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Lifeworthy Learning *Where Knowledge Goes in Learners' Lives*

WHEN FOURTH GRADERS, HIGH SCHOOL SOPHOMORES, OR COLLEGE FRESHMEN ASK, “Why do we need to know this?” we know what they are worried about. They don’t see the meaningfulness of the topic on the table, at least not the meaningfulness for *them*. They’d like to feel that what they’re learning today is knowledge for the future. They’d like to feel that it would contribute significantly to the lives they are likely to live. They are looking for what might be called, to borrow a phrase from business, return on investment (ROI), not just in monetary but in any terms—professional, civic, family, involvement with the arts, or understanding better the world we encounter daily.

Sometimes they are wrong to be skeptical. They can’t see beyond the horizon of the week or month to how a particular bundle of knowledge might serve them well in the future in some way.

But sometimes they may be right. They may share an unease expressed by John Dewey in his 1916 work, *Democracy and Education*: “Only in education, never in the life of farmer, sailor, merchant, physician, or laboratory experimenter, does knowledge mean primarily a store of information aloof from doing.” They may well suspect that the complicated steps of mitosis (the process of asexual cell division, in case you’ve forgotten), details of the Boxer Uprising (in China at the end of the eighteenth century, opposing Western intrusions and influences),

or multiple linear equations will not come up significantly or even often in the lives they are likely to live.

Likely to matter in the lives learners are likely to live: that's a very useful phrase, but it's also a bit of a mouthful. So let's attach a single word to it: lifeworthy, that is, likely to matter in the lives learners are likely to live.

Lifeworthy as Key

What's lifeworthy learning is a broad qualitative judgment, and it's one that young students in particular are not in a very good position to make. The complaining students might be right or wrong for that moment. But certainly the question of lifeworthiness is right for education broadly. How often is a particular fact, understanding, or skill likely to come up? With what importance? Would it grow in breadth and depth and significance over time—or do we simply forget it?

When teachers expand the range of education to explore those six beyonds—introducing twenty-first-century skills, new advances in the disciplines, interdisciplinary studies, and so on—they display a concern with lifeworthy learning. They foresee that a curriculum of much wider than traditional scope speaks more powerfully to the lives learners are likely to live.

Indeed, educating for lifeworthy learning has always been central to what makes human beings human. David Christian, writing about “big history” (which begins with the big bang and progresses by stages to the emergence of humans, early civilizations, and modernity), contrasts humans with other primates. Creatures like chimpanzees, for example, bright as they are in some ways, are living today essentially the same way that they did 1 million years ago. If, for an interesting measure, you estimate the share of energy they use from the overall flow of energy from the sun striking Earth, it remains essentially the same per chimp.

The story is radically different for human beings. Contemporary lifeways for human beings are hardly anything like their lifeways of 100,000 or even 500 years ago. The average energy use by each human and his or her activities (including electricity, heating, and goods that

required energy for their manufacture) is several orders of magnitude higher than the energy share of our human ancestors, an attainment that comes with a dark side: our huge and precarious impact on the environment.

What has made this possible? Big brains? Sure. Speech? Certainly. The later development of writing? Absolutely. But most centrally, Christian urges, it is collective learning—in other words, education in its broadest sense of passing on lifeworthy learning to others. It's this that has allowed the human species to share, accumulate, and extend knowledge generation after generation. It's this that enables people today to search for the Higgs boson in physics or live out parts of their lives in Second Life, the vast online environment that itself constitutes a kind of culture, or simply have coffee at Starbucks made from beans from the other side of the world. Chimpanzees and a number of other creatures learn quite well, even with a measure of insight, but they show very little collective learning.

Education in its broadest sense gives knowledge much more of a lifeworthy future than it would otherwise have, dying with the learner. Early forms of education—the young in hunter-gatherer groups at the feet of the elders, the private tutors of the Roman elite, apprenticeship practices in the medieval guilds—sought in various ways to leverage collective learning toward a greater return on investment. Today's educational systems, despite our complaints that they are not doing as well as we would like, have a breadth simply astounding by the measure of even the recent past. Participation in education, as student, as teacher, as parent, as planner, as policymaker, as developer of materials, is participation in a fundamental aspect of what it is to be human.

