

## NAME INDEX

### A

Abbott, C., 108  
Abelson, R. P., 73, 94  
Adams, J. E., 71, 74, 90  
Allensworth, E., 69, 93  
Almond, R., 132  
Ambron, S. R., 196  
Anders, P. L., 72, 83, 84, 90  
Anderson, J. R., 49, 64  
Anderson, R. A., 131, 181, 195  
Anderson, R. C., 71, 90  
Anderson, R. E., 49, 64, 119, 124, 131  
Archodidou, A., 90

### B

Baisden, K., 196  
Ball, D. L., 52, 58, 64, 71, 73, 83, 90, 91  
Bascia, N., 112, 131  
Beauchamp, T., 108  
Bebell, D., 111–112, 117, 129, 132  
Becker, H. J., 53, 64, 119, 124, 131,  
181, 195  
Becker, M., 182, 196  
Bennett, D., 107, 108  
Bereiter, C., 49, 66, 74, 94  
Berman, P., 33, 46  
Berne, J., 79, 95–96  
Best, S., 52, 65  
Blair, T., 98, 99, 100  
Blakeley, B., 108  
Blumenfeld, P., 49, 51, 52, 55, 58, 60,  
64, 65, 66, 181, 195  
Blunkett, D., 99  
Bohrnstedt, G., 180, 195, 197  
Bolman, L. G., 29, 30, 46  
Borko, H., 33, 46

Box, N., 66  
Bransford, J. D., 49, 64, 72, 91,  
92–93, 95  
Bray, M., 68, 75, 77, 85, 86, 90,  
92, 95, 96  
Brewer, W., 73, 91  
Brown, A. L., 49, 64, 71, 74, 90  
Brown, M., 177, 196  
Brown-L'Bahy, T., 119, 132  
Bryk, A., 6, 25, 69, 71, 93  
Burgess, K. L., 95

### C

Campione, J. C., 71, 74, 90  
Carey, S., 71, 91  
Carle, E., 10  
Carney, K., 94  
Carpenter, T. P., 72, 83, 84, 92  
Carrejo, D., 214, 219, 224  
Carrigg, F., 1, 2, 8, 9, 17, 19, 71, 92,  
228–229, 230  
Carrillo, R., 54, 65  
Carter, D.S.G., 79, 91  
Casserly, M., 153, 154, 175, 229, 234  
Cebulla, K. J., 5, 25  
Ceperich, J., 154, 175  
Chinn, C., 73, 91  
Chudowsky, N., 127, 132  
Clements, D. H., 5, 25  
Cobb, P., 50, 64, 83, 84, 91  
Cochran-Smith, M., 71, 72, 83, 85, 91  
Cocking, R. R., 49, 64  
Cohen, D. K., 4–6, 24, 25, 52, 58, 64,  
83, 90  
Coleman, E. B., 186, 196  
Collazo, T., 54, 65

- Confrey, J., 50, 64, 198, 199, 209, 214,  
219, 220, 224, 225, 236  
Congalton, R. G., 182, 196  
Cook, T. D., 178, 180, 196  
Corbett, A. T., 49, 64  
Cottom, C., 75, 95  
Cox, K., 107, 108  
Cox, M. J., 101, 105, 107, 108  
Cronbach, L. J., 178, 196  
Cuban, L., 50, 56–57, 65, 107, 108  
Curry, M., 70, 71, 83, 93

## D

- Darling-Hammond, L., 71, 91  
Datnow, A., 112, 131  
Deal, T. E., 29, 30, 46  
Dede, C., 110, 111, 119, 120, 122,  
127, 128, 131, 132, 227, 229,  
233, 234  
Desimone, L. M., 71, 91  
Dewey, 46  
Diamond, J., 128, 132  
Dickard, N., 130, 132  
DiSessa, A., 50, 64  
Doise, W., 71, 93  
Donovan, S., 72, 91  
Doolittle, F., 112, 132, 154–155, 175  
Dornbusch, S. M., 196  
Dorney, J., 5, 26

## E

- Easton, J., 6, 25  
Edelson, D. C., 177, 196  
Elliot, D. L., 5, 26  
Elmore, R. F., 6, 25, 46, 68, 70, 71, 73,  
91, 92, 107, 108

## F

- Felton, M., 71, 92  
Fennema, E., 72, 83, 84, 92  
Finn, J. D., 180, 196  
Finzer, W., 211, 225  
Firestone, W. A., 83, 94

- Fishman, B. J., 48, 49, 52, 58, 64, 65,  
66, 195, 229, 230, 231, 233  
Fosnot, C. T., 83, 84, 94  
Franke, M. L., 72, 83, 84, 92  
Fritz, J., 98, 109  
Fuhrman, S. H., 63, 65  
Fullan, M., 6, 25, 68, 70, 71, 79, 92,  
117, 132, 146, 152  
Fuller, H., 113–114

## G

- Gage, N. L., 136, 152  
Gause-Vega, C. L., 68, 73, 92, 96  
Gauvain, M., 71, 92  
Gearhart, M., 70, 71, 83, 93  
Georges, A., 8, 25  
Gilbert, L., 90  
Ginsburg, H. P., 25  
Glaser, R., 127, 132  
Goldman, S. R., 67, 68, 77, 85, 86, 90,  
92–93, 95, 96, 228, 231, 232  
Gomez, L., 58, 65  
Gordin, D. N., 50, 66  
Green, J. S., 182, 197  
Grossman, A., 233  
Grouws, D. A., 5, 25  
Grover, S., 113, 132  
Guzdial, M., 64

## H

- Hackett, R., 92–93  
Haertel, G., 132, 194, 196  
Hall, G., 6, 25–26  
Hall, J., 101, 108  
Hallinger, P., 68, 70, 79, 93  
Halverson, R., 128, 132  
Haney, M., 107, 108  
Hargreaves, A., 112, 131  
Hauser, R., 221, 225  
Hawley, W. D., 73, 82, 92  
Hepp, P. K., 103, 104, 105, 107, 109  
Herlihy, C., 112, 132, 154–155, 175  
Hess, R. D., 196  
Heubert, J., 221, 225

Hiebert, J., 73, 95  
 Highton, T., 8  
 Hill, H. C., 4–6, 24, 25  
 Hinostroza, E., 104, 105, 109  
 Hirsch, E. D., 81  
 Hmelo, C., 95  
 Hoadley, C. M., 50, 66  
 Hodas, S., 50, 65  
 Hofer, B., 73, 92  
 Hoffman, J., 66  
 Holland, H., 79, 92  
 Honan, J. P., 227  
 Honey, M., 1, 71, 92, 228, 229, 230,  
 234, 235  
 Hornik, R. C., 196  
 Hsi, S., 49, 65  
 Hubbard, L., 112, 131

