



Innovation Precursor Catalog

Education focus
March 2023

ABOUT THIS DOCUMENT

Precursors show us the future, in bite sized nuggets

One of the most pervasive clichés about innovation was coined by William Gibson in *Neuromancer*: ***The Future is already here—it's just not evenly distributed.*** Gibson's pithy observation was true as far as it went, it just wasn't very helpful.

In the field of ***innovation effectiveness***, we try to distill useful, provably true insights about innovation into disciplined, focused methods that anyone can use. So, saying that the future is out there, somewhere, tends to take away your agency when you are hoping to innovate.

Precursors give agency back to you. Simply put, they are a distant cousin of benchmarking, and a way to find intriguing, modular exemplars of things people have innovated. You can use them to find inspiration in partial answers to the challenges you are trying to overcome.

Where the presumption of benchmarking is that *somewhere I can visit a perfect solution to my exact problem*, precursors instead presume that there are many useful advances I should be learning from, remixing, adapting, and extending.

Naïve innovators tend to be immediately discouraged if they find anything at all even remotely like the idea they are dreaming up. Experienced innovators know that is profoundly and deeply wrong to equate novelty with innovation. Indeed, scientists have known for nearly 200-years about a phenomenon called *Simultaneity of Discovery*: the tendency for broadly similar ideas to emerge entirely independently but in parallel throughout history.

Precursors make that easier for you. Scan them quickly or follow the links for deeper understanding. You should find many here that you never knew about before, but which are astonishingly relevant to specific itches you are urgently trying to scratch. And remember the golden axiom of innovation: ***It's much easier to have an idea second!***

EDUCATION PRECURSORS:

INNOVATION CATALOG

Quick takes on useful existing innovations

Important “building blocks” to remix

Summarized in a consistent way

Kaiser Permanente Medical School

Concise description

The first new medical school to open in the United States in many years is challenging two key medical education orthodoxies. First, instead of trying to teach all of medicine to every doctor, this medical school teaches it as team-based from the outset. Second, recognizing the complexity of modern medicine, The Bernard J Tyson School of Medicine teaches medicine as a data science, and with an emphasis on cultural diversity.

These changes in education anticipate (and address) significant shifts in the practice of medicine. Specifically, it helps to address greater complexity, greater personalization, and far more sophistication in arenas like predictive analytics, cultural adaptation, and specialization.

The initial plan of making the school fully-focused on data sciences seems to have been downplayed a bit in initial execution. This is likely related to ensuring that the school achieves accreditation (a lengthy and cumbersome process that often makes innovation in education difficult). But the school itself—its facilities, and specific functionality—is much more data centric than conventional medical schools.

Also, given the highly diverse patient population served by Kaiser Permanente, it comes as no surprise that cultural diversity in admissions, in faculty, and in curriculum design are all emphasized here.

It should be noted that the parent company, Kaiser Permanente, is one of the leading not-for-profit healthcare systems in the world, focused primarily on providing integrated services for major employers. They are also the single largest user of EPIC patient health record systems in the world.

Innovative adaptations and extensions

Health care is going through a massive shift globally, so it is interesting to see when and how medical education anticipates and addresses such shifts.

What thoughtful people everywhere should expect is that medicine will emphasize much greater **teamwork, data agility, predictive analytics, complex integration, and personalization of medicine**. To some extent, IBM Watson promised this revolution, but has not yet delivered it.

Consider these extensions and possibilities:

- Teaching any medical specialties as team-based, rather than as a challenge for individual mastery;
- New kinds of patient condition data displays, e.g., a conventional one devoted to patient vitals and current condition; then supplemental ones for **patients with this condition covering predictive outcomes for various interventions**, and a third for **patients like this one, covering cultural norming for diet, lifestyle shifts, and support for caregivers**
- Integrated care innovations that manage complex conditions and address all the associated complexities as a data science, with integral predictive modeling

Relevant links

- KP Medical School website: [KP Med School](#)
- Wikipedia on KP Med School: [Wikipedia KP School of Medicine](#)
- KP key features: [Key Features](#)
- Design of School: [Design principles](#)
- Fly through: [School Fly Through](#)
- Forbes story: [Forbes coverage](#)



2U Online Higher Education

Concise description

For most of the past twenty years online education has been growing. But it has also tended to be both lower cost and far lower in quality than traditional degree-granting university education.

More recently, great universities, including MIT and Harvard have experimented with MOOCs (Massive Open Online Courses), essentially a way to open courseware to just about anyone, to see what resulted with massive scale and new business models. What happened was a bit predictable: the results were highly spotty and uneven. Seems that, at least in most cases, students cannot simply teach themselves.

Now 2U is becoming the aggregator and the “experience engineers” behind this vast and growing courseware, bringing depth and discipline to the way courses are delivered. They do this not by granting degrees themselves, but rather by partnering with those who do. Managing the content and ensuring that the online students complete the work and master the material.

At least as important, this opens new and more flexible kinds of mastery too. One need not go to 2U just for a conventional degree. They also have the technology to deliver material for certain kinds of certifications or immersion programs. For instance, in a recent partnership with Netflix and Norfolk State University, 2U has created a specialty Tech Bootcamp that is conducted entirely online. This is a flexible, adaptable model that can be delivered at scale easily—anywhere in the world.

Innovative adaptations and extensions

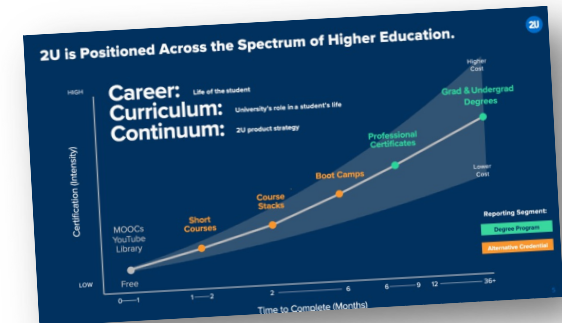
Given the cost and the many challenges in access to high quality university educations, programs like 2U are likely to grow and adapt in surprising and impressive ways. Though there are certain to be other important competitors that emerge in this space, for the moment, 2U has lots of momentum in creating deals with the owners of content to deliver that material in fresh new ways.

There are many possible extensions and adaptations to consider here:

- Major corporations could create skill set requirements, then work with 2U to integrate, simplify, and create the certification metrics needed to ensure that tech teams had the base skills expected in the firm;
- Focused, vertical, or specialized certifications could become more comprehensive, disciplined and uniformly managed. This would allow individuals of any age and regardless of prior education to document skills for something emergent, such as Blockchain, cyber skills, new types of data analytics, etc.;
- Governments that need certain kinds of skills—even if they are unusual or new—might work with 2U to establish goals, then ;

Relevant links

- 2U website: [2U](#)
- 2U Wikipedia : [2U Wikipedia](#)
- EDx partner: [EDx](#)
- 2U growth: [2U + EDx](#)
- 2U Crunchbase: [Crunchbase](#)
- Harvard Analytics: [Harvard Analytics](#)
- FastCompany profile: [FastCompany](#)
- 2U critique: [HigherLearning](#)



The Kalamazoo Promise

Concise description

The first program of its kind in the United States, the Kalamazoo Promise provides permanent funding for scholarships for ANY student who completes their education through 12th grade in the public schools in that community. Then, up to 100% of their tuition and fees are fully paid as they attend the four-year state university of their choice, or the two-year community college of their choice.

Though the donors that funded this remarkable foundation are anonymous, our research shows that it is largely a group of the major corporations in the city, principally Stryker, Upjohn, and Pfizer. Students have NO obligation, upon getting their degrees to do anything in return. Moreover, the students who benefit from this program are also frequently offered summer internships in the city of Kalamazoo at the largest employers who participate in the program.

The value of this gift to local students is considerable—covering as much as US \$30,000 or more per student, per year. The benefits of the program seem to arise in the way it is completely color-blind and universal, leading to considerable local community pride and lots of loyalty to the public school system. Students educated in private (typically religious) schools and charter schools are not eligible for The Kalamazoo Promise program.

Since this program was pioneered in this mid-sized city in the State of Michigan, nearly two-dozen other cities have created similar programs that emulate it. Collectively, these cities have themselves banded together to share their experiences and data, in a group called PromiseNet.

Innovative adaptations and extensions

US post-secondary education is often prohibitively expensive, in ways that are very stressful for individuals and their families. On the other hand, US universities have vast endowments and deep resources as a result, sometime to an absurd extent. The endowment at Harvard University alone, for instance, vastly exceeds the collective endowments of all universities in the UK, collectively.

So, this systemic attempt to foster technical training and university degrees for ALL citizens in a community is noteworthy. Some aspects of this can be adapted and extended even in Europe or Asia, where university tuition and fees are often covered by subsidized by the state in ways that are not done in the US:

- Create consortia of corporations that focus on simplifying, streamlining, and paying for the advanced educations needed to be a great employee in the 21st century.
- Specifically integrate technical certifications, internships, and scholarships;
- Do this regardless of race, creed, ethnicity, etc., wherever possible, and without special testing or grade performance requirements.

Relevant links

- Kalamazoo Promise website: [Kzoo Promise](#)
- Wikipedia on Kalamazoo Promise: [Kzoo Promise Wiki](#)
- Research on impact: [Kzoo Promise Effects](#)
- PromiseNet conference: [PromiseNet](#)



HOTEL ICON HONG KONG

Hotel ICON teaching laboratory

Concise description

Built as a living laboratory for the Hong Kong Polytechnic's School of Hotel and Tourism Management, the Hotel ICON is a premium upscale hotel used for teaching and research.

From the design to the operations, everything about the hotel is designed to rate among the very best hotels in the world. And yet, its purpose is to continually advance the frontiers of hospitality—not to compete on conventional hospitality metrics, such as occupancy rates and profitability.

Part of what drives its distinctiveness is the way the design and architectural schools of the Hong Kong Polytechnic were also challenged to help differentiate the property. Top design teams were selected for the base architecture, staff uniforms, the interiors—including a signature Vivienne Tam Suite—and the interior artworks, curated by a leading Hong Kong designer. The flowers throughout the hotel are constantly arranged by a team of botanists. And three restaurants inside are designed to be experimental too.

