
Index

- Achieve (education reform group), 84
- Achievement gap: after-school programs' impact on closing the, 13, 50–51; societal benefits of closing the, 49–50; wage gap resulting from, 48; workforce consequences of, 48–49
- Adaptive learning, 67
- African American youth: achievement gap suffered by, 47–49; attitudes on approaches to education of, 42*fig*; attitudes on how well prepared are, 41*fig*; attitudes on important skills needed by, 43*fig*; attitudes on less strongly needed skills for, 44*fig*
- After-school programs: characteristics of effective, 51; charting a new course for, 94–97; Citizen Schools, 3, 6, 22–23; disadvantaged children and benefits of, 12–13, 49–51; educational value of, 3–4; JA Worldwide (Junior Achievement Worldwide), 20–21, 144–146; link between academic success and, 13; meaningful real-world learning approach of, 91–93; one student's story on, 93–94; project-based learning/skill mastery approach of, 88–91; safe childcare function of, 141; small group size advantage of, 86–88; twenty-first century learning in, 15–16, 81–97
- Afterschool Alliance, 141
- Afterschool Education: Approaches to an Emerging Field* (Biancarosa, Dechausay, and Noam), 96
- Alabama Best Practice Centers, 34
- American Federation of Teachers, 84
- AOL Time Warner Foundation, 11, 39
- AOL Time Warner Foundation survey (2003): on attitudes on approaches to education, 42*fig*; on attitudes on how well prepared American youth are, 41*fig*; on attitudes on important skills that youth will need, 43*fig*; on attitudes on less strongly needed skills for youth, 44*fig*; on attitudes on necessary skills, 40*fig*; background information on, 39
- Apprenticeship approach, 92–93
- Assess 21 database, 74–75
- Assessments: Mankato Survey for, 117, 119; measuring areas of self-direction, 117*fig*, 118*t*; measuring entry-level worker skills, 83–84; NTHS (New Technology High School) approach to, 106–108; outcomes as part of, 107–108; Programme for International Student Assessment (2003), 2, 83; strategies for twenty-first century learning, 72–75
- Attitudes for Success Youth Leadership Program (Oregon), 137
- Australia, 106
- Authentic learning, 123
- Basic literacy, 114, 123
- “Basics-plus” education, 11, 40
- Beck, S., 93–94
- Biancarosa, G., 96
- BLS (U.S. Bureau of Labor Statistics), 53, 55
- Blue Hills Regional Technical School (Massachusetts), 129
- Blue-collar jobs, 60
- Boeing, 56–57
- Boston Latin School: Citizen Schools experience by students of, 22–23, 156–161; high standards of, 159
- Boston Public Library, 92
- Boston Public Schools system: Citizen Schools' Eighth Grade Academy

- collaboration with, 22–23, 157–161; student story on her experience with, 156–157
- Box, J. M., 5, 20, 141, 147
- Bracco, C., 89
- Bransford, J., 67
- Bridging* (Citizen School magazine), 159
- Brown, J. S., 89
- Bruett, K., 4, 9, 25, 30
- Buckley, M., 6
- Building Schools for the Future program (U.K.), 102
- Cabral, L., 5, 22, 155, 161
- Cain, M., 6
- Calendaring strategy, 105–106
- Cape Verdean Club, 156, 161
- Capuano, M., 5, 17, 113
- Carnegie Report *Great Transitions: Preparing Adolescents for a New Century*, 134
- Cascarino, J., 6, 89
- Case studies. *See* Twenty-first century learning case studies
- CATIA (computer-assisted design software), 56
- Center for Children and Technology, 63
- Character education, 61–62
- Cheney School District, 36
- China, 65
- Chun, M., 73
- Citizen education, 61–62
- Citizen Schools: after-school apprenticeship courses of, 92–93; Boston Latin School student experience with, 22–23, 156–161; McKinley Institute of Technology partnership with, 89; Massachusetts schools collaboration with, 130; small teams approach used in, 87; successful learning by students in, 91, 130; Teaching Fellowship program of, 96; twenty-first century skill learning in, 3, 6, 22–23
