



ADULT LITERACY LANDSCAPE ANALYSIS

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ABOUT THIS REPORT

This report is a landscape analysis of the adult literacy space in the United States that was created as part of a formal prize design process for the Adult Literacy XPRIZE. This report summarizes the primary and secondary research and analysis conducted during that prize design with the goal of informing the development of a prize competition would that incentivize revolutionary literacy solutions for adult learners in the U.S.

EXECUTIVE SUMMARY

Today the United States faces an educational Grand Challenge—more than 36 million U.S. adults lack basic English literacy skills.

Adult literacy is key to healthy families and communities, a stable economy, an educated and participatory citizenry, and to the very future of our society: our children. American democracy and culture is predicated on the belief that we all share opportunities for greatness—in our own lives, in our children’s lives, and in society—yet these opportunities are less available to those without basic skills.

Local service providers such as community college systems, library literacy programs, and other organizations provide the vast majority of adult literacy education in the U.S. Adult literacy programs are generally place-based, geographically distinct programs that provide direct, in-person services in a classroom, small group, or one-on-one setting. These programs are relatively small in size and scope, are generally underfunded, and are unable to scale to meet the high level of need in the U.S.

Significant market failures have contributed to the prevalence of low adult literacy skills in the U.S., including a lack of the following: access to services and community support for low-literate adults, persistence among adult learners, relevance of literacy solutions for adults, and scalable solutions capable of meeting the needs of millions of adults. By integrating mobile technology solutions with deployment strategies, educators, engineers, innovators, game designers, and technology experts from around the world will develop a new generation of adult literacy learning tools that are highly effective, scalable, and accessible to those in need.

PRIZE DESIGN PROCESS

XPRIZE IS AN INNOVATION ENGINE.

A facilitator of exponential change. A catalyst for the benefit of humanity.

We provide the thought leadership and expertise to identify the Grand Challenges of our time—the national or global crises, market failures, and opportunities where solutions are thought to be either out of reach or just plain impossible. We then design and operate incentivized prize competitions to solve these problems.

XPRIZE acts as a convening platform, bringing together passionate partners to accelerate a positive future based upon our vision of a preferred state. These partners include sponsors, entrepreneurs, philanthropists, industry, government, academia, and innovators who help us make the impossible possible.

We don't dictate the solution. We ask the right questions. And we provide the platform, global visibility, credibility, and opportunity for our partners to take risks that ultimately lead to radical breakthroughs. Together, we create the future. The result? Averted crises. Revitalized markets. Better technologies. New industries. And empowered people.

XPRIZE accomplishes this by creating large-scale, market-driven, incentivized prize competitions that focus global innovators on goals that are audacious but achievable. We leverage the intellectual and financial capital necessary to stimulate research and development, yielding measurable results and efficiency that ensure our supporters consistently back winning solutions.

The design of an XPRIZE competition is guided by the following principles:

- XPRIZES result in innovations that make a lasting impact. Although a technological breakthrough may meet this criterion, so do prizes that inspire teams to use existing technologies, knowledge, and/or systems in more effective ways.
- XPRIZES legitimize a field of interest, making it possible for teams to attract support for their efforts.
- XPRIZES generate popular interest through the prize life cycle:
 - *Enrollment:* The world is introduced to the players. Prizes ideally encourage the participation of a wide range of participants—from leading thinkers in relevant fields to maverick inventors and entrepreneurs. These rare individuals are often as difficult to identify as the proverbial “needle in a haystack.” XPRIZES attract these “needles” to solve seemingly impossible problems.

- *Competition*: The world watches as teams work to win the XPRIZE.
 - *Post-Win*: Retrospectively, competitions are regarded as landmark events that revolutionized an industry or opened up new markets.
- XPRIZE competitions incorporate elements of both technological innovation and successful real-world deployment. An innovation that is too costly or too inconvenient to deploy widely will not win.
 - XPRIZE competitions engage multidisciplinary innovators who would otherwise be unlikely to tackle the problems that the prize is designed to address.
 - XPRIZE competitions promote collaboration in the quest to find a solution.

In developing prizes for more than 15 years, XPRIZE has become expert in prize design. The XPRIZE prize design process is anchored in an open collaboration model, which is designed to enable many external constituencies to contribute to the process. Input from innovators, industry leaders, academia, government, non-governmental organizations, and the general public is routinely and formally sought.

The ideas that emerge from this collaboration are vetted through XPRIZE's formal prize design process to ensure the design of the best competition possible. XPRIZE develops competitions in areas where market failures have limited progress or exhausted resources.

During the prize design process, XPRIZE identifies and analyzes the underlying market failures that a prize can address, focusing on the technological, market, behavioral, and policy sectors that could be impacted and changed by a prize. XPRIZE engages with technology experts, industry advisors, and creative thought leaders to identify and prioritize prize concepts and technical parameters that can best solve market failures. For the leading prize concept(s), XPRIZE then creates a set of initial prize concepts.

Once XPRIZE and its sponsors agree to move forward with a single prize concept, that concept is truly crafted into an XPRIZE competition. XPRIZE defines the value proposition and stakeholders, and develops detailed plans for the launch, operation, and awarding of the prize. Additionally, XPRIZE finalizes competition guidelines and establishes success criteria for the competition, including detailed team and sponsor business, marketing, and promotional strategies. XPRIZE also lays out a detailed operations strategy that defines the operational, sponsorship, marketing, educational, and financial resource requirements for all competition partners, sponsors, and stakeholders.