Lifeworthy at Risk

Recognizing this, we also need to recognize a weirdness in formal education today that goes back to the uppity question. The lifeworthiness of the multitudinous facts and ideas in the typical curriculum is spotty. It seems not to have been thought through very carefully.

The default mind-set goes something like this: “These are the things good to know. After all, they are there in the textbooks, and someone put them in the textbooks for some reason.” So most educational initiatives focus on signs of short-term success: doing well on assignments and scoring well on tests in the course of the school year, without much thinking about the long-term return on investment.

A more sophisticated defense of at least some conventional education would go something like this: “These ideas are fundamental to our understanding of the world; they figure centrally in science, history, mathematics, literature.” That’s certainly better than “someone put them in the textbooks.” However, what if many of these ideas, central though they might be to particular disciplines or professions, hardly ever come up in significant ways in the lives most learners are likely to live? Are they truly worth learning?

It depends what we mean by *worth*. Maybe they are worth learning in some intrinsic sense, that is, good to know in principle. But that answer works only if they stay known. The hard fact is that our minds hold on only to knowledge we have occasion to use in some corner of our lives—personal, artistic, civic, something else. Overwhelmingly knowledge unused is forgotten. It’s gone. Whatever its intrinsic value might be, it can’t be lifeworthy unless it’s there.

Maybe we need to get beyond a presumptive “good to know.” Knowledge is good to know only if there are occasions that call on it and keep it alive and available. To be worth knowing, knowledge has to go somewhere.

When Lifeworthy Thrives

TRY THIS

What did you learn during your first twelve years of education that matters in your life today?

You might find it interesting to take a minute to jot down two or three topics or skills in answer to this question. But don't make it too easy for yourself. Let's not count basic literacy and numeracy. Of course, those figure all the time in people's lives. They are lifeworthy learning, no question. Such basics are not at issue here.

At the other end of education, let's not count specifically professional knowledge. I'm reminded here of the Gary Larson cartoon where, in the midst of surgery, one surgeon wonders aloud how many chambers the heart has. Of course, specifically professional learning is lifeworthy for that life. So not counting the most basic basics and not counting professional knowledge, what did you learn that matters in your life today?

To ask such a question is to look for knowledge that has already yielded a return on investment in our own experience. I've put this query informally to several dozen individuals over the past several years. The good news is that people often have exciting and even inspiring answers.

Here are a couple of favorite examples. One person pointed to the French Revolution, about the last thing I would have expected to hear, since my student experience of the French Revolution gave me little to celebrate. But here was this person's comment: "Through the French Revolution, I was able to understand the generalities of world conflict—for instance, how the lack of freedom, poverty, overtaxation, weak economies, the struggle between the Church and state, or social inequity has always been a reason to engage in war." Clearly for this learner, the French Revolution became much more than a pile of facts. It functioned as a lens through which he could see the troubles of the world in many other venues. For him, it was certainly lifeworthy learning.

Here is another example: "Understanding of energy and climate change issues . . . has not only proven useful in everything from everyday decisions about my transport and consumer choices, but also in political decisions, social interactions, and life philosophy." We live in an age of ecological concern, but it's questionable how many people take the dilemmas of our planet to heart. This person plainly does, and schooling contributed to the mind-set.

What people have to say about knowledge that has been important to them ranges from historical perspectives through ecological concerns to political responsibility, leadership skills, and on and on. Here's yet another example:

Throughout my life thus far, music and performing arts has been a significant part of life through lessons, performances, and competitions. . . . These experiences and learning offered an outlet from my traditional schooling and allowed me to develop discipline, analytical skills, focus, and expression. Furthermore, my involvement with dance and music offered me opportunities to interact with others and develop collaboration, effective listening, and leadership skills. These are skills that are needed in any organization, not just an orchestra, a dance ensemble, or a nonprofit arts organization. I have utilized what I have learned and applied them in business, school, and every other setting that I have encountered.

