

3-2017

Re-Envisioning Professional Education

Kimberly Austin

Columbia Law School, Center for Public Research and Leadership

Elizabeth Chu

Columbia Law School, Columbia Center for Public Research and Leadership

James S. Liebman

Columbia Law School, jliebman@law.columbia.edu

Follow this and additional works at: https://scholarship.law.columbia.edu/faculty_scholarship



Part of the [Law Commons](#), and the [Teacher Education and Professional Development Commons](#)

Recommended Citation

Kimberly Austin, Elizabeth Chu & James S. Liebman, *Re-Envisioning Professional Education*, (2017).

Available at: https://scholarship.law.columbia.edu/faculty_scholarship/3945

This Report is brought to you for free and open access by the Faculty Publications at Scholarship Archive. It has been accepted for inclusion in Faculty Scholarship by an authorized administrator of Scholarship Archive. For more information, please contact scholarshiparchive@law.columbia.edu.

Re-envisioning Professional Education

Prepared for Accelerating
Multidimensional Learning in
Professional Education Convening

March 2017

Kimberly Austin

Elizabeth Chu

James Liebman



Columbia University Center for Public Research and Leadership
James S. Liebman, Director

RE-ENVISIONING PROFESSIONAL EDUCATION*

- RE-ENVISIONING PROFESSIONAL EDUCATION* i
- Introduction..... 1
- Part I: The New Professional Competencies 2
 - A. Proliferating Careers..... 2
 - B. The New Learning Competencies..... 3
- Part II: Evidence of Professional Schools’ Failure to Impart the New Competencies..... 5
 - A. The Current Critique of Professional Education..... 5
 - B. Evidence from Changes in Professional School Enrollment 6
 - C. Evidence from Alternative Sources of Professional Preparation..... 9
- Part III: A Path Forward for Professional Schools..... 11
- Part IV: Case Studies of Change 13
 - A. Law Schools..... 14
 - B. Education Schools 15
 - C. Medical Schools..... 16
 - D. Business and Management Schools 17
 - E. “Engineering and” Programs 17
 - F. A Business, Education, Law, and Public Policy Consortium..... 18
- Conclusion and Convening Questions: 19
- APPENDIX.....21
 - A. Yale Office of Career Strategy Survey of Graduates Six Months after Commencement 21
 - B. *The Harvard Crimson* Survey of Post-Graduate Plans, 2007-2016 22
- REFERENCES.....23

INTRODUCTION

In the dynamic, hyper-connected, and unpredictable 21st century, workplace and career paradigms are rapidly changing. The professions are no exception. Technology has routinized and increased access to the expertise that traditionally set professionals apart from other workers, leading some to forecast professions' demise (12, 156). Even if, as we suspect, new forms of complexity and needs for expertise continue to outrun technology (51, 90), professionals' lives and careers will diverge dramatically from past norms (96). In the world we anticipate, the number of theories, diagnoses, and strategies among which each professional—alone or in teams—must make informed and workable judgments will increase exponentially, as will the rapidity with which their specialties become obsolete and have to be retooled or replaced (18). In this world, learning to learn will far outstrip the importance of applying the specialized knowledge with which professionals are initially programmed (8, 15, 52, 139).

If this prediction is correct, then university-based professional schools (hereinafter “professional schools”), which historically have done that initial programming, must change at the same pace as their graduates' careers. Evidence that professional schools are not evolving quickly enough is widespread. Employers and policymakers criticize professional schools for not preparing graduates to succeed in the modern workplace or to solve increasingly acute public problems (see *infra* pp. 5-6, 8-9). And prospective students are voting with their feet, opting for less expensive and more relevant training from accelerators, boot camps, and massive open online courses (MOOCs) and in dynamic work environments themselves (see *infra* pp. 11-12). In order to help the professions retool for the modern world, professional education must retool itself (6, 13, 26, 42, 45, 85, 123, 139, 156, 158).

Professional education has done just that repeatedly in the past when challenged to keep pace with changing professional demands and burgeoning social problems. Unlike in the past, however, the trick is not to enhance the finite categories of specialized knowledge with which professional schools program their students. Instead, professional schools must program students to learn how to learn—to reprogram themselves to generate ever more specialized knowledge, continuously, experientially, and collaboratively, across disciplinary lines. As institutions committed to self-conscious learning, professional schools should be up to the task. Each participant in the upcoming convening has already begun this work.

To provoke discussion at the Convening of what already is happening, what more is possible, and challenges faced, this paper proceeds in four steps. Part I identifies learning competencies modern professionals need for success in rapidly diversifying careers solving increasingly multidimensional problems. Part II examines professional programs' uneven, at times indifferent, attentiveness to these competencies and to evidence that the programs' responses matter to prospective professionals and employers looking to thrive in a changing world. Part III suggests a way forward for professional schools committed to preparing graduates for fulfilling and socially productive modern careers. Part IV collects some examples of steps professional educators, including ourselves, are taking in the directions indicated. In conclusion, we pose some questions we hope to address with others at the Convening.

PART I: THE NEW PROFESSIONAL COMPETENCIES

A. PROLIFERATING CAREERS

Gone is the world in which professional school graduates finish clerkships or residencies and join an architectural or law firm, corporation, school system, or medical practice in which they might expect to remain for the rest of their professional lives, gradually settling into one or a few stable specialties. Today, “[i]ndividuals increasingly face the prospect of not just multiple jobs but multiple careers over a lifetime, and of constantly changing technology and environments within a job” (66).

For starters, in nearly all job categories, “radical shifts in product design or production technology . . . permanently devalue whole skill categories” (139A). As a result, disruption in careers and unemployment for workers who cannot rapidly retool now qualify as “structural” problems (140, 157).

As quickly as technological advances and changing trends render older sets of knowledge and skills obsolete, however, the same forces generate new opportunities for those who *can* rapidly retool (96). In part this is because new techniques and technologies—robotic surgical procedures, for example, or artificial intelligence programs for reviewing legal documents—create better and faster ways to do the work. They also multiply expectations about the skills professionals need to master the new tools and the possibilities they create, and they accelerate the evolution of “new occupations, roles, titles, and functions” (52, 66). The increased availability of data and power of automated analytic methods, for example, has given rise to the data scientist. In 2008, there were 142 people who described themselves as data scientists on LinkedIn; five years later, when the number of people on LinkedIn had grown by about 7.5x, the number of self-described data scientists had increased by 30x (115).

These forces also vastly expand the types of work professionals now can be expected to perform. It is not simply that our burgeoning ability to (i) observe, collect, and generate; (ii) analyze and visualize; and (iii) collaboratively reflect and act upon massive quantities of information amplifies our access to what is knowable under existing intellectual frames (45). In addition, the rapid and frequent conceptual shifts these processes produce increase the intellectual frames that professionals can bring to bear, expanding the range of what is knowable and multiplying the nuances in identifiable causes (diagnoses) and responsive strategies (treatments) that professionals can apply to the problem at hand.

Beyond managing nuance, modern professionals must be ready to address problems and solutions that have many more dimensions. Increasingly attentive observation, wider access to data and knowledge, and improved analytics and visualization also enable modern professionals to recognize previously obscure relationships among the biological, social, economic, legal, and political forces that shape such issues as obesity, drug use, unemployment, mass migrations of refugees, and global warming. Those insights push professionals deep into domains that previously lay outside their purview and imagined competency. More broadly, these forces transform expertise from the mastery and mobilization of a relatively fixed body of knowledge associated with a single discipline into the ability to access and apply a flexible and responsive body of knowledge that routinely incorporates ideas from many fields, while generating new ideas through the structured interaction among the intellectual frames, work styles, institutional mindsets, and knowledge bases that predominate in those fields (45, 139).

Adding further pressure on professionals are increases in the range of problems clients consider to be solvable, in the number of categories of people recognized as having a right to personalized services, and in the competitiveness of markets, all of which generate demand for services that are ever more tightly customized to each client's variegated needs (165). Attentiveness to what clients know and want is even more fundamental than these forces might suggest. In situations in which nuances are crucial, and in which clients themselves have considerable access to the information, expertise, and techniques that once were the sole domain of the professional, the professional's value lies not in defining the problem and crafting a solution *separate from* and *for* clients (1, 9). Instead, the professional's value lies in helping clients discover what they already know, clarifying what they need, and, in the process, *coproducing* a solution *with* them. Should clients thereafter be capable of defining and solving other such problems without professional help, all the better—all the more value the professional has added in the role of learning facilitator as well as problem-solver (9). The role of the modern professional thus has changed from empowering clients with an expert's solution to empowering clients with the facility and confidence to generate their own solutions. Rather than *knowing* what others can't know, the modern professional is defined by her ability to: (i) *learn* more herself; (ii) *coproduce* knowledge with colleagues and clients; and in the process (iii) *empower* colleagues and clients to learn rapidly on their own (see 15, 139).

Under modern conditions, therefore, successful professionals can expect their careers to take as many turns as the product of the quantity of distinct problems they are asked to help solve, the number of distinct clients on whose behalf they act, and the number of distinct combinations of disciplines that intersect in identifying possible causes and solutions. Some modern professional workplaces—high-octane consulting firms come to mind—bring many such careers *to* their professional employees; other professionals, however, may have to navigate between workplaces in the process of managing their careers. Given the extraordinary difficulty of predicting which skills and jobs will be useful in the future and which are vulnerable to obsolescence, successful professionals must be highly adaptable problem-solvers with the lifelong learning capacity needed to acquire quickly new knowledge and skills (52, 66).

B. THE NEW LEARNING COMPETENCIES

Professionals and researchers in disparate disciplines have worked to specify the competencies modern professionals require (e.g., 6, 31, 116, 120, 145, 165). There is substantial consistency among proposed frameworks. Most intersect at the concept of the “T-shaped professional,” which conceptualizes the deep domain knowledge, the wide array of learning competencies, and the broad interdisciplinary fluency needed to succeed in the many modern workplaces in which professionals “collaborate across a variety of different disciplines” (107).

In the “T-shaped” metaphor, the vertical stroke represents the familiar disciplinary and institutional knowledge and doctrines that have long been associated with each particular profession and the standard curriculum of its allied professional schools. More interestingly, the horizontal stroke represents a number of learning competencies that range beyond the disciplinary anchor.

A first learning competency is the capacity to think critically and creatively at the same time. The modern professional must excel not just at recognizing and offering explanations for what doesn't stand

to reason or won't likely work but also what *may* do so under complex and rapidly changing conditions. This requires "inventive thinking," "creativity," and "curiosity" (61, 82, 117, 120, 145).

A second key competency is "flexibility" and "adaptability"—subordinating the acquisition of discrete, relatively fixed skills to the ability to acquire new skills rapidly (61, 117). This flexibility also extends to cognitive flexibility: the ability to recognize and adapt to unexpected information, idiosyncratic manifestations of familiar problems, and evidence of failure (1). Professionals must be able to absorb and integrate ideas and ways of applying them from diverse bodies of knowledge (96, 126). Finally, cognitive flexibility requires an ability to generalize core principles from this expanding array of experiential and conceptual inputs and to apply them to new situations (145).

A third learning competency is the ability to work effectively in teams, especially interdisciplinary, cross-functional teams, as multidimensional problems require collaboration with colleagues with better access to relevant bodies of knowledge and their uses (18, 46, 61, 67, 139). Fourth are a variety of personal disciplines that are particularly valued in changing and unpredictable conditions, such as self-motivation, resilience, and an ability to press forward despite a lack of clear direction (61, 126). Fifth are interpersonal skills, such as emotional intelligence and the ability to communicate across social, economic, and cultural boundaries (68, 145). Finally, professionals must be proficient in using, and rapidly adapting to new forms of, data and technology, which are increasingly central to problem solving (120, 145).