PROJECT BACKGROUND & MARKET SITUATION ANALYSIS

Lack of basic literacy skills is a debilitating problem for millions of adults in the United States. However, few Americans are aware that low literacy is a problem, and even fewer understand the societal impacts that result from a society with a large number of adults with low literacy skills. Thus, a lack of urgency exists to address the problem of adult literacy. The U.S. has been a leader in education for so long that it seems impossible that we have lost our place at the top. Americans are shocked to learn that the current generation of young adults is the first in U.S. history to be less well educated than the preceding generation (see Figure 1).¹

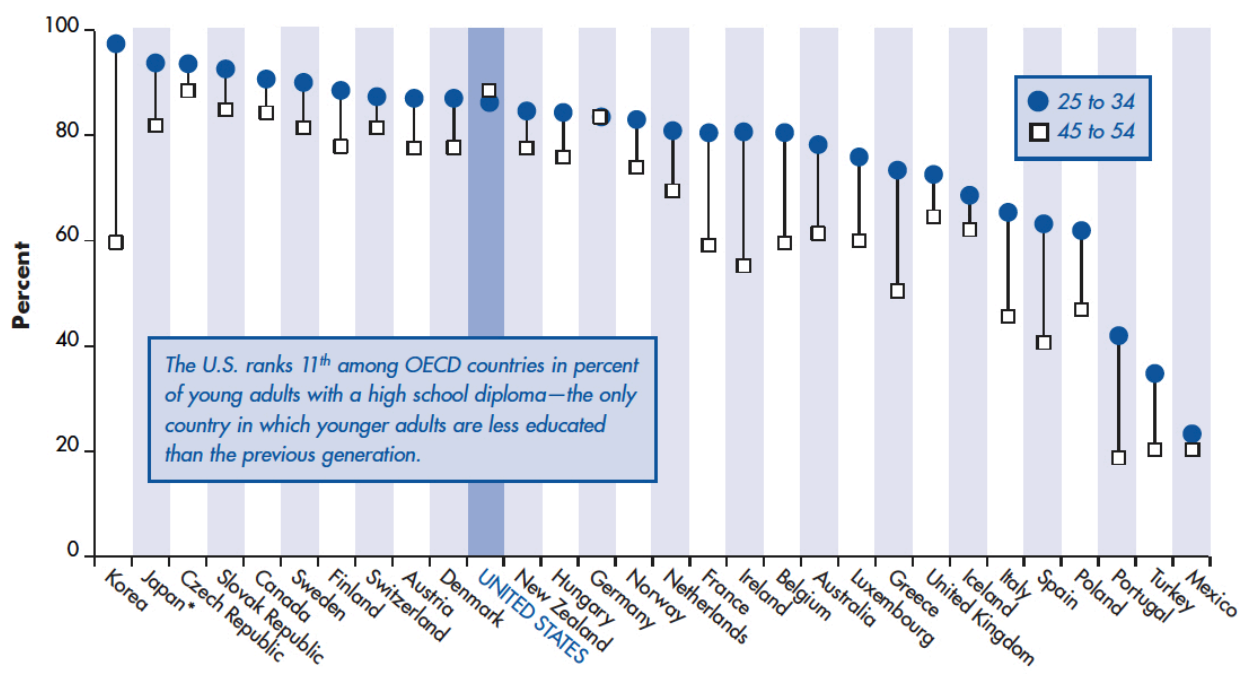
This reality flies in the face of what Americans believe about themselves. We are a nation of people who want more for our children than we had, who fight for our children to have opportunities we did not, and who strive for a better standard of living with each passing generation. We believe that we are the land of opportunity—that we all have access to knowledge that can improve our lives.

There are significant segments of our population, however, that do not have the skills and tools necessary to live up to this ideal, support their children's success in school, participate in government or civic life, gain skilled employment, or ensure their families' health and safety.

¹ National Commission on Adult Literacy. (2008). *Reach Higher, America: Overcoming Crisis in the U.S. Workforce*. Retrieved from www.nationalcommissiononadulthoodliteracy.org/ReachHigherAmerica/ReachHigher.pdf

Figure 1. High School Attainment of Younger and Older Adults

High School Attainment of Younger and Older Adults—U.S. and OECD Countries, 2005



GRAND CHALLENGE

Today we face the Grand Challenge that **more than 36 million U.S. adults lack basic literacy skills.**² Without these basic skills, many adults struggle every day to navigate in our increasingly complex society, to find and hold meaningful employment, and to provide even the most basic of necessities for themselves and their families. The challenges faced by adults with low literacy skills spill over into communities, as well as the workplace and healthcare. Individuals with low literacy skills are often unable to gain employment or to advance at work. These individuals often incur unnecessary health care costs, such as emergency room visits, because they are not able to adequately address their families’ health needs, such as reading prescription labels or physician instructions. Low literacy skills cost the U.S. an estimated \$225

² Organisation for Economic Co-operation and Development. (2013). *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*. Retrieved from <http://skills.oecd.org/skillsoutlook.html>

billion in lost productivity and tax revenue and add an estimated \$230 billion to our annual health care costs.³

DEFINING LITERACY

At its most basic level, literacy is the ability to read and interpret the written word. In the modern, knowledge-based economy, however, literacy means so much more. It is the ability to participate in the literate world; to understand and respond to a near-constant influx of information; and to use knowledge to improve our lives.

We define a literate nation as one in which:

- Parents and grandparents help their children succeed in school, read to their children, and share a joy of knowledge with their families.
- People regularly participate in the knowledge-based economy, governance, and civic life.
- Communities have lower crimes rates, lower poverty rates, higher standards of living, and economic stability.
- Individuals can reach their personal potential and identify and meet their goals.
- Everyone has the life skills needed to thrive and the ability to handle their families' health and finances.

XPRIZE uses the Organisation for Economic Cooperation and Development's (OECD) Survey of Adult Skills definition of literacy, which is "understanding, evaluating, using, and engaging with written text to participate in society, to achieve one's goals, and to develop one's knowledge and potential."⁴ XPRIZE acknowledges, however, that the full benefits of literacy come after basic literacy skills have been achieved. Therefore, XPRIZE believes an Adult Literacy XPRIZE should focus on the most disadvantaged adults who have not yet reached the tipping point that enables them to read on their own, learn new information, or apply learned information to make their lives better.

