, reading for understanding, and information alignment with key questions. Science and math, history, literature, health, and arts projects, can be developed at each grade level, or alternated among the grades. Specific projects can emphasize different skills – to identify ways to help students read for understanding, create surveys and collect and analyze data, conduct experiments, interpret results, write persuasive arguments, and create and make powerpoint and other types of presentations.

At critical points in a student's schooling, "cornerstone" projects¹ might be developed, designed to fundamentally assess student growth and development in the five skill areas. Cornerstone projects typically occur at transition points, such as at the end of second or third grade (primary grades) fifth or sixth grade (before entering middle school), eighth or ninth grade (before entering high school), and a senior project, often completed at the end of the eleventh or twelfth grade. The results of the cornerstone projects may also be presented before panels of teachers and/or outside community representatives, depending on the school or the nature of the project. These projects become "keepers" – that is, they become a major part of a student's portfolio of work, demonstrating on-going growth of student learning in the five skill areas, along with habits of mind and knowledge learning.

Cornerstone projects can take many forms. In one suburban school district, the sixth grade cornerstone project was developed as an open-ended research project. Students were given the opportunity to develop a question or formulate a problem in an area of greatest interest, and then to search for, find and process information, collect and analyze data, and develop a product to share with their class.

In another example, a fifth grade project asked students to:

*Research and design a dream house, including floor plans, a description of the interior of the houses, materials to be used to build the house. Students also create a model of their homes and a cost analysis for the interior of at least one room in the house. Students also are required to make a presentation summarizing the results of their work.*²

One district's ninth grade cornerstone project asks students to:

Select an important local, state, National, or world issue...and...in cooperation with a few of your classmates, research it, explain its impact, explain opposing viewpoints, and take a position on the issue based on your findings. [After you have completed your research and drawn conclusions], you will submit a project folder that includes written descriptions of the research process you used and the way you and others worked together to complete this task. You will present your position and defense of it to a panel of people in a manner chosen by you and/or your group mates. This argument will be presented in a form that you choose: you may stage an interview, perform a play, write a position paper, have a debate, give a speech, create a newspaper, teach a class, or come up with an idea of your own that allows you to present the issue and defend your position.

There are many permutations and combinations of using inquiry-research projects to develop skills in these five areas. More than one project might be developed every year. Key interdisciplinary projects might be developed by school committees. Design, literary, science, social issues, arts, and/or mathematics projects can support subject areas. Projects built around student-developed questions can help students reflect on and extend their interests and talents. Senior projects might be tied to a student's talents and interests, community issues and problems, or a general research project or science experiment.

Whatever the model used by a school district or school, the systematic use of inquiry based research projects, focusing around the five key skill areas, should be a major component of a 21st century school curriculum. Focusing on teacher-developed questions or challenges, or developing questions around student interests, stimulates student curiosity. Searching for and processing information builds reading, analysis and information search skills. Data conceptualization, organization and analysis strengthens study, math, and critical thinking skills. Developing and sharing presentations and written analyses builds oral and written communication skills. Self-reflections build self-understanding. Taken together, the projects not only develop these five skill areas, but also strengthen habits of mind, attitudes and behaviors important both for the next levels of learning and for life – curiosity, persistence, dealing with frustrations and failures, initiative and responsibility, precision, accuracy, clarity, and excellence.

This relatively simple, consistent addition to schooling at all levels, on a regular basis, is one way to prepare students for the continual learning they will have to face in an ever changing, uncertain, high skills world. Let's hope that today's schools and classrooms begin to regularly integrate inquiry-research projects at every grade level, and intentionally and systematically move in this direction in the near future.

¹ For further information about cornerstone projects/assessments, see Wiggins, Grant and McTighe, Jay, *Schooling By Design* (2007). Alexandria, VA: Association for Supervision and Curriculum Development, pp. 79-87.

² This cornerstone project example is adapted from a sixth grade class project outlined more fully in *ENC Focus*, Volume 9, November 2, 2002. Washington, D.C.: Eisenhower National Clearinghouse, pp. 16-18.