Together, these competencies go a long way toward enabling the modern professional to learn continuously, coproduce knowledge with others and facilitate their ongoing ability to learn. Additionally, however, learning in these ways requires facility in the use of an important tool: a widely applicable and accessible methodology for working alone or with a diverse array of stakeholders to specify an aim or impact to be achieved, develop a working theory premised on predictions about the expected drivers of success, identify causes of and solutions for obstructions, envision what success looks like and how its attainment can be at least roughly measured, rapidly test solutions and compare results to expectations, and progressively adjust diagnoses and treatments until results align with aims (e.g., 19).

Methodologies of this sort need to be more structured and rigorous than the intuitive guesswork that professionals often exercised in the past (e.g., 135; see 1, 99) and more accessible and immediately actionable than the wholly deductive approaches associated with Donald Campbell and randomized controlled trials (21; see 1). Various denominations "abductive reasoning" (128; see 39), "improvement science" (19, 37, 102), "evolutionary learning" (1), and "democratic experimentalism" (43)—and associated with a variety of improvement or problem-solving techniques such as "Deming cycles" (7), "PDSA cycles" (19), "quality circles" (150), "Six Sigma tools" (4), and "strategic inquiry" (124)—these techniques are designed to professionalize workers of all sorts and give teams of them the structure and confidence to tackle an array of aims or problems that neither individual members nor the entire group knows how to address at first.

Evidencing the widely translatable nature of these competencies is the similar career advice being given to professional students in multiple disciplines. In business and management, "employers like IBM, IDEO, and Cisco are spearheading initiatives to hire" T-shaped professionals; IBM has even begun

assessing potential candidates on these traits through the use of a “T-score” (53). Columbia Business School Dean Glenn Hubbard called attention to a “new environment” in which “entrepreneurs and entrepreneurially minded business leaders are successful not because they set an unchanging goal and then labor to achieve it” but because they are “agile seekers looking for many different ways to identify and capture opportunity” (88). Business graduates accordingly are expected to “think globally, cross boundaries, collaborate, think critically, be creative and innovative, learn continuously, understand systemic impacts, and lead with courage and integrity” (16). Law students are likewise being urged to leaven the legal expertise and “thinking like a lawyer” that law school has traditionally provided with a capacity to collaborate across disciplines, such as technology, business, analytics, and data security and act as dynamic problem-solvers who can adapt to new situations (67, 93, 95, 149).

Medical students get similar advice. “[C]linicians will be required to work in interprofessional teams, coordinate care across settings, utilize evidence-based practices to improve quality and patient safety, and promote greater efficiency in care delivery. The health care system will need to adapt to support these changes, and hospitals and health systems will need to acquire new competencies” (31). Likewise, engineering students are being urged to develop “the skills to create and exploit knowledge and technological innovation” and “translate [that] knowledge into innovative, competitive products and services” (167; see 45). And pre-service teachers are encouraged to take a “competency-based approach to learning,” while “integrat[ing] the use of supportive technologies, inquiry- and problem-based approaches and higher order thinking skills” (126). Across many disciplines, the focus is moving beyond mastery of set doctrine to learning to apply concepts, information-gathering and analytic techniques, and knowledge developed *by*—or as a result of the *interaction of*—a variety of disciplines to the proliferating problems, solutions, and client needs characterizing our dynamic world.

PART II: EVIDENCE OF PROFESSIONAL SCHOOLS’ FAILURE TO IMPART THE NEW COMPETENCIES

A. THE CURRENT CRITIQUE OF PROFESSIONAL EDUCATION

Even as professional school leaders and faculty join other prognosticators in advising aspiring professionals to prepare themselves for the unpredictability and multidimensionality of modern careers and public problems, professional schools are under attack for failing to provide that preparation (e.g., 3, 8, 11, 14, 16, 23, 26, 27, 38, 40, 42, 44, 45, 54, 55, 59, 65, 82, 85, 93, 100, 104, 105, 110, 119, 123, 129, 141, 147, 156, 157, 179). The gist of these critiques is that professional schools continue to prepare graduates to succeed in bureaucratic organizations of a bygone era with predictable rules, roles, and hierarchies, not in the flexible, connected, and flatter organizations of today (164). Professional schools thus have no place for learning competencies or broadly applicable problem-solving methodologies. Instead, their courses of study and status distinctions—themselves developed decades earlier—actively isolate the different bodies of knowledge, mindsets, learning methodologies, solutions, and stakeholders that diverse teams of modern professionals must be able to integrate and reintegrate in tackling the multifaceted challenges that proliferate in modern work settings (54, 166).

In particular, professional schools may be criticized for counterproductively separating:

- professional disciplines and specialties within disciplines;

- high-concept thinking from hands-on experience;
- research from pedagogy, and both from practice;
- individual from institutional learning (instructing students versus changing systems);
- learning from public service;
- active production of solutions by professionals from their passive reception by clients; and
- active presentation of curricula by faculty from their passive reception by students.

If longstanding divisions like these do continue to characterize professional schools, and if they are counterproductive to modern career preparation, one would expect the outcomes of prospective students’ and employers’ cost-benefit calculations in regard to professional schools versus other pathways into modern professions to change. Our examination of the available—incomplete and only suggestive—data indicates that such conditions do continue to exist in some areas of professional education and are affecting prospective students’ and employers’ decisions.

B. EVIDENCE FROM CHANGES IN PROFESSIONAL SCHOOL ENROLLMENT

Going to professional school is expensive, as the following table illustrates (68A, 74, 76, 77):

Harvard, 2016-17	Tuition	+ Fees, Expenses
Medical School (4-year MD)	\$232,000	\$341,296
Law School (3-year JD)	\$178,650	\$265,800
Business School (2-year MBA)	\$127,350	\$204,200
Education School (2-year Ed.M.)	\$ 90,016	\$145,152

Although professional degrees have long been expected to pay for themselves in post-graduate earnings, their price tag is high enough to sensitize prospective applicants to changes in the degrees’ likely contribution to career success compared to what less expensive options might offer. Recent trends in the behavior of promising candidates and their prospective employers suggest that both groups are attuned to how quickly and far professional schools are evolving in response to changing conditions.

In recent years, enrollment at many professional schools has declined—trends that professional associations, scholars, the media, and a number of the professional school innovators with whom we spoke while preparing this report associate with doubts about the financial, experiential, and preparatory returns to an expensive professional education. Law schools have been especially hard hit. Since 2011, the number of applicants to U.S. News & World Report’s top 20 ranked law schools has dropped by a median of 18%, with nearly double those declines at less prestigious schools (44, 100).

No doubt part of this decline is attributable to the economic climate after 2008, when legal sector income declined by 20%, law firm partner salaries dropped by 15%, and sector employment shrunk by 10% (11). Buffeted as well by automation and competition from offshore actors and non-legal accounting and consulting firms, nearly a third of law school graduates have recently been accepting employment in positions not requiring a JD (49, 143). Yet, these conditions concentrate at the lower end of the pay and prestige scales, while the decline in law school applications has been greatest at the upper end of the credentials scale as measured by LSAT scores (92, 97, 118, 174). Because even during the recession highly

credentialed prospective applicants could predict with some certainty that they would be admitted to top law schools and have access after graduation to secure and high-paying jobs at least as insulated from economic shocks as positions in other sectors of the economy, factors beyond the episodic downturn have evidently been affecting their cost-benefit analyses.

The talented U.S. college graduates who are increasingly passing up law school evidently are not generally choosing business school. In 2010-2013, business school applications declined precipitously. More recently, the number of applicants has returned to the pre-recession level (91), but foreign applicants have taken up most of the slack (36, 159.) International students now make up 55% of all candidates for admission to U.S. business schools, and again, their impact is not limited to the lower end of the selectivity and status scales. International students comprise over a third of Harvard and Wharton MBA students and closer to 40% of those at MIT, U.C. Berkeley, and Yale (175). The implications of this trend may intensify if changes in federal immigration policy and heightened competition from Australian and Canadian schools diminish foreign applications, as some predict (17, 113).

Employers are pressuring business schools, as well. Fewer, for example, are willing to pony up tuition fees for Executive MBAs that they believe are no longer required for career advancement: in 2005, 69% of Executive MBA students had their fees paid by their employers; a decade later, the rate had dropped to 39% (59, 114). Others believe that the “staples of traditional business school training at the nation’s elite colleges” dampen the creativity needed for success in modern firms (55).

Education schools are experiencing similar trends. Although many universities use their teacher education programs as “cash cows” to generate revenue to fund more prestigious and academic departments, recent U.S. Department of Education estimates suggest that enrollment in university-based teacher preparation programs declined by about 10% between 2004 and 2012 (142).

Enrollment trends in medical and engineering programs are different. Notwithstanding the high cost of a medical education, stressful working conditions, and economic uncertainties (63, 127), medical school enrollment has increased by 25% since 2002, reaching an all-time high in 2015 (89). Enrollment in engineering programs has risen even more sharply, increasing by 38% since 2005. Although financial considerations associated with the rise of technology firms and big data are no doubt at work here, as are lower relative tuitions, the enrollment gains have occurred despite substantial increases in actual tuition costs: up 47% at private institutions and 73% at public institutions since 2005 (119).

What might account for the greater attractiveness to U.S. college graduates of medical and engineering compared to law, business, and education degrees? One answer is variation in professional schools’ responsiveness to changing professional careers and environments.¹ Medical schools have self-consciously adjusted their programming to better equip graduates for problems encountered in modern

¹ Medical schools are also privileged by their tight control over access to the profession, but this factor does not explain their similarity to engineering schools, which have less control, or their better performance than law schools, which have similar control. On the demand side, the shortage of MDs (127) and the tech sector’s growing need for engineers have an effect, as well, but may not distinguish the market for, respectively, JDs, given a similar shortage of lawyers for middle class and rural populations (62, 132) or MBAs, which should be attractive to the tech sector.

medicine, and the President of the American Association of Medical Colleges has attributed enrollment gains in part to this “innovation in education and training programs” (89). These changes were driven by a recognition over the past two decades of a knowledge-skill divide in the profession that produced variability in healthcare outcomes, cost, and safety, as well as by the ensuing quality improvement movement (10, 25). Working in concert with medical schools and professional associations, physicians have developed new models of clinical practice that make fuller use of data, new technologies, and multidisciplinary problem solving (60, 162, 173). Propelled by the same forces, medical faculty are gradually revising medical school curricula along lines discussed below (4, 13, 89; *infra* p. 17).

Engineering schools’ similarly integrative training may add to their attraction, too. Engineering schools tend to focus more heavily than other professional programs on applying scientific and technical knowledge in experiential settings, providing students with team-based and interdisciplinary problem-solving skills and a chance to use critical thinking capacities in practical contexts (24, 57, 133). Teams of engineering students often participate in competitions to produce solutions to real world problems, with funds provided so winners can implement their plans. And engineering programs often include curricular options in which hands-on projects comprise a large portion of the work (32, 58, 168, 176).

In contrast to medical and engineering schools, university-based law, business, and education schools largely adhere to longstanding functional and status divisions between disciplines, specialties, and pedagogical methodologies that limit access to T-shaped learning competencies. Standing pat in this way may diminish the value of the latter degrees to prospective applicants and lead them to choose less expensive pathways into the workforce such as those discussed in the next section.

Nearly all law schools continue to honor divides between doctrinal and experiential learning, different doctrinal disciplines (students, for example, learn contract, real property, corporate, and environmental law separately, though most interesting legal problems—assembling a shopping mall deal, for instance—straddle all those disciplines); legal and non-legal (e.g., financial, scientific and technical, policy, and cultural) considerations; professionals and clients; and faculty and students (23, 26, 93). Although students are welcome to take courses and engage in activities on as many sides of the divides as they like, they rarely have the opportunity for the productive and simultaneous oscillation across all of those divides that is necessary to build confidence and skill in addressing unpredictable and multifaceted problems. No wonder, then, that talented young adults who in past years may have chosen to go to law school might instead use a different portal to enter the modern workforce.