## J

Jasna, R., 114  
 Jennings, N. E., 177, 197  
 Jepson, J., 154, 175  
 Johnson, R. L., 216, 225  
 Johnson, S. M., 228  
 Johnston, C., 100, 101–102, 109

## K

Kafka, J., 70, 71, 83, 93  
 Kerbow, D., 6, 25  
 Kim, D. Y., 196  
 Kim, S., 90  
 Kirkpatrick, H., 50, 57, 65  
 Kiskis, D., 66  
 Klann, E., 66  
 Kleiman, G., 233–234  
 Klein, A., 25  
 Koedinger, K., 49, 64  
 Korbak, C., 132, 196  
 Krajcik, J. S., 49, 51, 52, 54, 57, 64, 65,  
 66, 195  
 Kress, S., 218  
 Kruse, S., 71, 93  
 Kuhn, D., 71, 92  
 Kupperman, J., 51, 57, 66  
 Kyzza, E., 94

## L

Lagemann, E. C., 30, 46, 236  
 Lamon, M., 74, 75, 92–93, 94  
 Laral, K., 104, 105, 109  
 Lehrer, R., 50, 64  
 Leonard, D., 233  
 Lesgold, A., 178–179, 196  
 Levine, E., 182, 197  
 Lewis, A., 132, 186, 196  
 Lewis, S., 154, 175, 196  
 Lieberman, A., 71, 93  
 Linn, M. C., 49, 65  
 Little, J. W., 5, 26, 29, 33, 46, 70, 71,  
 83, 93  
 Lord, B., 5, 26  
 Loucks, S., 6, 25–26  
 Louis, K. S., 71, 93  
 Love, N., 200, 225  
 Lowther, D. L., 77, 87, 94  
 Lubienski, S. T., 83, 96  
 Lynch, O., 100  
 Lytle, S. L., 71, 72, 83, 85, 91

## M

MacInnes, G., 17  
 Makar, K. M., 198, 209, 220–221, 225,  
 236  
 Marx, R. W., 49, 51, 52, 54, 64, 65, 66,  
 195  
 Mattson, S., 83, 96  
 McCarthy, S. J., 46  
 McDonald, J. P., 30, 46  
 McLaughlin, M., 6, 26, 33, 46, 69, 71,  
 75, 93, 177, 196  
 McMillan-Culp, K., 71, 92  
 McNeil, L., 221, 225  
 McNurlen, B., 90  
 McTighe, J., 183, 197  
 Means, B. M., 50, 66, 176, 181, 183,  
 184, 186, 194, 196, 197, 237  
 Mehan, H., 112, 131  
 Messick, S., 199, 225  
 Michalchik, V., 196  
 Miles, M. B., 68, 70, 92, 117, 132, 146,  
 152  
 Miller, B., 5, 26

Miller, L., 75, 95  
 Mirel, J., 79, 93  
 Mirsky, N., 182, 197  
 Mislevy, R., 127, 132  
 Moje, E. B., 54, 65  
 Moore, G. A., 48, 52, 65  
 Morgridge, J., 127  
 Morrissey, M., 182, 197  
 Mugny, G., 71, 93  
 Murphy, J., 68, 70, 79, 93  
 Murphy, R., 196

**N**

Nelson, R., 110, 114, 229, 233  
 Newmann, F. M., 69, 93  
 Nghuyen-Jahiel, K., 90  
 Nielsen, J., 55, 65  
 Norris, C., 66

**O**

O'Day, J., 54, 66  
 O'Dwyer, L., 111–112, 117, 129, 132  
 O'Neill, M. H., 79, 91

**P**

Padilla, C., 181, 196  
 Palincsar, A., 64  
 Pappas, C., 84, 93  
 Pea, R. D., 50, 66  
 Peck, C., 50, 57, 65  
 Peek-Brown, D., 230–231  
 Pellegrino, J. W., 72, 91, 127, 132  
 Pelletier, R., 49, 64  
 Pennell J. R., 83, 94, 124  
 Penuel, W., 132, 176, 179, 181, 183,  
 186, 196, 197, 237  
 Perkins, D. N., 29, 35, 38, 46, 232, 234  
 Perret-Clermont, A.-N., 71, 93  
 Peterkin, R., 234, 236–237  
 Peters, G., 66  
 Peters, L. C., 97, 234  
 Peterson, P. L., 46  
 Petrosino, A., 92–93  
 Pfeffer, J., 29, 46

Phillips, D. C., 196  
 Piaget, J., 73, 94  
 Pintrich, P., 73, 92  
 Plants, R. T., 77, 87, 94  
 Pogrow, S., 6, 26  
 Pomfret, A., 6, 25  
 Postawko, S., 182, 197  
 Pressman, J. L., 69, 79, 89, 94  
 Preston, C., 107, 108  
 Putnam, R. T., 33, 46  
 Puttnam, Lord, 100

**R**

Ravitz, J. L., 53, 64  
 Reimer, T., 73, 95  
 Reiser, B. J., 71, 73, 94, 95  
 Reznitskaya, A., 90  
 Rhodes, V., 101, 108  
 Rice, R., 56, 65  
 Richardson, D., 66  
 Richardson, V., 72, 83, 84, 90, 94  
 Riha, S., 182, 197  
 Robin, J., 182, 197  
 Rogers, E. M., 52, 56, 65, 66  
 Rogoff, B., 71, 92, 93  
 Rollow, S., 6, 25  
 Ronen, O., 66  
 Ronkvist, A., 49, 64  
 Roschelle, J. M., 50, 66  
 Rosebery, A., 83, 84, 94  
 Ross, S. M., 77, 87, 94  
 Rowe, R., 182, 196  
 Rumelhart, D. E., 73, 94  
 Rundquist, S., 73, 90  
 Russell, M., 111–112, 117, 129, 132

**S**

Sabelli, N., 236  
 Sarason, S. B., 79, 94  
 Scardamalia, M., 49, 66, 74, 94  
 Schank, R. C., 73, 94  
 Schauble, L., 50, 64  
 Schifter, D., 83, 84, 94  
 Schneider, R. M., 54, 66  
 Schön, D., 33, 47