ADULT LITERACY IN THE UNITED STATES

Adult literacy in the U.S. is measured by various national and international agencies. One of the most comprehensive assessments in recent years is the 2013 OECD Survey of Adult Skills, also known as the Program for the International Assessment of Adult Competencies (PIAAC),⁵ which measured literacy, numeracy, and problem solving in technology-rich environments across the 30 OECD countries. This assessment found that the U.S. ranks below average in literacy among these 30 countries. Within the U.S.,

³ ProLiteracy. The Crisis: Adult Literacy Facts. Retrieved from <http://proliteracy.org/the-crisis/adult-literacy-facts>

⁴ ProLiteracy. The Crisis: PIAAC—Survey of Adult Skills. Retrieved from <http://proliteracy.org/the-crisis/piaac-survey-of-adult-skills>

⁵ PIAAC is a household study developed under the auspices of OECD. For more information, visit the National Center for Education Statistics at <http://nces.ed.gov/surveys/piaac> and OECD at www.oecd.org/site/piaac/surveyofadultskills.htm

the literacy skills of adults aged 16 to 65 were determined using computer and paper-based assessments. The breakdown of the U.S. adult population is shown in Table 1 below.

Table 1. Adult Literacy Levels⁶
Program for the International Assessment of Adult Competencies (PIAAC)

PIAAC ASSESSMENT LEVEL	DESCRIPTION OF ASSESSMENT LEVEL	PERCENTAGE OF U.S. RESIDENT ADULT POPULATION	ESTIMATED NUMBER OF U.S. RESIDENT ADULTS (16–65)
BELOW LEVEL 1	Adults have some basic vocabulary knowledge and can locate a single piece of information on a familiar topic in a brief text.	3.9%	8,172,275
LEVEL 1	Adults have basic knowledge of vocabulary, sentences, and paragraphs, and can read short texts (print or digital).	13.6%	28,498,191
LEVEL 2	Adults can read printed or digital material, make low-level inferences, paraphrase, and compare and contrast basic information.	32.6%	68,311,839
LEVEL 3	Adults can read and understand lengthy and dense texts, evaluate and interpret information, and disregard irrelevant information.	34.2%	71,664,568
LEVEL 4	Adults can integrate, interpret, and synthesize information from lengthy and complex texts and can evaluate subtle arguments.	10.9%	22,840,462

⁶ OECD Skills Outlook 2013.

PIAAC ASSESSMENT LEVEL	DESCRIPTION OF ASSESSMENT LEVEL	PERCENTAGE OF U.S. RESIDENT ADULT POPULATION	ESTIMATED NUMBER OF U.S. RESIDENT ADULTS (16–65)
LEVEL 5	Adults can evaluate arguments using logical and conceptual models, evaluate evidentiary sources, use specialized knowledge, and make high-level inferences.	0.6%	1,257,273
MISSING	Adults are not able to provide enough information to assess a score because of language difficulties or mental disabilities.	4.2%	8,800,912
TOTAL		100%	209,545,520

See Appendix B for a full description of PIAAC literacy levels.

Adults who score at Level 1 and below on the PIAAC assessment—the population we often refer to as “low skilled”—have extremely limited literacy skills. More than 36 million U.S. adults fall into this literacy range. This is approximately 18 percent of resident adults aged 16 to 65.

A second study conducted in 2003 by the National Assessment of Adult Literacy (NAAL) scored U.S. adults in four categories: Below Basic, Basic, Intermediate, and Proficient. It found that 14 percent, or approximately 30 million U.S. adults aged 16 and over, have no more than the most simple literacy skills. Three percent of adults could not be interviewed due to language barriers or mental disabilities; that number is not included in the table below.

**Table 2. Adult Literacy Levels and Population Breakdown
National Assessment of Adult Literacy (2003)⁷**

NAAL ASSESSMENT LEVEL	DESCRIPTION OF LEVEL	PERCENTAGE OF U.S. RESIDENT ADULT POPULATION	ESTIMATED NUMBER OF U.S. RESIDENT ADULTS (16 AND OLDER)
BELOW BASIC	No more than the most simple and concrete literacy skills	14%	30 million
BASIC	Can perform simple and basic everyday literacy activities	29%	63 million
INTERMEDIATE	Can perform moderately challenging literacy activities	44%	95 million
PROFICIENT	Can perform complex and challenging literacy activities	13%	28 million
TOTAL			216 million

Literacy levels among adults have changed little overall during the past three decades. A comparison between the 2003 NAAL and the 1992 National Adult Literacy Survey (NALS) found that average literacy scores stayed relatively flat over that 11-year period. Additionally, based on the more recent PIAAC results presented earlier, there has been no great improvement in overall literacy rates since 2003.⁸

In addition to these national and international assessments, various assessment tools are used in the U.S. to measure adult literacy competency. The federal government requires any state that receives federal funding for adult education to use an assessment tool that works within the framework of the National Reporting System for Adult Education (NRS). The NRS was developed by the U.S. Department of Education as a means for interpreting literacy levels and improvements across the various assessment tools used by state education departments and adult education programs.⁹

⁷ NAAL. Key Findings: Demographics—Overall. Retrieved from http://nces.ed.gov/NAAL/kf_demographics.asp

⁸ *Ibid.*

⁹ NRS. About NRS. Retrieved from www.nrsweb.org/about

One of the most widely used of these assessment tools is the Comprehensive Adult Student Assessment Systems (CASAS). CASAS is a competency-based assessment tool that measures the basic skills of adult learners.¹⁰ CASAS scores adults on a scale of zero to 500 and places them in categories known as “CASAS Levels” based on their proven competencies. See Figure 4 for a graphic representation of CASAS scores, CASAS levels, and approximate grade-level equivalents. CASAS provides detailed scoring based on competencies, has proven compatibility with the NRS, and can be used to test adult learners who are native English speakers as well as those who are English language learners.