Of course, these examples celebrate the experience of particular individuals. Other students with very similar school experiences might not have made nearly as much of them. However, the point is that learning about the French Revolution or ecological concerns or the arts carries the potential for knowledge that lasts and matters to people's lives.

Moreover, a close look at these examples reveals a key ingredient: these learners all generalized the significance of their experiences well beyond the obvious reach, to other facets of the world and to aspects of their personal beliefs and behavior.

When Lifeworthy Falters

The quadratic equation, that venerable and universal feature of algebra 1, offers a cautionary tale. Here's an activity I have done with a number of groups in various parts of the world.

TRY THIS

Question 1. How many people in the room at one time or another in the course of their precollege education studied quadratic equations? [Here, virtually all the hands in the room go up. Did your hand go up?]

Question 2. How many people have used a quadratic equation in the last ten years? [Here, maybe only 5 percent or 10 percent of the hands go up. Is your hand still up?]

Question 3. How many people have used quadratic equations during the last ten years in a setting outside education? If your application was within education, put your hands down. [Now almost all the hands are down, leaving only two or three even in a large group. Is your hand still up?]

The uncomfortable fact is that almost everyone studies quadratic equations, relatively few people use them, and hardly anyone uses them outside of teaching them. The topic of quadratic equations lives on in schools largely to equip the next generation of teachers to impart quadratic equations. Not so lifeworthy!

Here is where some math teachers get peeved, although many do not. Some math teachers experience this little audience experiment quite reasonably as a particular version of the uppity question: they see it as challenging their commitment and good service.

I completely understand this reaction. After all, most math teachers did not assemble the algebra 1 curriculum themselves. Moreover, arguably quadratic equations are an important part of the pyramid of mathematical understanding. I always feel moved to say that I have no personal animosity toward quadratic equations. In fact, I like quadratic equations and all sorts of mathematical structures. All my academic degrees are in mathematics, even though I slid over into cognitive psychology, learning theory, and education.

Yet to answer the questions myself, I haven't used quadratic equations for anything for at least ten years.

Lifeworthy versus Quadratic Equations

“Sure,” anyone might say in a moment of caution, “I get the point. Lifeworthiness is important. But it’s not the only important value in learning.”

Right—up to a point. Lifeworthiness is not the only important value. But it’s easy to miss the point that we are talking about: what’s worth learning for most people most of the time. Let’s look at some lines of thought here.

How about Technical Needs?

Understandably one might feel that we don’t want to surrender quadratic equations to the dustbin of the not-so-lifeworthy easily. Students headed in technical directions need quadratic equations. And there’s plenty of advocacy for certain rather specialized topics in any discipline because they play important roles in those disciplines.

Right—up to a point. Technical understandings are important if that’s where the learner is headed. The question is *which* technical understandings? Any discipline offers endless technicalities that receive little or no allocation of time in typical education. In practice, people headed in technical directions learn what they need later on, at the college level. And of course, early on we don’t know who is headed in what direction. So the technical importance of a piece of knowledge is not in itself a very good reason to lavish precollege attention on it if it isn’t otherwise lifeworthy.

Basic statistics and probability are technical understandings just as much as quadratic equations are.

TRY THIS

In analogy to the “try this” about quadratic equations, have you used some basic understanding of probability or statistics in the last ten years? In the last year? In the last month?

Most likely, your answer is yes to all three. Matters of basic statistics and probability come up all the time in newspaper articles, insurance decisions, stock market investments, medical choices, and on and on. Statistics and probability are interesting and challenging areas of mathematical understanding. They are technical understandings just as much as quadratic equations are. Perhaps we should invest more time on such topics and less on quadratic equations, also using them as occasions to build mathematical thinking. To confront such possibilities is to take seriously the challenge of lifeworthy learning.

How about Ways of Thinking in the Disciplines?