Sebring, P., 6, 25  
 Secules, T., 68, 75, 92–93, 95, 96  
 Selwyn, N., 98, 105, 109  
 Senge, P. M., 69, 70, 71–72, 79, 95,  
 135, 152  
 Senk, S. L., 71, 95  
 Shaw, V., 71, 92  
 Shear, L., 132, 196  
 Shepard, L. A., 54, 66  
 Shulman, L. S., 85, 95  
 Smith, B. S., 69, 93  
 Smith, M. S., 54, 66  
 Smith, N., 194–195, 197  
 Snipes, J. C., 112, 132, 153, 154–155,  
 175, 229, 234  
 Soloway, E., 49, 51, 52, 57, 60, 64, 65,  
 66, 195  
 Sorsa, D., 94  
 Spillane, J. P., 5, 26, 73, 93, 95, 128,  
 132, 177, 197  
 Starkey, P., 25  
 Stecher, B. M., 180, 195, 197  
 Steinberg, L., 132  
 Steinmuller, F., 94  
 Stiegler, J. W., 73, 95  
 Stokes, D., 70, 95  
 Stringfield, S., 133, 141, 148, 152, 235  
 Supik, J. D., 216, 225  
 Sutton, R., 29, 46  
 Swenson, K., 211, 225

## T

Tal, R., 52, 65  
 Talbert, J. E., 69, 75, 93  
 Tan Yap Kwang, 101  
 Thompson, D. R., 71, 95  
 Thorpe, R., 1, 228, 229, 230  
 Tillmanns, M., 90  
 Toma, C., 71, 94  
 Toyama, Y., 132, 196

## U

Unger, C., 38, 46

## V

Valencia, R., 222, 226  
 Valenzuela, A., 221, 222, 225  
 Valli, L., 73, 82, 92  
 Voss, J. F., 95  
 Vye, N. L., 71, 95  
 Vygotsky, L. S., 71, 95

## W

Walker, D. F., 196  
 Wallace, R., 51, 57, 66  
 Warren, B., 83, 84, 94  
 Wayman, J. C., 133, 141, 148, 152, 235  
 Webb, M., 108  
 Webb, N. L., 71, 95  
 Weiner, S. S., 196  
 Wenger, E., 33, 47  
 Wenglinsky, H., 50, 66  
 West, B., 107, 109  
 Whitehouse, P., 119, 132  
 Whitehurst, G. G., 177, 197  
 Wiggins, G., 184, 197  
 Wildavsky, A. B., 69, 79, 89, 94  
 Wilkins, E. B., 107, 108  
 Willett, J., 233  
 Williams, S. M., 74, 95  
 Wilson, S. M., 79, 83, 95–96  
 Wiske, M. S., 27, 35, 38, 47, 234  
 Wong, Y., 53, 64  
 Wood, T., 83, 84, 91  
 Woodward, A., 5, 26  
 Wright brothers, 135

## Y

Yackel, E., 83, 84, 91  
 Yakimowski, M. E., 133, 141, 148, 152,  
 235  
 Yarnell, L., 132, 186, 196, 197

## Z

Zech, L., 68, 72, 77, 82, 83, 85, 90, 92, 96  
 Zecker Z. L., 84, 93

## SUBJECT INDEX

### A

Abbott Implementation Regulations  
for Improving Standards-Driven  
Instruction and Literacy (Intensive  
Early Literacy), 16–23

Academic achievement, in urban school  
districts, 155–159, 160

Access, technology, 119, 127, 186

Accessibility, of student data analysis  
software, 139

Account software, 142–143

Accountability systems and pressures:  
data-driven decision making and,  
137, 141, 151; equity and fairness  
issues in, 198–224; GLOBE science  
education program and, 187;  
high-stakes test data in, 198–224;  
of No Child Left Behind, 106–107,  
181–182, 199, 209; professional  
development in technology and, 98,  
106–107; in Texas, 199, 203–221; in  
United Kingdom, 98; in urban school  
districts, 163, 167. *See also* No Child  
Left Behind

Achievement gaps: data analysis of,  
199–224; in urban school districts,  
158, 172; variety of, 200

Active learning, teacher, 30

Adobe Acrobat, 140

Advanced placement courses, 170

African American student performance,  
in Texas, 200–201, 202–208, 213,  
218, 221

Aggregate data, 200

ALPS (Active Learning Practices for  
Schools), 35; Web site of, 35

Artemis, 51, 57–60

Asian and Pacific Islander student  
performance, in Texas, 202

Assessment: alignment of, 71; equity and  
fairness issues in, 198–224, 235–236;  
of GLOBE science education program,  
189–192; high-stakes test data and,  
198–224; multiple measures in,  
221–222; in scaling up urban school  
districts, 155; technology-enabled,  
127; in Union City’s literacy pro-  
grams, 13, 21; in WIDE World  
professional development program,  
38, 39

Asynchronous communication:  
in student learning, 119–120; in  
WIDE World professional develop-  
ment program, 40

Atmosphere-investigation program,  
191–192. *See also* GLOBE

Average effect size, 237

Awareness building, in Union City  
professional development, 13–14

### B

Balanced literacy, 13–14

Basal readers, 9

Beliefs: changing, 73; about technology  
roles and functions, 97–108, 111,  
117

Big Books, 20

Bilingual and English as a second  
language (ESL) education, in Union  
City, New Jersey, 8, 9–15, 20, 22