Business school programs maintain similar divides. Google executives’ critique of the MBA, for example, goes directly to the divide business school curricula maintain between design, testing, and implementation. Business school curriculum is ineffective, in their view, because it teaches students to expect executives’ plans to “set the direction of project management like Moses coming down from the mountaintop,” rather than “design[ing] for the unexpected and work[ing] with engineers in an iterative fashion” that “leave[s] room for the unplanned” (55). Business school curricula likewise are criticized for continuing to revolve around “strict disciplinary” subjects, which made sense when preparing graduates for “large, vertical corporate bureaucracies, when management careers and management problems were carved up by function,” but do not prepare graduates for modern, more horizontal organizations seeking

“leaders who can see opportunities and address problems that cut across functional boundaries” (164; see 14, 38, 40, 82, 85, 110, 112, 114).

University-based teacher preparation programs face similar criticism from the federal, state, local, and classroom levels—and resulting competition from alternative preparation programs—based on their failure to prepare educators adequately for the practical demands and complex problems they face every day in the classroom (42, 105, 123, 138). In response, the Council for the Accreditation of Educator Preparation emerged in 2014 and Deans for Impact in 2015 to provide standards and a community of practice for transforming how professional schools prepare teachers (35, 141).

C. EVIDENCE FROM ALTERNATIVE SOURCES OF PROFESSIONAL PREPARATION

Additional evidence emerges from the choices college graduates make directly after graduation. Although limited, publicly available information suggests college graduates see decreasing returns on attending university-based professional schools.

In 2010, Yale reported that only 21% of its graduates that year were attending graduate school six months later, the lowest level since it began collecting data (most of it unpublished) in 1960 (134). Since 2011, the proportion entering graduate school has dropped even further, hitting a low of 17% in 2014 (56). And as many of half of those graduates are pursuing degrees in academic, as opposed to professional, fields. Meanwhile, the proportion immediately entering the workplace has risen from 20% in 1968 to 76.3% in 2016. In other words, since the 1960s, the initial destinations of graduates have essentially flipped from about three-quarters headed to graduate school and a fifth headed to the workplace, to the reverse. Among recent graduates taking jobs, an increasing number, topping 30% since 2015, are working in finance or consulting (about evenly divided between the two), with an additional 17% as of 2016 (rising rapidly from 7.1% in 2013) starting jobs in technology, engineering, and project management. Just over 6% took jobs in health-related settings in 2013-16, while about 4.5% started paralegal, investigation, and other law-related jobs (178; see *infra* [Appendix A](#)).

Analysis of data collected by *The Harvard Crimson* (available for 2013-2016) reveals similar patterns. In 2015, only 14% of Harvard graduates surveyed at commencement were headed to graduate school—of whom evidently only half were seeking professional degrees. By contrast, close to 70% were headed into the workforce. Among graduates taking jobs, the proportion entering consulting, finance, and engineering and technology rose from 44% in 2013 to 53% in 2016. During those same years, around 5% of working graduates took jobs in health- or law-related fields (69-72; see *infra* [Appendix B](#)).

The 2013-16 *Crimson* surveys also asked graduates entering the workforce to report on the fields in which they expected to be working ten years later. Reflecting patterns across all four years, 21% of 2016 working graduates began their careers in consulting, but only 1% of working graduates expected to be consultants a decade later; for finance jobs, the comparable numbers were 18% and 6%; and 14% and 7% for engineering and technology jobs. The pattern is the reverse for the health field, which claimed only 4% of 2016 Harvard working graduates but was the predicted destination ten years later of 15% of them. The fields of law, public service, and K-12 teaching were each the immediate destination of only about 4% of 2016 graduates and the expected destination ten years later of 7% or fewer. The small number of

students oriented towards public service and teaching and the number's sharp decline since 2013 as private-sector salaries increased suggest another effect of decreasing enrollment in professional schools, which in our experience play a strong socializing role in steering graduates to public service (69-74; see *infra* [Appendix B](#)).

We don't know how many Yale and Harvard graduates go to professional school later in their careers, nor whether their behavior is representative of other college graduates who might be destined for the professional ranks. Declining professional school enrollments themselves, however, as well as data points showing that the average age of students admitted to top law and business schools is not rising and has actually declined for law schools, suggest that the trend is towards less, not later, interest in these schools as the way to launch the careers of promising prospective professionals (47, 57, 84, 97).

Although many interpretations are possible, these patterns hint that college graduates are taking jobs in consulting, finance, and engineering and technology for reasons that previously might have led them to go immediately to professional school: to spend a few years right after college acquiring the knowledge and skills expected to launch them into careers doing other things. The difference is that in the past graduate *study* was seen as a pathway to *practical work* in the *same* field; today, *practical jobs* in consulting, finance, engineering, and technology are seen as a pathway into *those and other* fields, both practical and academic—including the four fields in which at least 10% of Harvard graduates expect to be working ten years later: health, academics and research, arts and entertainment, and entrepreneurship. Although medical schools appear to be holding their own with these recent college graduates, law, business, and education schools, are not (69-72; *infra* [Appendix B](#)).

The evidence also suggests that college graduates who used to but no longer go to professional schools are not forgoing post-graduate preparation altogether but are seeking it in other forms. When it comes to professional training suited to modern careers, that is, university-based professional schools are no longer the only game in town. Since the rise of Silicon Valley, college graduates have flocked to start-ups, with the objective of learning on-the-job while getting paid for it, rather than delaying remunerative work and incurring high and climbing professional school tuition costs (179). For college graduates with less of an entrepreneurial spirit, corporations are increasingly providing intensive training programs—often through “corporate universities”—that introduce their employees to the tools they need to succeed in the workplace, again without an expensive price tag (65, 106). These training opportunities are among the reasons employers discourage employees from pursuing MBAs (59, 114). Competition with professional schools is not simply on the training side. Innovative business firms such as Apple, Goldman Sachs, and Google—the very ones attracting the most college graduates who do not go to professional school—are also increasingly committed to creating “world-class management research” groups that compete with the top business school and other research faculties (16, 46).

“Boot camps” and “start-up accelerators” offer another educational opportunity for twenty-somethings looking to supplement knowledge and skills acquired in college (66). These short-term, cohort-based training programs lasting anywhere from weeks to a few months are becoming increasingly attractive ways to (i) learn skills such as computer coding that are in high demand and constantly changing, in the case of boot camps (87, 145); and (ii) get “early-stage, growth-driven . . . education, mentorship,

and financing” for entrepreneurial ideas in the case of accelerators (81). Illustrating these opportunities’ impact on cost-benefit calculations in regard to professional training, Jake Schwartz recently explained that he founded the popular coding boot camp General Assembly after concluding that his undergraduate degree from Yale “conferred no practical skills” and his two-year MBA “had cost too much time and money: ‘I wanted to change the return-on-investment equation in education by bringing down the costs and providing the skills that employers were desperate for’” (52; see 27, 81, 145, 172). MOOCs provided by Kahn Academy, SkilledUp, Udacity, and other non-university-based actors are another threat to MBA and other traditional professional programs (66, 104).

Alternative routes into the teaching profession provide another example. Rather than earning a graduate degree in education before entering the classroom, prospective teachers are increasingly turning to programs that allow them to teach while earning their credentials, often at newly created graduate schools of education located outside of traditional universities. These programs use curricula that focus more self-consciously on teaching specific pedagogical techniques and on performance-based assessment. Their faculties are comprised of experienced practitioners, who closely observe teaching in simulated and field settings and provide individualized feedback (83, 136, 151).

There can be little doubt that the intention of these non-university-based pathways into the professions is to offer more of the new learning competencies and more fully integrate disciplines, methodologies, statuses, and actors than do traditional law, business, education, and other professional schools. To be sure, these alternative programs may still unduly wall-off high-concept from experiential learning—albeit prioritizing the latter, not former—but they do seem to be altering the post-graduate calculations of aspiring professionals. To that extent, they too tend to confirm the insufficiency of traditional professional schools’ response thus far to changes in career demands and the nature of public problems. By hewing to the familiar role of programming students with advanced, specialized content knowledge and forms of critical thinking and technical skills directly associated with the application of those bodies of knowledge, professional schools do invite doubts about their capacity to prepare graduates for the multidimensional careers and public problems that are now theirs to manage.

PART III: A PATH FORWARD FOR PROFESSIONAL SCHOOLS

The trend away from professional schools and towards alternative opportunities poses risks, not only to those schools but also to potential applicants, employers, and the public. Historically, professional schools have played an important role in increasing professionals’ orientation toward public service, disadvantaged constituencies’ access to professional help, and professionals’ focus on high-concept ideas. As recent changes in medical and engineering education are starting to demonstrate, however, there are good reasons to think that university-based professional schools can continue to serve those valuable public functions and also effectively provide the learning competencies, problem-solving methodologies, and integration of disciplines, methodologies, and people that modern preparation and effective competition with alternative pathways require.

By their very nature and nomenclature, “univers-ities” aggregate in one place top experts associated with each of the fields, methodologies, and objectives that are ingredients of the learning

competencies. And through their various “colleg-ia”—co-research, co-authorship, and co-teaching as well as formal and informal workshops, conferences, and associations—university faculties have long histories of productive interaction among themselves. Although university-based experts have tended to collaborate with others on their own side of the various divides, it should not be too difficult to extend the flexibility that their within-category collaborations require to ones across the divides. Indeed, one of the reasons high-tech firms congregate near collections of universities is the ability of their employees to draw upon and synthesize the various bodies of knowledge, mindsets, and methodologies that their proximity to universities place at hand. In theory at least, there is no reason why universities cannot adapt those same synthetic processes to their collaborations, classrooms, seminars, and labs (50). Additionally, with modernized standards, professional schools’ systems for reviewing admissions credentials and validating work products through grading, publication decisions, and awards could, as in the past, provide prospective students, employers, colleagues, and clients with valuable vetting and validation services that other actors cannot provide as efficiently.

These efficiencies might particularly benefit public- and social-sector organizations and the constituencies that rely on them. Public and non-profit organizations tend to have fewer resources than their private-sector counterparts to devote to research and development and to identifying qualified employees and sources of expertise. And professional schools have long prepared students for and steered graduates into public service careers solving society’s toughest problems. If we forsake professional schools and rely on market forces to sort and distribute students, there is a genuine risk that a much higher proportion than already do will choose jobs based solely on pay and prestige.

Further, U.S. universities have a long history of evolving in order to meet their responsibility to equip students with the knowledge and skills needed to meet changing workplace demands and societal needs. Professional schools have been the site of much of this work, codifying and preparing graduates to apply the standards and doctrines of existing professions and developing and providing status for new professions (see, e.g., 155). Although it criticism from social commentators and front-line practitioners has often been required to prod universities into action, their newly created or reformed professional schools have swiftly moved to the forefront of social change.

During the Progressive Era, for instance, universities responded to criticism for failing to help the nation address problems associated with rising industrialization, urbanization, and immigration and to embrace new conceptions of social science and professional expertise by establishing schools of primary education, scientific forestry management, social work, nursing, and public health.² Later, the burgeoning field of public administration, the Depression, and the New Deal gave rise to schools of public affairs, starting with the (since renamed) Harvard Kennedy School, which aspired to teach research and policy skills to the vastly expanding corps of federal and state administrators and bureaucrats (122). In the wake of World War II, these schools expanded to include international affairs and undertook to prepare

² Examples of social critics and the professional schools they helped pioneer are: Edward Patterson Cubberly and Stanford School of Education, 1898; John Dewey and Teachers College, 1898, 1904; Gifford Pinchot and Yale School of Forestry, 1901; and Jane Addams and John Dewey, University of Chicago School of Social Work Administration, 1894, 1908 (152, 160, 177, 166). See also Columbia and Harvard Schools of Public Health, 1922, 1923 (30, 80).

students in applied economics, domain-specific centers, and (as a result of the Cold War) a range of international and regional studies (see, e.g., 29). The Civil Rights, Antiwar, and Feminist movements of the 1960s and 1970s similarly changed the landscape of law schools with the addition of hundreds of legal clinics serving impecunious, unpopular, and underrepresented individuals (155).