Low-Literate Adults

The low-literate adult population in the U.S. is disproportionately composed of immigrant and minority groups, with only 10 percent of white adults scoring below Level 2 on the PIAAC assessment, compared with 35 percent of black adults and 43 percent of Hispanic adults. Similarly, the NAAL found that these same populations were significantly overrepresented in the Below Basic category. While black and Hispanic adults comprised 24 percent of the total NAAL population, they made up 59 percent of the Below Basic population. Forty four percent of the Below Basic population did not speak English at home before starting school.¹¹

Socio-economic background correlates significantly with literacy levels, as do parental literacy and education levels. A person born to low-educated parents is 10 times more likely to be low skilled than a person born to higher-educated parents. “Socially disadvantaged group[s] will tend to pass on their disadvantages to their children in the form of weaker skills...” wrote OECD. “This effect is stronger in the U.S. than in other countries.”¹² These data highlight adult literacy as a civil rights issue in the U.S.

Literacy is also closely related to negative social outcomes. Nearly 30 percent of adults with low skills report poor health outcomes (rating their health as “poor” or “fair”), and nearly one-half report low levels of perceived political efficacy.¹³

¹⁰ CASAS. About CASAS. Retrieved from www.casas.org/docs/pagecontents/whatiscasas.pdf

¹¹ *Ibid.*

¹² OECD. (2013). *Time for the U.S. to Reskill? What the Survey of Adult Skills Says*, OECD Skills Studies. Retrieved from http://skills.oecd.org/Survey_of_Adult_Skills_US.pdf.

¹³ *Ibid.*

Table 3. Snapshot of the Low-Literate Adult Population in the U.S.^{14,15}

- One-third are under the age of 35
- One-third are immigrants
- One-half are black or Hispanic
- One-half are men; among young adults (ages 16–24), two-thirds are men
- Two-thirds are employed, but generally earn low wages
- Nearly one-third are in fair or poor health

Low-literate adults live in nearly every community and every city in the U.S. Low-literate adults are found in rural, urban, and suburban communities and in every age bracket. While low skills correlate strongly with socio-economic, immigration, and minority status, as discussed above, it is important to note that low literacy is a diffuse, national problem.

While all low-literate adults need assistance improving their literacy skills, XPRIZE’s primary research revealed that two specific target populations represent a majority of the total number of low-literate adults—English language learners (ELLs) and young adults aged 18 to 34.

English Language Learners

English language learners (ELLs) account for more than one-half of all low-literate adults in the U.S. and 42 percent of the population enrolled in adult education programs.¹⁶ ELL adults have limited English proficiency. Some speak English but have low literacy skills in English, while others are learning to speak and read in English. Many low-literate ELL adults have some, but not extensive, education in their native languages, and some are learning to read for the first time in English. ELL adults in the U.S. come from diverse backgrounds, have disparate educational levels in their native languages, and have various experiences (or lack thereof) with formal education in general.¹⁷ XPRIZE’s primary research revealed that improving literacy skills for ELL adults leads to better social, economic, and community outcomes for the adults themselves and is particularly important for mothers of young children. Improving mothers’ literacy levels has a significant positive impact on the future educational success of children who are raised in households where English is not the primary

¹⁴ National Commission on Adult Literacy. (2008). *Reach Higher, America*.

¹⁵ OECD Skills Outlook 2013.

¹⁶ Foster, M. & McLendon, L. (2012). *Sinking or Swimming: Findings from a Survey of State Adult Education Tuition and Financing Policies*. Center for Law and Social Policy (CLASP) & National Council of State Directors of Adult Education (NCSDAE). Retrieved from www.clasp.org/resources-and-publications/publication-1/Sinking-or-Swimming-State-Adult-Education-Tuition-and-Financing-Policies.pdf

¹⁷ Burt, M., Peyton, J. K., & Adams, R. (2003). *Reading and Adult English Language Learners: A Review of the Research*. Center for Applied Linguistics. Retrieved from <http://files.eric.ed.gov/fulltext/ED505537.pdf>

language.¹⁸ This population of ELL adults is significant. The 2011 American Community Survey found that 20.8 percent of all households in the U.S. do not speak English at home.¹⁹

Young Adults

Young adults, defined by OECD as adults under the age of 35, who are low-literate and do not have a high school diploma or equivalent are a population of particular concern to literacy experts and those interested in positive social, economic, and health outcomes.²⁰ These young adults have not succeeded in traditional education. Experts argue that there are myriad reasons for the lack of educational success in young adults, which may include problems at home, community issues (e.g., gangs), language barriers, undiagnosed learning disabilities, mental health challenges, poverty, lack of interest in education, lack of hope, and other challenges. Without basic literacy skills, the economic future for these young adults is grim. While two-thirds of low-literate young adults are employed, the majority of them are earning low wages with little chance for advancement.²¹ The economic future of the U.S. relies on an educated workforce that can participate in the knowledge-based economy. Currently, these young adults are excluded from that future. Additionally, for those young adults who are parents, particularly young mothers, improvement of their own literacy skills is critical to giving their children a better chance of future success.²²

CURRENT LANDSCAPE

Local community college systems, library literacy programs, and other local organizations provide the vast majority of adult literacy training in the U.S. Adult literacy programs are generally place-based programs that consist of classroom style or one-on-one tutoring programs that provide direct services in person to adult learners. Place-based methods of providing adult education in the U.S. have changed very little over the last three decades. Most adult literacy programs are relatively small in size and scope. Many of the program administrators who XPRIZE spoke with stated that the capacity of their programs was a few hundred individuals at most and that there was always a larger demand for their services.