The hotel is operating under the mandate to benefit the hotel industry through experimentation and research and offer training to SHTM students. Students have the opportunity to participate in structured internship programs. The school occupies nine floors, of which four floors connect to the hotel.

Interestingly, at least prior to the recent period of unrest in Hong Kong, the Hotel ICON was receiving many serious proposals per year to fund its expansion into a global chain, all of which it turned down as unrelated to its central mission.

Innovative adaptations and extensions

Hong Kong is an interesting city. With a population of 7.5 million, the city typically attracted more than 65-million visitors annually, prior to the recent period of COVID and political unrest. As such, focusing on tourism as a strategic growth arena was a top priority, and thanks to a visionary local business leader, Victor Lo, Hong Kong routinely tackled these advances systemically, especially by combining design, education, and vertical industry focus.

Communities that want to adapt and emulate this form of advance might:

- Identify critical local sectors to advance, such as tourism, dining, sports (including perhaps emergent ones like online games) tech centers, etc., and identify a local university that will commit to creating a state of the art laboratory for that sector.
- Make certain that your work is integrated and designed to be newsworthy globally. The key paradox here is that this strategy is very low risk if it is designed to be the best in the world of its type, and higher risk if it “plays it safe”.
- Partner with experts in the domain to ensure that it is easier to advance the field in your laboratory than anywhere else in the world. Note parallels like The Media Lab at MIT, or the Santa Fe Institute, know globally for pioneering complexity research.

Relevant links

- Hotel ICON website: [ICON](#)
- Hotel ICON Wikipedia: [ICON Wiki](#)
- Opening: [Announcement](#)
- Web review: [Oyster](#)
- Deep review: [Conde Nast Traveler](#)



HIGH SCHOOL EDUCATION PRECURSOR

A+ World Academy

Concise description

The largest program of its kind, this is a rigorous and fully accredited high school conducted aboard tall ships. Students combine conventional studies with actual sailing experience to 20 cities, in 14 countries on four continents. This is a Swiss international boarding school, conducting an American educational curriculum, aboard Norwegian tall ships.

The central idea here is to ensure that the students combine real world pragmatic experience plus rigorous high school studies. They live with the other students in a confined setting full time and for months, of course, enhancing teamwork skills. Plus, they master the disciplines of specific roles and physical exertion for sailing. Students routinely describe the experience as life-changing—both as an education and a lesson in leadership.

Innovative adaptations and extensions

There are many interesting ways to be unconventional about where and how to give people an education. Some, like this exemplar, are systemic and novel. Others are focused on special situations—like schools conducted inside prisons, or for unwed mothers, or for people with special needs (PTSD, those on the spectrum, etc.) or special interests (writing, cooking, hospitality, programming, robotics, etc.).

Some principles that may allow these programs to be adapted and adopted include:

- Think through the distinctive qualities of the participants. Is there a talent pool you might want to cater to or build around?
- Consider the special future attributes you are trying to foster. Are you trying to build great teams, personal discipline, great leadership skills, a deep sense of purpose, technical prowess, diverse talent pools, adaptability, comfort with ambiguity, something else? Any of these distinctive needs might reward innovative schooling designs.

Relevant links

- A+ website: [A+ Academy](#)
- Wikipedia on A+: [Ship Wiki](#)
- School reviews: [A+ reviews](#)
- SeaSemester similar program: [SeaSemester](#)



EXPLORANCE, Machine Learning platform

Concise description

This is a machine-learning based SaaS platform designed to support students through their complete academic journey. It provides listening and decision support strategies with consistent feedback. Designed to foster student engagement and retention—and integrated seamlessly into a related family of enterprise solutions that students could then use post graduation. This firm sees itself as providing the soft human support systems needed for effective modern individual and team performance.

The developers claim they work with 25-percent of top higher education institutions, including UC Berkeley, Penn, University of Michigan, Northwestern and more, including 8 of the world's top 10 business schools.

Relevant links

- Key product: [Explorance Blue](#)
- Tech roundup: [eCampus News](#)
- Independent reviews: [GetApp Blue review](#)
- LinkedIn profile: [LI Explorance](#)
- Website: [Explorance](#)

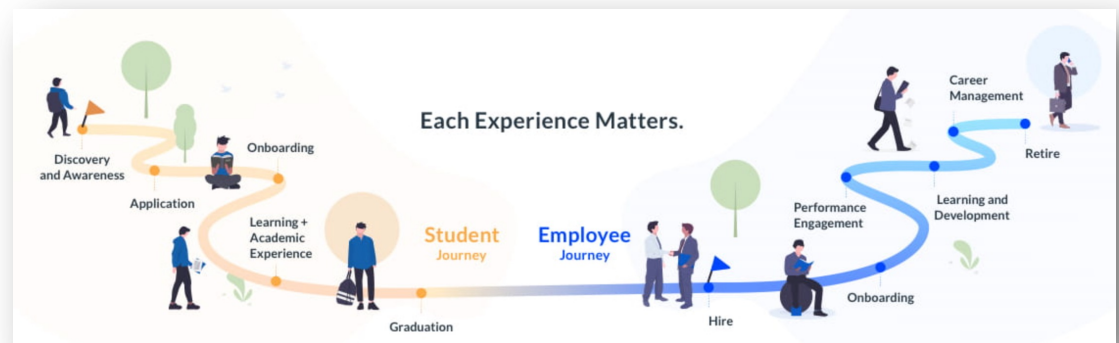
Innovative adaptations and extensions

Modern students can present paradoxes: some are the best trained, most focused and most skilled students in history; others are fragile butterflies, with socialization challenges that need significant handholding. As ever, some may have special cultural identities or be the first in their extended families to attend higher ed. Since most schools prize diversity and inclusion, these characteristics get amplified with scale.

It is frightfully complex and costly to build the supportive social systems that can be customized to each student and her needs. Naturally, there are many competing tech platforms claiming to have solutions here. It seems inevitable that *some small number of tech platform will emerge as the category leader in this arena over time*, so thoughtful higher ed leaders should ask the question: what do we do to focus on human skills along with content?

Some principles that may allow these capabilities to be adapted and adopted include:

- Shared student evaluation metrics that are customized by program, college, or university
- Promises to employers that the university will adopt *best-in-class* methods that integrate seamlessly with their own support and evaluation tools



GENERATIVE AI, as an emergent capability

Concise description

After decades in development, AI applications have matured and emerged as both robust solutions and deep threats to the historic ways we think about “authoring” content or producing “creative” work. Many end-of-year innovation analysts have cited 2022 as the year when AI finally became mature enough to transform entire fields.

Broadly, generative AI takes expressed goals as its input then, typically using vast databases of text or images and subjecting them to machine learning, *generates* something new, consistent with the input goals.

This is challenging all conventional ways that we think about what it means to create a novel work. For the moment, generative AI systems come in vertical forms: images, video, text, engineered devices, software code, etc., but we can expect these to conflate over time.

There are many culturally controversial aspects of these digital capabilities, especially the issues of *deepfakes*. This is where something has been generated artificially but with production values that make it hard for most users to detect that the resulting video, music, news story, article, scientific study, or data visualization is untrue. Naturally, this trend, extrapolated and with ever higher production values, exacerbates the already pronounced problem of eroding trust in information.

Over time, expect it to be very hard to determine if a student wrote his paper, built her artwork, created his final video submission, or built her own data model through conventional hard work, or merely by tuning the input in some intelligent generator until the result seemed credible and good enough to meet course requirements.

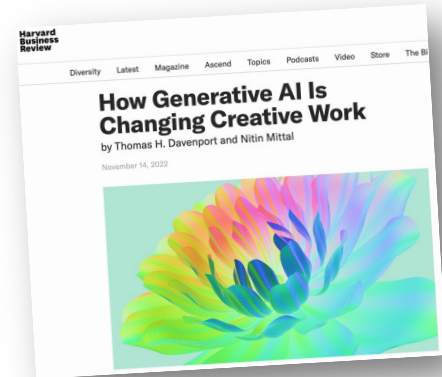
Innovative adaptations and extensions

This is such a huge and transformational trend that no higher ed institution can afford to ignore it. Generic options include but are not limited to these:

- Pioneer it, lead it, apply it, adapt it, teach it: this can be either by using the capabilities or by creating programs that allow students to experience and master these capabilities
- Track and comment upon it, by exploring the many ethical, legal, practical, vetting, authentication or evaluation issues that these new capabilities introduce;
- Detect and defend yourself from use and misuse, as students increasingly use these tools to fake their work or do credible work with shortcuts that really exhibit little or no “learning”.
- Adapt honor codes and student evaluations to either prohibit such tools or carefully cite precisely where and how they were used by students or teams.

Relevant links

- Overview article: [Future Generative AI](#)
- Wikipedia on synthetic media: [Synthetic Media](#)
- AI and creative work: [HBR AI Creative Work](#)
- Field survey: [Machine Learning Mastery](#)
- Chat GPT (text): [ChatGPT](#)
- Instruct GPT (instruction): [InstructGPT](#)
- DALL-E2 (images): [DALL-E2](#)
- Top applications: [AIM research](#)
- Today Explained episode: [AI on Today Explained](#)



INSTRUCTURE CANVAS, global expansion

Concise description

Instructure is the developer behind *Canvas*, one of the indisputable leaders among ed tech support platforms used in many higher ed institutions. But here we focus on their partnership with ASU, Thunderbird and a philanthropy to support the **100 Million Learners Initiative**, [100m Learners](#)

Built upon Canvas, this additional suite of capabilities condenses learning material, offers it online, connects it to digital quizzes, then permits global students to earn badges and certifications. It is an ultra low-cost solution for global scaling and expansion that some schools will find valuable to expand their brand, reach and impact, while others may find to be connected to their missions or, simply, a gift to the world.



Innovative adaptations and extensions

A very big question confronting thoughtful higher ed leaders now is *What value propositions ought we support beyond completed degrees?* Initiatives like this one can act as a proving ground for trying lower cost content delivery, brand extension, market expansion, and new educational “products” that will be valuable to students and recognized by employers.

