Educational Outcomes for an Era 3 World*

By

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Why We Need New Educational Outcomes

Here is a story that I heard recently. A woman, when she cooked brisket, automatically cut off a slice and put the remaining chunk into a large pan and then into the oven. When she was asked why she did this, she didn't really know, but realized that she had followed her mother's recipe that included this step. So she went and asked her mother. Her mother also didn't know why she did this, but thought that it was something that she learned from her mother. Fortunately, the grandmother was still alive, so both the daughter and granddaughter went to the grandmother and asked her why she included this step in cooking a brisket. She replied "I didn't have a pan large enough for the entire brisket when growing up, so I learned to cut off a slice of the brisket to be able to fit it into the pan".

This story illustrates how in many cases we follow traditions out of habit and automatic activity that no longer are necessary. We continue to follow routines mindlessly even though they no longer fit with the times and may even be dysfunctional.

Unfortunately, education today seems too often to fit this pattern. We continue to focus on "coverage" of information in a search engine world. Bubble type testing that focuses on factual learning is the most predominant means of determining whether students are achieving in an era where understanding concepts, information processing, and creative problem solving are critical. We disconnect school learning from the outside world of college and career. Passive student learning and low expectations is rampant in American schools, held over from a time when students were sorted into high and low achievers. Industrial style, assembly line schedules in which students frequently move from subject to subject continue to dominate in middle and high schools (and even in elementary schools). These educational habits and routines no longer fit with a rapidly changing America and world.

What are the core qualities and characteristics of our changing American society that suggest the need for new educational approaches? Glen Robinson outlines three distinct historical periods that describe how the world and educational practices have changed and need to change to meet the demands of a new era[1]. In Era 1, during the latter part of the 19th century, when America was primarily agricultural, the critical learning concept was that most students would learn a little bit and be taught the 3R's. The focus of this learning was on basic literacy, rote learning, and respect for authority. Both behavior and learning were evaluated. Not much was expected from most students who did not, could not, or who were unwilling to learn --- there was a place for all these students in the world of manual labor, farming, and other work that did not require much

education. This era also established the basic yearly schedule for schooling that excluded the summer so that children could work extensively on a farm.

During the second era, coinciding with the development of an industrial society and an expanding electorate (the end of the 19th century to the 1970's), education focused on much learning for some students and "basic" learning for most. This was the "sorting" era, in which some students who had the capacity and aptitude (and who also often had more money and were better assimilated) were expected to become the "professionals" of the time – the lawyers, doctors, business leaders, and so on. Most others would leave school to become the workers on the farms and in the factories and businesses, primarily with "grunt" labor and repetitive tasks. During this era, the factory-like schedule was developed at the middle and high school levels, with each subject having its own time frame in school, and bells and schedules moving children from one subject to another each day. Most learning was repetitive and rote, emphasizing the same kind of learning and behaviors that were expected in factories and farms. Notably, in spite of less need for children to do farm labor, lack of school for long summer periods continued.

Era 3 began in the 1970's, coinciding with the development and use of home computers, a major shift to a "flatter" world,[2] and a more democratic, diverse, knowledge-based, and service-oriented society. Open communication, technological sophistication, and a consumer based economy have become a permanent part of life for most Americans. Rapid change, global networking, easy access to overwhelming amounts of knowledge, career transformations, and general uncertainty and anxiety about the future are key hallmarks of Era 3.

The Internet is enabling instant communication across the globe and transforming how and when we communicate with each other. The amount of available information is exploding and easily accessible, which makes it difficult to decide what information is critical and what information is superfluous. Thousands, even millions of pieces of information are available instantly on the Internet, literally within seconds. It is estimated that over 1,000 books are published each week in the United States alone, and this number does not count books that are self-published.