Adult literacy programs in the U.S. vary greatly in terms of size, structure, target populations, teaching methods, assessment tools and outcomes. There is no single program model, assessment tool, or national standard to which adult literacy programs must adhere. Two common types of programs—a library adult literacy program and a community college program—are described below.

¹⁸ National Institutes of Health (NIH). (2010). Improving mothers' literacy skills may be best way to boost children's achievement [Press release]. Retrieved from www.nih.gov/news/health/oct2010/nichd-25.htm

¹⁹ U.S. Census Bureau. (2012). *2011 American Community Survey*.

²⁰ OECD *Skills Outlook 2013*.

²¹ National Commission on Adult Literacy. (2008). *Reach Higher, America*.

²² NIH. (2010). Improving mothers' literacy skills may be best way to boost children's achievement [Press release].

Los Angeles Public Library (LAPL) Adult Literacy Services

The LAPL offers three adult literacy programs: Adult Literacy Program, Limited English Proficiency, and Families for Literacy. These programs are funded through the Caroline Singleton Adult Literacy Endowment and other charitable organizations. All three programs are offered free of charge. The LAPL offers these services at 21 branch libraries in Los Angeles.

- The **Adult Literacy Program** is a one-on-one mentorship program where adult learners come to a branch of the library and meet with their volunteer tutors face to face. Adult learners meet with tutors twice a week, for 60 to 90 minutes each time, for a minimum of six months. Volunteer tutors are not required to follow specified curricula, but they must undergo training prior to beginning tutoring.
- The **Limited English Proficiency** program is a self-guided program, meaning that adult learners work on their own at the library, using books and videos, and without dedicated volunteer tutors. This program is for adults with limited proficiency in English and has no time requirements or limits. Adult learners can ask staff for assistance; there is usually a single staff member at the library branch who works with the literacy programs.
- The **Families for Literacy** program offers free children's books to adult learners who are enrolled in either the Adult Literacy Program or the Limited English Proficiency program and have children under the age of five. Volunteer tutors and staff work with adult learners to teach them how to read to their children.

The LAPL also offers online literacy programs to help adult learners improve their test scores on job skills exams, online tutors to provide one-on-one virtual assistance, and online classes in computer basics, as well as links to distance learning, job skills sites, and online reading lessons.

To sign up for adult literacy services through the LAPL, adult learners must call to make an appointment, fill out an application, and take a 90-minute assessment so that they can be placed in the proper program at the appropriate level.²³ In 2010, approximately 900 LAPL literacy program volunteers provided 70,000 hours of services to 2,000 adults.²⁴

Edmonds Community College Volunteer Literacy Program

Edmonds Community College in Lynnwood, WA offers volunteer literacy services to Snohomish County residents who are enrolled in English as a Second Language (ESL) or General Educational Development

²³ Los Angeles Public Library. Adult Literacy. Retrieved from www.lapl.org/adult-literacy

²⁴ Library Foundation of Los Angeles. Adult Literacy. Retrieved from www.lfla.org/support/whatwefund/literacy/adult-literacy.php

(GED) classes at the college. The program's services include Adult Basic Education (ABE), ESL, and GED test preparation classes. These classes take place on the college campus during the day, as well as in the evening. The program has approximately 40 paid staff members and 60 volunteers who undergo a minimum of one hour of training. The program is funded through a grant from the Verizon Foundation. Literacy services are provided free of charge to students. Edmonds Community College serves 2,200 adults annually.²⁵

Some adult education programs offer online services, such as LAPL's (discussed above), for those adult learners who have access to computers and broadband service at home or who can access them from public libraries or other locations. These services often include practice tests, reading and vocabulary lessons, distance learning materials, and, sometimes, online tutors.²⁶ However, literacy programs have not yet taken advantage of the significant advances in mobile technologies to improve adult literacy skills.²⁷

Federal funding for adult education is provided to state and local organizations under the Workforce Investment Act of 1998 (WIA). Specifically, adult education and literacy programs are funded under the Adult Education and Family Literacy Act (WIA Title II). In 2013, the federal government spent \$600 million on these programs.²⁸ In comparison, the federal government provided nearly \$76 billion in funding for K-12 education in 2012.²⁹ With inflation taken into account, federal funding for adult education programs has dropped nearly 23 percent since 2002.³⁰ Given the large numbers of low-literate adults in the U.S., coupled with the decrease in government funding for adult education programs, current literacy programs do not have the capacity to adequately reach or serve enough low-literate adults.

States that accept WIA Title II funding must provide a match of at least 25 percent (cash or in-kind contributions).³¹ California, Florida, and New York, have historically contributed significant adult education funding to their state programs, while other states have provided little or no such funding at all. Nationally, federal funds account for approximately 44 percent of adult education funding, state funds account for 45 percent, and local agencies and program tuition make up the remaining 11 percent. Total government funding for adult education programs was more than \$1.3 billion in 2012.³² The result is a patchwork of revenue sources for adult education programs that is insufficient to address the national need.³³

²⁵ Edmonds Community College. Volunteer Literacy Program. Retrieved from www.edcc.edu/vlp/default.html

²⁶ Los Angeles Public Library. Adult Literacy.

²⁷ Warschauer, M. & Liaw, M.-L. (2010). *Emerging Technologies in Adult Literacy and Language Education*. National Institute for Literacy. Retrieved from https://lincs.ed.gov/publications/pdf/technology_paper_2010.pdf

²⁸ Committee for Education Funding. *Budget Response: Fiscal Year 2014*. Retrieved from http://cef.org/wp-content/uploads/2011/04/2014-Budget-Response_Intro.pdf

²⁹ The Center for Education Reform. In the States: K-12 Facts. Retrieved from www.edreform.com/2012/04/k-12-facts/

³⁰ Literacy & Policy. Primer. Retrieved from <http://literacypolicy.org/primer-adult-literacy-in-the-u-s/>

³¹ Foster, M. & McLendon, L. (2012). *Sinking or Swimming*. CLASP/NCSDAE.