Also pointing the way to change are the ongoing improvements in medical and engineering programs. To be sure, both fields have idiosyncratic cost structures—engineering because most recipients of its degrees need only have completed four, not six or more years of post-high school education; medicine because of billions of dollars a year in federal subsidies for teaching hospitals to support the crucial experiential learning opportunities provided by medical internships and residencies in return for the hospitals’ agreement to treat Medicare, Medicaid, veteran, and other categories of patients (41). And both also have longer histories of more fully integrating and according equal status to academic and practical learning than is true of other professional schools.

Still, as to both funding and the integration of learning modalities, recent changes in medical and engineering schools can illuminate the path forward for other professional programs. First, those changes suggest that students are willing to pay professional school tuitions and that public support may be available as long as professional schools can demonstrate their capacity to provide modern learning competencies more effectively than alternative pathways into productive careers. To be sure, costs will have to be cut as well. Integrating undergraduate and graduate programs—as in the case of engineering programs—is one solution. Another is to integrate different universities by pooling the costs for new or revised programs serving students at multiple institutions. To reduce the relatively high cost of experiential methods needed to impart the new learning competencies (94), professional schools may have to increase the size of student cohorts, give students more responsibility for solving actual and bigger problems, and expect longer faculty hours.

Second, even given different starting points for medical and engineering schools compared to other professionals programs, the changes the former two have made recently reveal that faculties over time, and individual faculty members more abruptly, *can* remake themselves. And they can work happily and effectively across the disciplinary, specialization, and methodological lines that have been held dear in the past, cemented by pay and status differentials (see, e.g., 146, 168).

It is surely impossible from the current vantage point to identify the best funding and educational models for the professional programs that may emerge and succeed in the remainder of the 21st century. Instead, using the same problem-solving methodologies they should impart to their students—professional schools should experiment with and refine new curricula and pedagogies, in the process discovering what their true costs are and the best ways to sustain them. In the next section we examine examples of how professional education is already being reimaged in just these ways.

PART IV: CASE STUDIES OF CHANGE

If professional programs are to succeed in attracting and adequately preparing a new generation of professionals, they must provide students with the tools that a modern succession of careers and workplaces requires. Most importantly, they must help students develop the competencies associated

with learning to learn—including faculty with protocols for mobilizing a diverse array of stakeholders to specify aims, identify and rapidly test hypothesized drivers of success, compare results to expectations, and progressively adjust diagnoses and treatments until results align with aims. Professional programs should provide learning experiences in which students work in diverse teams to synthesize and apply information from across different fields to address multifaceted problems. To the extent possible, the programs should integrate professional disciplines and specialties; conceptual thinking and hands-on experience; research, pedagogy, and practice; ways that both students and organizations learn to learn; and learning and service. Students should experience the process of co-producing and consuming curriculum, knowledge, and learning with faculty, clients, and other professionals. The more realistic and meaningful the work in which these programs engage students, and the more mediated the work is by the technologies graduates will use in the workplace, the better the preparation is likely to be.

Responding to the concerns and opportunities addressed above, a number of professional schools, either across the board or through discrete centers of change, have begun experimenting with new, often more interdisciplinary (even, at times, inter-university) approaches to curricula, programming, credentialing, pedagogy, collaboration, and phasing of courses of study, among other changes. This section describes some of these trends and initiatives without claiming to be comprehensive. Because these programs are typically new, there are few scholarly or evaluative treatments of them, requiring us to rely primarily on their self-descriptions. At risk of reinforcing the disciplinary lines we have suggested need to be breached, we organize the section by types of professional schools, concluding with programs that cut across disciplines, including our own.

A. LAW SCHOOLS

Faced with declining applications, criticism from professional associations, and mandates from national and state regulatory bodies, many law schools are providing more and earlier opportunities for students to learn from experience in clinical and simulation settings, to work in teams to confront problems from the variety of contexts in which the problems actually arise and must be solved, and to study and be credentialed across the boundary between law and other disciplines (11, 26, 86, 148, 158).

An interesting example is Northwestern Law School in Chicago. Building on the strong reputation of its research-oriented, interdisciplinary faculty, the school's new strategic plan aspires to generate graduates with "the knowledge, skills, and perspective to engage *with* practice" in the learning-to-learn senses described above—readying them "to take ownership of their career development, to work constructively in teams, to exploit training opportunities, [and] to be true entrepreneurs in their own . . . life-long career paths" (95, 121).

Components of Northwestern Law's strategy include:

- Steps to develop a "modern, innovative curriculum . . . that encompasses emerging areas of law, is responsive to the needs and demands of the market, is rich in interdisciplinary training, and incorporates extensive experiential options along with opportunities for development of essential workplace skills and entrepreneurial thinking";

- A Center for Practice Engagement and Innovation to build the new curriculum, engage students with legal practice, and partner “with the profession to understand the current professional landscape and the practice community needs”;
- The Donald Pritzker Entrepreneurship Law Center, with the two-way mission of giving students “intensive, hands-on training” in “assist[ing] small business owners and entrepreneurs with their legal needs and problems” and “creat[ing] a curricular and extracurricular focus on how the skills that entrepreneurs need and learn can enrich the skills of lawyers”;
- An Innovation Lab to “focus on the legal, business, technical, teamwork, design and presentation skills involved in the innovation process” and engage students in simultaneously developing “a commercial product that will solve a legal problem,” “legal subject matter expertise in the[] area of focus,” and “the skills required to innovate in that area”;
- A Technology, Innovation, and Entrepreneurship concentration for students; and
- Expanded multidisciplinary degree opportunities with the university’s Schools of Management, Engineering, Medicine, and Arts and Sciences (2, 95, 121).

Without as fully breaching the various divides noted above, Stanford Law School has recently augmented its longstanding curriculum centered on doctrinal legal courses with an expanded array of experiential offerings, including:

- Eleven legal clinics that engage students full-time for a quarter in direct-service representation of clients in areas such as community development, criminal prosecution and defense, environmental protection, and special education hearings;
- Student-arranged externships for which they receive course credit for specified hours of work with public and non-profit legal organizations under faculty supervision;
- A broad set of negotiation and mediation simulation courses; and
- Twenty or so policy practicums in which teams of students work with faculty to provide clients with policy research and recommendations in law-inflected contexts like *California Prop. 64 and Marijuana Policy*; *Native Amicus Brief Project*; and *Policing and Technology* (153).

During their three years of law school, virtually all Stanford Law students enroll in a clinic and at least one of the other experiential opportunities listed.

B. EDUCATION SCHOOLS

A number of graduate schools of education have innovated in teacher and principal preparation. As early as 2006, Arthur Levine identified several university-based undergraduate and masters teacher-education programs that were substantially diminishing the usual focus on doctrine and theory and expanding the quantity and quality of professor-facilitated or mentored field work up to as much as 100% of students’ time for a year (98). Paralleling these efforts, the Carnegie Project on the Education Doctorate (CPED) has helped revamp the education doctorate (129-131). Recognizing that unlike in other fields, the doctorate in education exists to develop practitioners (147), CPED has supported doctoral programs in emphasizing “the generation, transformation, and use of professional knowledge and practice” (131).

University-based education schools also have created innovative programs for developing school district, charter management organization, and nonprofit leaders. In 2010, the Harvard Graduate School of Education introduced a Doctor of Education Leadership Program, a tuition-free, three-year doctoral program in education leadership taught by professors from Harvard's schools of education, business, and public policy (125, 171). This program aims to create "transformative leaders in preK-12 education" who are "uniquely prepared for system-level leadership positions in national nonprofits and philanthropies, state and federal departments of education, mission-driven for-profits, and school systems" (73). Its cohort model brings together students from diverse professional backgrounds for a one-year core education curriculum, a second year of interdisciplinary study in a number of Harvard departments, and a 10-month residency in a leadership role in an education sector organization (73). Using a similar model, the University of Virginia's Darden School of Business and Curry School of Education have partnered to create a MBA/M.Ed. degree to prepare "the next generation of leaders . . . who will innovate and transform education around the world" (169).

C. MEDICAL SCHOOLS

Supported by American Medical Association Accelerating Change in Medical Education grants, a number of medical schools are reforming their traditional two-plus-two curriculum of high-pressure lectures and testing on basic science subjects in years one and two and clinical practice thereafter (AMA 2015). Integrating these and many other changes is Harvard Medical School's new Pathways curriculum. Initially triggered by insights from clinicians, collaboratively generated by a wide segment of HMS professors, and continuously improved based on frequent feedback from surveys and student "curriculum development consultants," the new course of study:

- "flips" first-year classrooms, requiring students to read materials, watch brief concept videos, and take a readiness assessment before class, then spend class applying that knowledge in team-, case-, and problem-based learning exercises and faculty-led discussions "exploring the deeper principles behind the core content";
- engages students every other week in a half day of primary care office practice, connecting them to and letting them follow cases of individual patients;
- devotes the second year to hospital clerkships; and
- allows more student choice among advanced seminar-style classes and research projects in the last two years of instruction, supported by more vigorous curricular advising (13, 78, 108, 144).

Motivating these changes are (i) insights from the quality improvement movement tracing error in medical practice to misdiagnoses associated with rote rather than analytic and systems-based thinking; (ii) the link between rote thinking and the "cram, exam, forget" model characteristic of traditional medical education models; and (iii) the growing importance of learning to learn rather than memorizing biomedical knowledge that changes so rapidly that it makes no sense to absorb it all at once (see 162, 163). As Harvard Medical School Dean Edward Hundert sums it up, "Medical education is not about the transmission of information, but about the transformation of the learner" (144, 146).

D. BUSINESS AND MANAGEMENT SCHOOLS

Business schools have a long history of practical pedagogy associated with the case method; team-based exercises; adjunct faculties drawn from practice; deals- and product-focused simulations and competitions; investment labs; lecture courses with field observation components with a global focus; student-led consulting services; certification in particular practice settings; and a growing number of social entrepreneurship programs (14, 109). Even so, business schools face rising criticism and competition from accelerators and other non-university-based training programs (14, 16, 38, 110, 112).

Convinced that arranging management education around siloed disciplinary categories no longer makes sense, Yale's School of Management recently restructured its first-year curriculum (170). Now, students take courses like *Competitor, Investor, Customer, and Employee*, which consider how organizations work across dimensions to solve problems. The curriculum also uses "raw" case studies that present problems as they actually appear at the start—complete with data, financial statements, and video interviews with key actors—replacing the traditional after-the-fact, boiled-down case study built around a single decision point and result (164).

Taking a step further is Cornell Tech, a one-year MBA program developed by Cornell University's Graduate School of Management based on research by Bain & Co. and Deloitte. The research revealed that tech companies want employees who have spent more time than the typical MBA student working in related fields. They believe that a year is the optimal amount of time for attractive job candidates to invest in business school (33, 64). Cornell Tech selects students based on their creativity, technical skills, and experience in fields like computer science, engineering, and math. Students begin school with a 10-week immersive semester in Ithaca comprised of core business courses and leadership training intended to introduce them to design thinking, big data analytics, innovation and entrepreneurship, digital marketing and social media, project and product management, tech strategy, and entrepreneurial finance. Over the remaining nine months, along with further study in those areas, students engage in a "product" and a "startup" studio project in labs in New York City, working on "cross functional" teams to develop new business ideas from concept to launch in response to "challenges" presented to them by actual firms such as JP Morgan and Weight Watchers. Program components include "student-led scrums," in which students develop skills related to building new products and give and receive feedback, and "studio sprints"—short concentrated periods of intensive student project work uninterrupted by classes (34, 64).

E. "ENGINEERING AND" PROGRAMS

Stanford's Center for Biodesign is an example of a trend toward the adoption by various professional schools of action-oriented pedagogical practices from engineering. The Center brings together teams of practicing physicians and engineers to retool themselves as health technology entrepreneurs capable of thriving in a "value-driven innovation ecosystem." After "identifying an unmet clinical need," program fellows work together to generate a solution, often complete with a prototype and plan to bring the product to market (137). In the process, fellows develop and apply an understanding not only of medicine and engineering but also of myriad other subject areas, including technology, finance, marketing, patent law, and other types of regulation (137).