An explosion in the variety and sophistication of career options makes it imperative that students have a chance to explore, develop and hone their skills, talents and interests. Jobs and job growth in Era 3 have

changed dramatically: technology is transforming the job market, leaving many behind. New job areas "…span a wide area of job types, skills and growth dynamics, but more and more jobs, especially high paying jobs, require the types of skills developed through a college education or specialized technical skills". Innovation and technology will more and more become the center of new job creation in the future. Low skill occupations had the highest job losses in all sectors during the 2007-2009 recession. Training and retraining (continuous learning) becomes more important in an economy that keeps shifting jobs and requiring new, specific technical skills.[3]

As of this writing, a deep recession has led to an acceleration of change, crisis, anxiety, and uncertainty. The gap between rich and poor is growing. The middle class is shrinking. Low and moderately skilled workers have not improved their standard of living in recent years. 15% of all Americans are either out of work or are underemployed. Large numbers of Americans have either lost their homes or have homes that are "underwater". And these problems are not expected to go away any time soon.

As a result of these and other changes, both individuals and society are frequently dealing with difficult, complex, and complicated problems that have no easy, simple answers. How can I be best prepared for successful post high school learning experiences? How should I train for jobs in the future? How will technology continue to transform how we communicate and live? How will we resolve the complex problems facing America and the world? How can I as a citizen participate in the American democratic system? How can I decide what programs are best to advocate for in the American political system? What do I want to do with my life?

These challenges will require multiple skills that most of today's students are not adequately provided during their K-12 educational experience. There is often a minimal focus on some of the most important outcomes for all students in an Era 3 world, such as preparing students for continual learning as citizens, in college, at work, and at leisure; working collaboratively; taking initiative; persisting in the face of adversity and challenge; successfully completing long-term projects; thinking critically and creatively; communicating effectively; and planning for the future. Unfortunately, too many students must take remedial courses and/or drop out of college because they don't have the necessary background knowledge, reading, writing and research skills necessary for successful achievement and to complete their degrees.

The Mission of Schools in an Era 3 World

In our view, given these characteristics and changes, the mission for schools in an Era 3 world should be to:

provide all students with the critical knowledge, skills, attitudes and behaviors that prepares them for:

- *Lifelong Learning*
- *Informed, Intelligent Citizenship*
- *Self-Development and Understanding*

Each of these three outcomes will be considered separately, below.

Outcome #1: *Preparation for Lifelong Learning*

In an Era 3 world, all students, when they graduate from high school, must be prepared with the knowledge, skills and habits of mind to continuously learn throughout their lives. Whether they go on to some form of higher education, the military, or even a low skilled job, continued learning will be part of their lives as citizens and if they want sometime in the future to improve their lot. They must have developed a foundation of critical knowledge and understandings – core background knowledge -- that is the bedrock of future learning. They need to develop an attitude of "mindfulness", one that enables them to constantly raise significant questions and open their minds to what is happening around them. They need to develop the skills and habits of mind necessary for continually searching for and processing information, and to learn how to solve complicated, open-ended, ambiguous problems. Reading for understanding, being a good problem solver, creating and adapting ideas in the face of changing circumstances, and communicating effectively are important for both citizenship and career. Knowing how to conduct and complete projects and take initiative is more useful than memorizing information and doing routine tasks (much of which can be easily searched for or done technologically).

How should students be prepared for lifelong learning? Each of the areas below focus on a component of lifelong learning education:

a. Develop a Framework of Essential Knowledge, Ideas, and Understandings

Given today's enormous amounts of easily accessible information, it's important for schools to select a few fundamental ideas for each subject and for interdisciplinary learning experiences that guide key learning experiences in each course and program. Content is taught and learned

in the context of intentionally selected "big ideas" that help to organize knowledge into meaningful frameworks. Instead of fragmented, discrete units of information, divorced from building understanding, knowledge is tied together into a web of conceptual and meaningful ideas, principles, theories, dilemmas, and perspectives.

A powerful Era 3 curriculum identifies a few core fundamental understandings that "naturally" derive from and connect to subject areas, such as human rights, democratic values, mathematical variables, scientific method, "life forces and systems", the nature of "worthy" art, musical genres, and ethical issues raised through great literature. These become central, "must" learning goals. Knowledge and ideas are turned into essential questions that help students inquire into critical concepts, core issues, theories and principles.