One might suggest that the real aim of studying quadratic equations is to learn mathematical thinking and to inculcate the rigor of mathematical thinking. Some teachers of mathematics have said exactly this to me. Indeed, mathematical thinking is a useful and beautiful tool. Also, it provides information about the content and style of the discipline that can inform eventual professional choices. The same certainly holds for other disciplines. Of course, quadratic equations often are taught in quite a mechanical way, but they can be taught in a richer way.

So, right—up to a point. Indeed, chapter 7 focuses on the value of learning ways of thinking characteristic of the disciplines. It's a learning agenda of fundamental importance and very lifeworthy.

However, why not have a twofer: Why not build curriculum around content that is both likely to come up significantly later *and* likely to develop mathematical thinking? Why not, for instance, teach more statistics and probability and build mathematical thinking around that and other topics with more general payoff than quadratic equations? As to rigor, statistics and probability are hardly soft subjects. They can be made just as rigorous as anyone might want.

How about Literacy in the Disciplines?

One might feel that some sense of quadratic equations is part of mathematical literacy, important to having a broad sense of mathematical

content. It's background for becoming a well-oriented citizen of a sophisticated world.

Right—as far as it goes. I wouldn't suggest that we banish quadratic equations from the curriculum. However, quadratic equations come up much more often at the level of mention than at the level of dealing with them technically. Perhaps quadratic equations are a mathematical construct worthy of a kind of acquaintance knowledge, a general sense of what quadratic equations are like and what they can do and where to find out more, while skipping the weeks of graphing, factoring, studying the derivation of the quadratic formula, and so on.

How about Loving That Kind of Thing?

One might observe that some learners have an enthusiasm for particular slices of learning. Shouldn't they have a chance to learn it, cultivating what might become a lifelong commitment, maybe professional but maybe important in other ways, as, for instance, the arts are for many people who are not professionally involved in the arts? Might there not be learners who love even quadratic equations?

Well, that was me. I loved quadratic equations and was very happy to have an opportunity to learn them.

So, right—as far as it goes. We should design education to find learners' enthusiasms and give them a chance to develop those enthusiasms, including technical enthusiasms, for instance, through electives or patterns of small group study or online modules or community mentoring.

However, the basic curriculum can't be molded around the individual enthusiasms of learners. We need to figure out what's likely to be lifeworthy for most students, kindling enthusiasm there as much as we can while also making room for individual enthusiasms.

How about High-Stakes Testing and University Entrance Requirements?

One might mutter that high-stakes tests and university entrance requirements commonly expect learners to know some very traditional

chunks of curriculum. Whatever the ideals are, we're stuck with these realities.

Right—kind of. In the short term, we're stuck with accommodating to practical realities. However, many schools I know manage to serve those realities well while exploring fresh visions of what's worth learning. Also, current realities can change through clarifying goals and renegotiating priorities. That's what this book is ultimately intended to inspire. Without any champions, that will not happen. Surely it makes no sense to resign ourselves to an unproductive reality just because it is there.

Close Encounters of the Third Kind

To sum up, let's remember Stephen Spielberg's classic film, *Close Encounters of the Third Kind*. The film takes its title from a classification of different levels of alien encounter. The first kind is simply a visual sighting of vehicles, the second kind notes physical evidence left in the environment, and the third kind entails seeing or meeting the aliens themselves. The levels of encounter seem remarkably suited to profiling the problem with quadratic equations. We know they're there and might see them or traces of them occasionally, but almost never do we actually personally have to deal with one. No close encounters of the third kind.

Over these last paragraphs, I've made a whipping boy of quadratic equations. So let me get even more uppity and ask this: How many chunks of knowledge in the typical curriculum are not like quadratic equations? How many truly lead to significant close encounters of the third kind? I don't have a researched number, but I'd like to suggest that the percentage is low. Students are asked to learn a great deal for the class and for the test that likely has no role in the lives they will live—that is, a great deal that simply is not likely to come up again for them in a meaningful way.

Of course, it's still nice to know a lot. But remember, knowledge not used is simply forgotten, so today's students don't end up knowing all that a year later or ten years later. Moreover, what's at stake here might remind us of the concept of opportunity cost from economics.