Two programs at MIT recognize both the value to other professional disciplines of hands-on engineering pedagogy and the need to broaden the traditional core curriculum of engineering specialties to prepare graduates for the leadership as well as technical roles that a typical engineering career now entails are two new programs at MIT. First is a dual business/engineering masters program culminating in a Leaders for Global Operations (LGO) degree. This program offers students the opportunity to learn from faculty members who “have shaped . . . the fields of engineering and management,” offers faculty the chance to collaborate on courses and multidisciplinary research, and fosters “a dynamic academic environment that instills in students the ability to analyze operational challenges through a technical lens and to implement solutions from a management perspective” (111). The second MIT program enables engineering students to cross-register in the Sloan School of Management and participate in internships to broaden their management skills and experiences (48). Similarly, Carnegie Mellon offers a Master of Integrated Innovation for Products & Services degree, bringing together business, design, and engineering disciplines and faculty (22). And faculty and students in Stanford’s mechanical engineering program regularly partner with colleagues in other departments, including Art and Art History, Biology, Mathematics, and Medicine (154).

F. A BUSINESS, EDUCATION, LAW, AND PUBLIC POLICY CONSORTIUM

The Columbia University Center for Public Research and Leadership (CPRL) brings together students from multiple disciplines and universities, with the mission of reinventing professional education while revitalizing public education and improving the lives and life chances of the nation’s children (28). Housed at Columbia Law School, CPRL brings together upper-level graduate students from over twenty business, education, law, and policy schools from a dozen universities for an immersive semester during which students devote at least forty hours a week to the program. Students pay tuition at their home institution, which in turn pays CPRL a modest per pupil fee to cover overhead. CPRL has three main intermediate objectives:

- creating a stream of talented and committed learning-oriented graduates into transformative organizations in the education sector (to date, CPRL has had about 250 students; approximately 70% of its graduates work after graduation in the education sector);
- providing short-term consulting and research support to those same kinds of organizations (to date, CPRL has conducted over 100 consulting projects for over 40 clients); and
- modeling new, broadly integrative forms of professional education.

Components of the program include:

- a seminar focused on comparative governance structures—particularly, “democratic experimentalist” learning structures—in use by public- and private-sector organizations worldwide and their application to public education;
- skills training in the application of an “evolutionary learning” framework applicable across work settings to “see” the system; organize its goals and plans around an operationalized theory of action; evaluate success at each step; and use the results in broadly participatory teams to develop and rapidly test improvements;

- a consulting project, on which an interdisciplinary student team guided by a professional on-staff engagement manager applies the course’s “learning” concepts and skills to help solve a multidimensional problem in collaboration with an education-sector client (a state or local school system, charter management organization, or other non-profit or philanthropic foundation) that pays for the work at cost;
- front-loading of the seminar and skills training in the first three weeks, allowing full-time project work later in the semester;
- project rounds in which students use a protocol for identifying and getting the advice of members of other teams on their projects;
- various feedback mechanisms through which students generate and often lead programmatic enhancements; and
- CPRL Scholars awards of up to \$20,000 in tuition support for a limited number of students selected based on merit and need and a legally binding commitment to spend three of their first five years after graduation working full time in public or non-profit public-sector organizations.

Through these steps, CPRL students operate at once across most of the usual divides, integrating different disciplines, pedagogy and practice, high-concept and experiential learning, individual and institutional learning, learning and service, professionals and clients, faculty and students, and, to a degree, professional schools and universities. Relatively large class sizes (35-40 students/semester), modest per-pupil contributions from participating professional programs, and modest fees from education-sector organizations in return for services that support CPRL’s sector-wide talent creation (analogously to the Medicaid subsidy for medical schools) enable CPRL to be self-supporting aside from the founding director’s salary, paid for by Columbia Law School, and tuition support awards supported by donations. Challenges include connecting concepts and skills to project-embedded learning opportunities in real time; misalignment between CPRL’s learning structures and some clients’ rigid governance structures; the reluctance of some professional programs to “share” their students; heavy transaction costs associated with professional school partnerships; and the sustainability of the engagement manager role, in which professionals must excel at two demanding, often conflicting, jobs: giving clients high-quality work products and giving students agency, mentorship, and professional support.

CONCLUSION AND CONVENING QUESTIONS:

Pending testing and revision at the upcoming Convening, our conclusions are straightforward, if also incomplete. In the modern workplace, the professional’s edge changes. Instead of an ability to master and manipulate what she knows and others lacking her expertise cannot know, the professional must have a capacity, working with other experts and stakeholders whose expertise and local knowledge she cannot hope to master, to wring as much new knowledge as possible as rapidly as possible out of the situation and people at hand. University-based professional schools have taken uneven, often halfhearted steps to enable their students with these capacities, evidently impelling prospective students and employers to look elsewhere for the necessary learning capacities. Although there is a way forward for professional schools, it will require them to cross divides they have long honored—between disciplines, specialties, pedagogy and practice, conceptual and experiential learning, individual and institutional

learning, learning and service, professional and client, and faculty and student. A variety of professional educators—including those who are about to convene—already are showing the way forward.

In addition to wondering how far these conclusions have missed the mark, we know we have not yet addressed a number of other key issues we hope to explore at the Convening. Among these are the obstacles that impede the way forward for professional schools, how consistent those obstacles are across disciplines and contexts, and what we can do collectively to support and advocate for additional progress. As such, we pose the following questions for consideration as the Convening approaches:

1. To what extent are professional careers and the problems professionals face changing in the ways we suggest?
2. To what extent are the competencies modern professionals need the “learning competencies” we have identified?
3. Are we right about the importance, as well, of problem-solving methodologies?
4. How useful are the “divides” we identify—between different bodies of knowledge, ways and objectives of learning, and potential participants in the learning process—for organizing thinking about how professional schools can impart important competencies and change?
5. How accurately have we assessed the extent to which professional schools have responded to the changing needs of their students and the public—including in the distinctions we’ve drawn between business, education, and law schools on the one hand and engineering and medical schools on the other?
6. What can we learn from the many professions and professional schools we have not addressed?
7. We devote a lot of attention to changes in enrollment in professional schools and alternative forms of professional preparation—in the process suggesting conclusions that might be drawn about inevitably obscure motivations from admittedly incomplete information. We do so for a strategic reason: to mobilize evidence that, weak as it may be, may have more capacity than other arguments to motivate professional schools to act, fearing for their futures. How badly have we overplayed our hand? How much should we try to prod professional schools to change? How else might we achieve this objective?
8. *Is there a path forward for professional schools? If so, have we accurately described it, again with reference to ways those schools separate what in the future should be integrated?*
9. Have we identified appropriate examples of change? Have we accurately described them? What others should we include?
10. In regard to the examples we give and more generally, what obstacles to change are being encountered? How consistent are those obstacles across professional contexts? How corrigible are these problems?
11. What can we do individually and as a group to avoid these obstacles and otherwise facilitate and advocate change?

APPENDIX

A. YALE OFFICE OF CAREER STRATEGY SURVEY OF GRADUATES SIX MONTHS AFTER COMMENCEMENT

(Response rates > 90%)

Career destinations of Yale College graduates 6 months after commencement	2010	2013	2014	2015	2016
Working	75%	72.6%	74.2%	76.0%	76.3%
Attending Graduate or Professional School	21%	18.3%	17.0%	20.0%	17.9%

Degree programs of Yale College grads in grad. school 6 months after commencement	2013	2014	2015	2016
Master's Degree (e.g., MA, MS, MEng, MBA)	36.7%	35.6%	31.4%	41.7%
Medical (e.g., MD, DO, DDS, DVM)	27.6%	24.0%	28.0%	22.0%
Ph.D	16.8%	20.2%	20.3%	19.7%
Law Degree (e.g. JD or LLB)	9.7%	9.1%	13.0%	10.8%
Other degree or certificate	9.2%	11.1%	7.2%	5.8%

Jobs and salaries of Yale College graduates who are working 6 months after commencement	2013	2014	2015	2016
Consulting	13.5%	12.4%	15.7%	15.3%
Finance	9.5%	13.9%	15.7%	15.3%
Tech/Engineering/Project Management	7.1%	9.7%	13.1%	16.6%
Healthcare/Medical/Pharmaceutical	5.8%	5.2%	6.2%	8.6%
Law	3.2%	5.3%	3.2%	5.5%
Starting salary of \$70,000 or more	26.3%	28.2%	39.4%	42.1%
Starting salary of \$100,000 or more	5.7%	7.5%	9.8%	10.5%

B. THE HARVARD CRIMSON SURVEY OF POST-GRADUATE PLANS, 2007-2016

Graduating seniors as of May

	2007	2009	2013	2014	2015	2016
Reported response rate	-	-	nearly ½	nearly ½	nearly ½	>½
Entering workforce	-	-	61%	70%	71%	66%
Entering graduate school	-	-	18%	18%	15%	14%
Entering academic/research field	-	-	-	7%	7%	7%

Among Harvard Graduates entering the workforce

Entering consulting, finance, tech/eng.			44%	46%	48%	53%
Entering consulting, finance	47%	20%	31%	31%	34%	40%
Planning to be in same in 10 years	-	-	6%	6%	5%	7%
Entering consulting	-	-	16%	14%	15%	21%
Planning to be in consulting in 10 years	-	-	<1%	<1%	<1%	1%
Entering finance	-	-	15%	17%	18%	18%
Planning to be in finance in 10 years	-	-	5%	6%	5%	6%
Entering tech/engineering	-	-	13%	15%	14%	14%
Planning to be in tech/eng. in 10 years	-	-	9%	9%	7%	7%
Entering health field	-	-	3%	5%	5%	4%
Planning to be in health in 10 years	-	-	20%	16%	20%	15%
Entering K-12 education	-	-	8%	8%	7%	4%
Planning to be in K-12 ed. in 10 years	-	-	8%	5%	4%	3%
Entering public service/non-profit	-	-	7%	9%	8%	4%
Planning to be in same in 10 years	-	-	8%	6%	7%	6%
Entering law field	-	-	-	-	-	4%
Planning to be law field in 10 years	-	-	-	-	-	7%
Expecting to make ≥ \$70,000 in first year	-	-	-	38%	41%	53%
Expecting to make ≥ \$90,000 in first year	-	-	-	12%	16%	20%
Expecting to make >\$110,000 in first year	-	-	-	4%	8%	9%

REFERENCES

1. Ansell, C. (2011). *Pragmatist governance: Re-imagining institutions and democracy*. Oxford, UK: Oxford University Press.
2. Anyaso, H.H. (2016, May 16). Law curriculum to address technologically driven economy. *Northwestern Now*. Retrieved from <https://news.northwestern.edu/stories/2016/05/new-law-curriculum-addresses-technologically-driven-economy/>.
3. American Medical Association. (2015). *Accelerating change in medical education: Creating the medical school of the future*. Retrieved from https://www.ama-assn.org/sites/default/files/media-browser/public/about-ama/ace-monograph-interactive_0.pdf.
4. American Society for Quality. (2017) Six Sigma tools. Retrieved from <http://asq.org/learn-about-quality/six-sigma/tools.html>.
5. Association of American Medical Colleges. (2017). *Curriculum inventory and reports*. Retrieved from <https://www.aamc.org/initiatives/cir/>.
6. Association of Schools & Programs of Public Health. (2015). *Framing the future task force*. Retrieved from <http://www.aspph.org/educate/framing-the-future/>.
7. Averson, P. (2017, February). *The Deming Cycle*. Balanced Scorecard Institute. Retrieved from <https://www.balancedscorecard.org/Resources/Articles-White-Papers/The-Deming-Cycle>.
8. Batalden, P. (2016). *Continuing Professional Development in Medicine and Health Care: Better Education, Improved Outcomes, Best Care*. Manuscript in Preparation.
9. Batalden, M., Batalden, P., Margolis, P., Seid, M., Armstrong, G., Opiari-Arrigan, L., & Hartung, H. (2015). *Coproduction of healthcare service*. *BMJ Quality & Safety in Healthcare*. Retrieved from <http://qualitysafety.bmj.com/content/early/2015/09/16/bmjqs-2015-004315>.
10. Batalden, P. B., & Davidoff, F. (2007). *What is "quality improvement" and how can it transform healthcare?* *BMJ Quality & Safety in Healthcare*. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2464920/>.
11. Bayless, M. (2016). *Legal education for a changing legal profession, part 1 and 2*. Mitchell Lecture Series, SUNY Buffalo Law School. Retrieved from <http://www.law.buffalo.edu/news/mitchell/2016/part-1.html> and from <http://www.law.buffalo.edu/news/mitchell/2016/part-2.html>.
12. Beaudry, P., Green, D. A., & Sand, B. M. (2016). *The great reversal in the demand for skill and cognitive tasks*. *Journal of Labor Economics*, 34 (1), 199-247.
13. Beck, M. (2015, February 16). *Innovation is sweeping through U.S. medical schools*. *The Wall Street Journal*. Retrieved <http://www.wsj.com/articles/innovation-is-sweeping-through-u-s-medical-schools-1424145650>.
14. Bennis, W. G., & O'Toole, J. (2005). *How business schools lost their way*. *Harvard Business Review*, 83 (5), 96-104.