Some principles that may allow these capabilities to be adapted and adopted include:

- Strategies that codify and determine the interchangeability of badges vs certifications vs degrees, and how they are earned
- New ways to combine and permute such accomplishments across campuses, schools and over time—to create supported lifelong learning solutions
- Work with employers to custom build the content, connect it to the learning delivery and evaluation, and operate it remotely, anywhere in the world
- Connect to other deep archives, whether Kahn Academy, 2U or Open Courseware, to make more self-administered and self-directed pathways for learning, yet in ways that make evaluation strategies reliable, robust, and

Relevant links

- Key product: [Explorance Blue](#)
- Tech roundup: [eCampus News](#)
- Independent reviews: [GetApp Blue review](#)
- LinkedIn profile: [LI Explorance](#)
- Website: [Explorance](#)

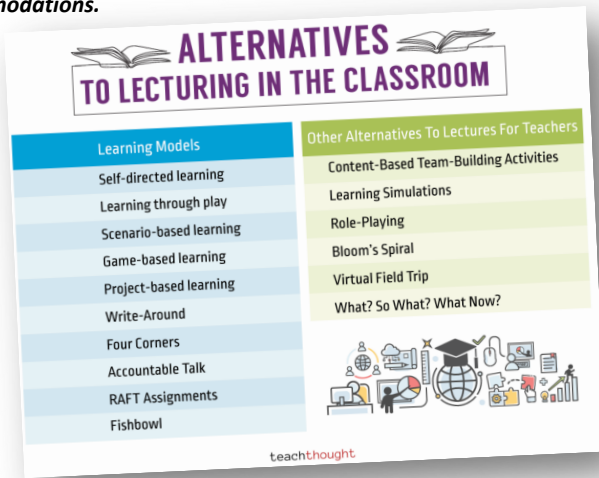
NEW EDUCATIONAL EXPERIENCES

NEW PEDAGOGIES, alternatives to lectures

Concise description

Innovators challenge *orthodoxies*—the hidden assumptions about how we need to do things because, that’s always how we’ve done them. Bold innovators find and flip common orthodoxies. Like Canon, making a copier where users could change the engine themselves, or Airbnb, helping you stay in a “hotel room” that they do not even own.

The COVID era was a time that forced nearly all educational institutions to change their *rate of change*, though not necessarily the boldness or efficacy of their changes. So, we often changed tech platforms, delivery models, or rules about attendance. Too often along the way, we tolerated some deterioration in the actual quality of the educational experience, since we were “making do” temporarily. **Think through new teaching modes to go much further if you wish to get great and enduring advances, instead of temporary accommodations.**



Innovative adaptations and extensions

There are many common lists of teaching methods that augment or entirely transcend lectures. And all of these can be compounded depending on whether a particular course is designed for individual instruction, team mastery, lab research, demonstration projects, etc.

It is especially useful to think about this topic from inside at least two different frames: what will the student do *during this course*? And what might the student find useful *over time*? That simple reframe can material transform what you think of as the role and value added of a university and of education.

Some principles that may allow these programs to be adapted and adopted include:

- Consider challenging departments and faculty members to create highly newsworthy experiences—and reward those that get the best ratings
- Imagine **smart archives** that students who graduate get lifelong access to—so that they don’t just master one course this year, but see you as a continuing partner in their success
- Hybridize as much as possible, so that you use virtual teaching for the content where this works, and other experiences to achieve deep team or student/teacher interactions where those are ideal
- Consider teaching some topics or sessions in **signature ways**, so that your approach to teamwork or to inclusion, or freshman orientation, or empathic listening becomes a distinguishing feature that transforms students and faculty lives forever

Relevant links

- Changing pedagogies: [TeachThought paper](#)
- Future pedagogies: [Evidence based pedagogies](#)
- Deep Learning: [Deep Learning pedagogies](#)
- Smart archives: [Modern data archives](#)
- Team Learning Wikipedia: [Team Learning](#)

EFFICIENCY PRECURSORS:

INNOVATION CATALOG

Quick takes on useful existing innovations that specifically help bend the cost curve for higher ed.

Coursera and Teaching Company

Concise description

For a brief period of about ten years there was great hope around the world that Massively Online Open Courses would revolutionize the delivery of university level courses at vastly lower costs. In practice, the experiences of building, using, and getting reliable value out of MOOCs has not lived up to the hype. Elsewhere in this Precursor Catalog we cite 2U, which has found new ways to add value to open courseware. Within the specific arena of MOOCs however, Coursera is generally regarded as the best resource.

The basic idea here is to license content from universities and professors, assemble it into courseware that can be managed by a student acting remotely, on her own time and at her own pace. The student completes course requirements, passes quizzes or tests to demonstrate mastery, then receives either certifications (for individual courses) or degrees (issued by partner schools, not Coursera) up to and including Masters degrees.

The challenge in nearly all cases is to get enough of the students to stick with the courses. Experts pay a lot of attention to the completion rates of these courses, which rarely are above 15%--causing many to declare it a failure as an experiment. It is more reasonable to recognize that delivering courseware online is still in its infancy, and that it will likely take a while to learn how to create the compelling content that people will stick with.

Online course strategies will be essential wherever COVID is still rampant, and great innovators may find useful hybrids between those that emphasize content (like Coursera) and those that emphasize compelling teachers, like The Teaching Company.

Innovative adaptations and extensions

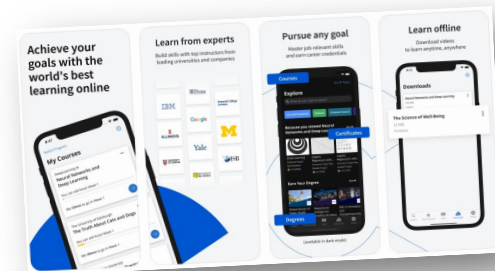
No one should be surprised that simply taking content, putting it online, and expecting students to teach themselves did not revolutionize skill building. It is normal for a new medium to take decades to find its conventions and successful new forms. We're in the early days of podcasts too—a few are wildly successful; most fail.

There is every reason to believe that MOOCs can play an enduring role as and when we learn to drive adaptations such as:

- Focus particularly on the specializations: quick hit programs that can give people certifications for focused skills, like blockchain, machine learning, AWS skills, or specific computer language skills;
- Pay special attention to the recently developed Coursera for Governments & Nonprofits. And the newly announced partnerships with the Institute for Veterans & Military Families. These are smart examples of special sponsors or users.
- Think through ways to connect home-based upskilling to COVID protections during periods and in places where pandemic infection rates are spiking. Consider making the content available with subsidies or for free, then pay people who successfully complete courseware and achieve certifications or degrees.

Relevant links

- Coursera website: [Coursera](#)
- Coursera Wikipedia: [Coursera Wiki](#)
- Critiques: [Upskillwise](#)
- Evaluation: [Review](#)
- Completion rate: [Completion problems](#)
- Teaching Company: [Great Courses](#)
- Great Courses Wikipedia: [Great Courses](#)
- Bill Gates comment: [Great lectures](#)



Kahn Academy

Concise description

Kahn Academy is a revolutionary interactive knowledge archive started by Salman Kahn in 2006 to help his nieces be better prepared for college aptitude tests. To his surprise, it went on to be a universally valued resource, leveraged globally, to simplify, streamline and modularize the basic elements of learning that people should master at different stages of their lives.

A robust way to understand this innovation is that it epitomizes a learning progression: the respected notion that anyone can learn more effectively if the content is carefully sequenced so that what you try to learn builds on other concepts you've already mastered.

With Kahn Academy, these individual modules of learning are typically offered as short videos, 4-5 minutes in length, often augmented by lessons and occasional quizzes, especially in the Kahn Academy App.

Many resource-constrained regions around the world have discovered that Kahn Academy is robust enough to prevent them from having to fund and build grade schools. More commonly, schools everywhere have leaned on Kahn Academy content and tools to augment conventional education, especially by helping students get what they need individually at their own pace.

Innovative adaptations and extensions

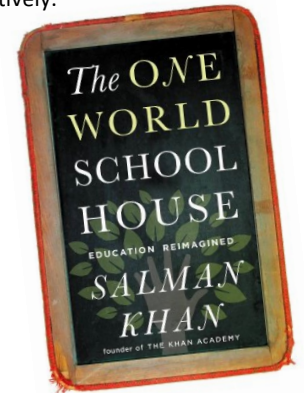
Like Wikipedia, Kahn Academy is a useful, self-contained, respected innovation with global scale and deep technological support. But like all general-purpose platforms many of the best innovations in use are surprising and worth knowing about.

Consider these extensions and possibilities:

- Creating special-purpose classes around focused topics, hosted by Kahn Academy and using the Kahn Academy content- and lesson-types. Pixar has done this to teach fundamentals of animation, and Kahn itself has done to teach coding.
- Add integral diagnostics and analytics to help pinpoint what any individual student might wish to focus on to shore up learning, personal confidence or better outcomes;
- Identify preferred learning styles by individual students, so that they can get the material they need to master in the form they find most comfortable or compelling, and do this for both individual students or for team-based learning;
- Add integrated metrics to help determine whether core curriculum requirements are, in fact, being mastered by individual students or by a class, collectively.

Relevant links

- Kahn Academy website: [Kahn](#)
- Wikipedia history of Kahn Academy: [History](#)
- Integrated Kahn-leverage lab school: [Kahn Lab](#)
- Exemplar, Kahn approach to teaching coding: [Kahn Coding](#)
- Applications research: [Kahn as Supplemental resource](#)
- World Bank evaluation: [World Bank on Kahn](#)
- SRI evaluation: [SRI on Kahn](#)
- [One World Schoolhouse](#) book: click on picture



EFFICIENT STAFFING PRECURSOR

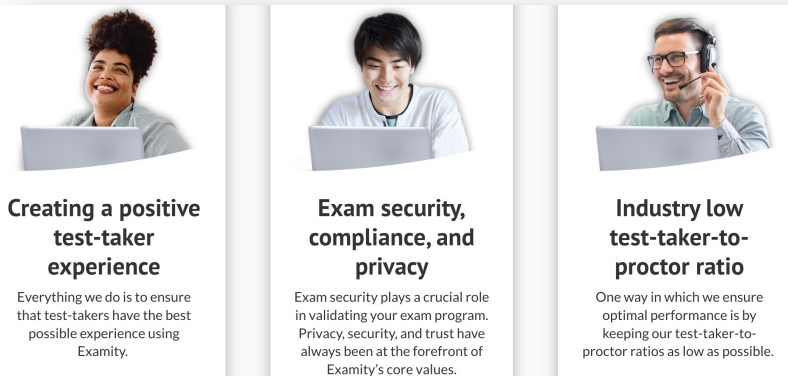
EXAMITY, digital proctoring solution

Concise description

As universities and community colleges virtualize a growing number of **point solutions** have emerged around specific needs. None of these is revolutionary, including the exemplar covered on this page. But higher ed institutions may well find that they can outsource some functions to focused firms and end up with both lower costs and better experiences.