Bloom’s taxonomy, 12

“Bookends” approach to reform, 199

Brio, 123

British Education Communications and  
Technology Agency (Becta), 100

Brookings Institute, 7

“Bubble kids,” 209, 216, 217, 235–236

- Business partnerships, 114, 115, 129, 233. *See also* Collaborations and partnerships
- Busing, 78–79
- C**
- California: class-size reduction in, 180–181; mathematics reform in, 4–6
- California Department of Education, 4
- California Learning Assessment System, 4
- Capability dimension, for innovation adoption, 56, 57–58, 60–61
- Career needs, student, 119
- Cascade model, 102–103. *See also* “Training the trainers” model
- Causal relationships, determination of, 177–178
- Causal theories, scaling models as, 28, 34–35, 42
- Center for Children and Technology, 130, 131
- Center for Highly Interactive Computing in Education (hi-ce), 49, 51–52, 63; Web site of, 51
- Center for Learning Technologies in Urban Schools (LeTUS), 51–52, 54–61, 231
- Center for Technology in Learning, 176–177, 183, 189
- Central office role, in urban school district reform, 162, 163, 164, 171, 174
- Central tendency, 216
- Champions, 63, 71, 229
- Chancery, 142–143
- Change: coping with, 227, 228–230; funding, 230; individual, 71–73; leadership, 229, 238; political and policy, 88, 228–229, 230, 232
- Change, wide-scale: design principles for, 67–74, 88; dimensions of, 29–31; replica trap in, 31–34, 41–42; research issues in, 177–181; Schools for Thought illustration of, 74–88; in urban schools, 153–175. *See also* Scaling up
- Change leaders, 71, 78, 229
- Change process principles, 69–70, 78–82, 88
- Charlotte-Mecklenburg School District, 156, 157–159, 172, 173
- Chasms, technology adoption, 48, 49, 52–53, 231
- Chicago Public schools, 51–52; educational improvement in, scalable design of, 68, 88
- Chile, professional development in technology in, 97–98, 103–105, 107; United Kingdom compared with, 103, 105
- Chilean Ministry of Education, 103
- Cisco Network Academy (CNA) program, 118, 127
- Classroom-based coaching, 73
- Classrooms: computers in, 15, 119; factors influencing instructional use of technology in, 112; handheld computers in, 60–61; redesigning, for curricular reform, 14–15, 19
- Class-size reductions, 19, 180–181
- Coaching, 30, 32; classroom-based, 73; peer, 14, 77, 122; in Web-based professional development program, 36, 40, 42, 43, 44–45
- Coherence: across state, district, and school levels, 1–2, 17, 69; in curricular reform, 5–6, 17, 161, 163, 164, 168, 171, 173, 174; lack of instructional, in urban school districts, 161, 164, 171; in scaling up educational reform, 68, 69
- Cohort model, in professional development, 39–40
- Collaborations and partnerships: building support and, 230–231; challenges for school-university, 61–63; for educational improvement, 69–70, 74–88; for Internet-based professional development, 44–45; for Internet-based teacher support, 120; for learning technology innovation and adoption, 48–64, 114, 118, 121, 129–130; for technology improvement in Union City, 15; working with, 233–234

- Collaborative Curriculum Design Tool, 39
- Collaborative discussions, 73
- Collaborative inquiry, 71, 77, 82–85.  
*See also* Inquiry orientation
- Commitment to the Future, 79, 80
- Community involvement, 129–130, 174
- Comparative linguistics, 10–11
- Computers. *See* Handheld computers; Learning technology innovations; Software; Technology and technology innovation
- Concert Inform, 142–143
- Consensus, in urban school district reform, 162, 163, 167
- Consortium for School Networking, 114
- Constituent support building, 230–231
- Constructivist pedagogies, scaling up, 27–46, 49–50
- Content coverage, 193
- Content-Based Collaborative Inquiry (CBCI), 83–85
- Context: adapting innovations across, 48–64; adapting to changing, 228–229; alignment across multiple levels and, 69; evaluating intended innovation's fit with, 54–57
- Context variables: in GLOBE science education program, 185–187; in professional development, 29, 30–31, 34, 37, 44–45; research design and, 177–182, 194–195
- Continuous improvement process, 69
- Cooperative learning, 13–14
- Core Knowledge Curriculum/Core Knowledge Foundation, 81–82
- Cost-efficient delivery, 136
- Costs: of Internet-based scaling up, 43; of student data analysis software, 140, 146–148; of technology, calculation of, 130
- Council of Great City Schools, 112, 154
- Council of Great City Schools, research studies: on barriers to reform at scale, 164, 171–172; key findings of, 155; on practices of faster-improving *versus* comparison districts, 162–170; purposes of, 154–155; research issues in, 159–160; school districts in, 156, 157–159; on urban school challenges, 160–162; on urban school progress, 155–159
- Craft variables, 29–30, 34, 37, 41
- CRESST, 142–143
- CRM, 142–143
- Cross-cultural comparison, of professional development in technology, 97–108
- Cultural-symbolic dimension of change, 29, 31
- Culture change principles, 70–71
- Culture dimension: for innovation adoption, 56, 59, 61; for technology use, 107
- Cumulative subskill acquisition model, 9
- Curriculum design assistant (CDA) tool, 120–121, 122, 124–125
- Curriculum Online, 99
- Curriculum reform: coherence in, 5–6, 17, 161, 163, 164, 168, 171, 173, 174; learning technology alignment with, 49–50, 53–57, 97–108; in New Jersey, 1–25; Web-based design tool for, 120–121

## D

- Data analysis. *See* Student data analysis
- Data analysis software. *See* Dynamic statistics software; Student data analysis software
- Data cleaning and integration, 144, 145
- Data collection, in GLOBE research project, 186–187
- Data interpretation strategies, 235–236
- Data inventory, 144
- Data Miner, 142–143
- Data needs assessment, 144–146
- Data Point, 142–143
- Data presentation, 139, 145
- Data usefulness criterion, 136, 145
- Data warehousing, 137, 145, 146. *See also* Student data analysis software
- Data-driven decision making, 127, 130, 227, 235–236; high-stakes test data and, 198–224; professional

- Data-driven decision making (*continued*)  
 development for, 151; student data analysis software and, 146, 150–152; trends toward, 136–137; in urban school district reform, 163, 169, 171, 173, 174. *See also* Student data analysis software
- Data-processing systems, in urban school districts, 171, 173
- Decision making, effective, 227, 235–236. *See also* Data-driven decision making
- Decodable books, 20
- Deficit thinking, 222
- Demonstration projects. *See* Pilot tests
- Desegregation, 78–79
- Design principles, for scalable educational improvement, 67–74, 88; Schools for Thought illustration of, 74–88
- Design-based research methodologies, 50, 52, 54
- Detroit Public Schools: grant support for, 230; learning technology partnerships of, 49, 51–52, 54–64, 230–231
- Diagnosis of situation, 165
- Digital divide, 126
- Disaggregated data, 134, 141; of high-stakes test scores, 199, 200
- Distributed equity, 221–224
- Distributed Equity and Steady Improvement (DESI) simulation tool, 222–224
- Distributed leadership, 117, 127–128
- Distributed learning, 119–120
- Distribution, statistical, 199, 212–213, 221, 222, 224
- Drill-and-practice tools: alignment of design of, 56; popularity of, 49, 50
- Drill-down capabilities, 140
- Dynamic statistics software, 199, 211, 213
- E**
- Early adopters, 52
- Early childhood programs, 172
- Ease-e, 142–143
- Economically disadvantaged students: academic achievement of, in urban school districts, 160; performance of, in Texas, 202, 218; statistical analysis of high-stakes test data on, 199, 200–224
- EDmin, 142–143
- EDsmart, 142–143
- Education Commission of the States, 114
- Education Development Center (EDC), 122, 233–234
- Education Sciences Reform Act, 177–178
- Education Summit, 1989, 154
- Educational improvement and reform: change process principles for, 69–70, 78–82, 88; defining, 88–89; designing for scalable, 67–90; individual change for, 71–73; organizational culture change for, 70–71; politics and, 78–82, 88, 228–229, 230; pre-conditions for, 155, 162, 165–166, 174; Schools for Thought illustration of, 74–88; in urban school districts, 153–175
- Eisenhower National Clearinghouse, 198, 225
- Elementary grades, starting reform with, 163, 170
- E-mail accounts, staff, 115
- Emotional dimension, of information technology, 117
- Enactment variables: in GLOBE science education program, 184, 185–187, 193–194; research design and, 177–182, 194–195, 237
- English as a second language (ESL) education. *See* Bilingual and English as a second language (ESL) education
- ENLACES, 103–105
- ENT (Education with New Technologies), 35, 38–39; Web site of, 35, 39
- Environmental science program. *See* GLOBE
- Equity/inequity: in assessment of student performance, 198–224; in technology access, 119, 127; in Texas accountability and assessment system,