15. Berger, W. (2016, July 2). The power of 'why?' and 'what if? The New York Times. Retrieved from <https://www.nytimes.com/2016/07/03/jobs/the-power-of-why-and-what-if.html>.
16. Boston University Questrom School of Business. (2014). Reimagining business education: A world of ideas. Business Jam. Retrieved from <https://cdn.questromworld.bu.edu/businesseducationjam/files/2015/04/Business-Education-Jam-Envisioning-the-Future.pdf>.
17. Bothwell, E., (2016, November 14). U.S. fears decline in international students after Trump election. Times Higher Education. Retrieved from <https://www.timeshighereducation.com/news/us-fears-decline-international-students-after-trump-election#survey-answer>.
18. Brown, V. A., Harris, J. A., & Russell, J. Y. (2010). Tackling wicked problems through the transdisciplinary imagination. Washington, D.C.: Earthscan.
19. Bryk, A., Gomez, L., Grunow, A. & LeMahieu, P. (2015). Learning to improve: How America's schools can get better at getting better. Cambridge, MA: Harvard Education Press.
20. Byrne, J. A. (2013, July 23). Cornell's \$95K one-year MBA in New York. Poets & Quants. Retrieved from <http://poetsandquants.com/2013/07/23/cornells-95k-one-year-mba-in-new-york/>.
21. Campbell, D. T. (1957). Factors relevant to the validity of experiments in social settings. *Psychological Bulletin*, 54 (4), 297-312.
22. Carnegie Mellon University. (Undated). Master of integrated innovation for products & services (Pittsburgh Campus). Integrated Innovation Institute. Retrieved from <https://www.cmu.edu/integrated-innovation/degrees/miips/index.html>.
23. Cassidy, R.M. (2013). Can law schools prepare students to be practice ready? [PDF transcription of 2013 Chapman Law Review symposium] Retrieved from <http://lawdigitalcommons.bc.edu/cgi/viewcontent.cgi?article=1726&context=lsfp>.
24. Chance, S., Marshall, J., & Duffy, G. (2016). Using architecture design studio pedagogies to enhance engineering education. Dublin Institute of Technology. Retrieved from <http://arrow.dit.ie/engscheleart2/102/>.
25. Chassin, M. R., & O'Kane, M. E. (2010). History of the quality improvement movement. Toward Improving the Outcome of Pregnancy III, 2. Retrieved from <http://www.marchofdimes.org/materials/toward-improving-the-outcome-of-pregnancy-iii.pdf>.
26. Chemerinsky, E. (2008). Rethinking legal education. *Harvard Civil Rights-Civil Liberties Law Review*, 43, 595-598.
27. Colao, J. (2012, January 12). Eight reasons startup incubators are better than business schools. Forbes. Retrieved from <https://www.forbes.com/sites/jjcolao/2012/01/12/eight-reasons-startup-incubators-are-better-than-business-school/#24ca921c7bc6>.
28. Columbia Law School Center for Public Research and Leadership. (Undated). About CPRL. Retrieved from <http://www.law.columbia.edu/public-research-leadership>.

29. Columbia School of International and Public Affairs. (Undated). Mission & History. Retrieved from <https://sipa.columbia.edu/experience-sipa/about-sipa/mission-and-history>.
30. Columbia University Mailman School of Public Health (CUMSPH). (Undated). Mission & History. Retrieved from <https://www.mailman.columbia.edu/about/mission-history>.
31. Combes, J. R., & Arespachochaga, E. (2012). Physician competencies for a 21st century health care system. *Journal of Graduate Medical Education*, 4(3), 401-405.
32. Cornell Engineering. (2016). Cornell engineering: Graduate degrees. Cornell Engineering. Retrieved from <https://www.engineering.cornell.edu/academics/graduate/degrees/>.
33. Cornell Tech. (Undated). Culture: Fostering creativity and collaboration. Retrieved from <https://tech.cornell.edu/studio/culture>.
34. Cornell Tech. (Undated). Johnson Cornell Tech MBA. Retrieved from https://tech.cornell.edu/programs/masters-programs/johnson-cornell-tech-mba?_ga=1.84355545.1162335104.1480186320.
35. Council for the Accreditation of Educator Preparation (CAEP). (2017). History of CAEP. Retrieved from <http://www.caepnet.org/about/history>.
36. Damast, A. (2011, December 19). Foreign enrollment surges at U.S. B-schools. Bloomberg. Retrieved from <https://www.bloomberg.com/news/articles/2011-12-19/foreign-enrollment-surges-at-u-dot-s-dot-b-schools>.
37. Deming, W. E. (1981). Improvement of quality and productivity through action by management. *Global Business and Organizational Excellence*, 1(1), 12-22.
38. Denning, Steve (Feb. 13, 2013). "What's Wrong With Today's Business Schools?" Forbes. Retrieved from <https://www.forbes.com/sites/stevedenning/2013/02/26/whats-wrong-with-todays-business-schools/#3fa9c2547158>.
39. Dewey, J. (1933). *How we think*. Boston, MA: D.C. Heath & Co.
- 40.
41. Dhar, V. (2013, January 7). Business schools face a challenging future. *The Financial Times*. Retrieved from <http://www.ft.com/cms/s/2/e111f93e-3a39-11e2-a00d-00144feabdc0.html>.
42. Dickinson, T. A. (2004). The future of financing medical education: Questions about Medicare's role. *The American Journal of Medicine*, 117(4), 287-290.
43. Dimyan-Ehrenfeld, J. (2013, July 18). Teacher training programs need a reboot. *Washington Post*. Retrieved from https://www.washingtonpost.com/opinions/teacher-training-programs-need-a-reboot/2013/07/18/3d359e5a-eb47-11e2-a301-ea5a8116d211_story.html.
44. Dorf, M. C., & Sabel, C. F. (1998). A constitution of democratic experimentalism. *Columbia Law Review*, 98, 267-473.
45. Douglas-Gabriel, D. (2015, April 20). Why law schools are losing relevance—and how they're trying to win it back. *Washington Post*. Retrieved from

https://www.washingtonpost.com/business/economy/why-law-schools-are-losing-relevance--and-how-theyre-trying-to-win-it-back/2015/04/20/ca0ae7fe-cf07-11e4-a2a7-9517a3a70506_story.html?utm_term=.3c5167c60781.

46. Duderstadt, J. J. (2008). Engineering for a changing world. The Millennium Project, The University of Michigan. Retrieved from http://milproj.dc.umich.edu/publications/EngFlex_report/download/EngFlex%20Report.pdf
47. Duhigg, C. (2016, February 25). What Google learned from its quest to build the perfect team. The New York Times. Retrieved from <https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html>
48. Dustman, K. & Gallagher, A. (2016). Analysis of ABA law school applicants by age group: 2011-2015. Law School Admission Council. Retrieved from [http://www.lsac.org/docs/default-source/data-\(lsac-resources\)-docs/analysis-applicants-by-age-group.pdf](http://www.lsac.org/docs/default-source/data-(lsac-resources)-docs/analysis-applicants-by-age-group.pdf)
49. Eames, P. (2008, February 1). SDM brings a new class into the action. Retrieved from <https://sdm.mit.edu/sdm-brings-a-new-class-into-the-action>
50. The Economist. (2015, March 19). Attack of the bean-counters. The Economist. Retrieved from <http://www.economist.com/news/business/21646741-lawyers-beware-accountants-are-coming-after-your-business-attack-bean-counters>
51. The Economist. (2009, Aug. 24). Clustering. The Economist. Retrieved from <http://www.economist.com/node/14292202>
52. The Economist. (2016, June 25). Automation and anxiety: Will smarter machines cause mass unemployment? (2016, January). The Economist, Special issue: Artificial intelligence, the impact on jobs. Retrieved from <http://www.economist.com/news/special-report/21700758-will-smarter-machines-cause-mass-unemployment-automation-and-anxiety>.
53. The Economist. (2017, January 12). Lifelong learning is becoming an economic imperative, The Economist. Retrieved from <http://www.economist.com/news/special-report/21714169-technological-change-demands-stronger-and-more-continuous-connections-between-education>
54. Education Advisory Board. (2014). Design thinking business programs: Industry futures series. Retrieved from <https://www.eab.com/-/media/EAB/Research-and-Insights/COE/Success-Pages/2016/Design-Thinking-Business-Programs-White-Paper.pdf>
55. Edwards, Harry (1992). The growing disjunction between legal education and the legal profession. Michigan Law Review, 91, 34-42
56. Ferenstein, G. (2015, February 6). Google executives explain why the MBA approach to building things is 'stupid.' Venturebeat.com. Retrieved from <http://venturebeat.com/2015/02/06/google-executives-explain-why-the-mba-approach-to-building-things-is-stupid/>.
57. Foggatt, T. (Undated, 2014). 2014 career paths revealed. Yale Daily News. Retrieved from <http://technology.yaledailynews.com/features/2014-careers/>

58. Gallagher, S. (2014, April 4). In defense of the Master's degree. *Forbes*. Retrieved from <http://www.forbes.com/sites/realspin/2014/04/04/in-defense-of-the-masters-degree/#3d4feaea1d0b>
59. Gandel, C. (2013, March 14). Revamped engineering programs emphasize real-world problem solving. *U.S. News & World Report*. Retrieved from <http://www.Unews.com/education/best-graduate-schools/articles/2013/03/14/revamped-engineering-programs-emphasize-real-world-problem-solving?page=2>
60. Garvin, D. A., & Srikant, M. D. (2008) Business summit: Business education in the 21st century. [Summary] Retrieved from <http://hbswk.hbs.edu/item/business-summit-business-education-in-the-21st-century>
61. Gawande, A. (2007, December 10). Annals of medicine: The checklist. *The New Yorker*. Retrieved from <http://www.newyorker.com/magazine/2007/12/10/the-checklist>
62. Gerkman, A. & Cornett, L. (2016). Foundations for practice: The whole lawyer and the character quotient. Access Group Center for Research & Policy Analysis Research, Paper No. 16-04. Retrieved from <https://ssrn.com/abstract=2823835>
63. Gerlock, G. (2016, December 26). Lawyer shortage in some rural areas reaches epic proportions. *NPR*. Retrieved from <http://www.npr.org/2016/12/26/506971630/nebraska-and-other-states-combat-rural-lawyer-shortage>
64. Goodman, J. C. (2014, September 11). Why are doctors so unhappy? *Forbes*. Retrieved from <https://www.forbes.com/sites/johngoodman/2014/09/11/why-are-doctors-so-unhappy/#2a7d71681771>
65. Griswold, A. (2013, December 18). Cornell's new MBA could shake up how leaders emerge in tech. *Business Insider*. Retrieved from <http://www.businessinsider.com/cornell-johnson-tech-mba-2013-12>
66. Guthrie, D. (2013, January 22). Corporate universities: An emerging threat to graduate business education. *Forbes*. Retrieved from <https://www.forbes.com/sites/dougghuthrie/2013/01/22/corporate-universities-an-emerging-threat-to-graduate-business-education/#1854398c17a0>
67. Hagel III, J., Brown, J.S., Mathew, R., Wooll, M. & Tsu, W. (2015). The lifetime learner. *The Atlantic* [sponsored content by Deloitte] Retrieved from <http://www.theatlantic.com/sponsored/deloitte-shifts/the-lifetime-learner/256/>.
68. Hamilton, N. W. (2015). Roadmap: The law student's guide to preparing and implementing a successful plan for meaningful employment. Chicago, IL: ABA Book Publishing.
- 68A. Harvard Business School. (Undated). Financial Aid Cost Summary, 2016. Retrieved from <http://www.hbs.edu/mba/financial-aid/Pages/cost-summary.asp>.
69. Hamilton, N. W. (Forthcoming 2017). Formation-of-an-ethical-professional-identity (professionalism) learning outcomes and e-portfolio formative assessments. *The University of the Pacific Law Review*. Retrieved from https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=2910795