It is especially smart to identify those needs you have that are evergreen, complicated, and becoming more challenging as you virtualize—and where you must do tasks in different locations using technologies that students may control instead of you.

Running tests of any kind is meant to stand in as a general example of such a capability. *Eximity* is just one such point solution.



The image consists of three vertical panels, each featuring a photograph of a person at a computer and a corresponding text block. The first panel shows a woman smiling at her laptop, with text about creating a positive test-taker experience. The second panel shows a man at a laptop, with text about exam security, compliance, and privacy. The third panel shows a man wearing a headset and talking on a phone while looking at his laptop, with text about industry low test-taker-to-proctor ratios.

Creating a positive test-taker experience
Everything we do is to ensure that test-takers have the best possible experience using Eximity.

Exam security, compliance, and privacy
Exam security plays a crucial role in validating your exam program. Privacy, security, and trust have always been at the forefront of Eximity's core values.

Industry low test-taker-to-proctor ratio
One way in which we ensure optimal performance is by keeping our test-taker-to-proctor ratios as low as possible.

Innovative adaptations and extensions

Corporations long ago learned to ask the question of what they could outsource effectively, in order to gain focus, operational efficiencies, consistency and scalability. Universities tend not to ask such questions as often or as well—one of the reasons why costs in the sector have risen steadily for decades at rates that outpace inflation. The common exceptions to this come in janitorial services, plus cafeteria and bookstore operations, all of which are commonly outsourced. Consider deeper strategies:

- Find services that bring better experiences plus lower costs
- Look for ancillary benefits beyond operational efficiencies—such as long-term data hygiene, the ability to amass big data, the ability to predictive analytics, etc.
- Look for vendors or point solutions that significantly reduce complexities for faculty and students, and work in ways that become cumulatively better over time.
- Always watch for the essential tension between your need to be *distinctive* vs. these solutions providers' eagerness to be uniform, standardized, and scalable. Never outsource something that you are trying to do in a way that is culturally unique and important in your institution.

Relevant links

- Eximity, proctoring solution: [Eximity](#)
- K-16 Solutions, system integrator: [K-16 Solutions](#)
- General trend: [Washington Post](#)

Moodle OPEN LMS software

Concise description

Learning Management Systems (LMS) promise to help educators integrate content, exercises, cited resources, individual and team course support, plus evaluation, into useful, reusable, and easily adapted modules. The best of them also act as delivery engines, making it easy for students to watch lectures, interact with instructors or classmates, and take quizzes, etc., all online, and often remotely.

To a large extent, these tools make the tasks associated with teaching easier to scale. The jury is very much out about whether they can be used in ways that provide excellent learning experiences—though expect that to steadily be improved over time.

The COVID years have caused nearly all institutions to scramble to create acceptable online courseware, and this significantly increased the market scale for LMS platforms, leading to an explosion of developments in this domain.

Moodle has entered this fray with a commitment to *open-source* software standards, designed to help enlarge the user and use ecosystem with far fewer concerns about intellectual property or costly proprietary software that doesn't scale readily.

Higher Ed institutions that are trying new models, or trying to reach new users—especially those that could not reasonably afford the current models you use today—may find these methods worth a try.

Innovative adaptations and extensions

Across nearly ALL fields, from programming to financial services, to services, to entertainment what we are seeing is the careful **modularization** of content and capabilities. You need look no further than the millions of apps now available for your smart phone or tablet to see this trend on full display. *Why should education be any different?* Consider:

- Courseware and content can be digitally packaged, then made available in many different modes of access, all with integral evaluation, etc.
- Such modules can be rated, remixed, extended into projects or team tasks, etc., using hybrid educational forms and methods;
- Many core courses or prerequisites could be treated in modalities very different from other electives—leading to self-administered and self-assessed methods to get basics delivered.
- To get past the tendency to use these tools to establish low bar quality for material, prizes or incentives could be used to help reward faculty for producing the modules or programs that reach the most users, earn highest student ratings, find the most novel content, etc.

Relevant links

- Moodle website: [Moodle](#)
- Moodle OPEN LMS: [LMS Edu](#)
- eLearning community: [User community](#)
- White paper: [Higher Ed LMS](#)
- Open LMS reviews: [Reviews](#)



APPLIED DATA ANALYTICS IN HIGHER ED

Concise description

Ever since Michael Lewis wrote *Moneyball*, most people have some soft sense of the rising role of big data and data analytics in just about every field. Sports may have been early adopters, field like finance, healthcare government, philanthropy, and even education have realized that big data patterns lead to transformative discoveries.

With large data sets you can radically transform your ability to serve students, support faculty, tune curricula, change your tech platforms, lower your operating costs, and much more.

Data sets look backwards, of course. But at a bit of math and probability, and they allow you to look forwards too, in ways almost indistinguishable from magic. This specialized field is *predictive analytics*, which is radically transforming the sciences of decision making everywhere.

In Higher Ed, the combination of big data and predictive analytics can do things like:

- Detect when a student is likely to have difficulty completing a course, a term, a year, or a degree;
- Model enrollment trends, help drive your diversity and inclusion goals, or find ideal future students that will thrive in your programs;
- Find economic efficiencies in how you allocate resources—even minutiae like energy use, or facilities optimization, or parking spaces
- Help identify the emergent topics that employers or students might want to explore—then predict the demand for future degrees or specialties.

Innovative adaptations and extensions

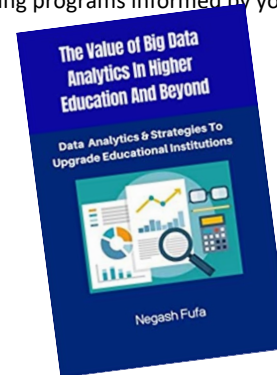
Big data and predictive analytics allow you to have data inform your hindsight, your insight, and your foresight. As higher ed enters a period of exceptional field and category shifts, it is not too strong to say that dexterity with data can help you both avoid costly errors and confidently make bold, surprising moves.

As ever you will need to be careful with the optics and the many anxieties that may surface as you use more and better data insights:

- Even with the best of intentions, some students or faculty may feel that you are using data and insights in ways they find intrusive, unhelpful, or biased
- Your data models and insights should inform decisions, not necessarily dictate them. All members of your community should benefit from having better command of data and facts. But the most logical or rational decisions are not always the socially acceptable ones today. Be sure to study the ethics of effective predictive analytics use;
- Some of the most interesting and novel uses of data analytics may emerge if you wish to do deeper partnerships with major employers—to predict future fields, identify future talent pools, or build custom new degree or training programs informed by your data and theirs

Relevant links

- Fufa book: [Intro book](#)
- Burning Glass Institute: [Future work](#)
- Predictive analytics: [Ethical considerations](#)
- McKinsey paper: [McKinsey on Ed Analytics](#)



ADJACENT PRECURSORS:

INNOVATION CATALOG

Quick takes on useful existing innovations that are not within education *per se*, but illustrate future capabilities higher ed might consider leveraging

Y Combinator Accelerator

Concise description

Harder to get into than Stanford, Y Combinator (YC) is one of the best known and most respected tech accelerators. It uses a combination of seed funding, pitch coaching, and supportive processes to try to give entrepreneurs the time, space, and support needed to help them take early-stage risks.

YC has one primary tool to help foster this progress: small amounts (\$125k) of seed capital given out twice a year to each of 100+ startups, provided inside a cultural environment with constant emphasis on building demos. YC keeps the emphasis on building something new and noteworthy in a support period limited to three intensive months. Interestingly, the partners never request or read business plans, relying instead on short concept pitches and demos. An additional value they create comes in making introductions to people in their network (financiers, engineers, and other YC alum and entrepreneurs).

Y Combinator gets its unusual name from a concept in computing science: a program that runs programs. They use a steady cadence of development to help start up teams make progress.

The business model of YC is simple. In return for the seed capital of \$125k they take 7% of the company post the time it gets funding. YC companies can be located anywhere in the world, but to simplify funding, accounting and controls, YC requires that it be under a parent company created in the United States, Canada, Singapore or the Cayman Islands. They have standard recommended business structures designed to protect founders and investors. They have a record number of successful exits compared to other global accelerators.

Innovative adaptations and extensions

In general, elected officials the world over believe there is far more value in tech accelerators than is generally warranted. YC is one of the best, yet it has a shockingly low success rate (secret, but likely to be well below 1%).

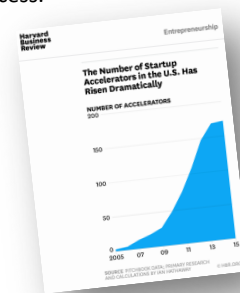
No one gets very far merely by mimicking the trappings of an accelerator: emphasis on building demos; concept pitches; events; cool spaces; motivational posters. The bits that matter most are very hard to replicate: a highly engaged and large network of investors and engineers who have been involved in many startups.

Here are some of the best features that can be emulated and built upon:

- A simplified, smart, and fair model for structuring start up firms that can swiftly be cloned and adapted without much cost or complexity;
- A simplified model for managing a fair amount of ownership for a fair amount of seed capital;
- A network of local business leaders, financiers, and university researchers, with an overall emphasis on pragmatic progress and cadence for development;
- A system that is explicitly focused on the concept itself and its utility, making something people want, with almost no focus on the business plan, the connections of the individuals, or other considerations that rarely predict success.

