

7 Principles of Learning that Support the Implementation of Five Lifelong Learning Skills for a New Age*

**By
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INTRODUCTION

This new era we now live in, with its qualitatively different dimensions – the exponential growth of knowledge, instant search engines, cheap worldwide communication, social networking, rapid technological innovation, robotics and particle colliders, job restructuring, uncertainty and change, and new, complex political, economic and social challenges -- requires a very different educational approach.

In the face of these societal changes, all students need to be prepared with critical knowledge, skills, and attitudes and behaviors that allow for continued learning and growth beyond high school, critical and creative thinking, and the skills necessary for finding and processing huge amounts of information. Even with the Common Core standards, our current educational emphases aren't adequately preparing most students for learning beyond high school – for college, career, military or other future endeavors.

Along with a critical knowledge/understand base and positive attitudes and behaviors, students must also develop some key skills if they are to adapt to this new world and be prepared for lifelong learning. The five key skill areas, described in figure one, below, should be given a laser-like focus in order to prepare students for living and learning in this new age.

[Insert Figure One Here]

These five skill areas create a relatively simple approach to thinking about skills teaching. Taken together, they provide students with powerful tools for learning and living. They can be taught separately, but my thinking is that they are of a whole cloth. Together, they form an “Inquiry Based” Instruction model for teaching and learning, and provide the common threads for unit design and powerful project important, essential questions, provides students with many opportunities to development. They suggest a curriculum that concentrates on working from frequently collect and process information and data, encourages students to extend their thinking, builds in opportunities for students to draw conclusions and apply learning, and enables students to frequently and effectively communicate. All subjects and content areas, such as literature, history, science, engineering, mathematics, health and physical education, the arts, and foreign languages, become the vehicle through which these skills are continuously taught, learned, and developed in their complexity over time.

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FIGURE ONE
FIVE KEY SKILL SETS FOR AN ERA 3 WORLD

1. CURIOSITY: *Ask questions, formulate problems and challenges*

It is a rare school or program that enables students to examine and develop profound questions, solve complex problems on a regular basis, or work from/develop challenges that are worthy of critical study.

Imagine studying the American Revolution by enabling students to brainstorm questions and choose (with the teacher's input) to examine some profound and critical questions, such as "Why revolution, not evolution?" "Did they really have to revolt?" or "Is war ever justified?"

2. INFORMATION LITERACY: *Search for and Process information and data*

Information processing enables students to learn a broad variety of skills appropriate for a world of information overload and instant access. These series of skills assure that students can search for information from many sources, sort and select for importance, evaluate information for reliability, read for understanding, analyze data, and summarize, categorize, and conceptualize information, ideas and data from texts.

3. THOUGHTFULNESS: *Think deeply and flexibly*

Students are provided with the opportunity to extend their thinking – for example, to compare and contrast, interpret, apply, infer, analyze, synthesize, and think creatively.

4. APPLICATION: *Draw conclusions, apply learning*

Students draw conclusions, solve problems, make decisions, answer key questions. They are often asked to apply learning to new and novel situations, problems, and issues.

5. COMMUNICATION: *Communicate effectively.*

Students communicate effectively in a number of ways, such as through writing a persuasive essay, demonstrating how to solve a math problem, or creating a powerpoint presentation in order to explain the results of a science experiment.

The teaching of these skills starts in pre-school, as students are encouraged to ask questions about the world around them, observe pictures, discuss books that are read to them, play in ways that encourage analysis, use numbers and measurement to analyze problems and data, and so on. As students progress through the grades, they focus learning around critical and essential questions. Textbooks are treated as searchable texts. Research opportunities help students find and evaluate new resources, process information, read for understanding, and learn and use numbers and measurement. As appropriate, students develop their own questions for exploration, find and analyze data, brainstorm alternative solutions to problems, draw conclusions, apply learning to new and novel situations, make presentations, and write, write, write and do more writing. Discipline based and interdisciplinary thematic projects are a core part of the learning process. As they use these skills, they also learn the attitudes and behaviors they will need for future learning, such as curiosity, collaboration, perseverance, learning from failure, risk-taking, striving for accuracy, and learning how to improve their work.

This relatively simple approach to teaching and learning is what students need to be prepared for the continual learning they will have to face in an ever changing, uncertain, high skills world.

SEVEN PRINCIPLES TO GUIDE SKILL DEVELOPMENT

How can teachers support and enhance the teaching and learning of these “inquiry based” five skill areas? The following seven principles should guide instruction in every classroom and at every level of schooling and provide a natural way for these skills to be developed:

1. *Use teacher and/or student-developed “essential” questions, problems, or challenges to guide teaching and learning.*

As I visit many classrooms, I rarely see provocative, relevant, “essential” questions, problems or challenges as the starting point for information searches and processing, critical and creative thinking, application of learning, and communication skill development. Sometimes teachers have essential questions on the Board, but even then they are often not the centerpiece of teaching and learning. Student-developed essential questions, developed through such strategies as a question brainstorm around a topic, or a K-W-L (what do I know, what do I want to know, what have I learned), are used even less frequently to provoke inquiry, research, and high level thinking.