- Citizen Schools' Eighth Grade Academy: data analysis and writing instruction at, 157–159; oral communication and leadership development at, 159–160; student outcomes of, 160–161
- CLA (Collegiate Learning Assessment), 73, 74
- Clark, R., 51
- Classrooms: creating supportive and enabling environment, 150–151; educational strategies applications for, 151–152; public policies facilitating learning in, 153; use of technology in, 109–110, 152–153. *See also* Schools
- Cohen, D., 85
- Collins, A., 89
- Complex communication skills, 58–59
- Cooney, E., 6
- “Correct answer compromises,” 84
- Council of Independent Colleges (Washington, D.C.), 35
- Critical Hours: Afterschool Programs and Educational Success*, 12–13, 50–51
- Critical thinking: higher-order and, 115, 123; testing, 73
- Cullinane, M., 34
- Curtis, P., 104
- Dechausay, N., 96
- Dell: commitment to provide relevant technology education, 26, 28; education partnerships between schools and, 28–29; global strategy of, 25; Partnership for 21st Century Skills membership by, 27
- Dell, M., 4, 9, 26, 30
- Dewey, J., 88
- Digital Age Literacy Advisory Group, 124
- Digital Age Literacy Initiative (MSDLT), 18, 114, 119, 123–124
- Digital literacy: company incentives for developing competencies in, 32–34; as imperative, 32, 115; Partners in Learning (PiL) initiative to increase, 10–11, 33–37
- Disadvantaged population: achievement gap of, 47–49; AOL Time Warner Foundation survey (2003) on, 39–45; benefits of after-school programs for, 12–13, 49–51; need for twenty-first century skills by, 12–13
- Driscoll, D. P., 5, 18, 127, 131

- Earnings gap. *See* Wage gap
- Eastern Washington University's College of Education, 36
- Education: American public attitudes on approaches to, 42*fig*; "basic-plus," 11, 40; changing economy impact on need for, 13–14; character and citizen, 61–62; critical role of higher education institutions, 75–77; critical subjects lacking state standards/implementation, 76; current state of, 2–3; national and individual prosperity through, 26; new directions toward twenty-first century, 3–4; using pedagogy strategies for twenty-first century, 70–72; public policies supporting, 153; redefining scholastic rigor in, 64–68; using assessment strategy for twenty-first century, 72–75; wage gap linked to, 48. *See also* Schools; Teaching twenty-first century skills; Technology education
- Education institutions: critical role of higher education, 75–77; mission and vision statements of, 127. *See also* Schools
- Education reform: addressing two important gaps in, 1; basic points of agreement on, 1; changing economy impact on, 13–14; current state of education requiring, 2–3; earnings distribution consequences of, 60–61*fig*; increasing competitiveness for businesses/individuals, 26–30
- Education Week* Commentary, 106
- Elementary and Secondary Education Act, 77
- Elmore, R., 85
- English map, 152
- ETS's ICT Literacy Assessment, 73, 74
- Evaluation. *See* Assessments
- Expert thinking, 57–59
- Fasca, C., 63
- Finland, 65
- 4-H pledge, 19, 20, 133, 137–140
- 4-H Youth Development program: current state of, 135–136; objectives of, 133–134; origins and development of, 134–135; Project LIFE, 138; Seeds to Success, 138–139; Success Youth Leadership Program, 137; Teen 24/7 Tech Club, 139; twenty-first century learning approach of, 19–20, 136–140
- Friedman, T., 111
- Gardner, H., 84
- Gates Foundation, 93
- Gates Intermediate School (Massachusetts), 129
- Geography guide, 152
- Global economy: awareness/cultural competence skills for, 115; NTHS (New Technology High School) meeting the challenge of, 111; outsourcing role in, 67; preparing students to be competitive in, 25–26, 128; SCANS report (1991) on teaching skills for, 101–102; specific approaches to preparing students for, 29–30; twenty-first century learning required for, 13–14, 53–62; United States challenges in preparing for, 31; workforce requirements for twenty-first century, 10–11, 31–37