Opportunity cost makes a fundamental point about decision making: when we decide in favor of one course of action, we forgo others that might have generated certain benefits. A cost of the path we choose is loss of benefits from the abandoned paths. With quadratic equations as with anything else, we have to ask not just whether they are nice to understand in themselves but what might have been learned instead.

Remember that it's not all doom and gloom. Recall the examples from the previous section. Ideas about poverty, overtaxation, weak economies, and so on (as in the French Revolution) generate plenty of close encounters of the third kind. So also do notions about energy and climate change. So also do general skills and mind-sets drawn from dance and music.

Moreover, here's a surprise for you: the study of quadratic equations, treated in the right way, may promise more encounters of the third kind than it seems to right now. I'll tell that story in a later chapter.

Questing for Lifeworthy

To envision what might be lifeworthy about what we teach surely is a fundamental act of the educational imagination. It's an act that expresses the essential character of human beings as collective learners. Also, it's an act perhaps too often neglected in the shaping of education by policymakers, parents, subject matter experts, teachers, and others. We need to get more learning return on investment in a smarter way. We need to have better answers to the uppity question. We need to pay more attention to the six beyonds.

In envisioning what will turn out to be lifeworthy, we certainly won't assume that prediction is easy. Nor will we assume that the answer is the same for everyone. Although we'll deal largely in generalities, concrete decisions would vary somewhat by learner characteristics and cultural and geographical setting. As educators, our hope has to be that there are trends to tease out and put to work in the construction of education. The challenge of a curriculum rich with lifeworthy learning is more like a smart bet in the casino of life than it is a sure thing.

Decisions about what to teach get influenced at many levels by many different sorts of people: ministries of education, state school boards, local school boards, textbook publishers, textbook authors, expert panels representing the disciplines, parent interest groups, special interest groups, teachers with various latitude depending on the context, and sometimes even students. It's not my aim in this book to take the power of decision away from those diverse bodies. How could we, even if we wanted to?

Rather, let's hope we can inform those decisions by encouraging more serious, vigorous, and creative envisioning of what learning might matter. Parents can consider the prospects: What do I think my children should know, and how can they best learn it, and how can I help make that happen? Teachers, mentors, and coaches can engage such questions as well: What should my charges come to know, and know in a way that lasts and expands and informs their lives? Policymakers at the highest level can take these questions to heart: What do people need to learn toward living well and contributing to society? And how can we get this knowledge into the curriculum in ways that are affordable and scalable?

It's inevitable that in any quest for lifeworthy learning, some contentious value-laden and political issues arise. Consider, for instance, the controversy in some parts of the United States and a few other parts of the world around teaching the theory of evolution as natural selection. More broadly, history education involves starkly contested approaches around the world: Do we want a comfortable account of how our nation grew, with polite acknowledgment of some unfortunate bobbles along the way, or do we want a more critical and comparative examination? What version of history young students should be taught is a controversy explored deeply in Mario Carretero's *Constructing Patriotism*.

I'm clear about my personal response to these high-blood-pressure questions in the body politic: of course, we should foster educational engagement with controversial themes and perspectives. However, let me reassure those who feel otherwise. A general commitment to lifeworthy learning does not require a bold embrace of hot topics. While some lifeworthy topics boil with controversy, most do not; examples are

many topics around health care (not counting abortion or birth control or the Affordable Care Act) or twenty-first-century skills (not counting critical thinking about religion) or the biosphere (not counting evolution) or the immensely useful, albeit dry-sounding, probability and statistics. So we can readily construct lifeworthy curricula that for the most part dodge controversial topics. I feel we'd be missing something important by doing so, but not nearly as much as we're missing by broadly ignoring lifeworthiness.

In summary, this is challenging terrain. In no way are the ideas in this book likely to settle anything. Perhaps, though, they can help to deepen the conversation, bringing into the foreground a consideration of what's worth learning that's usually banished to the background. Perhaps these ideas will help people reassess the worth of what is conventionally taught and give more presence in education to broad understandings and powerful ways of thinking and communicating.