Relevant links

- Y Combinator website: [YC](#)
- YC Wikipedia: [Wikipedia YC](#)
- 50 Best global accelerators: [50 Best](#)
- What Accelerators Really Do: [HBR](#)



Founder Friendly Labs

Concise description

Founder Friendly Labs (FFL) charges about \$7,000 to provide entrepreneurial teams for access to advanced developmental environments and resources. For example, such a membership fee will get the start-up access to advanced cloud-computing based development environments and tools.

FFL members are required to attend developmental workshops (at least one) but do not give up any equity in their firms.

As with tech accelerators, the emphasis is more on building things than planning things, and the specific tools and environments needed to support this are made available in streamlined ways, typically through “credits”—such as \$25,000 USD in Amazon Web Services credits, good for two years and \$100,000 USD in Google Cloud Platform credits, good for one year. FFL does not invest in startups.

Variations of tech incubators tend to create more emphasis on a network of local support, from banks, financiers, VC firms, universities, research parks, or hospital systems located in the same geographic vicinity.

Some tech accelerators also provide real estate and shared lab spaces, though this varies widely in the COVID-era. Shared space models, epitomized (for better or worse) by WeWork are also models often conflated with Tech Accelerators. The FFL model is a reasonably pure form of tech incubator—and one that has an above average success rate within the category.

Innovative adaptations and extensions

People nearly always think that tech incubators and tech accelerators are the same thing. Many websites and imprecise use of these terms compounds this error. In fact, they are (or should be) very different.

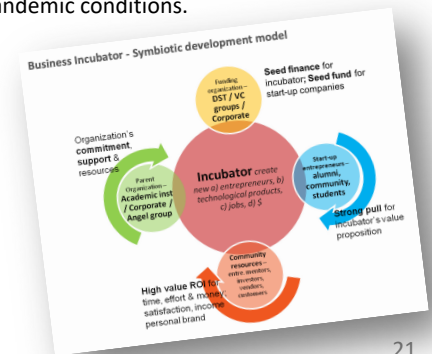
The heart of a tech incubator is to provide low-cost, ideally subsidized, access to advanced cloud-based computing environments and resources, provided for a longer time period than accelerators (1-5 years vs. 3-6 months).

Here are some of the best features that can be emulated and built upon:

- Strategic relationships with the best tech development partners for startups, such as AWS, Google, Apache, Hadoop, Atlassian, and others to make it easy, affordable, and simple to build and test working systems;
- Simplified access to advice and expertise;
- A network of other support services, all available á la carte, ranging from space to work to financing to university research environments;
- Ideally, these services and systems should be tailored to local governmental priorities and market needs—and actively adapted to local pandemic conditions.

Relevant links

- Founder Friendly Labs website: [FFL](#)
- Incubator Critique: [Incubator Problems HBR](#)
- Incubator Development Metrics: [Metrics](#)
- What Accelerators Really Do: [HBR](#)



EDUCATIONAL PRIZE PRECURSOR

FIRST Robotics Competition

Concise description

For Inspiration and Recognition of Science and Technology (FIRST) is an international youth organization that operates the FIRST Robotics Competition, FIRST LEGO League Challenge, FIRST LEGO League Explore, FIRST LEGO League Discover, and FIRST Tech Challenge competitions. It was originally developed in 1989 by Dean Kamen (famous inventor of, among other things, the Segway Human Transporter), along with Woodie Flowers.

Now in its 32nd year, these various FIRST competitions operate in 110 countries and allow teams to solve robotics challenges that make STEM learning pragmatic, fun, and applied. More than 79,000 teams with collectively more than 660,000 individual students have participated— inventing more than 51,000 robots. The various competitions are geared to different age groups, from Pre-K through age 18.

At least as important, the prizes winning teams get typically come in the form of University Grants and scholarships, typically sponsored by major corporations, and over \$80-million in such scholarships have been awarded thus far. Over 90% of participants express interest in going on to get university degrees.

Innovative adaptations and extensions

Prizes have a long and glorious history in helping build bold, often surprising solutions to valuable problems. The virtues of sponsoring a prize are many, and the FIRST Prize is mostly about engaging young people in experiential applications of STEM. Throughout history, research shows, well-designed prizes tend to cause teams to expend between 17- and 19-times the total prize monies in their zeal to win the prize.

Consider these extensions and possibilities:

- Sponsor prizes that are strategically related to sectors or issues in the sponsoring geographic region or country.
- Identify inspiring social or cultural challenges that are authentically related to your region or country of operations;
- Identify the most pressing global issues, such as COVID adaptations or global warming, then design inspiring prize competitions around those topics.

Relevant links

- FIRST Competition website: [FIRST](#)
- Wikipedia summary of First Competitions: [History](#)
- Links to FIRST Impact studies: [FIRST Impact](#)
- Student testimonial, YouTube: [FIRST YouTube](#)
- Dean Kamen Bio: [Dean Kamen](#)
- McKinsey Research on Prizes: ["And the Winner Is..."](#)
- [FIRST Robots](#) book—click on picture



MAKER GIRL PROGRAM

Maker Girl

Concise description

A STEM-centric program build by girls for girls, Maker Girl teaches young women to be fearless about coding, 3D printing, designing games, and making things generally.

There are three broad kinds of programs offered in 28 US States and three additional countries: workshops for individual girls; group workshops for girls in Scouting Troops or classrooms groups; or for the children of sponsoring companies.

By confining the groups all to girls, Maker Girl helps to build confidence, and prevent some of the competitive dynamics that can be commonplace with mixed gender groups.

Maker Girl was only founded in 2014 and has been growing fast (at least pre-COVID), largely by piggy backing on University Engineering programs at top universities. The concept scales nicely and can be adapted to nearly any culture or geography.

Innovative adaptations and extensions

It is highly likely that experience and confidence in making things works best when started at a young age. Maker Girl was explicitly developed to enhance the confidence of young girls and help them feel they can directly and personally shape their world.

Some principles that may allow these programs to be adapted and adopted include:

- Sponsor a local extension of the Maker Girl program in your region.
- Identify groups of young girls that might benefit from short courses in making things—and engage them collectively.
- Build a Maker session as a reward at key junctures in a school year.
- Connect sponsored game design challenges around some key concept being taught in the STEM curriculum—combining theoretical learning with the hands-on building experience.

Relevant links

- Maker Girl website: [Maker Girl](#)
- Reviews: [Maker Girl reviews](#)



HOMEBOY INDUSTRIES, LOS ANGELES

Homeboy Industries

Concise description

Beginning in 1988 as a way of improving the lives of former gang members in East Los Angeles, Homeboy Industries has now evolved into the largest gang intervention, rehab and re-entry program in the world. It has grown by extending its model with over 400-affiliated organizations in 34 US states or territories and 20 countries.

The program focuses on high-risk youth, including former gang members and the recently incarcerated. Free programs include mental health counseling, legal services, tattoo removal, curriculum and education classes, work-readiness training, and employment services. Structured both as a social enterprise and social business, Homeboy Industries helps young people acquire job skills and seek jobs in a safe, supportive environment.

Among the businesses it operates are the Homeboy Bakery, Homegirl Café & Catering, Homeboy/Girl Merchandise, Homeboy Farmers Markets, The Homeboy Diner at City Hall, Homeboy Silkscreen & Embroidery, Homeboy Grocery, and Homeboy Cafe & Bakery in Los Angeles International Airport.

A huge part of the success of Homeboy Industries derives from the remarkable charisma and personality of its founder, Father Gregory Boyle. But the model it has developed has proven to be robust—scaling successfully to many states and countries. The heart of this model is compassion, plus a very practical focus on fixing social problems (gangs, tattoos, dependencies) and getting jobs for at-risk youth.

Innovative adaptations and extensions

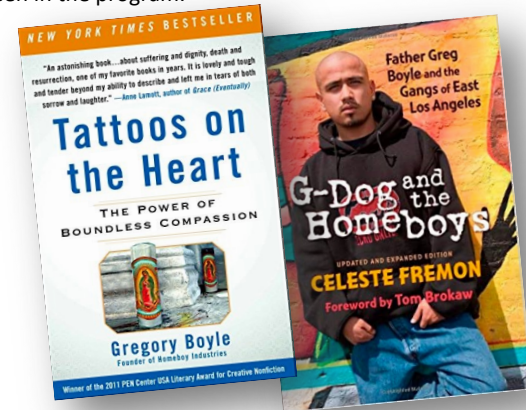
Anywhere in the world, when young people do not sense genuine opportunity, they get attracted to gang activities, drugs, and other social challenges. Homeboy Industries has invented and formalized an approach to reversing the adverse effects of these problems once they arise.

Some principles that may allow these programs to be adapted and adopted include:

- Integrate programs that deal with youth challenges and help build job skills.
- Specifically create firms that will employ these at-risk individuals.
- Actively celebrate the achievements of the participants—whether it is their ability to be substance abuse survivors or acquiring job skills.
- Work with many organizations in the local community to create partnerships with and demand for the young people who have been in the program.

Relevant links

- Homeboy website: [Homeboy Industries](http://HomeboyIndustries.com)
- Homeboy Wikipedia: [HI Wikipedia](https://en.wikipedia.org/wiki/Homeboy_Industries)
- Documentary on HI: [El padre y los homies](https://www.youtube.com/watch?v=Elpadre)
- Founder book: [Tattoos on the Heart](https://www.amazon.com/dp/0312345678)
- Journalist book: [G-Dog & Homeboys](https://www.amazon.com/dp/0312345679)
- HI Research: [Homeboy Research](https://www.homeboyindustries.com/research)
- HI Controversy: [Gang criminal activity](https://www.homeboyindustries.com/controversy)



HARLEM CHILDREN'S ZONE

Harlem Children's Zone

Concise description

Created as a systemic intervention to end generational poverty, Harlem Children's Zone (HCZ) is an experiment in getting the community to provide the care needed for impoverished children and families. It is now being expanded to several US cities.