- Global Kids (New York City), 35
- Global Kids (Partners in Learning), 11
- Grading procedures (NTHS), 107–108
- Great Transitions: Preparing Adolescents for a New Century* (Carnegie Report), 134
- Greater Lawrence Regional Technical School (Massachusetts), 129
- Hamilton, L., 73
- Harrington, C., 96
- Haugabrook, A. K., 6
- Henrico County Public Schools (Virginia), 28
- Higher education institutions, 75–77. *See also* Education
- Higher-order thinking, 115, 123
- Hispanic youth: achievement gap suffered by, 47–49; attitudes on approaches to education of, 42*fig*; attitudes on how well prepared are,

- 41*fig*; attitudes on important skills needed by, 43*fig*; attitudes on less strongly needed skills for, 44*fig*;
Attitudes for Success Youth Leadership Program for, 137
- Holum, A., 89
- Homewood School (U.K.), 106
- Honda assembly plant, 89–90
- Honey, M., 5, 14, 63
- IBM Lotus Notes technology, 110
- ICT (communication technology):
assessing knowledge of, 72–75; literacy skills, building, 69, 77; measuring higher-order competencies in, 73–74; role of higher education in building, 75–77. *See also* Technological literacy; Technology education
- ICT ONscreen Test, 73, 74
- ICT plan [Singapore], 65
- If I Had a Minute with the President* (film), 92
- India, 65
- Information literacy, 115, 123
- Inquiry-based learning, 123
- “Interpersonal and self-directional skills” competency, 13, 169–170
- JA Company Program, 144
- JA Dollars and Sense program, 144, 145
- JA It’s My Business! 144, 145
- JA Worldwide (Junior Achievement Worldwide): after-school program launched by, 144–146; origins and success of, 20–21, 142, 143–144; twenty-first century learning components supported by, 142–143
- “Jobless recovery” (1992–1994), 54
- Kay, K., 5, 6, 7, 14, 45, 63
- Key Stage 3 ICT Onscreen Test, 73, 74
- Klein, S., 73
- Knoderer, T., 5, 17, 113
- Knox, A., 4, 10, 31, 37
- Kress, C., 5, 19, 133, 140
- Kuh, G., 73
- Lake, Snell, Perry, and Associates, 39
- Lawrence Township. *See* MSDLT (Metropolitan School District), Indianapolis
- Learning: adaptive, 67; American public support for twenty-first century, 11–12, 39–45; America’s disadvantaged and need for twenty-first century, 12–13; AOL Time Warner Foundation survey (2003) on attitudes toward, 39–45; authentic, 123; changing economy requiring twenty-first century, 13–14, 53–62; establishing R&D agenda for twenty-first century, 14–15, 63–78; inquiry-based, 123; meaningful real-world, 91–93; new conversations on twenty-first century, 4–5; new directions toward twenty-first century, 3–4; problem-based, 104–106, 107; project-based, 88–91, 104–106, 107; reimagining, 6. *See also* Twenty-first century learning case studies
- Learning triangle, 88*fig*
- Learning for the Twenty-First Century* (Partnership for 21st Century Skills), 102
- Lemke, C., 124
- Leventhal, E., 93
- Levy, F., 5, 12, 13, 49, 53, 62, 83, 84, 89, 90
- Life skills, 13, 169–170
- Mankato Surveys (MSDLT assessment), 117, 119, 120*fig*–122*fig*
- Market Strategies, 39
- Mars Odyssey* (spacecraft), 129
- Mars Student Imaging Project (NASA), 129
- Massachusetts educational system: mission and vision statements of, 127–128; successful outcomes of, 128–131; twenty-first century learning approach by, 18–19
- Massachusetts Institute of Technology (MIT), 92, 93
- Math map, 151–152
- McKinley Institute of Technology, 89
- Metiri Group of California: literacies/ twenty-first century skills adapted by, 114–115; Metropolitan School

- District partnership with, 17–18, 123; Self-Directed Learning Inventory developed by, 116–117