For example, high school history teachers often focus the study of the Civil War on remembering large amounts of information, including the battles fought, the wartime strategies, and so on. In order to reduce the amount of discrete information and concentrate on "essential" learning, a teacher might focus on understanding the idea of a "civil" war – a war in which "brother fights against brother". Students examine the motives and goals of Northerners vs Southerners, and why decisions were made to take the extreme course of fighting and dying against each other and risking a split in the nation. Why did the North decide that it was more important to save the Nation instead of allowing it to divide in two? Why did the south decide to secede rather than remain as part of the Union? Students try to figure out why brothers were literally willing to fight against each other on different sides. As they examine this big idea and essential questions, they weave a fabric of Civil War facts and events that help to understand why and how brother fought against brother. And the idea of "civil war" can also be used to help analyze other such wars in order to understand the motives, conflicts and issues that led to them and allow them to continue to this day.

a. Learn How to Inquire and Investigate

Skills that make it possible for students to continue to learn beyond high school are critical for living in an Era 3 world, where overwhelming amounts of knowledge and ideas are continually created, changed and easily accessed. How to search for, organize, understand, and evaluate information and ideas, research answers to important questions, gather evidence to support a hypothesis, think creatively and solve complex mathematical problems become educational priorities for all students in an Era 3 world.

For example, young children often investigate key biological concepts by planting seeds and watching as the seeds turn into plants. They explore the following questions: Under what conditions do the seeds grow best? What are the needs of plants as they grow? What thoughts (hypotheses) about plant growth can we develop and how might we test them? Students observe and analyze the growth of plants, the amount of watering and other outside supports that are needed, the climatic conditions that affect growth, and so on.

The same investigation skills are the focus of learning when students are asked to explore the question: What rights does the Bill of Rights guarantee for all Americans? What are some of the key issues surrounding the Bill of Rights today? In order to answer these questions, they research the origins of the Bill of Rights, discuss the rights dilemmas that are being debated today, and develop their own updated version of the Bill of Rights designed for living in the 21st century.

These skills are clustered below into a framework of inquiry skills that will help teachers plan ways to incorporate them into the learning process. Our descriptions, definitions and frames are derived not only from the Partnership for 21st Century Skills, but also from the work of Tony Wagner (Ed Leadership, October, 2008), and others. In our view, inquiry and investigation skills provide a framework for lifelong learning through five skill areas described below: learning how to ask open-ended, meaningful questions and pose ill-structured problems, search for and process information, think deeply, draw conclusions, and communicate results.

1. Ask Open-Ended, Meaningful Questions, Pose Complex Problems

Young children are curious about the world, ask lots of questions, and find learning interesting because they can explore and inquire about the world through questions. Unfortunately, many teachers don't support continued inquiry learning through meaningful, open-ended, interesting and motivating questions. We have lost the art of stimulating student curiosity, focusing student learning around key questions, and making learning engaging, interesting and motivating for students throughout their K-12 experience.

A key component of inquiry-based learning is the identification and clarification of meaningful questions and problems for discussion and exploration. Good questions and challenges form the heart of inquiry – they lead to exploration, finding and organizing information, drawing conclusions and communicating results.

In many instances, teachers can be the catalyst for inquiry by developing "essential" questions or challenging problems that lead to student inquiry. Questions and problems are selected that support the core learning of key ideas and are motivating to students. For some units of study students can brainstorm and design their own questions and challenges for inquiry. Opportunities for students to develop their own key questions and/or problems for projects and research are an important part of the process.

2. Search For and Process Information and Data

This cluster of skills focuses on the ways in which students search for, find, comprehend, sort, organize, evaluate, and apply knowledge and data in order to develop understanding. For example, as students read a variety of texts, they need to be able to understand the language and vocabulary of texts, and learn how to comprehend texts they don't understand. These skills include close reading of a text in order to learn and understand concepts and vocabulary; connecting, sequencing, classifying, categorizing and labeling information, objects, events, ideas etc. so as to build concepts, principles, theories, etc.; summarizing and paraphrasing key ideas; identifying issues and analyzing arguments; interpreting and analyzing charts, graphs, ideas, outlining different perspectives; using numbers and measurements to better understand data and information; and evaluating the reliability of information, data, and ideas.

Searching for and processing information are more likely to be effective if focused on a few, important big ideas, understandings, and meaningful questions. For example, imagine a US History teacher focusing a unit on the Revolutionary period on understanding the concept of "revolution" through the essential question "Why revolution? Why did the founding fathers decide on revolution rather than working within the English system of government? What events led in this direction? What ideas encouraged this approach?" Multiple text materials can be searched through, read, and synthesized in order to help answer these questions. Note-taking that focuses on answering the key questions of the unit, developing and using graphic organizers and other visual data organizers, developing timelines of events to show why revolution occurred – all this provides more time for and encourages the development of processes and skills that help students build information literacy skills for the future.