HCZ provides free support in the form of parenting workshops, a preschool program, three charter schools, and child-oriented health programs for thousands of children and families. The HCZ is "aimed at doing nothing less than breaking the cycle of generational poverty for the thousands of children and families it serves."

The two fundamental principles of The Zone Project are to help kids as early in their lives as possible and to create a critical mass of adults around them who understand what it takes to help children succeed.

Components of the HCZ programs include:

- The Baby College: for parents of children ages 0–3
- All-day pre-kindergarten
- Extended-day charter schools (Promise Academy)
- Health clinics and community centers for children and adults during after-school, weekend and summer hours
- Youth violence prevention efforts
- Social services such as a foster-care prevention service
- After-school programs equipped with academic resources and extracurricular activities
- College admissions and retention support
- Post-high school programs aimed to help students during their college years and beyond

Innovative adaptations and extensions

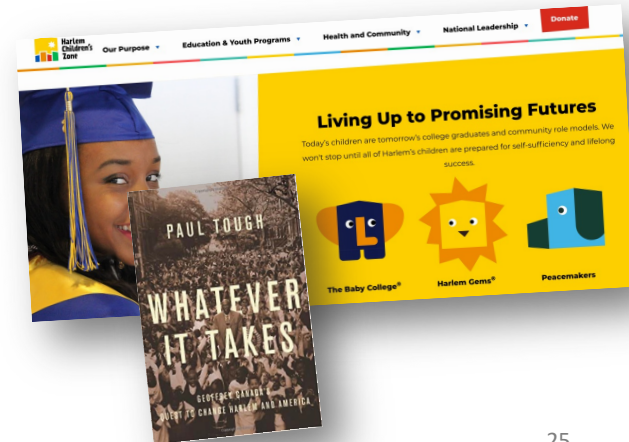
Longitudinal studies have now established that children who are read to daily have as many as 20,000 more vocabulary words by age eight as children who are not read to regularly. This is thought to be how generational poverty begins—and then persists.

Healthy communities think through these issues systematically. Some principles that may allow such programs to be fostered and adapted include:

- Ensure that all families can participate entirely for free.
- Encourage broad participation across the community. For instance, engage middle school students to volunteer to help with all-day kindergarten story hours, art classes, or other forms of enrichment.
- Engage local corporations to contribute goods, services, and financial support to ensure that the programs are sustainably funded and not dependent on public financing. Also encourage those firms to provide jobs for the program alumnae.

Relevant links

- HCZ website: [HCZ](#)
- HCZ Wikipedia: [HCZ Wiki](#)
- Book: [Whatever it Takes](#)
- Radio episode: [TAL HCZ](#)
- Expansion: [Six Cities](#)
- Evaluation: [Results](#)



Flexibility² Talent Network, PWC

Concise description

Large-scale consulting firms like McKinsey, PWC, Ernst & Young, Deloitte and others have found that their talented and experienced consultants want to have far greater flexibility to determine when and how they will work. This is commonly dictated by life situations: the birth of a child, moving to a new location, retirement, or the careers needs of a spouse, for instance. Yet clever firms have found ways to continue to access such talented, highly trained individuals even when they can't or prefer not to be on call full time.

It is important to see this as a general trend with many kinds of responses emerging all over the world. Slightly different than mere gig work (a trend covered elsewhere in our precursor catalog) this is more about top talent for hire. In that sense, it mirrors how movies have produced for decades—fitting the exact team you need for a specific movie production, lasting a year or two. It is also a bit like the way sports teams are composed, for one season at a time, and with the individual team members rotating in and out constantly.

Of the examples cited here, the one that is most typical is the FTN from PWC. This essentially takes their many different specialized skills and makes them available in ways that can be temporary—to meet seasonal demand (tax filing season) or special needs. A significant variant in the same vein is the E&Y Wavespace network: this is a carefully curated group of global luminaries that E&Y has attracted and can configure and deploy as needed for demanding challenges anywhere in the world. E&Y typically uses not only these exceptional individuals but puts them in technologically advanced facilities for amazing focused meetings to solve tough problems.

Innovative adaptations and extensions

One reason why economies get staid is the belief that employees deserve a job for life, and that companies are obligated to constantly work with the talent they have in house at any time. So, it can be especially refreshing to realize that it is much easier for firms, and often better for individual workers, to commit to a brief project-based challenge instead.

Consider themes and variations like these:

- Use older, experienced domain experts, researchers, or senior leaders as mentors, coaches, or temporary team members;
- Build your own specialist network of global advisors for special challenges (like blockchain, cybersecurity, or global scaling) paid some agreed day rate, then make them available to young people working in a startup accelerator as needed;
- Create relationships with headhunter firms in your area to specifically help you find temporary, project-based, team members, rather than full-time employees;
- Partner with universities to gain access to either faculty members or teaching assistants in their annual periods when the university is not in session;
- Create entirely new flexible work contracts with your own employees, where those that wish can opt for project-based work contracts instead of full-time work.

Relevant links

- PWC FTN website: [FTN](#)
- YouTube FTN: [FTN video](#)
- Independent coverage: [Going Concern](#)
- EY Wavespace: [Wavespace](#)
- EY GigNow network: [GigNow](#)
- McKinsey Talent Network: [McK Talent function](#)
- Forbes on McK Talent: [Forbes](#)



Teach For All Program

Concise description

Based on the successful US model called Teach for America, Teach for All is a global program designed to attract skilled and motivated graduates of leading university programs to volunteer as teachers in regions where they are needed most. Commitments are intended to last at least two years and designed to ensure that stressed educational systems get exceptional talent, rather than marginal talent in the areas that are most distressed.

Teach for All uses a proprietary selection process to select applicants for persistence and adaptability, two qualities that help to ensure success over time, even when resources are scarce, and systems are dysfunctional.

A benefit of the TFA model is that that it engages highly talented individuals as teachers, encouraging them to serve their communities, which tends to make them lifelong advocates of strong educational systems.

It is also the case that respected mainstream employers tend to respect the alumnae of Teach for All, often giving them preferred roles, such as internships or fellowships, in part because of the prestige and experience gained in two-years with TFA.

Innovative adaptations and extensions

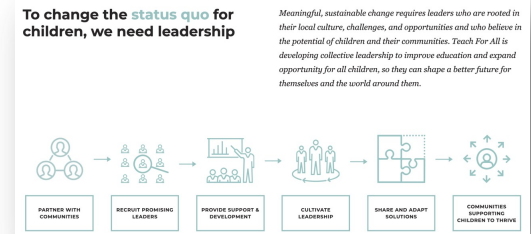
One way to think about partnering with TFA, is that it tends to bring in talent for teaching in ways that educational salaries can rarely hope to achieve. While this can often be threatening to regular teachers (and their unions), the individuals are typically selected for the communications skills and persona needed to minimize these predictable social challenges.

Savvy leaders can leverage the TFA capability by using it in these special situations:

- When local educational districts and regions are financially stressed and unable to fully cope with local community needs;
- When a change in educational methods, curriculum, or teaching models is overdue, desperately needed, but cannot be funded for development using conventional means and mechanisms;
- When you wish to try a new form of teaching in a new place, such as just-in-time learning; special learning certifications; or reskilling within a workplace or a vertical market (e.g., coal mining) that needs to outsource many workers;
- Focus on teens or minorities that are chronically-unemployed or under-employed to help them build skills and prepare them for new needs.

Relevant links

- Teach for All website: [TFA](#)
- Wikipedia on TFA: [Wikipedia TFA](#)
- Challenges with TFA: [TFA going local](#)
- Criticism about organization: [Criticism](#)



Outward Bound Program

Concise description

Outward Bound (OB) is an international network of outdoor education organizations founded in 1941. Today it runs schools in over 35 countries attended by more than 150,000 people each year. They focus on experiential learning, by putting small teams in outdoor environments, where they must learn to solve problems, make decisions, and build leadership skills.

This general idea of situated or experiential learning is widely praised in the domain of educational research. When people are in these distinctive settings their familiar habits and practices are disrupted, so they must adapt much more than they normally do. Plus, the memories of both the place and the experiences tend to be vivid, helping any lessons and learnings persist much more effectively than conventional educational settings.

Innovative adaptations and extensions

Any great experiential learning program can have a big impact on individuals and teams. As the Buddhists have noted: at the end of our lives, the only days we remember are the ones where we did something different.

Clever ways to adapt or leverage an experience like Outward Bound might be:

- Adapt it for individuals with troubled pasts. OB has variations of its program in some regions explicitly designed for these special individuals;
- Use a program like this at critical junctures, such as in a gap year, or just before university studies, or just prior to a crucial team challenge that might be expected to last many months;
- Use it as a family bonding experience—at a critical age juncture;
- Sponsor it with affiliate organizations—church groups, fraternities or sororities; departments within a firm; professional associations, sports teams;
- Allow such experiences to be a paid benefit that individuals earn through special effort—such as academic performance, volunteer work, teacher selection, etc.

Relevant links

- Outward Bound International website: [OB Net](#)
- OB Wikipedia: [Wikipedia OB](#)
- OB US: [OB USA](#)
- Independent reviews: [Reviews](#)



Team Reviews

Concise description

For decades in the management sciences, there has been a search for the “secrets” that will unlock team effectiveness. A vast array of approaches are available commercially, exhibiting the usual bell curve of credibility, usability and utility.

Many popular approaches, like Meyers Briggs and other systems that reduce people to basic “types” have been systematized into apps or tools, essentially automating practices that do have familiarity, but don’t work very well in practice. Meanwhile, both Daniel Kahneman and more recently Richard Thaler, got actual Nobel Prizes for building massive fields of research and practice by proving that people very frequently behave in ways that are not rational. Researchers have now codified more than 1,200 distinct cognitive biases humans routinely exhibit.

Even though this arena is plagued with many charlatans, it is a bad idea to rely on teams and have no discipline for assessing and improving them. For this precursor we are creating a composite view of the most respected methods, and explicitly NOT recommending any one approach or vendor.

In that spirit, we are citing 360° reviews as a general method. In this approach, all team participants evaluate one another and themselves. Then the feedback is consolidated, and typically fed back to each individual graphically, most commonly in a spider diagram. Where an organization properly knows what metrics matter and can be measured (huge assumption), this general approach allows each team member to visually see how they perform vs. an abstract “ideal”.