- Metropolitan School District. *See* MSDLT (Metropolitan School District), Indianapolis
- Microsoft: Career Development Competencies, 34, 35*fig*; Partners in Learning (PiL) initiative, 10–11, 33–37; Philadelphia School of the Future Project, 34; twenty-first century skills demanded by, 10–11
- “Mission Tetris: Teaching 8th Graders to Program Tetris” (Citizen School project), 93
- MSDLT (Metropolitan School District), Indianapolis: background information on, 113–114; Digital Age Literacy Initiative of, 18, 114, 119, 123–124; evidence of progress by, 116–119, 117*fig*, 120*fig*–122*fig*; Mankato Surveys assessing outcomes of, 117, 119, 120*fig*–122*fig*; Metiri Group of California partnership with, 17–18, 123; Partnership for 21st Century Skills collaboration with, 124; sustainability of progress made by, 119, 123–124
- Mulford, P., 47
- Murnane, R. J., 5, 12, 13, 49, 53, 62, 83, 84, 89, 90
- NAEP (National Assessment of Educational Progress), 83, 128
- Napa Valley Unified School District, 110
- NASA (National Aeronautics and Space Administration), 129
- A Nation at Risk* report (1983), 83
- National Assessment of Academic Progress (2002), 2
- National Assessment of Educational Progress, 26
- National Association of Science Teachers, 152
- National Commission on Teaching and America’s Future, 36
- National Commission on Writing in America’s Schools and Colleges, 2
- National Council for Geographic Education, 152
- National Council of Teachers of English, 152
- National Council of Teachers of Mathematics, 151
- National Education Association, 149, 154; Partnership for 21st Century Skills framework used by, 21–22
- National Foundation for Teaching Entrepreneurship, 87
- National Science Board, 2
- National Science Foundation, 136
- NCREL (North Central Regional Educational Laboratory), 114
- Nellie Mae Education Foundation’s Critical Hours: Afterschool Programs and Educational Success, 12–13, 50–51
- New Tech High Learning System, 110
- No Child Left Behind (NCLB) Act, 2001: accountability provisions of, 85–86; content standards/high-stakes assessments of, 70; school priorities dictated by, 15, 85; underlying principles of, 47
- Noam, G., 6, 96
- North Carolina Center for 21st Century Skills, 71–72
- NTHS (New Technology High School), California: assessment strategies used at, 106–108; background information on, 103–104; grading procedures used by, 107–108; meeting the globalization challenge, 111; project- and problem-based learning approach of, 104–106; schools as workplaces for students approach by, 108–109; as successful twenty-first school, 16–17; technology in the twenty-first century classrooms of, 109–110; twenty-first century learners of, 110–111
- Organisation for Economic Cooperation and Development, 2
- Outsourcing, 67

- Partners in Learning (PiL) initiative (Microsoft), 10–11, 33–37
- Partnership for 21st Century Skills: Assess 21 database created by, 74–75; critical content areas without standards/implementation identified by, 76; framework of, 3, 6, 14, 27; initiative on twenty-first century learning by, 9–10; *Learning for the Twenty-First Century* by, 102; model on needed competencies, 34, 35*fig*; MSDLT partnership with, 124; National Education Association's application of, 21–22; North Carolina and West Virginia implementation of, 71–72; project-based learning approach used by, 88; recommendations for students using the, 33; on shortcomings of U.S. education model, 66–67; six components of twenty-first century learning identified by, 142–143
- Pearlman, B., 5, 16, 101, 112
- Perry, K., 6
- Pink, D., 83
- PISA (Programme for International Student Assessment), 70–71
- Pohlman, N., 93
- Problem solving: expert thinking used in, 57–59; testing critical thinking used for, 73; U.S. ranking in abilities of, 2, 83
- Problem-based learning, 104–106, 107