³² Foster, M. & McLendon, L. (2012). *Sinking or Swimming*. CLASP/NCSDAE.

³³ National Commission on Adult Literacy. (2008). *Reach Higher, America*.

Enrollment in adult education programs is declining. In 2010, approximately 1.9 million adults (down from 2.6 million in 2000³⁴) were enrolled in state-administered adult basic education (ABE), secondary education, or English as a second language (ESL) programs. Nearly one-third of these adults (32 percent) were enrolled in programs in California and Florida. Various explanations for this decline exist. A portion of the decline is likely due to reduced government funding for adult education programs over that time period, as well as the fact that some adult education programs have moved to managed enrollment and fee structures, which may reduce overall enrollment but tend to increase the number of students who stick with programs once enrolled.

Of those enrolled in adult education programs, approximately 46 percent are in ABE programs, which serve students with low literacy skills (up to approximately an 8th grade equivalency), while 42 percent are in ESL or ELL programs, which serve students with limited English skills. The remaining 12 percent are in Adult Secondary Education (ASE) programs, which serve students with intermediate and high basic skills (approximately 9th- to 12th-grade equivalency).³⁵ In 2009, about three percent of all adult education participants were enrolled in ABE Beginning Literacy classes for the very lowest-skilled adults.

Of the 1.9 million adults currently being served, approximately 874,000 of those are receiving ABE services; of that subgroup, 57,000 are receiving the lowest level Beginning Literacy classes. Approximately 798,000 adults are receiving ELL services. Combined, these ABE and ELL adult learners total approximately 1.7 million adults. In other words, ABE and ELL programs are serving, at the very most, less than four percent of the 36 million low-literacy adults in the U.S. This is a conservative estimate, as some ABE and ELL students have skill levels above those considered to be “low-literate.” Thus, adult literacy programs are serving a very small proportion of the lowest-skilled adults in need.

Nonprofit organizations at the national and local level also provide adult education services and funding for adult literacy programs. Organizations such as the Portland Literacy Council and New York City’s Literacy Partners provide direct literacy services to adult learners. Other organizations, such as the Barbara Bush Foundation for Family Literacy and the Florida Literacy Coalition, provide funding and support services for local programs. For example, the Florida Literacy Coalition provides professional development, resource sharing, networking, and training and technical assistance to more than 300 adult education, adult literacy, and family literacy providers in Florida.³⁶ Other organizations, like the National Coalition for Literacy lobby to promote adult education and family literacy, garner support and funding for programs, and increase public awareness around the issue of adult literacy. Some corporations and endowments also provide significant funding for adult literacy programs through grants. While there is no centralized tracking

³⁴ National Center for Education Statistics. Digest of Education Statistics. https://nces.ed.gov/programs/digest/d12/tables/dt12_484.asp

³⁵ Foster, M. & McLendon, L. (2012). *Sinking or Swimming*. CLASP/NCSDAE.

³⁶ Florida Literacy Coalition. About Us. Retrieved from http://floridaliteracy.org/about_us_programs_and_services.html

mechanism for non-profit and corporate funding for these programs, it is important to note that they can be a significant source of funding and support for local initiatives.

Many experts whom XPRIZE spoke with during its primary research expressed concern that the American public is generally unaware of the scope and scale of the adult literacy problem in the U.S. and the effects this problem has on our society and economy. Many of the experts argued that this lack of awareness hinders our society from putting significant efforts and resources toward solving the problem.

Adult literacy programs in the U.S. have been successful at improving skills and life outcomes for those participants who are able to persist in the programs. Programs have reported that their participants' experiences improved economic outcomes, reduced dependence on government aid, and improved health, including improved confidence and knowledge about participants' own health. Programs have also resulted in better outcomes for participants' children, including improved health and nutrition, school attendance, and social outcomes.³⁷ However, currently only a fraction of the adults in need are currently receiving help. While increasing the funding for existing adult literacy programs would help reach more adults, it is unlikely that enough funding would ever be available to reach the millions in need. Improving adult literacy in the U.S. will require a fundamental transformation in the distribution and consumption of adult education services—scaling these services to meet the needs of millions of adults in effective and efficient ways.

³⁷ ProLiteracy. (2003). *U.S. Adult Literacy Programs: Making a Difference*. Retrieved from <http://literacyconnects.org/img/2011/11/US-Adult-Lit-Programs-Making-a-Difference-Research-review.pdf>

ROOT CAUSE ANALYSIS AND MARKET FAILURES

MARKET FAILURES

Every generation of Americans aims to develop and support the next generation of well-educated parents, workers, and community members. Some aspects of the modern world—immigration, shifting demographics, socioeconomic stratification, struggling school systems, and the high speed of economic and social change—have contributed to a more complex and challenging educational environment. Thankfully, there are also aspects of the modern world that could help Americans adapt to these realities, such as improvements in technology and communication that will enable greater access to literacy tools and services for those who need them.

Based on its research and expert interviews, XPRIZE determined that the following market failures contribute to the problem of low literacy among adults in the U.S.

Access

Place-based adult education programs are often difficult for adults to get to, particularly low-income adult learners who may have irregular work schedules, transportation or childcare difficulties, or other life factors that make attending a program in person more difficult, even if programs are held on evenings or weekends. XPRIZE's primary research revealed that low-literate adults lack access to literacy classes, as well as the time to attend them.