Innovative adaptations and extensions

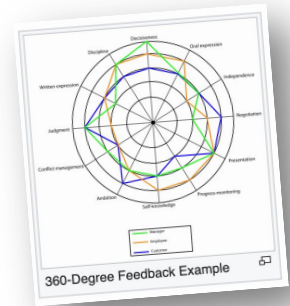
Complex problems depend on multi-disciplinary teams. Yet all too often, people assemble diverse groups and do little or nothing to help them be effective collectively. This problem gets worse in different situations—such as in medicine, the military, in hostile environments (outer space, undersea, etc.). Teamwork is so important that you should not “wing it”. Do the research to find the methods that work best for teams like yours.

Then consider these important extensions and extrapolations:

- Use a standard approach routinely, reliably, and longitudinally: when you find a tool that works, use it consistently;
- Never assume that all team members should be the same. It is highly likely that a good team evaluation tool will be subtle enough to find distinguish between universal needs (that all your teams need) and specialized needs (that vary by role).
- Next, create deeply human-centered advances, proactively helping people to determine their programmatic priorities (in consultation with HR colleagues). For instance, there may be periods (say, after the arrival of a new baby at home) where a team member wants to be programmed only around core strengths. At other times that same team member might want to focus on critical stretches.

Relevant links

- 360° reviews Wikipedia: [360](#)
- Team Effectiveness research: [Citations](#)
- Team questionnaire design: [Team audit](#)
- Team Leadership research: [Team Leadership](#)
- Personal Testimonial: [Commentary](#)



MaRS Discovery District, Canada

Concise description

MaRS Discovery District is a not-for-profit corporation founded in Toronto, Ontario, Canada in 2000. Its stated goal is to commercialize publicly funded medical research and other technologies with the help of local private enterprises and as such is a public-private partnership. Its strange name derived originally from “Medical and Related Sciences”—a derivation it no longer wants to be associated with or limited by.

As part of its mission MaRS says, “MaRS helps create successful global businesses from Canada's science, technology and social innovation.” As of 2014, startup companies emerging from MaRS had created more than 4,000 jobs, and in the period of 2011 to 2014 had raised over \$750 million in capital investments.

Operating as a Charitable Trust, with a mission to support tech development across Canada, makes this a bit of an odd duck especially in contradistinction with venture capital funds. For instance, MaRS has a wide array of corporate partners and professional service organizations who are expected to offer their expertise at no cost through education and training, and advisory hours.

Making it a charitable organization can and has also led to controversies, such as what a “fair” salary level would be for the CEO and other top staffers—problems that are rare in the VC world, where the compensation is directly related to the size of the fund and its investment success.

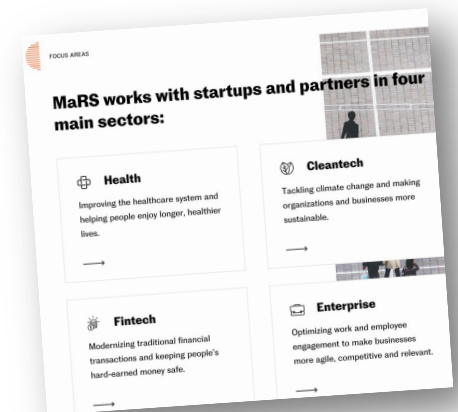
Innovative adaptations and extensions

People nearly everywhere over invest in tech accelerators of all kinds—expecting too much from them, and rarely paying attention to the poor results they routinely deliver. Still, there are some aspects of the MaRS Discover District that deserve notice:

- Actively select one to five areas of emergent interest to concentrate upon. Naturally, these should be related to local priorities in your region;
- Find ways to engage leading firms and universities in your region as investors, partners, and collaborators. Do not necessarily do this the way MaRS does.
- Specifically create a cadence and rhythm to your work. Annual summits, research reports, investment cycles, and demo days can do a lot to create an impetus to act;
- ***It is common in major cities for universities to open a university outreach inside these tech accelerators. Typically, the goal is to support startups with access to professors, ways to hire students, and the hope that startups will license bits from their IP or patent portfolios.***

Relevant links

- Website: [MaRS](#)
- Wikipedia link: [MaRS Wikipedia](#)
- YouTube channel: [MaRS YouTube](#)
- Crunchbase data: [CB on MaRS DD](#)
- Magazine: [MaRS Magazine](#)
- MaRS TechCrunch: [TC on MaRS](#)



FOUR-DAY WEEK SHIFTS

Four-Day Workweek Innovations

Concise description

Throughout history as productivity has increased society has intervened to shorten the normal workweek. Yet for reasons most sociologists are baffled by, this longstanding pattern has stalled for seventy years or more. The world over, work norms are 40-hour weeks, typically though not always, 8-hour days, five days per week.

This is finally starting to change.

Of the two most common variants the easiest shift is a 4/10 pattern, where work is four days a week for ten hours per day, thus demanding little sacrifice for employers. Employers using this approach often find employees are much happier with this work arrangement, and experience little or no loss of productivity. Employers also can save money this way, typically by not having to heat or cool office spaces over three-day weekends. From the vantage point of employees, the benefits are self-evident, specifically more time for families, hobbies, and local activities—often directly benefitting local economies.

The second variant, less common so far, is a shift to a 32-hour workweek: four hours a day, eight days a week. Research on this one is also very positive and requires much less adjusting on the part of employees. Surprisingly, employers that adopt this approach often discover that their employees prefer it so much that they will often be especially loyal to their firms—foregoing raises and staying put longer.

With either variant, one complication is synchronizing such shifts in a community. If, for instance, some employers make the shift, but the educational system does not, then families with school-age children will derive far less benefit from the extra day of flexibility.

Innovative adaptations and extensions

Long term, this overdue shift is likely to become the norm. Firms, regions, communities or governments that urge its early adoption can be seen as family-centered, modern and progressive. Given the evidence that the shift also seems to pay off for employers, there are other ways to think about building on this emerging trend:

- Use this strategy as part of COVID reduction and recovery approaches, so that family life is rebalanced;
- See this, as New Zealand does, as one way to boost domestic tourism revenues, without opening country borders up to foreign travel so much.
- Make it a norm for communities being optimized for younger workers, startups, and people recently out of school—to enhance work life balance and appeal to “nomad” workers.
- For maximum return on effort, take care to think through the associated schedules for schools in the region too. Or allow that day you gain to be used by universities for *continuing education and certification*.

Relevant links

- Wikipedia: [Four-Day Week](#)
- Japan Shift: [Japan 4-day week](#)
- Global shift: [Bloomberg](#)
- Pros & cons: [CHANGE](#)
- Bad idea: [Critique](#)
- New Zealand: [Guardian](#)
- Atlantic Mag: [Research](#)



X-PRIZE Foundation and Innocentive

Concise description

Throughout history prizes have been used to solve tough problems, and in a connected world seem to work better than ever in helping to inspire teams to do amazing things.

The best analyses and academic research have now established that, on balance, every time a cash prize has been offered to solve a tough problem the world spends 17-19 times that amount of money to find solutions. Moreover, with a well-designed prize, one need never spend the prize money unless and until the goal has been definitively reached. Thus, prizes are an excellent basic strategy whenever you want to solve a tough problem and do not have the team in-house that can reliably find the novel and effective solution.

X-Prize Foundation is a consulting organization that specifically designs prize competitions to solve problems that are valuable, complicated and vexingly difficult. Their value added comes in the design of the problem itself, plus the careful establishment of definitive solution goals. This is important because if either the problem is poorly framed or the prize goals ambiguous, the sponsor might end up paying the (sometimes hefty) award to multiple solvers.

X-Prizes tend to be at either the US\$1m or \$10m level, in each case sponsored by some individuals or firms. It is best known for the Ansari X-Prize—first reusable craft to go to low-earth orbit twice in a month.

Innocentive, now owned by a crowd sourcing firm called Wazoku, addresses smaller, more focused challenges, with an average prize hovering around US\$35k. This works well for simpler challenges that are often narrowly defined and industry specific.

Innovative adaptations and extensions

Prizes used to inspire innovation have a long and distinguished history, and now seem to be even more effective and useful since you can easily promote them broadly on the internet. They are usually sponsored by governments, companies, or wealthy individuals, and the services listed here make that easier than ever to administer.

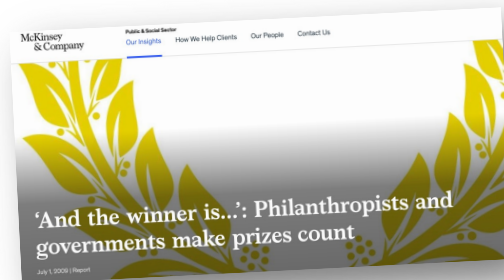
Consider using prizes whenever:

- A problem is especially challenging and urgent;
- The individuals or teams under your direct control do not know any workable answer and/or may not have the ideal mix of talent;
- You sense the that answer you seek might be especially surprising, novel, or unprecedented;
- When awarding the prize can itself lead to a newsworthy event, such as when the winner(s) might be from an especially unexpected or deserving sector of society.

Always bear in mind that the design of both competitions and the explicit terms of the prize need to be carefully developed. Also, as a rule, the promotion costs for the competition tend to be roughly equal to the prize amounts being awarded., if you want many entrants. And you do! The more, the better.

Relevant links

- X-Prize Wikipedia: [XPrize Wiki](#)
- X-Prize website: [XPrize.org](#)
- Innocentive Wikipedia: [InnoCentive Wiki](#)
- Innocentive website: [Innocentive](#)
- McKinsey Research: [Using Prizes](#)
- Prizes for Idea: [Prizes Roundup](#)
- Prize pitfalls: [HBR](#)



Kaggle

Concise description

The first firm to build a network of Data Scientists and machine learning experts, Kaggle was a hot company from its start in 2010. It only took till 2011 to raise millions in equity. Large firms, including GE used Kaggle routinely to build robust data sets and crack complex algorithms needed to create machine learning capabilities for many of their 100+ companies serving five major economic sectors.