- Programme for International Student Assessment exam (2003), 2, 83
- Project LIFE (4-H program), 138
- Project-based learning: feedback as part of, 107; strategies for, 88–91, 104–106
- Public policies, 153
- Purdue University, 123
- Qualifications and Curriculum Authority (U.K.), 73–75
- R&D agenda. *See* Twenty-first century skills R&D agenda
- Reimagining learning, 6
- Resnick, L., 89
- “Rich Tasks” initiative (Australia), 106
- Ripley, M., 73
- Rose Kennedy Greenway, 92
- Sacconaghi, M., 4, 11, 39, 45
- SCANS (Secretary's Commission on Achieving Necessary Skills) report (1991), 101–102
- Scholastic rigor, 64–68
- Schools: Boston Public Schools system, 156–161; character and citizen education by, 61–62; limitations of traditional, 85; Massachusetts educational system, 18–19, 127–131; McKinley Institute of Technology, 89; NCLB dictating education priorities of, 15, 85; public policies facilitating, 153; twenty-first century learning and role of higher education, 75–77; as workplaces for students, 108–109. *See also* Classrooms; Education; Education institutions
- Schwarz, E., 5, 6, 7, 15, 81, 99
- Science and Engineering Indicators Report* (2004), 2
- Science map, 152
- Seeds to Success (4-H program), 138–139
- Self-Directed Learning Inventory, 116–117
- Self-direction competency, 115, 117*fig*, 118*t*, 123
- Shanmugaratnam, T., 102
- Sharnique's story, 93–94
- Sharpshooters (Honda assembly plant), 89–90
- Shavelson, R., 73
- Shepley Bullfinch Richardson and Abbott, 93
- Singapore, 65, 102
- Society of Women Engineers, 93
- Sound reasoning skill, 115
- Stolow, D., 5, 15, 81, 99
- Students: African American, 41*fig*–44*fig*, 47–49; Citizen Schools' Eighth Grade Academy outcomes for, 160–161; disadvantaged, 12–13, 39–45, 47–51; dissipating options for drop-outs, 128; Hispanic, 41*fig*–44*fig*, 47–49, 137; MSDLT

- demographic makeup of, 113–114; MSDLT outcomes for, 116–119, 117*fig*, 120*fig*–122*fig*; NTHS outcomes for, 110–111; preparing them for a global economy, 25–26, 128; schools as workplaces for, 108–109; teaching twenty-first century skills to, 82–103
- Su, L., 47
- Tabachnick, M., 158
- TEA (Texas Education Agency), 29
- Teachers: creating supportive and enabling environment, 150–151; strategies for teaching twenty-first century skills, 86–97, 102–103; twenty-first century learning for, 149–154
- Teaching Fellowship program (Citizen Schools), 96
- Teaching the New Basic Skills* (Murnane and Levy), 83, 89
- Teaching twenty-first century skills: after-school programs role in, 86–94; charting a new course for, 94–97; curricula design for, 102–103; learning triangle and, 88*fig*; making real-world learning meaningful, 91–93; one student's story on experience with, 93–94; project-based learning to develop mastery approach to, 88–91; small group size used for, 86–88; urgent challenge of, 82–86. *See also* Education
- TechBoston, 93
- Technological literacy, 115, 123, 150. *See also* ICT (communication technology)
- Technology education: changing U.S. job distribution requiring, 56–57; Dell commitment to providing relevant, 26, 28; expert thinking and complex communication role in, 57–59; issues and concerns regarding, 59–60; NTHS classroom role of technology and, 109–110; skills/tasks in computerized workplace and, 57*fig*–58; twenty-first century skills and role of, 115, 123, 150. *See also* Education; ICT (communication technology)
- Teen 24/7 Tech Club (4-H program), 139
- Tierney, M., 85
- Time Warner Foundation, 11, 45n.1. *See also* AOL Time Warner Foundation survey (2003)
- TIMSS (Trends in International Mathematics and Science Study), 70, 71
- TIP (Technology Immersion Project), 29
- “Tolerate ambiguity” competency, 33
- “Total Learning” program (U.K.), 106
- Trends in International Mathematics and Science Study, 26