3. Think Deeply and Flexibly

Deep and flexible thinking enables students to explain and explore ideas, analyze and reflect on their learning, and be creative. In-depth

interpretations and analyses, argumentation, creative thinking, and problem solving occur as knowledge and ideas are learned and explored.

Explanatory thinking (explaining key ideas, connections, theories), Analytical thinking (thinking critically, reasoning logically), reflection (interpreting, finding implications, understanding different perspectives) and creative thinking (brainstorming, innovating, solving problems creatively) are core skills used to promote deep and flexible thinking. Explanatory, analytical, reflective and divergent thinking often include synthesizing and summarizing, logical step-by-step thinking, interpreting, cause and consequences thinking, analyzing, brainstorming and "thinking outside the box". For example, mathematical thinking often includes explaining the key parts of a problem, using step-by-step logical thinking to solve a problem (analytical reasoning), interpreting a problem (reflection), or brainstorming many different ways to solve a mathematical problem (flexible thinking).

Explanatory thinking includes synthesizing several sources of information to explain a theory, point out similarities and differences, and build cause and effect and correlation relationships.

Analytical thinking can take many forms. When students are focused on a few big ideas in mathematics, they can take the time to break down the parts of a complex problem to help them solve it. Students who are asked to focus on the questions "What causes economic cycles?" and "Can we ever eliminate them?" can be given a chart showing economic data over the past fifty years, be asked to compare and contrast data from different periods, and then explain why the data from different periods are different or the same. Or imagine that students who read a novel are asked to analyze and discuss the motivations of the characters in the story – "Why did these characters act as they did?"

4. Draw Conclusions and Apply Learning

Drawing conclusions involves creating some closure – summarizing key ideas, synthesizing information so as to form a creative theory, making decisions, developing a solution, forming an opinion, or confirming/negating a hypothesis. Drawing conclusions requires multiple types of skills – making inferences, thinking creatively, and identifying criteria for determining solutions. Strong conclusions require the ability to justify and explain one's thinking in logical ways.

Application involves students in figuring out how knowledge can be transferred and applied to new and novel situations. Application helps students retain knowledge and understandings and see its relevance.

How does learning about the Civil War help us to understand conflict today? How does knowledge of genetics help us to understand bioengineering? How does mathematical understanding help us to do simple tasks such as shopping, and more complex tasks such as buying a house or car? Continuous application of knowledge and understandings can help students understand the importance of what they learn and create the habit of thinking about the application of knowledge and its importance in today's and tomorrow's world.

5. Communicate Effectively

Clearly expressing ideas, views, perspectives, or results, in both oral and written format, requires years of practice and is increasingly important in an e-mail, collaborative, virtual communication world. It is important in an Era 3 world to effectively write in a variety of genres, create cogent arguments with supportive data, explain and justify points of view, and summarize and synthesize conclusions. Writing also provides a vehicle for organizing thoughts and ideas, and developing voice.
It is also important to learn how to communicate effectively through presentations and to learn how to use powerful technologies (e.g. powerpoint) while summarizing and synthesizing key ideas, drawing conclusions, making graphic representations, and the like.

c. Developing Mindful Behaviors and Attitudes for Success

Costa and Kallick have developed a list of "habits of mind" – habits of thought, attitudes and behaviors – that help us to be successful and effective[4]. Ellen Langer has developed a set of characteristics of mindful behavior that foster curiosity and openness to new ideas[5]. Together these habits of mind/mindfulness characteristics help us to deal with ambiguity and uncertainty, live in a multi-valued, multi-ethnic society, keep us on track, encourage flexible thinking and reflection, help us deal effectively with challenges and problems, and help us to work collaboratively and by ourselves.

Using the work of both authors, we have distilled nine specific behaviors and attitudes that we think need to be developed over time, as outlined in figure one, below. Without developing these behaviors and attitudes, learners are hard-pressed to act responsibly, persist in working through difficult tasks, do good work, or think before they act.