Machine learning is key here. This is the ability for digital devices to “learn” from patterns, choices, or data in order to achieve goals that people care about, without programmers being involved so directly over time. As an example, Nest or similar “smart” thermostats learn what preferences people have as they adjust on different days of the week or times of day and depending on whether they are home or away. Now smart appliances, vehicles, factory equipment, medical devices, drones, sensors, and security systems need these capabilities, creating a huge growth in demand for programmers and data analysts with the special skills needed to solve such challenges.

This is slightly related to Topcoder or Codeforces covered elsewhere in this precursor catalog, with one critical difference. Where those sites find talent to solve something like a website design, this site helps you find great data scientists for hire. Such a rare talent pool might be something you need very rarely, yet for some crucial capability that makes all the difference in building a fantastic innovation you need.

Until 2017, Kaggle was wildly successful, largely because it was the best place to get amazing algorithmic scientists to be available for hire, at a fraction of normal market costs. Google bought them in 2017, making it a bit more problematic to do business with them.

Innovative adaptations and extensions

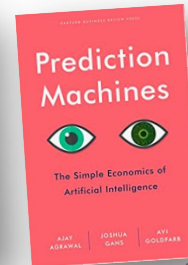
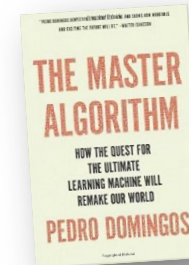
If you’re not inside MIT or Stanford, it is hard to be certain that the best data scientists are sitting right near you. So, knowing that you can access some of the best data scientists in the world without even knowing who they are is a great source of comfort and an amazing resource.

Often the best way to use Kaggle is to sponsor a competition to solve a problem, then reward the winners fairly. Some ways to leverage or adapting this

- Sponsor competitions that are especially noteworthy or relevant for a particular region or economic situation;
- Teach the fundamentals of machine learning, and the reasons why it is growing in strategic value and importance everywhere;
- Work with younger students, in high schools and undergraduate studies to give them basic skills in understanding what problems algorithms are useful for;
- Encourage government ministries to reward local teams or individuals who can do the interesting work of finding governmental services advances that use machine learning and algorithms effectively;
- Run annual events, sponsored by companies, philanthropies, or governmental agencies that use novel algorithms in surprising ways.

Relevant links

- Kaggle website: [Kaggle](https://www.kaggle.com)
- Kaggle Wikipedia: [Kaggle Wikipedia](https://en.wikipedia.org/wiki/Kaggle)
- Kaggle in Class: [University leverage](https://www.kaggle.com/learn)
- Kaggle competitions: [Solution winners](https://www.kaggle.com/competitions)
- Kaggle Crunchbase: [Crunchbase](https://www.crunchbase.com/organization/kaggle)
- Acquisition: [TechCrunch](https://www.techcrunch.com/2017/07/26/google-acquires-kaggle/)
- Kaggle criticism: [Critique](https://www.kaggle.com/critique)



Just Serve Platform

Concise description

Created as a “gift to the world” from the Church of Jesus Christ of Latter-Day Saints, Just Serve is the world’s leading platform for orchestrating and supporting volunteers to do community work.

The essence of this platform is that it allows any group to sponsor volunteer initiatives, then uses a mobile app to help identify and coordinate the volunteers needed to do the work—using secure modern mobile systems. It is global in scale, sophisticated in its functionality, and rapidly growing. Since the value of a volunteer hour now exceeds US \$28, the Just Serve platform provably creates billions in economic lift each year—entirely for free.

While this platform was created to augment the missionary work of the LDS Church, it is in no way limited to or by the Church’s own goals. More than half of the volunteers are not in anyway affiliated with the LDS Church, and a growing number of global philanthropies (including Catholic Relief Service, The Red Cross, United Way, Goodwill Industries and many others) have found Just Serve to be the best available partner for leveraging volunteer work. This is largely because the LDS Church has committed to building world-class technologies and allowing them to be used free of charge by its partners and affiliates.

For volunteers, one of the key advantages is that the platform builds a secure record—using blockchain—of their cumulative history, projects, and skills as a volunteer or team leader. Just Serve believes records of volunteerism may become as important as other credentials (e.g., test scores, technical certifications, and degrees) in documenting the achievements of individuals. Growing evidence also suggests that volunteer work is very good for mental and physical wellbeing.

Innovative adaptations and extensions

Economists widely believe that the whole world will suffer from a pandemic deficit, with the depth and duration varying from country to country. A handful of countries, like New Zealand, may enjoy a pandemic premium as their economies are not stressed by the pandemic, but for most, it is expected to take between three and twenty years to return to pre-pandemic economic norms.

One of the best ways to lessen the severity of these challenges is to harness the power of volunteerism. The Just Serve platform makes this easy, permitting layered sponsorship—where there may be one organization funding a project, with another managing it.

Consider these extensions and possibilities:

- Sponsor community improvement programs of strategic importance in your area;
- Marshall volunteers rapidly to deal with calamities following some natural disaster or weather-related crisis;
- Attract and orchestrate volunteers to help support vaccination events for reducing the risks of COVID in your area;
- Focus on teens or minorities that are chronically-unemployed or under-employed to help them build skills, and personal records of community service.

Relevant links

- Just Serve website: [JustServe](https://www.justserve.org)
- Wikipedia on Community Service: [Community Service](https://en.wikipedia.org/wiki/Community_Service)
- Value of Volunteers: [Value of Volunteer Hour](https://www.justserve.org/value-of-volunteer-hour)
- Health effects of volunteerism: [Health Effects](https://www.justserve.org/health-effects)
- Community topics: [On "communities"](https://www.justserve.org/on-communities)
- Effects of Youth Unemployment: [Youth Unemployment](https://www.justserve.org/youth-unemployment)



Amazon Web Services

Concise description

People are generally aware of the field of “cloud computing”. Fewer realize how revolutionary this has been and how it has transformed the digital world. AWS is the largest player in the field, running about a third of the cloud computing services in the world.

The main reason Amazon is dominant is AWS: it provides on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis. These cloud computing web services provide a variety of basic abstract technical infrastructure and distributed computing building blocks and tools.

To simplify, any team can now imagine a new capability as a startup business, a governmental service improvement, a philanthropic capability, even a new focus for university research, then build the requisite functionality within a matter of hours or days, using reusable, robust functional modules in a “stack” running on computers they need not own or maintain.

These modules make it trivially easy to do hard things, whether managing security, financial transactions globally, inventory and supply chains, handling data analytics, or hundreds of other needs.

The prices for these services are shockingly low—at least initially. A startup might discover it can build a state-of-the-art website with exotic bells and whistles within a few days, then operate for just a few dollars per hour—in contrast to the millions it would cost to build all that functionality from scratch. The prices increase with scale of users though—such that Netflix pays AWS an estimated \$9.6m per month for its services!

Innovative adaptations and extensions

Companies of the future are certain to be cloud based, using modular functionality, with ever more robust and varied services built into the digital systems they depend upon to function. The earlier this way of thinking can be taught, the better. And the more readily startup firms or innovation teams have access to such environments, the easier it will be for them to build what comes next. Consider:

- Training and practice for young people in building things from modules—Lego building bricks and then functional modules;
- Access to prototyping training and practice, including special labs, environments, and coaches that will give teams the skills they need to build functional systems;
- Negotiate discounts and contract terms designed to make it easier for teams to build their demos, beta, and alpha versions, then to operate affordably, even at scale. Note how some incubators, such as Founder Friendly Labs covered elsewhere in the precursor catalog, do this for participating startups;
- Provide incentives and establish metrics across government ministries or departments to require faster development, typically by requiring a shared computing “backbone” and architecture, such as with AWS or Microsoft Azure (largest competitor).

Relevant links

- AWS Wikipedia: [AWS Wiki](#)
- AWS website: [AWS](#)
- Getting Started: [AWS Start](#)
- News: [AWS News](#)
- AWS critique: [AWS Unfair](#)
- AWS anxiety: [NYT](#)



Azure

Concise description

Azure is Microsoft's cloud computing service created six years after Amazon Web Services, for building, testing, deploying, hosting, and managing applications and services on Microsoft data centers. It provides software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS), and supports many different programming languages, tools, and frameworks, including both Microsoft-specific and third-party software and systems.

As with AWS, the Azure system makes it easy for startups to build robust systems and operate them with world-class functionality and security, and at costs that start out at very low levels. For any small or medium size firm, and certainly for startups, the economics of this form of cloud computing are vastly superior to anything a firm could possibly do acting alone in terms of value for money. As is commonly the case, the cloud computing world has swiftly devolved into a battle of giants, with Amazon AWS, Microsoft Azure and Google Cloud battling one another for service superiority and market share.

Given that there is such an advantage to using these cloud services when firms are small, it is usually more productive for teams to debate which such service to use, than to debate whether to use a cloud service. This precursor catalog offers no opinions, but instead tries to highlight the cloud computing trend as a vital driver of sophisticated functionality and swift development, even for tiny firms or governmental agencies with very little budget.

Innovative adaptations and extensions

While AWS is the global leader in sophisticated cloud computing systems, it is not uncommon for larger enterprises, philanthropies or governmental organizations to prefer doing business with Microsoft, typically because of existing prior relationships. Also, there is some pushback on AWS for the way the pricing scales up as you grow and succeed.

For our purposes, the issues are different. What should you do to help a firm know about and use such cloud services well? We urge considerations like these:

- Train young people to building things in modular fashion;
- Provide special purpose prototyping environments, including access to robust developmental environments and coaches that can help teams prototype their new systems routinely and reliably;
- Use incentives and metrics and rewards to help acknowledge those teams that use such services most effectively—and build their prototypes fastest in such clouds;
- Consider building prizes or challenges for ANY team (even those not in your employ) that can build you the solution you need fastest, in the cloud you prefer.

Relevant links

- Azure Wikipedia: [Azure Wiki](#)
- Azure website: [Azure](#)
- Getting Started: [Free Starter account](#)
- Azure Reviews: [Reviews](#)
- Azure v AWS: [Azure v AWS](#)
- Azure evaluation: [Evaluation](#)