I hope so, and invite everyone to join in this hope because we occupy a historical moment where envisioning lifeworthy learning seems particularly important for our children and their children. Why now? Here's why.

Educating for the Unknown

The uppity question, "Why do we need to know this?" is always worth asking in the big picture, however annoying it may be coming from some tenth grader on Tuesday morning in the middle of studying Euclidean geometry. However, the uppity question takes on particular importance in our world and times.

Historically, precollege education has focused on educating for the known, the tried and true, the established canon. This made very good sense in the many periods and places where most children's lives were likely to be more or less like their parents' lives. However, wagering that tomorrow will be pretty much like yesterday does not seem to be a very good bet today. Perhaps we need a different vision of education, a vision that foregrounds educating for the unknown as much as for the

known. Perhaps we need a vision of education that's more "future wise," reflecting our best guesses about what's most likely to happen and foregrounding flexible knowledge likely to inform whatever does happen.

To be sure, it's nice to know everything in those textbooks. We want to be careful about what we toss. Knowing a lot well at an acquaintance level—a cappella, cholesterol, zygote—is a hallowed mission of education still relevant today. We hope that younger and older learners will come to know a lot well, including dates like 1066 and 1492 well buttered with their significance, models from the natural sciences (Ohm's law, the law of gravitation, atomic structure), profiles of notable figures from the history of politics and ideas (Caesar, Confucius, Madame Curie), forms of government and how they work (democracy, communism, socialism, autocracy), literary works of note (Shakespeare, Cervantes, Li Po), practical matters (office management, home accounting, gardening), personal health care (basic sanitation, cholesterol, exercise), tasty tidbits (the wives of Henry VIII), and far more. One could add dozens of particulars to these and extend the list for hour after hour.

And yet today's world does not seem very friendly to an encyclopedic education that has little time to do much more than build acquaintance knowledge. The fixation on the heap of information in the textbooks is itself part of the problem because the world we are educating learners for is something of a moving target, itself as much unknown as known.

It's commonplace to hear that the world is changing faster than ever before, so education better prepare learners for such a world. Actually I'm not so sure about the world changing faster than ever before. Do the excitement and trauma of change careen any more rapidly in current times than during the peak of the Industrial Revolution, with its profound dislocations of people and transformations of lifestyle? How in any case would we gauge the pace of change precisely enough to declare one era of flux speedier than another? But certainly things are changing fast, and what does seem distinct is the character of the changes afoot.

Contemporary communications and transportation are pushing the world together. This has been happening for a long time in limited

ways, from Roman roads to transatlantic vessels, but today it has reached a point where communication is near instantaneous and travel to most populated places a matter of a few hours. As people and peoples rub up against one another, the sparks are sometimes generative culturally and economically, and sometimes they are frightening. Samuel Huntington, for one notorious and controversial example, wrote about a likely (in his view) clash of civilizations between the West and other widespread identities, for instance, Islamic, African, or Confucian. Doomsayers aside, less-well-off countries struggle to achieve the economic success and material comfort of flagship nations, even as their very striving in some ways threatens those on top. The planet suffers from what pop songster Paul Simon tagged “too many people on the face of the Earth,” with problems of global warming and freshwater supplies looming. At the same time, world music, artistic exchange, economic synergies, and scholarly collaborations thrive.

Research on today’s workplaces and professional roles observes a profound shift in what it means to function effectively in today’s job market. In the most economically advantaged nations, the twentieth century saw a dramatic transformation from resource-based economies such as farming and mining to manufacturing economies and beyond that to service and information economies. Effective participation in these calls for more than the basics of education, a point emphasized by Richard Murnane and Frank Levy, among others, in their probing analysis of what education provides and what the workplace demands. The demographics show a thinning out of blue-collar roles compared to relatively unskilled and poorly paid labor, on the one hand, and, on the other, roles that require effective communications, collaboration, and problem-solving skills. To thrive in today’s society, people require education well beyond the basics.