The point is that students should regularly use teacher-developed essential questions, key problems and/or challenges as a catalyst for critical inquiry, research and skill development. Students should also be given many opportunities to develop and explore their own questions, problems, and challenges in order to learn and use these skills.

2. Treat textbooks and other materials as inquiry-research resources.

In my experience, texts are most often used for home reading assignments, or to read in class and then to answer questions at the end of each chapter. In other words, they are read first and then the information is summarized and highlighted through a series of questions. This approach minimizes lifelong learning skill development. But what if texts were thought of as information resources used to help students inquire into and research questions or problems that have been explicitly raised in advance? To help students search for and process useful information? To provide students with opportunities to use analysis and synthesis skills and develop creative ways to resolve challenges?

When teachers use textbooks, multiple texts and media as inquiry-research resources, they help students effectively use search tools and information processing skills to find resources, read for understanding, summarize, analyze, and synthesize information, solve complex problems, and examine significant challenges. With this approach, students, starting from essential questions or problems, actively engage with the text, take notes, and search for relevant information to find answers to the questions or solutions to the problems. Textbooks, other texts and resources become tools for inquiry and research, and for regularly practicing and learning the five critical skill areas.

One specific textbook strategy that supports a research-inquiry approach is SQ3R. In this approach, students survey a text, turn headings of texts into questions, and then read the text in order to answer the questions, recite and summarize their results, and finally review their results developed over time. A “retrieval” chart, developed by a teacher or students, helps students with the last review step – to summarize and categorize information gleaned from a text.

3. Embed skills in content instead of teaching discrete skills apart from content.

In many of today’s schools and classrooms, skills are learned as discrete, separate entities, divorced from subject matter. Writing, spelling and grammar skills are taught through the use of separate worksheets in many classrooms. Students still parse sentences. Reading comprehension is rarely explicitly taught through most content areas at all levels. Numbers and measurement are taught in isolation from real world problems and issues.

In my view, much of this way of teaching skills misses the mark. The goal of schooling should be to introduce and explore a broad array of key concepts, ideas, questions that arise through the study of literature, history and the social sciences, mathematics, science, the arts, language, health education, and other core subjects. I believe that the teaching of critical skills should be almost always integrated and embedded into rich and rigorous learning contexts as students explore key concepts and answer questions in all subject areas.

The teaching of the five key skill areas should naturally be incorporated into this integrated approach to teaching and learning. While teaching specific skills out of context

can be helpful to students, they best understand, apply and maintain these skills when they learn them in an integrated context. For example, reading skills, comprehension, background knowledge, interpretive skills, and even spelling skills are best learned by continually reading, analyzing, interpreting, and reflecting on literature and non-fiction texts. Writing skills are best learned as students write an essay analyzing a piece of literature, or write a persuasive essay regarding a current events issue. The more that students search for answers to key questions about historical events, take apart mathematics problems, analyze and interpret mathematical data, conduct science experiments, apply learning by creating their own wellness plan, and communicate effectively as they make presentations and write papers, the more meaningful and lasting learning will occur on an everyday basis.

4. Go for depth over breadth

A continual problem in most schools and classrooms is the amount of content teachers are expected to teach and students are expected to learn. While there is a current movement to reduce content and create more focused learning, the standards in most states still delineate long lists and pages of content students are expected to know and learn. "Coverage" of all this content thus makes it difficult to spend the time necessary to ask questions and formulate problems, search and process information, and effectively integrate other lifelong learning, career and college ready, citizenship skill areas.

How, then are we to deal with this problem? Many states recognize this problem and have begun to delineate "power standards" that represent a core focus for each subject. This is helpful. But if there are no state standards limitations, the best way to provide opportunities for teaching key skills is for schools and teachers to agree that a more focused, in-depth curriculum, built around a few key ideas, understandings, concepts, and essential questions, is better suited to this new age where understanding is important, it is impossible to teach all the content anyway, and knowledge is growing by leaps and bounds and so much of it is newly and easily accessible.

Thus, with a more focused curriculum, there is more time for students to brainstorm questions and/or discuss key essential questions, research key understandings, organize, analyze, synthesize and interpret data, hold interpretive discussions, write reflective and analytical papers, and, in general, learn lifelong learning skills and "go deeper" into subject matter.