- 198–224; theory of distributed, 221–224; in urban school district reform, 172
- E-rate program, 126
- EScholar, 142–143
- Ethnicity and race: statistical analysis of high-stakes test data and, 199–224; stereotyping by, 213, 216, 222; student achievement and, 158–159, 160
- Evaluation: alignment of, 62–63; of innovation usability, 54–57; of Schools for Thought, 87; of WIDE World professional development program, 40–41
- Excel, 140
- Executive Intelligence, 142–143
- Executive Technology Review Committee (ETRC), 114, 116
- Existence proofs, 167
- Expectations, low, 161, 222
- “Expertise across distance” project, 122–123, 125, 130
- ## F
- Failure, tolerance for, in Union City reform, 13
- Fairness, in assessment and accountability systems, 198–224
- Fathom software, 211, 213
- Fatigue, 172
- Federal education research agencies, 189–194
- Feedback, practitioner, 73
- “Fidelity of implementation” standard, 185
- Followers, 128
- Fort Worth School District, 156
- Foundations for Success* (Snipes et al.), 154–155, 175. *See also* Council of Great City Schools
- Franchise model, 233
- Funding: addressing fluctuations in, 230; grant, 74, 76, 80, 86, 87, 121, 123–124, 126, 127, 230; of Milwaukee Public Schools’ technology infrastructure, 121, 123–124, 125–126, 126, 127; of professional development in technology, 98, 100, 105; of research, 238–239; strategies for, 125–126; of urban school district reform, 166
- ## G
- Gap analysis, 175
- Gender differences, in student performance, 200, 202, 216
- Generalizability, 130–131, 155–156; random-assignment experiments and, 177–181, 194–195
- Generative curriculum topics, 38
- Generativity, 70
- Gifted and Talented School, Union City, 8
- Global Positioning System, 184
- GLOBE, 124, 125, 176–177, 182–194; assessment studies of, 189–192; conditions for success of, 187–188; description of, 182–183; implementation and context variables in, 185–187, 193–194; implementation levels in, 187–188; implications of, 192–195; learning outcomes measures in, 188–192; learning outcomes of, 189–194; theory of change of, 183–185; Web site of, 182
- Goal alignment, at multiple levels, 68, 69, 89
- Goal setting, for urban school district reform, 162, 167
- Grant funding, 74, 76, 80, 86, 87, 121, 123–124, 126, 127, 230
- Groupware, 123
- ## H
- Handbook of Research on Teaching (Gage), 136
- Handheld computers, 51–52, 60–61, 141
- Harvard Business School (HBS), 233
- Harvard Graduate School of Education (HGSE), 228, 236; Educational Technology Center of, 35; Project Zero of, 35; Teaching for Understanding (TfU) framework of, 35, 38–39; WIDE World of, 28, 35–46

- Harvard Principals' Institute, 122
- Harvard University, "expertise across distance" research of, 122–123, 125, 130
- High school dropouts, 216–217
- High school reform, 170, 175
- High-stakes test data, statistical analysis of, 198
- Hispanic student performance, in Texas, 201, 202, 218
- Hothouse research environments, 50, 54
- Houston School District, 156, 157–159, 173
- Human facilitation, in Web-based professional development program, 36, 39–40, 42, 46
- Human relationships, 86
- Human resources: capacity building in, 227, 232–234; wide-scale change and, 29–30, 71–72, 86
- Human resources management systems, 115, 124
- I**
- "I Can Learn," 118
- Ideas, 135
- Idiosyncrasy, culture of, 2–3
- Implementation variables, 177–182, 184, 185–187, 193–195
- Improvement. *See* Educational improvement and reform
- Individual change, 72–73
- Individualism, professional, 6, 33
- Inequity. *See* Equity/inequity
- Information and communications technology (ICT) teacher program, in United Kingdom, 100–101, 105
- Information management (IM), 137–138. *See also* Data-driven decision making; Student data analysis software
- Information technology. *See* Internet and Web-based technologies; Learning technology innovations; Software; Technology and technology innovation
- Innovations: adapting, across contexts, 48–64, 111–113; adoption curve for, 52; evaluation of, for usability, 54–57; framework for implementing, 54–61; promoting ownership of, 232; reinvention for, 56–57; scaling up, meaning of, 52–54; in scaling up process, 135–136. *See also* Learning technology innovations; Technology and technology innovation
- Inquiry orientation: collaborative, 71, 77, 82–85; to educational improvement change process, 69, 71, 77, 88; to professional development, 29, 31, 37, 42–43, 72–73, 77, 82–85, 124–125; in science education, 51–52, 57–61, 74–75, 183–185, 192, 193; of teachers for data analysis, 219–221, 222; technology innovations for, 49–52, 57–61, 124–125
- In-service training, 121
- Institute of Education Sciences, 177
- Intensive Early Literacy (IEL), 16–23
- Intercultural Development Research Association, 216–217
- Internet and Web-based technologies: advantages of, in scaling up, 42–43, 45; for assessment, 190–191; data-driven decision making and, 137–138; limitations of, 45–46; for professional development, 28, 35–46, 49–50, 121–123; scaling up, for science education reform, 57–60; scaling up constructivist pedagogies with, 28, 35–46, 49–50; scaling up educational improvement with, 110–131; for staff development, 123–125; for student data analysis, 137–138, 139, 140, 141; for technology-enabled student learning, 118–120. *See also* Learning technology innovations; Technology and technology innovation
- Internet, 2, 123
- Interpersonal relationships, 86
- Invention, 135, 136
- Iowa Test of Basic Skills (ITBS), 214–215, 220
- Isolation, culture of, 33

