

Most Likely to Succeed

PREPARING OUR KIDS FOR
THE INNOVATION ERA



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"If you read one book about education this decade, make it this one. I couldn't put it down, and neither will you."

—ADAM BRAUN, *New York Times* bestselling
author of *The Promise of a Pencil*

20th-Century Model

Language Arts Skills Needed to Succeed

Clear penmanship
Proper spelling and grammar
Sound vocabulary
Ability to read written materials (novels, poems, and plays)
Ability to write in complete sentences

21st-Century Model

Language Arts Skills Needed to Succeed

Use sound vocabulary
Read a wide variety of written materials (novels, poems, plays, essays, news) critically
Communicate clearly across multiple media forms, with a range of styles
Form and justify independent bold perspectives
Ask thoughtful questions
Engage in constructive debate

20th-Century Model:

Math Skills Needed to Succeed

Memorization of low-level procedures
Pattern recognition
Ability to perform calculations by hand
Speed
Accuracy
Ability to perform well under time pressure

21st-Century Model

Math Skills Needed to Succeed

Deeply understanding the problem
Structuring the problem and representing it symbolically
Creative problem-solving
Pattern recognition to understand which math "tools" are relevant
Adept use of available computational resources
Critical evaluation of first-pass results
Estimation, statistics, and decision-making
Taking chances, risking failure, and iterating to refine and perfect
Synthesizing results
Presenting/communicating complex quantitative information
Collaboration
Asking questions about complex quantitative information

20th-Century Model

History Skills Needed to Succeed

Coverage of important events and figures
Ability to recall important historical facts
Write short essays clearly recounting historical information

21st-Century Model

History Skills Needed to Succeed

Critically analyze historical events and sources
Form independent views on dynamics and implications
Write clear and thought-provoking theses
Ask questions and engage in constructive debate
Relate historical developments to current issues shaping the world we live in

20th-Century Model

Science Skills Needed to Succeed

Cover core disciplines—physics, chemistry, biology
Cover key definitions, formulas, and concepts
Gain familiarity with basic lab procedures

21st-Century Model

Science Skills Needed to Succeed

Understand how the world works
Be able to form and test scientific hypotheses
Be able to ask insightful questions and design experiments
Build things based on scientific principles
Apply principles across disciplines
Develop scientific creativity

20th-Century Model

Foreign Language Skills Needed to Succeed

Sound vocabulary and knowledge of verbs and tenses
Ability to read and comprehend written materials
Ability to write basic compositions in the language
Focus on languages for science or ancient cultures

21st-Century Model

Foreign Language Skills Needed to Succeed

True proficiency in speaking
Understanding cultures and the ability to navigate them
Ability to collaborate across cultures
Technology-leveraged polylinguality

The Opportunity Cost

Suppose you were president of the United States, and responsible for ensuring that our nation had a healthy, growing, competitive economy. Now suppose, in touring the country, you encountered a transportation system consisting of covered wagons. A communication system relying on the telegraph, using Morse code. Factories based entirely on manual labor. If someone in a press conference asked you whether the United States could compete against China, India, or other aggressive economic powers, you'd say, "Well, we don't stand a chance of beating them. But I think we can hold our own against Bhutan and Chad."

Our education model dates back to the dawn of the industrial era. We're fortunate that most other countries also educate with this obsolete model. Our failure to innovate and our lack of commitment to real research and development in education has put us at a competitive disadvantage against those countries that have invested in moving their citizens forward.

Educrats love to tie our system up in knots by adding new requirements, imposing new regulations, and dangling carrots for compliance. But they have completely failed to create the conditions for real innovation, or to make it possible to eliminate obsolete content. We demand that our teachers cover more content, do more test prep, and keep feeding the high-stakes test beast—a beast with an insatiable appetite. So there's just not enough time in schedules or budgets to reimagine education.

If we fill up the school year with second-order priorities, our kids won't have time to learn the skills, or develop the characteristics, that they'll need as adults. Our best teachers will leave the field. Accountability tied to a standardized-test regimen will absorb every hour in the school year. And when we stuff our classroom schedules with preparation for tests of low-level skills, what won't we have time to do? What aren't we teaching our kids?

Our choice is stark. We can continue training kids to be proficient at low-level routine tasks and to memorize content they won't remember

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on topics they'll never use. Or we can embrace the reality that much of what school is about today can be "outsourced" to a smartphone, freeing up time for kids to immerse themselves in challenges like the following:

Learning how to learn. This is arguably the single most important skill a student can develop, yet most schools accomplish the exact opposite. The teacher structures the content around a textbook, assigns the homework, designs the test, and grades the student on ability to jump through the hoops laid out by the teacher. Given an almost dizzying array of resources, we should be teaching young adults how to be effective in "learning how to learn."