5. Where possible, apply learning to real world situations

Tying learning to real world issues, events, and situations, through interesting projects and performance tasks, provides many opportunities for students to learn and apply key lifelong learning skills and is also highly motivating. Applications that involve problem solving can often lead to creative thinking, alternative solutions, and new ways of solving problems. For example, a sixth grade teacher develops a major project around the design of a house, enabling students to discover and apply mathematical and science principles, ecological design, and visual, artistic ideas. A world history teacher asks students to

apply their learning about war and peace to present a plan for an International organization that would preserve the peace in today's world. A science teacher asks students to develop their own science experiment, demonstrating their knowledge of scientific investigation principles and creating new experiments as part of the process.

These real world activities that apply learning to interesting and novel situations make learning meaningful, stimulate creative thinking, and give students a chance to use and apply a variety of inquiry-research skills.

6. Use varied products and assessments to judge progress and successful achievement

A variety of types of products and assessments give students multiple ways to demonstrate progress and successful achievement in the five skill areas. As students conduct research to answer essential questions, they find multiple sources, process information by writing summaries, and synthesize their results by developing and using graphic organizers. They analyze data and interpret novels. They demonstrate the conclusions they have reached by creating posterboards, teaching others, or conveying results through either written or visual methods, participating in discussions or writing an analysis. All of these products and assessments give teachers the opportunity to check skill development progress and understanding and to provide on-going feedback to help students improve their work. Ultimately, student products and assessments demonstrate whether they are making progress and reaching a level of skill associated with their age and grade level.

Variety also provides multiple opportunities for students to choose what products and assessments to develop, a significant way to motivate them and build on their strengths and talents. Students might be given a choice as to what questions they wish to explore to further their interest in and understanding of a topic of study. They might be given leeway in the types of sources of information to find and process. Students might be given the opportunity to choose how they demonstrate their analytical abilities, either by writing a paper or creating a visual. A choice among end products, such as posterboards, a teaching lesson, powerpoint, and/or a written paper gives students many ways to demonstrate results.

7. Structure inquiry-research teaching and learning as much as necessary, depending on the needs of students.

The sense that students are “not ready” for inquiry-research based learning is never an excuse not to begin the process to develop these key skills. There is a myth that inquiry learning must be done independently and in an open-ended fashion, and that students who need a structured learning environment to practice learning skills cannot function in an inquiry-research environment. The truth is that inquiry learning, like any other form of learning, can be highly structured. Students can conduct inquiry and do research under the strong tutelage of a teacher or teachers. Thus, when students begin to do inquiry-research based learning and use and practice the five skill areas, classroom activity can be

highly structured and teacher-centered. Students can discuss at length essential questions developed by the teacher and examine how the teacher arrived at those questions. They can together read and discuss texts in a highly structured way, including through the use of graphic organizers that help organize data and learn how to use and analyze numbers. Papers can be written in class, with teachers giving strong guidance, provide models of excellent work, and give detailed feedback to help students improve their work. Initial presentations can follow a specific set of rules, be brief, and have very clear expectations. As students practice inquiry and research learning skills over time, they can be given more freedom and opportunity to conduct research in the school library, work together to critique each other's papers, and work independently and collaboratively.

Therefore, teachers should give themselves permission to highly structure inquiry learning if they feel that students are not ready to use these skills on their own. Teachers can be the center of inquiry learning if students need the structure. Worksheets and other tools can be developed and used where necessary. The development of key inquiry-research skills is too important not to focus on them and apply them to every school and classroom.

These seven principles suggest the following teaching and learning beliefs to support learning in the five key skill areas:

- ***Teacher and/or student-developed essential questions, problems and challenges should guide teaching and learning;***
- ***Textbooks and other materials are best thought of as resources for inquiry and research;***
- ***Inquiry-research skills are best taught when they are embedded in content, rather than taught as discrete skills apart from content;***
- ***Depth is more important than breadth for teaching inquiry-research skills;***
- ***Applying learning to real world situations enhances the learning of inquiry-research skills;***
- ***A variety of products and assessments provide multiple ways to assess inquiry-research skill progress and achievement and motivate student learning;***
- ***Inquiry-research skills teaching can be highly structured as well as student-centered.***

These beliefs should help to build school programs and individual teaching that foster the learning of the five sets of inquiry-research skills, developing key lifelong learning/career and college/citizenship skills over time. Together they create a new vision for teaching and learning, suggest new types of teaching behaviors, and suggest ways to engage students in critical inquiry-research skill development. Commitment to and application of these seven broad teaching principles and beliefs in districts, schools, and individual teaching situations provide a framework for changing instruction and a direction for teacher growth and change. Instructional changes based on these principles and beliefs will help students prepare for the continuous learning they will need for living in the constantly changing, information rich, technologically advanced, uncertain world of the future.

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