Access to technology such as desktop or laptop computers—as well as consistent broadband connectivity—can also be a challenge for many low-literate adults. While technology is becoming more widely available, studies have found that computer and Internet access is still limited, particularly in low-income and minority communities. Approximately one-half of black and Hispanic households have broadband access at home.³⁸ Household income remains the primary determining factor. The National Telecommunications and Information Administration found that just 35.8 percent of households earning less than \$25,000 per year had broadband access in 2010.³⁹

Community

³⁸ U.S. Department of Commerce. 2010. "Exploring the Digital Nation: Home Broadband Internet Adoption in the United States." Washington, DC: National Telecommunications and Information Administration.

³⁹ National Telecommunications and Information Administration. (2010). *Exploring the Digital Nation: Home Broadband Internet Adoption in the United States*. Retrieved from www.ntia.doc.gov/reports/2010/ESA_NTIA_US_Broadband_Adoption_Report_11082010.pdf

Significant stigma surrounds adult illiteracy. Low literacy skills are still sometimes seen as “an indication of inherent deficit.”⁴⁰ Many adults hide their struggle with literacy from their families, friends, and colleagues—a behavior known as “passing” or “covering.”⁴¹ This stigma sometimes extends beyond difficulty with written language to having a negative effect on verbal interactions, such as with health care providers.⁴² Adults who are embarrassed about their low literacy skills often feel judged by others and disconnected from society. The experts XPRIZE spoke with said that the lack of social support structures for low-literate adults is a significant personal barrier that increases the stigma these adults feel.

Persistence

Many adult learners fail to stick with programs long enough to see improvement in their skill levels. This is often due to the fact that traditional programs are hard to get to and that it is difficult to juggle jobs, children, transportation, school, and other everyday tasks. XPRIZE’s primary research found that many experts agree that adults require a *minimum* of 100-150 hours of instruction to move up one grade level equivalent in their reading. On average, adult learners receive fewer than 100 hours of instruction, which means their training generally does not help them advance one literacy level.⁴³ In fact, one-third of adult learners leave adult literacy programs before advancing one literacy level.⁴⁴ The question of persistence in adult education is a significant one. The New England Literacy Resource Center (NELRC) has an entire site dedicated to the study and improvement of persistence in adult education. The center has identified several key drivers that help boost adult learners’ persistence: goal setting, a sense of community, a belief in their own agency, self-confidence, content that is relevant to their lives, and stability in their educational endeavors.⁴⁵

Relevance

A key challenge for adult education programs to overcome is the relevance of their content to diverse groups of adult learners. XPRIZE found during its primary research that much of the currently available adult literacy content is not relevant to adult learners’ goals or interests, which reduces learners’ motivation to participate in adult education programs. Adult learners have a variety of goals for improving their literacy skills. Some want to find a new job or advance within their current job, so they are interested in workplace skills. Others want to help their children with homework and more effectively manage household issues, so they are interested in a different set of skills. One of the key drivers of persistence highlighted by the NELRC

⁴⁰ Kozol, J. (1985). *Illiterate America*. Garden City, NY: Anchor Press/Doubleday.

⁴¹ Beder, H. (1991). The stigma of illiteracy. *Adult Basic Education*, 1(2), 67-78.

⁴² Easton, P., Entwistle, V. A., & Williams, B. (2013). How the stigma of low literacy can impair patient-professional spoken interactions and affect health: insights from a qualitative investigation. *BMC Health Services Research*, 13, 319.

⁴³ McLendon, L. & Polis, K. (2007). The role of state staff in promoting student persistence [PowerPoint presentation]. Retrieved from <http://naepdc.org/State%20Staff/Persistence%20for%20State%20Staff%203.11.pdf>

⁴⁴ Duke, A.-E. & Ganzglass, E. (2007). Strengthening state adult education policies for low-skilled workers [Policy brief]. The Working Poor Families Project. Retrieved from www.workingpoorfamilies.org/pdfs/WPPF_policy_brief_summer07.pdf

⁴⁵ New England Literacy Resource Center. Adult Learner Persistence. Retrieved from www.nelrc.org/persist/

and other groups is the relevance of literacy content to learners' everyday lives. Studies show that adults are "pragmatic learners" and expect instruction to be relevant to their needs and goals.⁴⁶ Many experts whom XPRIZE spoke with cited a need for improved content for adult learners.

Scalability

The vast majority of today's adult education programs rely on place-based teaching methods, such as classroom instruction, one-on-one tutoring, and personal mentoring services. Place-based approaches are limited by funding, staffing, and facility constraints, and therefore will not be able to reach the vast number of low-literacy adults without significant additional funding. The issue is not that existing adult literacy programs fail to improve the literacy skills of their participants; rather, the issue is that place-based programs are limited geographically and financially, and they cannot scale to address the high level of need.

The market failures identified above can be summarized as follows:

1. Access—technological and geographical access is insufficient
2. Community—learning does not happen in a vacuum; adult learners lack the support they need to overcome stigma
3. Persistence—current solutions do not break through the noise; adults do not stay on task long enough to significantly improve their skills
4. Relevance—learning is often not relevant to the learners; content does not focus on what adults want and need to learn
5. Scalability—current solutions do not scale nationwide in an affordable, efficient, and effective manner

CONCLUSION

XPRIZE believes the adult literacy space is ripe for disruption. A prize competition could address the market failures described above—access, community, persistence, relevance, and scalability—by incentivizing a paradigm shift in how we approach adult learning. A prize could catalyze new approaches to adult literacy instruction and prove that mobile technology solutions can overcome the challenges faced by low-literate adults in need.

⁴⁶ New England Literacy Resource Center. Adult Learner Persistence. Retrieved from www.nelrc.org/persist/

APPENDICES

APPENDIX A: INTERVIEWEES AND VISIONEERING PARTICIPANTS

APPENDIX B: PIAAC LITERACY LEVEL DESCRIPTIONS

APPENDIX C: CASAS ASSESSMENT LEVEL DESCRIPTIONS

APPENDIX A: INTERVIEWEES AND VISIONEERING PARTICIPANTS

The following is a list of interviewees and Visioneering participants who graciously provided guidance and input regarding the contents of this prize design. Please note that the conclusions and content within the report are those of XPRIZE and do not necessarily reflect the opinions of the individuals listed.