## J

Joyce Foundation, 122, 130  
Just for the Kids, 199

## K

K-3 literacy reform, 16-23  
"Knowledge in practice" mode, 83-84  
Knowledge management, 137. *See also*  
Data-driven decision making; Student  
data analysis software  
Knowledge-action gap, 28-31, 36, 41  
Knowledge-based decision making, 137.  
*See also* Data-driven decision making

## L

Latino students, bilingual and English as  
a second language instruction for, 22  
*Launch of Master Plan for IT in  
Education, Singapore*, 102, 109  
Leadership: attributes for, 128; coping  
with changes in, 229, 238; distributed,  
117, 127-128; diversity in, and wide-  
scale change, 33; for educational  
improvement, 71; stability in, 24, 63,  
155, 229, 238; for technology inno-  
vation, 117, 127-128; for urban  
school district reform, 155, 160, 162,  
164, 174; "without followers," 128  
Learning centers, community, 129  
Learning communities, 71, 79, 83, 86  
Learning how to learn, 12  
Learning methodology, for Union City's  
literacy education reform, 12  
Learning objectives, of GLOBE  
program, 183-185  
Learning organizations, 70-71, 74  
Learning outcomes measures: for  
GLOBE science education program,  
188-192; standardized test scores  
*versus*, 181-182, 188  
*Learning Policy* (Cohen and Hill), 4-6  
Learning styles, 119-120  
Learning technology innovations:  
adapting, across contexts, 49-64,  
111-113; alignment of, with curricu-  
lum reform, 49-50, 53-54, 97-108;

chasms in adoption of, 48, 49,  
52-53; cross-cultural comparison of  
professional development in, 97-108;  
framework for implementing, 54-61;  
in Milwaukee Public Schools,  
118-120; research issues and methods  
in, 50, 52, 54, 176-195; scaling up,  
110-131, 176-195; for science edu-  
cation reform, 49, 51-52, 57-64,  
176-195. *See also* Internet and Web-  
based technologies; Software; Tech-  
nology and technology innovation  
Learning with understanding, 72, 85  
Lesson study, 73  
Lessons learned: definitions and assump-  
tions about, 89-90; about design  
principles, 88; in Schools for  
Thought, 77-88  
LeTUS. *See* Center for Learning  
Technologies in Urban Schools  
Libraries: classroom, 19; for literacy  
improvement, 19-20  
Literacy and literacy reform: changes  
required for, 11-15; focus on, in  
urban school districts, 163, 171;  
in New Jersey, 7-25; traditional  
instruction and, 10; U.S. Department  
of Education's essentials for, 18  
Local change: knowledge-action gap  
and, 28-31, 41; replica trap and,  
32-34, 41-42, 153-154  
Long Beach School District, 156  
Longitudinal trajectory of performance,  
205-206, 210-211

## M

Magnitude problems, 32, 34, 42  
Main effects studies, limitations of,  
177-181  
Management and information services  
(MIS) division, 58-59  
Marquette University, 121  
Materialism, 32  
Materials. *See* Textbooks and materials  
Mathematics reform: assessment methods  
and, 221-222; in California, 4-6;  
focus on, in urban school districts,  
163, 171

- McDonnell Foundation, James S., 74  
 MDRC, Inc., 154  
 Mean scores, 220  
 Mentoring, 14, 122, 124, 187  
 Microsoft Office, 123  
 Microsoft Word, 140  
 Middle school reform, 170, 175  
 Midwest Higher Education Commission, 114  
 Milwaukee Area Technical College, 118  
 Milwaukee Board of School Directors, 114, 116, 120  
 Milwaukee Public Schools (MPS):  
   background and history of, 113–117;  
   collaborations of, 114, 118, 121,  
   129–130; continuing challenges of,  
   126–129; Department of Technology,  
   114–117, 123, 124, 125, 126, 128;  
   generalizability of, 130–131; leader-  
   ship instability in, 229; policy and  
   practice implications in, 129–131;  
   professional support portal (PSP)  
   of, 121–123, 124, 125, 130; staff  
   development in technology usage  
   in, 123–125; staffing and funding  
   strategies of, 125–126, 127; teacher  
   empowerment via technology in,  
   120–123; technology-enabled student  
   learning in, 118–120; technology  
   infrastructure design and implemen-  
   tation of, 110, 113–131  
 Milwaukee Teachers Education  
   Association, 115  
 MRDC Inc., 112  
 Mutual adaptation, 33–34, 36
- N**
- Namibian National Institute for  
 Educational Development, 44, 45  
 Nashville Public Schools, Schools for  
 Thought in, 74–88  
 National Assessment of Educational  
 Progress (NAEP), 155–156, 189;  
 Urban Trial program, 156  
 National Center for Education Statistics,  
 216
- National Center for Educational  
 Accountability, 199  
 National Commission on Teaching and  
 America's Future, 125, 132  
 National Council of Teachers of  
 Mathematics, 204  
 National Grid for Learning (NGfL),  
 99–100, 105  
 National Lewis University, 121  
 National Research Council, 72, 73, 78,  
 93, 221  
 National Teacher Council (United  
 Kingdom), 100  
 National Technology Advisory Board,  
 127, 129, 130  
 National Union of Teachers (United  
 Kingdom), 100, 109  
 National Writing Project, 220  
 Networks, practitioner, 71  
 New Jersey, literacy reform in, 1–25.  
   *See also* Union City, New Jersey  
 New Jersey Department of Education,  
 2, 17, 23, 24, 26  
 New Jersey Reading First, 17, 18–23  
 New York City public schools, 157–158  
 No Child Left Behind, 23; accountability  
 systems and, 106–107, 181–182,  
 199, 209; low-performing school  
 district interventions and, 174–175;  
 professional development/technology  
 provisions of, 98, 106–107, 121,  
 126; scaling up research and, 177;  
 student data analysis software and,  
 137, 141, 150, 151  
 Norfolk School District, 156  
 Northwestern University, 51–52  
 NSSE, 142–143
- O**
- Oklahoma VISION, 44–45  
 On-line performance assessments,  
 190–191  
 Organizational change principles, 70–71  
 Organizational development, collabora-  
 tions and partnerships for, 233–234  
*Oversold and Underused* (Cuban), 107