Meanwhile, biological research into the fundamental dynamics of life holds strong prospects of extending the human life span considerably in the course of the next fifty years. What sense would a K-12 or K-16 education make in a world where people live to be, say, 150 years old? Today we speak casually of lifelong learning, but in a few decades, it will likely be so much the norm as hardly to require its own label.

Cycles of formal learning as well as enriched processes of on-the-job learning seem destined to become routine.

With all this in view, the very idea of educating just for some set of canonical knowns, however carefully selected, seems grievously limited. It also gives short shrift to Pandora's prime character trait of curiosity. The agenda of education should not just be passing along the contents of already open boxes but fostering curiosity for those still unopened or barely cracked open. We need a bolder agenda. Let's call it *educating for the unknown*.

Yet the very turn of phrase has a paradoxical quality. How can we possibly know the unknown well enough to educate for it?

But wait: as we stand back from the challenge, it does not seem so unapproachable. Although we do not know exactly what the world will be like in ten or forty years, we certainly can make some good guesses. Thinking back to our examples so far of good return on investment from knowledge, it would be surprising if issues of poverty and taxation found in the French Revolution example disappeared from the world in the next twenty years. It would be surprising if issues of ecological stability, water supplies, and the threat of epidemic diseases enabled by a torrent of international travel were not still significant. Specific predictions aside, in a time of change and uncertainty, general capabilities take on special power—for instance, skills of communication, collaboration, problem solving, and learning.

Educating for the unknown, far from an unapproachable paradox, can be an alluring and inspiring agenda. Rather than counseling despair, educating for the unknown favors a vision of learning aggressive in its effort to foster curiosity, enlightenment, empowerment, and responsibility in a complex and dynamic world. It favors a broad and visionary reach for meaningful learning.

Toward Reimagining Education

With that on the table, I offer a brief preview of the ideas to come. Once we recognize how much of the typical curriculum is not so lifeworthy,

we have to wonder why. If the problem isn't taken seriously, what's happening instead? Chapter 2 explores the puzzle, examining three rival learning agendas: achievement, information, and expertise. Each has its own worth, but all sweep the problem of lifeworthy learning under the rug.

So what is lifeworthy? What kinds of knowledge have especially promising payoffs in the lives learners are likely to live? Chapter 3 introduces the idea of *big understandings*, that is, broadband understandings likely to come up in diverse circumstances and inform thought and action. Our three examples of good knowledge outcomes from earlier—the French Revolution as a lens, energy and climate change, and dance and music as cultivating analytic skills and focus and expression—are all big understandings. Chapter 4 explores big questions, the inquiry partner to big understandings. Big questions both lead into big understandings and point beyond them toward further exploration.

Although our center of gravity is content, not process—what's worth learning, not how it's best learned—we can't neglect process. Without the right sort of teaching and learning, content lifeworthy in principle can turn out not at all lifeready in practice—not at all ready to pop up on appropriate occasions and help make sense of the world. Chapter 5 examines the sort of teaching and learning that can bring big understandings and big questions alive in learners' lives.

The next chapters build on this to explore big understandings from the disciplines, the ways of thinking characteristic of the disciplines, how to organize multiyear curricula with lifeworthy learning in the foreground, and the place of twenty-first-century skills.

Chapter 10 sums up how we might think more deeply about what's worth learning and make better choices toward lifeworthy learning. The chapter also explores a lofty prospect: teaching knowledge on the way to wisdom.

To keep track of the developing ideas chapter by chapter, at the end of each chapter the "Reimagining Education" section charts the progress in terms of four quests. Together they make one big conversation toward sorting out the place of lifeworthy learning. Any teacher, parent, student, school board member, university educator, or political figure

concerned with education might engage this conversation. Here are the four quests:

1. Identifying lifeworthy learning in contrast with not-so-lifeworthy learning
2. Choosing what lifeworthy learning to teach from the many possibilities
3. Teaching for lifeworthy learning in ways that make the most of it
4. Constructing a lifeworthy curriculum