NAME	ORGANIZATION
Ann Bessell	University of Miami
Emily Callahan	St. Jude ALSAC
Peter Caron	Maine School Administrative District #27
Darryl Cobb	Charter Growth Fund
John Comings	World Education
Cristin Dorgelo	White House Office of Science and Technology Policy
Joe Dunn	Author
Kimberly Elliott	TV411
John Eriksen*	Roundtable Investment Partners
Carol Farrell	CASAS
John Fleischman	Sacramento County Office of Education
Michelle Fox*	ACT Foundation
Karl Haigler*	Haigler Enterprises International, Inc.
Christina Hong	Singleton Adult Literacy Center, Los Angeles Public Library
Meagen Howe	Farrellink.com
Darlene Hurtado*	Literacy Volunteers of Central CT
Susan James*	The Barbara Bush Foundation for Family Literacy

NAME	ORGANIZATION
Nancy Johnson	Literacy Coalition of Palm Beach County
Ilene Kantrov	TV411
Katy Kibbey	Wayne Metro Community Action Agency
SJ Klein	One Laptop Per Child
Alan Lesgold	School of Education, University of Pittsburgh
William Lieder	Target Corporation
Maureen Lovett	The Hospital for Sick Children
Merrilea Mayo	ACT Foundation
Edward McFadden	Literacy teacher, Rhode Island
Liza McFadden*	The Barbara Bush Foundation for Family Literacy
Kevin Morgan*	ProLiteracy
Matthew Meunch*	The Joyce Foundation
Lora Myers	TV411
Sam Novey	TurboVote
John Raymonds*	Raymonds Capital, LLC
Steve Reder	Portland State University
David Rosen*	Newsome Associates
Jessica Rothenberg-Aalami*	Cell-ED & Gobee Group
John Sabatini	Educational Testing Service (ETS)
Federico Salas-Isnardi	Texas Center for the Advancement of Literacy and Learning

NAME	ORGANIZATION
Amy Schmidt	ProLiteracy
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Bennett Shaywitz*	Yale University
Sally Shaywitz*	Yale University
Heidi Silver-Pacuilla	U.S. Department of Education, Office of Career, Technical and Adult Education
Greg Smith*	Florida Literacy Coalition
Britt Storrs	Singleton Adult Literacy Center, Los Angeles Public Library
Denine Torr*	Dollar General
Johan Uvin	U.S. Department of Education, Office of Career, Technical and Adult Education
Peter Waite	ProLiteracy
Alison Ascher Webber*	Cell-ED
Maryann Wolf	Tufts University

* Denotes a Visioneering participant

APPENDIX B: PIAAC LITERACY LEVEL DESCRIPTIONS

- Below Level 1: Adults can locate a single piece of information in a brief text on a familiar topic. Little, if any, competing information is present in the text. Basic vocabulary knowledge is required, but an understanding of sentence structure or paragraphs is not required. No competency with digital text is required.
- Level 1: Adults can read relatively short texts (print or digital) and locate a single piece of information that is identical or similar to information in the question. Little, if any, competing information is present. An understanding of basic vocabulary, sentences, and paragraphs is expected.
- Level 2: Adults can read digital or printed material and match information found in the texts. Low-level inferences or paraphrasing may be required. Competing information may be present. Some tasks require respondents to compare and contrast information, locate and integrate various pieces of information based on criteria provided, and navigate within digital texts.
- Level 3: Adults can read and understand lengthy and dense texts and can interpret rhetorical structures. Tasks require the respondents to identify, evaluate, and interpret multiple pieces of information, with varying levels of inference. Tasks require respondents to construct meaning from larger pieces of text, perform multi-step operations, and disregard irrelevant information.
- Level 4: Adults can locate, integrate, interpret, and synthesize information from lengthy and complex texts. Tasks require the evaluation of subtle arguments and the consideration of conditional information.
- Level 5: Adults can locate, integrate and synthesize various points of view and evaluate arguments. Logical and conceptual models are required to evaluate information. Tasks require the evaluation of evidentiary sources; an awareness of subtle, rhetorical cues; the use of specialized knowledge, and the ability to make high-level inferences.
- Missing: Adults were not able to provide enough information to assess a score because of language difficulties or mental disabilities.

APPENDIX C: CASAS ASSESSMENT LEVEL DESCRIPTIONS

CASAS LEVEL	CASAS SCORE	DESCRIPTION	APPROXIMATE GRADE LEVEL EQUIVALENT
A	180-200	<p><u>Beginning Literacy:</u> Very limited ability to read or write. Can recognize sight words on computers.</p> <p>Persons at the upper end of this score range can read and write numbers and letters and simple words and phrases related to immediate needs. Can read and interpret simple directions, signs, and menus.</p>	Beginning of 1 st Grade to end of 1 st Grade
B	201-205	<p><u>Beginning Basic Skills:</u> Can fill out simple forms requiring basic personal information or write a simple list. Can read and interpret simple sentences on familiar topics. Can read and interpret simple directions, signs, maps, and menus.</p>	Beginning of 2 nd Grade to end of 2 nd Grade
	206-210		Beginning of 3 rd Grade to end of 3 rd Grade
	211-215	<p><u>Intermediate Basic Skills:</u> Can handle basic reading and writing tasks related to life roles. Can read and interpret simplified and some authentic materials on authentic topics. Can complete a simple order form, fill out a basic medical information form or job application, and can follow basic oral and written instructions.</p>	Beginning of 4 th Grade to end of 4 th Grade
	216-220		Beginning of 5 th Grade to end of 5 th Grade