- Ownership: in collaborations, 62–63; of data, 236; promoting, 227, 230–232; shared, 117, 128; by teachers, 231; of technology infrastructure creation and implementation, 117, 128; of technology use, 105–106
- P**
- Palm computers, 51–52, 60–61, 141
- Parental involvement and support, 117, 119, 173
- Partnerships. *See* Collaborations and partnerships
- Pass rates, 220
- Pearson Digital Learning, 142–143
- Peer coaching, 14, 77, 122. *See also* Coaching
- “Percentage passing” measure, 209–210, 216
- Permutation tests, 212–213
- Philosophies, problem of diverse, 33.  
*See also* Beliefs
- Physical environment changes, in Union City, 14–15, 19
- Pilot tests and demonstration projects: of literacy education reform in Union City, 11; of Milwaukee Public Schools technology projects, 116, 117, 118, 119
- Policy and policymaking: changing nature of, 88, 228, 232; cross-cultural comparison of, 97–108; data-driven decision making for, 127; research design and, 177–182, 194–195, 237; technology innovation and, 56, 59–59, 61, 127, 129–131
- Politics: impact of, on educational change process, 78–82, 88, 228–229, 230; technology innovation and, 126, 127–128; in urban school district reform, 160, 164, 174; as variable in wide-scale change, 31, 33
- Portfolio assessment, 21
- Practice: alignment of innovations with, 49–50, 53–57; alignment of technology use with, 97–108; dilemmas of, 54; inquiry-based professional development and, 72–73, 83–85; knowledge-action gap and, 28–31, 36, 41; knowledge in, 84–85; modeling, 36, 39, 42; relationship of, to state policy, 16–17; research and, 28–31, 36, 41, 234, 236–237; technology implications for, 129–131; in Union City professional development, 14
- Practice tests, 216, 220
- Preschool, 20, 173
- Princeton University, 118
- Principals: technology innovation and, 119, 122, 195; urban school district reform and, 164, 172
- Privacy norms, 33
- Privilege, 224
- Professional development, staff, 123–125
- Professional development, teacher: in Chile, 97–98, 103–105, 107; context variables in, 29, 30–31, 34, 37, 44–45; craft variables in, 29–30, 34, 37, 41; for data-driven decision making, 151, 236; dimensions of, 29–31; factors in, for curricular reform, 4–6; features of effective, 30; five-stage model for, 13–14; inquiry-based approaches to, 29, 31, 37, 42–43, 72–73, 77, 82–85, 124–125; in inquiry into student assessment data, 220–221, 222, 236; Internet-based, 28, 35–46, 49–50, 121–123; lessons about, from Schools for Thought, 82–87; principles of change and, 71–73; replica trap and, 31–34, 41–42; for scaling up constructivist pedagogies with technology, 27–46; for scaling up educational improvement, 72–73, 82–85; in Singapore, 97–98, 101–103; in technologies, cross-cultural comparison of, 97–108; in technologies, in Milwaukee Public Schools, 115, 121–123; in technology-enabled science curriculum reform, 52; themes in, 234; in Union City, 13–14, 21–22;

- Professional development, teacher  
*(continued)*  
 in United Kingdom, 97–101; in  
 urban school district reform, 169;  
 WIDE World model of, 28, 35–46
- Professional support portal (PSP),  
 121–123, 124, 125, 130
- Professional Support Portal Web site,  
 122
- Professionalism, 6
- Program to Improve the Equity and  
 Quality of Education (ENLACES),  
 103–105
- Project Zero, 35
- Project-based strategy, 51–52
- Proteus, 110
- PT3 catalyst grant, 121, 126, 127
- Public Law No. 107–110, 106–107
- Pull-out programs: elimination of, in  
 Union City, 12–13, 21; in Texas, 216
- Q**
- QSP, 142–143
- Quartiles, 216
- Query tools, in student data analysis  
 software, 140
- R**
- Rand Corporation, 33, 155
- Random-assignment experimental  
 design, 177–181, 194–195
- Reading centers, in classrooms, 14–15, 19
- Reading First, 16–17
- Reading improvement focus, in urban  
 school districts, 163, 171. *See also*  
 Literacy and literacy reform
- Reengineering, of management systems,  
 115
- Reflection: on professional development  
 model, 84; teacher, 30, 33, 39, 72–73,  
 83. *See also* Inquiry orientation
- Reforms, pressing down, 169
- Reinvention, 56–57, 88
- Relevance, of student data, 140
- Remedial education: concerns about,  
 172, 205, 209, 216–217; elimination  
 of, 13; in Texas, 205, 209, 216–217,  
 220
- Replacement units, 200
- Replica trap, 31–34, 41–42, 153–154
- Replicable schools, 116
- Research issues and methods: complexity  
 and, 177–181; in Council of Great  
 City Schools research, 159–160; in  
 educational improvement process,  
 70; in evaluation of WIDE World  
 professional development program,  
 40–41; funding and, 238–239; in  
 learning technology innovation  
 research, 50, 52, 54, 176–195;  
 policy and, 177–182, 194–195,  
 237; practice and, 234, 236–237;  
 in professional development in tech-  
 nology, 105; in student data analysis  
 software, 152; in student perfor-  
 mance assessment, 198–224
- Research topics, future, 238–239
- Resistance: based on prior beliefs and  
 knowledge, 73; culture of idiosyn-  
 crasy and, 2–3; district-level, 126; to  
 technology innovation, 50, 126–127;  
 to uniform curriculum, 171
- Resource requirements, for scaling up  
 urban school districts, 162, 166.  
*See also* Human resources
- Risk and uncertainty, in technology use,  
 98, 101
- Roller coaster principle, 232
- Running Records, 21
- S**
- Sacramento School District, 156,  
 157–159, 173
- Safety zones, 86, 107
- Sagebrush Analytics, 142–143
- Sampling variation, 199, 213–214, 221,  
 222
- SAMS, 142–143
- Scale*, meanings of, 3, 52–54