Communicating effectively. This life skill will be important almost every day of an adult's life, unless he or she ends up in solitary confinement (this may sound flip, but it's one of the real risks we face with so many kids). Schools teaching grades seven through twelve do a miserable job of teaching kids to write—for lack of time and teacher preparation, as we've seen. Kids will also need to be good at public speaking, making a video, writing a blog and cultivating a following, and using communication to achieve a range of objectives.

Collaborating productively and effectively with others. These are essential skills that don't just come down from the heavens the day students get their diploma. Over and over, educators tell us, "We tried having kids work together on projects, but it never seems to work. One kid ends up doing all the work and the others just tag along." School networks like New Tech High have learned how to teach students team accountability through 360 peer reviews, so that there is genuine collaboration with every project.

Creative problem-solving. Over and over, employers tell us that the ideal characteristic they'd like to find in new hires is being a creative problem-solver. And, over and over, it seems to have been "schooled" out of fresh graduates, irrespective of their academic pedigree. For almost all schools we visit, the prevailing attitude among students is, "Just tell me what I need to know to get the right answer." And too many faculty members unconsciously seek a spe-

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cific answer. We need to teach kids to be innovative and creative problem-solvers.

Managing failure. School today is all about risk aversion. Both kids and teachers are discouraged, almost hourly, from trying anything that might not work. Understanding how and when to take risks, how to deal with setbacks, and how to handle the expectations and criticisms of others are all skills that need to be taught and learned. Innovative progress necessarily requires a healthy degree of risk-taking and "failure." The motto in most innovative companies is "fail early, fail often." There is no innovation without trial and error. We argue that there is also no real learning without trial and error. So not only do our schools not teach our kids the skills and perspective required to deal with risk, we actively dissuade kids from taking considered risks.

Effecting change in organizations and society. One of the most important contributions any adult can make is to effect positive change in existing organizations or communities. As we know all too well from our work in education, changing things is *hard*. Schools are the most natural of microcosms for helping kids learn how they can work hard to effect positive change. But when we ask schools to describe opportunities for students to take leadership in moving the school ahead, we're generally met with blank stares. Strategic planning processes are led by consultants, board members (who went to school decades ago), and school officials. Department reviews are driven by faculty. Even most clubs and after-school programs are defined and led by adults, with modest student input. Wouldn't it make sense to give students as many opportunities as possible to improve their school? Their community? And provide students with guidance and resources to help them learn how to effect change productively and develop leadership skills?

Making sound decisions. As we overschedule our kids, they have fewer opportunities to make their own decisions and experience the consequences. We take it for granted that they're learning how to

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make decisions, but how do they get good at something they never do? Effective decision-making can be taught using powerful and important math and emphasizing clarity on values and ethics.

Managing projects and achieving goals. In order to be successful, it's important to understand how to set goals and manage projects. It's curious that this course can be found at the college level, but it's something every high school student needs to be good at.

Building perseverance and determination. Paul Tough, in his groundbreaking book *How Children Succeed*, cites the research of MacArthur Award winner Angela Duckworth and others on the importance of a set of character attributes that are more important than IQ in determining adult success and well-being. These traits can be summed up with one word: grit. Much has been written about the importance of putting in ten thousand hours in order to master something difficult. But both in Duckworth's work and in our friend Dan Pink's excellent 2011 book, *Drive*, there has been little discussion of where the motivation to persevere comes from. Do all students need to have a Tiger Mom sitting on their shoulders? No! What Tony learned in student, teacher, and parent interviews for his book *Creating Innovators* is that play, passion, and purpose are essential ingredients for helping students to *want* to put in the time required to achieve or learn something of value.

Leveraging your passions and talents to make your world better. Most parents and educators would agree, at least in theory, that the single most important lesson we can impart to our youth is that they can, through their passions and talents, make their world a better place, in a way they define. Learning how to identify your passions and use them to make an impact doesn't just emerge from passively sitting through a school day. It requires practice in the real world.

Compare this list of skills with a typical night of homework for a high school student. Does anyone, besides high-stakes test designers, really think our kids should be spending all of their time memorizing the place-

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ment of accent marks in French vocabulary? Memorizing the definition of an isosceles triangle? Studying the definition of covalent bonds? And on and on. But when you fill up every waking hour of a teenager's life with these drills, you don't have time for what really counts. And you produce disengaged kids doing the most mind-numbing of tasks, rather than developing the skills they'll need to take on life's biggest challenges.