70. The Harvard Crimson. (Undated, 2014). The class of 2014 by the numbers. Retrieved from <http://features.thecrimson.com/2014/senior-survey/>.
71. Ibid. (Undated, 2015). The class of 2015 by the numbers. Retrieved from <http://features.thecrimson.com/2015/senior-survey/>.
72. Ibid. (Undated, 2016). The class of 2016 by the numbers. Retrieved from <http://features.thecrimson.com/2016/senior-survey/post-harvard/>.
73. Ibid. (2013, May 28). Where we stand: The class of 2013 senior survey. Retrieved from <https://www.thecrimson.com/article/2013/5/28/senior-survey-2013/>.
74. Harvard Graduate School of Education. (Undated). Doctor of Education Leadership. Retrieved from <https://www.gse.harvard.edu/doctorate/doctor-education-leadership>.
75. Harvard Graduate School of Education. (Undated, 2016). Tuition and costs, 2016-17. Retrieved from <https://www.gse.harvard.edu/financialaid/tuition>.
76. Harvard Law School. (Undated, 2015). Additional employment data, class of 2015. Retrieved from <http://hls.harvard.edu/dept/ocs/recent-employment-data/additional-employment-data/>.
77. Ibid. (2017). Cost of attendance. <http://hls.harvard.edu/dept/sfs/financial-aid-policy-overview/student-financial-aid-budget/>.
78. Harvard Medical School. (Undated). Medical education student handbook 6.01: Tuition and fees for 2016-17, HMS. Retrieved from <http://medstudenthandbook.hms.harvard.edu/601-tuition-and-fees>.
79. Harvard Medical School. (2017). Student curriculum development consultants. Retrieved from <https://hms.harvard.edu/departments/academy/pedagogy-pathways-curriculum-series>.
80. Ibid. (2017). Pathways. Retrieved from <https://hms.harvard.edu/departments/medical-education/md-programs/pathways>.
81. Harvard T.H. Chan School of Public Health. (Undated). History of the school. Retrieved from <https://www.hsph.harvard.edu/history-of-the-school/>.
82. Hathaway, I. (2016, February 17). Accelerating growth: Startup accelerator programs in the United States. Advanced Industry Series, Brookings Institute. Retrieved from <https://www.brookings.edu/research/accelerating-growth-startup-accelerator-programs-in-the-united-states/>.
83. Heffernan, M. (2013, April 10). Do business schools have a future? CBS MoneyWatch. Retrieved from <http://www.cbsnews.com/news/do-business-schools-have-a-future/>.
84. High Tech High (HTH) Graduate School of Education. (2016). Our approach: Challenging common assumptions, HTH. Retrieved from <http://gse.hightechhigh.org/ourApproach.php>.
85. Hodara, J.S. & Diarte Edwards, C. (2014, April 16). Getting into B-school when you're 30+, Poets & Quants. Retrieved from <http://poetsandquants.com/2014/04/16/overcoming-b-schools-20-something-preference/>.

86. Holland, K. (2009, March 14). Is it time to retrain B-schools? The New York Times. Retrieved from http://www.nytimes.com/2009/03/15/business/15school.html?_r=0.
87. Holmquist, K. (2012). Challenging Carnegie. *Journal of Legal Education*, 61(3), 353-378.
88. Hoover, D. (2014, April 4). Career accelerators: The future of adult education. *Wired*. Retrieved from <http://insights.wired.com/profiles/blogs/career-accelerators-the-future-of-adult-education#axzz4ZwvKXChG>.
89. Hubbard, G. (2007). The 21st century MBA. Plenary Session Address, Association to Advance Collegiate Schools of Business Deans' Conference, Las Vegas, February 8, 2007.
90. Jablow, M. (2015, May). The public health imperative: Revising the medical school curriculum. AAMC. May 2015. <https://chec-cesc.afmc.ca/en/public-health-education/resource/public-health-implicative-revising-medical-school-curriculum>.
91. Jacoby, Tama (2015, May 20). Technology isn't a job killer. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/technology-isnt-a-job-killer-1432161213>
92. Kitroeff, N, & Grant, S. (2015, September 22). Business schools see broadest increase in applications since the recession. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/articles/2015-09-22/business-schools-see-broadest-increase-in-applications-since-the-recession>.
93. Kitroeff, N. (2016, January 26). The best law schools are attracting fewer students. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/articles/2016-01-26/the-best-law-schools-are-attracting-fewer-students>.
94. Kitroeff, N. (2015, May 12). Lawyers don't know enough about business. Law schools are trying to fix that, *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/articles/2015-05-12/law-schools-teach-business-to-make-graduates-more-employable>.
95. Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4 (2), 193-212.
96. Leading law: Northwestern Pritzker School of Law strategic plan. (Undated.) Northwestern Pritzker School of Law. Retrieved from <http://www.law.northwestern.edu/about/leadership/documents/Strategic-Plan-Northwestern-Pritzker-School-of-Law.pdf>.
97. Lehtinen, E., Hakkarainen, K., & Palonen, T. (2014). Understanding learning for the professions: How theories of learning explain coping with rapid change. In S. Billett, C. Harteis, & G. Gruber (Eds.), *International Handbook of Research in Professional and Practice-Based Learning* (pp. 199-224). Netherlands: Springer International Handbooks in Education.
98. Leichter, M. (2012, April 19). What the numbers don't say: Law school applicants are getting older, not dumber. *American Law Daily*. Retrieved from <http://amlawdaily.typepad.com/amlawdaily/2012/04/what-the-numbers-dont-say-law-school-applicants-are-getting-older-not-dumber.html>.

99. Levine, A. E. (2006 September). Educating school teachers. The Education Schools Project. Retrieved from http://www.edschools.org/teacher_report.htm.
100. Liebman, J. S., & Sabel, C. F. (2003). A public laboratory Dewey barely imagined: The emerging model of school governance and legal reform. *N.Y.U. Review of Law & Social Change*, 28, 183-304.
101. Loftus, M. (2015, March 11). Drop in applications spurs changes at law schools. *U.S. News & World Report*. Retrieved from <http://www.usnews.com/education/best-graduate-schools/top-law-schools/articles/2015/03/11/drop-in-applications-spurs-changes-at-law-schools>.
102. Ludmerer, K. M. (1999). *Time to heal: American medical education from the turn of the century to the era of managed care*. Oxford University Press.
103. Marshall, M., Pronovost, P., & Dixon-Woods, M. (2013). Promotion of improvement as a science. *The Lancet*, 381 (9864), 419-421.
104. Massari, P. (2012, March 22). The hub of the post-college universe: Career services helps students to prepare for life after Harvard. *Harvard Gazette*. Retrieved from <http://news.harvard.edu/gazette/story/2012/03/the-hub-of-the-post-college-universe/>.
105. McGuire, R. (2014, September). Skipping the MBA for online ed? SkilleUp B28 Blog. Retrieved from <https://www.saylor.org/site/wp-content/uploads/2014/09/SkippingTheMBAForOnlineEd.pdf>.
106. Medina, J. (2009, October 22). Teacher training termed mediocre. *The New York Times*. Retrieved from <http://www.nytimes.com/2009/10/23/education/23teachers.html>.
107. Meister, J. (1998). *Corporate universities: Lessons in building a world-class work force* (2d ed.). New York: McGraw-Hill.
108. Michigan State University. (2016, March). T-summit 2016. Retrieved from <http://tsummit.org/t>.
109. Miller, J. (2015, July 30). Pathways to the future of medicine. *Harvard Medical School News*. Retrieved from <https://hms.harvard.edu/news/pathways-future-medicine>.
110. Milway, K. S., & Goulay, C. D. (2013). The rise of social entrepreneurship in B-Schools in three charts, *Harvard Business Review*. Retrieved from <https://hbr.org/2013/02/the-rise-of-social-entrepreneur>.
111. Mitroff, I.I., O'Connor, E.S. & Alpaslan, C.A. (2014, May 28). What's wrong with today's business schools? *The World Financial Review*. Retrieved from <http://www.worldfinancialreview.com/?p=1908>.
112. MIT LGO: Program Experience. (2016, April 10). MIT leaders for global operations. MIT. Retrieved from <https://lgo.mit.edu/operations-management-mba-engineering-masters/>.
113. Montgomery, A. (2015, April 24). The problem with business schools today (a systems view). *Intelligent Management*. Retrieved from <https://www.intelligentmanagement.ws/problem-business-schools-today-systems-view/>.
114. Moules, J. (2017, February 6). International U.S. business school students fear a travel ban. *Financial Times*. Retrieved from <https://www.ft.com/content/57a026c8-e7a8-11e6-967b-c88452263daf>

115. Murray, S. (2014, March 4). Challenging times ahead for business schools and MBA jobs. BusinessBecause. Retrieved from <http://www.businessbecause.com/news/business-finance-masters/2418/challenging-times-ahead-for-business-schools-mba-jobs>.
116. Murthy, S. (2014 January 6). Ten job titles that didn't exist 5 years ago. LinkedIn Talent Blog. Retrieved from <https://business.linkedin.com/talent-solutions/blog/2014/01/top-10-job-titles-that-didnt-exist-5-years-ago-infographic#>.
117. National Institute for Professional Practice. (2016a). The 21st century workplace: Part 1. Retrieved from http://www.professionalpractice.org/about-us/skills_for_success/.
118. National Institute for Professional Practice. (2016b.) The 21st century workplace: Part 2. Retrieved from April 18, 2016. http://www.professionalpractice.org/about-us/skills_for_success_2/.
119. Neil, M. (2015, April 16). Law school brain drain: Fewer individuals with high LSAT scores are applying, ABA Journal. Retrieved from http://www.abajournal.com/news/article/law_school_brain_drain_fewer_individuals_with_high_lsat_scores_are_applying/
120. Nisen, Max. (2015, March 10). US students are fleeing law schools and pouring into engineering. Retrieved from <https://qz.com/358929/law-school-enrollment-decline/>
121. North Central Regional Educational Laboratory & the Metiri Group. (2003). EnGauge 21st century skills: Literacy in the digital age. North Central Regional Educational Laboratory Retrieved from <http://pict.sdsu.edu/engauge21st.pdf>.
122. Northwestern Pritzker School of Law. (2017). Donald Pritzker Entrepreneurship Law Center. Retrieved from <http://www.law.northwestern.edu/research-faculty/entrepreneurship/>.
123. O'Neill, Robert (2011, Autumn). A New Discipline. Harvard Kennedy School Magazine. Retrieved from <https://www.hks.harvard.edu/news-events/publications/hks-magazine/archives/autumn-2011/a-new-discipline/>.
124. Otterman, S. (2011, July 21). Ed schools' pedagogical puzzle. The New York Times. Retrieved from <http://www.nytimes.com/2011/07/24/education/edlife/edl-24teacher-t.html>.
125. Panero, N. S., & Talbert, J. E. (2013). Strategic inquiry: Starting small for big results in education. Cambridge, MA: Harvard Education Press.
126. Pappano, L. (2009, December 29). Skills to fix failing schools. The New York Times. Retrieved from <http://www.nytimes.com/2010/01/03/education/edlife/03educ.html>.
127. Partnership for 21st Century Learning. (2016). Framework for 21st century learning. Retrieved from <http://www.p21.org/our-work/p21-framework>.
128. Pear, R. (2009, April 26). Shortage of doctors an obstacle to Obama goals. The New York Times. Retrieved from <http://www.nytimes.com/2009/04/27/health/policy/27care.html>.
129. Peirce, C. S., (1901). On the logic of drawing history from ancient documents especially from testimonies. Collected Papers.