- Twenty-first century learning case studies: Citizen Schools, 3, 6, 22–23; 4-H Youth Development program, 19–20, 133–140; JA Worldwide (Junior Achievement Worldwide), 20–21, 141–146; Massachusetts educational system, 18–19, 127–131; Metropolitan School District (Indiana), 17–18, 113–124; National Education Association, 21–22; NTHS (New Technology High School), 16–17, 101–111. *See also* Learning
- Twenty-First Century Literacy: A Vital Component in Learning*, 39
- Twenty-first century skills: adapted by NCREL and Metiri Group, 114–115; after-school programs to develop, 15–16, 81–97; American business demands for, 9–10, 25–30; American public support for learning, 11–12, 39–45; America's disadvantaged and need for, 12–13; attitudes on important, 43*fig*; attitudes on less strongly needed, 44*fig*; company perspective on business demands for, 10–11, 31–37; definition of, 27; establishing R&D agenda for learning, 14–15, 63–78; job-embedded opportunities to practice, 115–116; new directions on learning, 3–4; NTHS approach to learning, 16–17; Partners in Learning (PiL) initiative to increase, 10–11, 33–37;

- Partnership for 21st Century Skills framework for building, 3, 6, 14, 27; SCANS report (1991) on teaching, 101–102; six components of learning, 142–143; students graduating without necessary, 49; technological literacy role in, 115, 123, 150; urgent challenge of teaching, 82–86
- Twenty-first century skills R&D agenda: assessment strategy as part of, 72–75; challenge of establishing, 14–15, 63–64; critical role of higher education and institutions in, 75–77; framework as focus of, 68–70; pedagogy basis of, 70–72; redefining scholastic rigor, 64–68
- Umatilla/Morrow Education Service District, 137
- United Kingdom: assessment strategies used in, 73–75; Building Schools for the Future program of, 102
- United States: adult occupation distribution (1969–1999) in, 54–55*fig*; changing economy and impact on education/skill needs, 13–14, 53–62; declining level of science/engineering degrees in, 2; global economy challenges for, 31; problem solving ranking of, 2, 83; public support for twenty-first century learning in, 11–12, 39–45; trends in workforce tasks (1969–1998) in, 57*fig*–58
- The Unschooled Mind* (Gardner), 84
- U.S. Bureau of Labor Statistics (BLS), 53, 55
- U.S. Department of Agriculture (USDA), 134, 136
- U.S. Department of Education, 141
- U.S. Department of Justice, 141–142
- U.S. Department of Labor, 101
- Visual literacy, 115, 123
- Wage gap: consequences of educational improvements for, 60–61*fig*; gender gap in, 61*fig*; twenty-first century learning in context of, 48
- Wagner, T., 106–107
- West Virginia, 71, 87
- What Work Requires of Schools* (SCANS report, 1991), 101–102
- A Whole New Mind: Moving from the Information Age to the Conceptual Age* (Pink), 83
- Wilson, B. J., 5, 47, 52
- Wilson, J. L., 5, 21, 149, 154
- Workforce: achievement gap and consequences for, 48; assessing entry-level skills of, 83–84; attitudes on less needed skills needed by, 44*fig*; attitudes on needed skills needed by, 43*fig*; business demands for twenty-first century skills by, 9–11; changing economy and education/skills required of, 13–14; changing job mix/distribution of, 54–55*fig*; company perspective on twenty-first century learning by, 10–11, 31–37; concerns over technology education and unemployment of, 59–60; consequences of educational improvements for earnings of, 60–61; declining level of science/engineering, 2; Dell commitment to technical education of, 25–30; future of blue-collar jobs of, 60; graduating students lacking skills to succeed in, 49; “jobless recovery” (1992–1994) and, 54; opportunities to practice twenty-first century skills, 115–116; outsourcing practice and, 67; trends in tasks done by U.S., 57*fig*–58
- The World Is Flat* (Friedman), 111