[insert figure one here]

These behaviors, attitudes and values take time to develop. They are more likely to be incorporated into instruction when emphasis is placed

Figure One
Behaviors and Attitudes that Support Era 3 Learning

Curiosity– Developing an interest in learning, a questioning attitude, an interest in finding problems to solve.
Persistence –Persisting long term at learning and understanding; the willingness to persist in spite of frustrations and challenges along the way.
Managing impulsivity –Thinking before acting – remaining calm, thoughtful and deliberate in difficult and challenging circumstances.
Striving for excellence– "Getting it right" – striving to do things better.
Connecting prior knowledge to new situations – Using what is learned, synthesizing previous learning with new learning, becoming more knowledgeable, skillful, and wise.
Thinking and communicating with accuracy and precision –Working at improving the products of learning, developing greater clarity of thought, organizing one's thinking.
Working and learning independently and interdependently –Working and learning on one's own and also working with and learning from others.
Remaining open to continuous learning –Openness to learning something new, learning from experience, relearning and refining learning, reflecting on one's learning, learning from and about others.
Taking responsible risks – Venturing out to increase learning, trying new things, willingness to try even though the odds are against success, willingness to learn from failures.

on teaching fewer topics, "uncovering" a few big ideas, inquiring into essential questions, and solving difficult problems. Habits such as persistence, risk-taking, striving for accuracy, and interdependent thinking are more likely to be developed in learning situations that require time, commitment and long-term concentration, such as through interpretive discussions or the development of projects. Interdependent, collaborative skills are developed as students work together in pairs and in small groups in order to resolve conflicts, build consensus, solve problems, and discuss various perspectives, among others.

Outcome #2: Preparation for Informed, Intelligent Citizenship

Citizenship education provides students with the knowledge, skills and values they will need to become active, thoughtful citizens in a democratic society. A citizen's role in today's democratic society is often confusing, complicated, and difficult to navigate. Huge amounts of information, available mostly through the Internet and media, make it difficult to determine fact from fiction. Polls and school assessments indicate that students often have little accurate information about political issues and historical events. Politicians and members of the media of all stripes purposely portray a one-sided view of current issues and challenges, exaggerate the truth to make their point, and even create false statements designed to mislead. Many people blindly follow simplistic ideological beliefs and perspectives communicated through the media and on line.

A strong citizenship education provides students with specific knowledge and ideas, such as an understanding of democratic principles and ideals, and develops a beginning understanding of local, national, and international issues. It fosters citizens who think about these issues, vote regularly, and participate in grass roots activities that help to sustain and improve a democratic society and the lives of its people.

A strong citizenship education also promotes the inquiry skills and habits of mind mentioned earlier, such as the ability to think and reason at high levels and information processing skills that enable students to constantly update their information and knowledge about citizenship issues. Citizens need to develop key habits of mind, such as curiosity, an openness to new ideas, problem solving skills, and a willingness to discuss issues, examine a variety of perspectives, and work with others from multiple races, religions, ethnic groups and political viewpoints to solve problems.

Unfortunately, most schools today often do little to help students build the specific core knowledge, critical skills and habits of mind needed to continually analyze civic issues. "Coverage" history often relays irrelevant facts and speeds through historical periods, so that history teaching often confuses more than clarifies historical events. While media critical thinking is mentioned in the education literature, it is rarely part of systematic, coherent teaching over time. Analytical skills that help students determine which sources of information are reliable are often neglected. Little emphasis is given to promoting a deep understanding of historical and current events to enable students to systematically examine and think about current problems and issues. And opportunities for students to work collaboratively with others to solve difficult problems, especially those dealing with public issues, and rarely provided to students in most schools.

In most school districts, the Constitution, the hallmark of American democracy, is lightly covered and rarely studied in depth. Constitutional principles and major legal issues and cases arising from the Constitution are rarely considered important enough to be a major part of the curriculum or standardized tests. A fragmented program consisting of a mix of American history, AP and elective courses tend to dominate the junior and senior years of high school social studies. There is little emphasis on requiring every student to take "global studies" in order to develop an understanding of global issues and the cultures and politics of other countries. Most school districts don't include requirements that students perform community service, become involved in political campaigns of their own choosing, visit courtrooms, interview judges, follow politics in action, or register to vote when they turn eighteen (if they are still in school).