130. Perry, J. (2010). Reclaiming the education doctorate: Three cases of processes and roles in institutional change (Doctoral dissertation). Retrieved from <http://drum.lib.umd.edu/handle/1903/10289?show=full>.
131. Perry, J. (2012). What history reveals about the education doctorate. In M. M. Latta & S. Wunder (Eds.), *Placing Practitioner Knowledge at the Center of Teacher Education: Rethinking the Policy and Practice of the Education Doctorate*. Scottsdale, AZ: IAP.
132. Perry, J. (2013). Carnegie Project on the Education Doctorate: The education doctorate – A degree for our time. *Planning and Changing*, 44, (3/4),113–126.
133. Plunkett, L. (2013, July 24). The real way to fix law school: More lawyers. *The New Republic*. Retrieved from <https://newrepublic.com/article/114018/fixing-law-school-we-need-more-lawyers-poor-clients>.
134. Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223-321.
135. Rampell, C. (2011, December 21). Out of Harvard, and into finance, *The New York Times*. Retrieved from <https://economix.blogs.nytimes.com/2011/12/21/out-of-harvard-and-into-finance/>.
136. Ravitch, D. (2010). *The death and life of the great American school system*. Ch. 9. New York, NY: Basic Books
137. Relay Graduate School of Education. (Undated). About. Retrieved from <http://www.relay.edu/about/approach>.
138. Richter, R. (2016, May 3). Stanford Biodesign marks 15 years with new name, focus. *Stanford News*. Retrieved from <http://news.stanford.edu/2016/05/03/stanford-biodesign-marks-15-years-new-name-focus/>.
139. Ronfeldt, M. & Campbell, S.L. (2016). Evaluating teacher preparation using graduates' observational ratings. *Educational Evaluation and Policy Analysis*, 38(4), 603-625.
140. Rugarcia, A., Felder, R. M., Woods, D. R., & Stice, J. E. (2000). The future of engineering education: A vision for a new century. *Chemical Engineering Education*, 34(1), 16-25.
- 139A. Sabel, C. (December 2012). Dewey, Democracy, and Democratic Experimentalism. *Contemporary Pragmatism*, 9(2), 35-55.
141. Sabel, C., Saxenian, A., Miettinen, R., Kristensen, P. H., & Hautamäki, J. (2010). Individualized service provision in the new welfare state: Lessons from special education in Finland. Report prepared for SITRA, 2010, Helsinki. Retrieved from <https://www.sitra.fi/julkaisut/Selvityksi%C3%A4-sarja/Selvityksia62.pdf>.
142. Sawchuk, S. (2015, January 25). Ed School Deans Join Forces to Bolster Teacher Preparation. *Education Week*. Retrieved from <http://www.edweek.org/ew/articles/2015/01/28/ed-school-deans-join-forces-to-bolster.html>.
143. Sawchuk, S. (2014, October 21). Steep drops seen in teacher-prep enrollment numbers. *Education Week*. Retrieved from <http://www.edweek.org/ew/articles/2014/10/22/09enroll.h34.html>.

144. Schreiber, N. (2016, June 17). An expensive law degree, and no place to use it. *The New York Times*. Retrieved from <https://www.nytimes.com/2016/06/19/business/dealbook/an-expensive-law-degree-and-no-place-to-use-it.html>.
145. Schwartzstein, Richard, Interview, Oct. 28, 2017.
146. Selingo, J. (2016, April 18). Here are the five critical skills that every new college graduate should have. *The Washington Post*. Retrieved from <https://www.washingtonpost.com/news/grade-point/wp/2016/04/18/here-are-the-five-critical-skills-every-new-college-graduate-should-have/>.
147. Shaw, J., (2015, September-October). Rethinking the medical curriculum. *Harvard Magazine*. Retrieved from <http://harvardmagazine.com/2015/08/rethinking-the-medical-curriculum>.
148. Shulman, L. S., Golde, C.M., Bueschel, A.C., & Garabedian, K.J. (2006). Reclaiming education's doctorates: A critique and a proposal. *Educational Researcher*, 35(3), 25-32.
149. Sloan, K. (2009, Sept. 7). Reality's knocking: The recession is forcing schools to bow to reality. *The National Law Journal*. Retrieved from <http://www.nationallawjournal.com/id=1202433612463?slreturn=20170201220625>.
150. Smathers, R.A. (2014, July/August) The 21st century T-shaped lawyer. *American Bar Association, Law Practice Magazine* 40, 4, Retrieved from http://www.americanbar.org/publications/law_practice_magazine/2014/july-august/the-21st-century-t-shaped-lawyer.html.
151. Spear, S. J. (2010). *The high velocity edge*. New York, NY: McGraw-Hill.
152. Sposato Graduate School of Education. (2016). A different kind of graduate school. Retrieved from <https://www.sposatogse.org/about/overview/>.
153. Stanford Graduate School of Education. (Undated). History. Retrieved from <https://ed.stanford.edu/about/history>.
154. Stanford Law School. (Undated.) Practicums 2016-2017. Retrieved from <https://law.stanford.edu/education/only-at-sls/law-policy-lab/practicums-2016-2017>.
155. Stanford University Engineering. Mechanical Engineering: Department Overview. Retrieved from <https://me.stanford.edu/about/department-overview>.
156. Stevens, R. (2001). *Law school: Legal education in America from the 1850s to the 1980s*. Union, NJ: The Lawbook Exchange, Ltd.
157. Sturm, S, & Guinier, L. (2007). The law school matrix: Reforming legal education in a culture of competition and conformity. *Vanderbilt Law Review*, 60, 2, 515-54.
158. Susskind, R., & Susskind, D. (2015). *The future of the professions: How technology will transform the work of human experts*. Oxford, UK: Oxford University Press.
159. Sullivan, W. M., Colby, A., Wegner, J. W., Bond, L., & Shulman, L. S. (2007). *Educating lawyers: Preparation for the profession of law*. San Francisco, CA: Wiley, Jossey-Bass.

160. Symonds, M. (2015, September 9). MBA students of 2017 are more diverse, more international and more feminine. Forbes. Retrieved from <https://www.forbes.com/sites/mattsymonds/2015/09/09/mba-students-of-2017-are-more-diverse-more-international-and-more-feminine-are-they-also-smarter/#6bafec2255d4>.
161. Teachers College Columbia University. (Undated). Historical timeline. Student Handbook. Retrieved from <http://www.tc.columbia.edu/student-handbook/about-tc/historical-timeline/>.
162. Thiebault, G. E. (2012, June 15). Moving interprofessional education into the mainstream of health professions education. [Blog post]. Retrieved from <http://healthaffairs.org/blog/2012/06/15/moving-interprofessional-education-into-the-mainstream-of-health-professions-education/>.
163. Thiebault, G.E. (2013, October 4). Innovations in medical education: Aligning education with the needs of the public [PowerPoint slides]. Retrieved from Accelerating Change in Medical Education Conference, American Medical Association in Chicago, IL.
164. Thiebault, G. E. (2016, December 15). Lessons from the field: how local innovators are reshaping how doctors are trained. [Blog post]. Retrieved from <http://healthaffairs.org/blog/2016/12/15/lessons-from-the-field-how-local-innovators-are-reshaping-how-doctors-are-trained/>
165. Thompson, R. (2008, September 1). Building a better MBA. Harvard Business School, Retrieved from <https://www.alumni.hbs.edu/stories/Pages/story-bulletin.aspx?num=605>.
166. United States 21st Century Workforce Commission. (2000). A nation of opportunity: Building America's 21st century workforce. Cornell University ILR School: DigitalCommons@ILR. Retrieved from http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1003&context=key_workplace.
167. The University of Chicago School of Social Service Administration. (Undated). Our first century. Retrieved from <http://www.ssa.uchicago.edu/our-first-century>.
168. University of Michigan. (2016). A Roadmap to 21st Century Engineering [PowerPoint slides]. Retrieved from The Millennium Project, The University of Michigan http://milproj.dc.umich.edu/publications/EngFlex_report/download/MITEngFlexRoadmap.pdf.
169. University of Virginia. (2014, July 14). Biomedical engineering faculty move to hands-on learning. University of Virginia Today. Retrieved from <https://news.virginia.edu/content/biomedical-engineering-faculty-move-hands-learning>.
170. University of Virginia Curry School of Education. (Undated). MBA/MEd in Curriculum & Instruction: Innovation in Education Reform. Retrieved from <http://curry.virginia.edu/academics/degrees/dual-degree/mba-med-in-innovation-in-education-reform>.
171. Wallace, L. (2010, January 9). Multicultural critical theory. At B-school. New York Times. Retrieved from <http://www.nytimes.com/2010/01/10/business/10mba.html>.
172. Walsh, C. (2013, May 30). Transformative leaders: First cohort graduates from innovative doctor of education leadership program. Harvard Gazette. Retrieved from <http://news.harvard.edu/gazette/story/2013/05/transformative-leaders/>.

173. Wan, T. (2015). U.S. Department of Education opens financial aid to students in 'bootcamps' and non-institutional programs, EdSurge. Retrieved from <https://www.edsurge.com/news/2015-10-14-us-department-of-education-opens-financial-aid-to-students-in-bootcamps-and-non-institutional-programs>.
174. Weaver, S. J., Lubomksi, L. H., Wilson, R. F., Pfoh, E. R., Martinez, K. A., & Dy, S. M. (2013). Promoting a culture of safety as a patient safety strategy: A systematic review. *Annals of Internal Medicine*, 158, 369-374. Retrieved from <http://annals.org/aim/article/1656428/promoting-culture-safety-patient-safety-strategy-systematic-review>.
175. Weissman, J. (2012, April 10). The wrong people have stopped applying to law school, *The Atlantic*. Retrieved from <http://www.theatlantic.com/business/archive/2012/04/the-wrong-people-have-stopped-applying-to-law-school/255685/>.
176. Wisuri, R. (2015, October 12). International students at the top 10 U.S. business schools. Magoosh TOEFL Blog. Retrieved from <https://magoosh.com/toefl/2015/international-students-at-the-top-10-us-business-schools/>.
177. Wrigley, C., & Straker, K. (2015). Design thinking pedagogy: The educational design ladder. *Innovations in Education and Teaching International*, 1-12. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/14703297.2015.1108214>.
178. Yale School of Forestry & Environmental Studies (YSFES). (Undated). History, YSFES. Retrieved from <https://environment.yale.edu/about/history/>.
179. Yale Office of Career Strategy. (2016). Yale college first destinations: A four-year report classes of 2013, 2014, 2015 and 2016. Retrieved from [http://ocs.yale.edu/sites/default/files/files/OCS%20Stats%20pages/First%20Destinations%20Classes%202013-2016\(1\).pdf](http://ocs.yale.edu/sites/default/files/files/OCS%20Stats%20pages/First%20Destinations%20Classes%202013-2016(1).pdf).
180. Zaleski, A. (2015, September 9). Why accelerators are getting hotter than B school. *CNBC.com*. Retrieved from <http://www.cnbc.com/2015/09/09/why-accelerators-are-getting-hotter-than-b-school.html/>.