In an Era 3 world, every school needs to develop a continuous, coherent civic education program, K-12, that ultimately provides a deep understanding of the roots of American democracy, builds an understanding of local, national and global issues facing America and the world, promotes lifelong learning skills and habits of mind necessary for citizenship in a changing world, and provides opportunities for thoughtful, active citizenship and community service.

Outcome #3: Self-development and understanding

The increasing variety and complexity of career, educational, and leisure options and choices makes it increasingly important for students to "find themselves" – to discover and develop one's interests, to broaden and reflect on one's experiences, and to build talents and develop skills.

In order to help students self-develop, grow, and understand themselves, the curriculum should give students the opportunity to choose areas of interest and enable them to practice using and growing their diverse talents. For example, multiple extra-curricular activities at all levels should provide students with a rich diversity of options, both during and after school, to "try on" a variety of experiences, such as chess, sports, the arts, issue discussions, current events, robotics, book clubs, and the like. Classroom research projects might enable students to choose topics to study based on their interests. In developing the final product for a project, students might be able to choose the method of presentation – a written paper, a powerpoint presentation, or the use of cartoons and other types of drawings. Much of the junior-senior years program might consist of elective courses, internships, college course options, and other course options to help them develop skills, interests and talents necessary to fulfill future plans. The development of individual wellness plans helps students prepare ways to keep themselves healthy and physically fit.

Creating Era 3 Schools of Excellence

This article outlines a school mission and outcomes that should be the predominant forces that drive school change in an Era 3 world. The mission and outcomes are summarized below, in figure two.

[insert figure two here]

In order to prepare students for lifelong learning, intelligent citizenship, and self-development and understanding, schools must develop qualities that support the three Era 3 outcomes in these eight areas:

- *A commitment to an Era 3, outcomes based mission statement;*
- *Organizational policies and a positive learning environment that support the implementation of the mission;*
- *A coherent curriculum that uses rich core content, understandings and essential questions and the Era 3 mission outcomes to focus learning;*
- *A multi-dimensional assessment system focused around critical knowledge exams, performance tasks, self-reflective activities, and portfolios;*
- *Interactive and engaging instruction organized around research and project based instruction;*
- *Multiple options and choices for students;*

Figure Two
Mission and Outcomes of Era 3 Schooling

Mission: All students should develop a foundation of knowledge, skills, attitudes and behaviors that prepare them for:

Lifelong Learning

- ***Develop a Framework of Essential Ideas and Knowledge***
- ***Develop Lifelong Learning Skills, Attitudes and Behaviors***
  - *Research, Inquiry and Investigation Skills*
    - *Ask meaningful questions, pose complex problems*
    - *Search for and Process information*
    - *Think Deeply and Flexibly*
    - *Draw conclusions*
    - *Communicate effectively*
  - *Positive Attitudes, Behaviors*
    - *Curiosity*
    - *Persistence*
    - *Manage impulsivity*
    - *Strive for excellence*
    - *Connect prior knowledge to new situations*
    - *Think and communicate with accuracy and precision*
    - *Work and learn independently and interdependently*
    - *Remain open to continuous learning*
    - *Take responsible risks*

Intelligent Citizenship

- ***Understand the American political system and its value; develop a global perspective***
- ***Research, analyze, discuss and resolve local, national, and international issues and dilemmas***
- ***Practice active citizenship, and develop collaborative and leadership skills through service learning***
- ***Participate in extracurricular activities that encourage civic engagement***

Self Understanding and Development

- ***Understand and develop strengths and interests***
- ***Develop plans and goals for the future***
- ***Develop personal plans related to self-understanding and development, such as a wellness and fitness plan***

- *The regular use of "real life" resources that connect students to the outside world, and the application of their learning to authentic, real life, and novel situations;*
- *Growth oriented and adaptive problem solving in order to deal with internal and external challenges.*

The most promising Era 3 schools naturally and in relatively simple fashion redesign these eight school qualities so that they together foster the three Era 3 outcomes. For example, a small number of American schools have clear and relatively simple mission statements that guide and direct teaching and learning. They build the bulk of their school program, policies and the learning environment around project and problem-based learning. They focus the curriculum around a relatively few big ideas and essential questions, so that students have the time to conduct research, process information, write frequently, think deeply and creatively, draw conclusions, communicate results in a variety of ways, and build positive learning attitudes and behaviors. They are regularly asked to reflect on what they are learning and the learning process. They use internships, the Internet, speakers and other means to connect students to the outside world. Teachers act more like coaches as students learn collaboratively, interact regularly with teachers and other students, and work with updated technology. They are regularly given the opportunity to develop project questions based on their interests. They might also choose presentation modes based on their talents and skills. Frequent professional development and problem solving sessions are designed to examine student work and resolve school-based and classroom problems and issues.

A second model, primarily identified today with "Big Picture" Schools[6], is focused around individual student interests as a vehicle for advancing student learning. Over their four years of high school, students develop the motivation to learn as they identify career areas, topics and questions of interest to them, explore their interests by interning in the real world, conduct research, learn new knowledge and skills as appropriate, and complete meaningful projects.

A third model, found most frequently today in American schools, is generally more complicated and fragmented. It incorporates some Era 3 outcomes and approaches while maintaining many of the features of Era 2 schools. These schools often have confusing goals and unclear or vague mission statements. They are organized in traditional ways, have traditional assessments, and often use a coverage mode of learning. Yet some teachers focus their curriculum and engage students through big ideas and essential questions, thoughtful and reflective work, in-depth discussions about important issues, and application of ideas to new and

novel situations. Some courses include major research projects and performance assessments. Extra-curricular activities are often extensive and provide multiple options for self-discovery. There are enough Era 3 programs, courses, learning activities, open-ended projects and tasks, and extra-curricular enrichment activities to enable many students to learn key lifelong learning skills, attitudes and behaviors, become involved in civic learning and participate in civic activities, and build an understanding of their own talents and interests.

What's Next?

Unfortunately, most American schools have a long way to go in creating Era 3 schools of excellence. There are many obstacles and conflicting forces, including No child Left Behind; many State and National standards that focus on coverage and traditional learning; negative learning environments that discourage student curiosity, inquiry strategies, active student engagement, and project centered instruction; lack of coherent curricula supportive of Era 3 outcomes; poorly designed textbooks and materials; high stakes bubble based standardized tests; traditional scheduling models and use of time that constricts the possibility of curriculum integration and the incorporation of these ideas; not enough emphasis on long-term professional learning communities designed to improve student engagement and focus on student work; lack of funding and the will to create significant enrichment opportunities and choice activities for many children; and an Era 2, industrial era mindset predominant among many educators, politicians, and lay people that prevents major change.

Never-the-less, we can only hope that these obstacles can be overcome and new educational goals and approaches will prevail. In follow-up articles, we will further describe how the *five pillars of education* must be adapted to changing circumstances and situations. In particular, we will need to redesign our assessment system so that students demonstrate that they are prepared for lifelong learning, intelligent citizenship, and self-understanding.

Can we make the changes necessary to bring our educational system into an Era 3 world? Can we focus on Era 3 critical outcomes and move schools towards achieving these outcomes with all students? Can new educational models be incorporated into the current school system? Will educational organizations adapt their outcomes to help students live in this qualitatively different Era 3 world? Only time will tell.

ENDNOTES

[1] Glen Robinson (February, 1986). *Learning Expectancy: A Force Changing Education*, in *Concerns in Education*, Educational Research Services (ERS).

[2] A "flatter" world is one in which communication and collaboration across cultures and countries becomes cheap and easy. It is described in great detail in Friedman,Tom. *The World is Flat* (2005). New York, NY: Farrar, Straus, and Giroux.

[3] Manyika, James, Lund, Susan, Auguste, Byron, et. al. (2011). *An Economy That Works: Job Creation and America's Future.* McKinsey Global Institute. www.mckinsey.com/mgi

[4] Costa, Art and Kallick, Bena, editors (2000). *Discovering and Exploring Habits of Mind.* Alexandria, VA: Association for Supervision and Curriculum Development (ASCD).

[5] Langer, Ellen J. (1989) *Mindfulness*. Menlo Park, CA: Addison-Wesley Publishing Company.

[6] For further information about Big Picture Schools, go to: http://www.bigpicture.org/.