- Scaling model, 28, 34–35; of WIDE World, 41–45
- Scaling up: alignment of, at multiple levels, 69; challenges of wide-scale change and, 28–35; collaborative framework for, 48–64; of constructivist pedagogies, 27–46, 49–50; cross-cultural comparison of professional development and, 97–108; definitions of success and, 52–54, 88–89, 232, 238; design principles for, 67–74, 88; dimensions and variables in, 29–31; from district to state level, 1–25; internal barriers to, 2–3, 126; Internet-based technologies for, 28, 35–46, 121–125; of learning technologies, 110–131, 176–195; replica trap in, 31–34, 41–42, 153–154; research and, 176–182; steps in, 135; with student data analysis software, 133–152; success factors for, 4–6, 155; technology that empowers, 110–131; themes and insights on, 227–239; in urban school districts, 153–175
- SCANS report, 79
- Schedules, school-university collaboration and, 62, 233
- School boards: technology infrastructure development and, 126; urban school district reform and, 162, 164, 165, 174
- School districts: implementing innovations in, 54–61, 112; resistance of, to technology innovation, 126; scaling up at level of, 1, 2, 3–4, 7–15; scaling up from, to state level, 1, 2, 3–4, 16–25; urban, 153–175. *See also* Urban school districts
- School-based leadership in technology, 125–126
- SchoolCity, 142–143
- SchoolNet software, 142–143
- Schools for Thought (SFT), 74–88; background on, 74–75; evaluation of, 87; evolution of, 75–78; lessons learned in, 78–88
- Schools Interoperability Framework (SIF), 141, 144, 149–150; Web sites on, 149, 150
- School-university collaborations, 48–64
- Science education reform: Detroit Public Schools collaborations for, 49, 51–52, 57–64; framework for implementing, 54–61; GLOBE program of, 176–195; inquiry and project approaches to, 51–52, 57–61, 74–75, 183–185, 192, 193. *See also* GLOBE
- Second-order impacts, 238
- Secretary's Commission on Achieving Necessary Skills, 94
- Security protocols, 58, 59
- Selling of reform, in urban school districts, 166
- Shared vision, 162, 165, 174
- Side effects, 238
- Significance, statistical, 199, 213, 224
- Silicon Valley schools, 107
- Simulation tests, statistical, 206–207, 212–213, 222–224
- Singapore, professional development in technology in, 97–98, 101–103, 105; United Kingdom compared with, 101–102
- Singaporean Ministry of Education, 101, 102, 109
- Site-based management, 154, 161
- Social structures, for organizational change, 71
- Socrates Data System, 142–143
- Software: dynamic statistics, 199, 211, 213; early literacy, 20; educational, in Chile, 104; educational, in United Kingdom, 100; student data analysis, 133–152. *See also* Learning technology innovations; Student data analysis software; Technology and technology innovation
- Special education, 202, 204
- Special services, in Union City, 21
- Stability, leadership, 24, 63, 155, 229, 238
- Staff: e-mail accounts for, 115; for Milwaukee Public Schools technology infrastructuring, 125–126,

- Staff: e-mail accounts for (*continued*)  
 130; professional development of in  
 technology usage, 123–125
- Standard deviation, 216
- Standardized test scores: learning out-  
 comes *versus*, 181–182, 188; statisti-  
 cal analysis of, for Texas, 198–224
- Stanford Research Institute (SRI), Center  
 for Technology in Learning,  
 176–177, 183, 189
- STARS, 142–143
- State policy: district policy that informs,  
 16–25; relationship of practice to,  
 16–17; research on scaling up and,  
 4–6; Union City, New Jersey case  
 study of, 1–25. *See also* Policy and  
 policymaking
- Statewide implementation: culture of  
 idiosyncrasy and, 2–3; scaling up to,  
 1, 2, 16–25
- Statistical analysis, of high-stakes test  
 scores, 198–224
- Stereotyping, 213, 216, 222
- Stress, in urban school district reform,  
 172
- Structural dimension of change, 29, 31
- Student data analysis: issues in, 235–236;  
 simulation tool for, 222–224; stan-  
 dardized assessment and, 198–224;  
 teachers as inquirers in, 219–221,  
 222; use of, for student performance  
 improvement, 198–224. *See also*  
 Data-driven decision making
- Student data analysis software, 133–152;  
 case illustration of, 133–135; com-  
 mercially available, 141–143, 145,  
 146–148; costs of, 140, 146–148;  
 features of, recommended, 138–140;  
 future opportunities of, 150–152;  
 implementation considerations for,  
 144–150; information management  
 (IM) applications of, 137–138; locally  
*versus* commercially developed,  
 146–148, 151; outside contracting  
 for, 145–146; review of commercially  
 available, 141–143, 148; scaling up,  
 135–140; Schools Interoperability  
 Framework (SIF) and, 141, 144,  
 149–150; vendors of, 142–143, 145,  
 148–149; Web site for reviews of,  
 141, 148
- Student mobility, 161
- Student motivation, 130
- Student performance, data-based  
 analysis of, in Texas, 198–224
- Study groups, 40, 43, 71
- Subtractive schooling, 222
- Superintendents: technology innovation  
 and, 126; urban school district  
 reform and, 164, 174
- Sustainability, 53–54, 69, 73, 175,  
 228–229
- SwiftKnowledge, 142–143
- Systemic Crossfire* (Confrey), 199

## T

- T* test, 206, 213
- Talent development, 224
- Tapped In, 122, 123
- TEACH Wisconsin, 126
- Teachers: empowering, via technology,  
 120–123; individualism in, 6, 33;  
 as inquirers/investigators, 219–221,  
 222; learning communities of, 71, 79,  
 83, 86; ownership by, 231; resistance  
 in, 3, 73, 171; in urban school dis-  
 tricts, 161, 172. *See also* Professional  
 development, teacher
- Teachers Evaluating Educational  
 Multimedia (TEEM), 99
- Teachers union: negotiations with, 81;  
 technology training with, 121
- Teachers-as-investigators, 219–221
- Teaching for Understanding (TfU)  
 framework, 35, 38–39
- Teaching to Standards with New  
 Technologies (TSNT) course, 38–39
- Teachscape, 122
- Technical assistance providers, 234
- Technical dimension of change, 29,  
 30, 31
- Technology and technology innovation:  
 access inequities and, 119, 127, 186;  
 adapting, across contexts, 48–64,  
 111–113; alignment of, with context,

- 49–50, 53–57, 97–108; approaches to, 98; beliefs about nature and function of, 97–108, 111, 117; conditions for success of, 111, 136, 238; costs and benefits of, 130; cross-cultural comparison of professional development in, 97–108; for curricular reform in Union City, 15, 20; emotional dimension of, 117; factors influencing, 111–113, 126–129; inquiry approaches and, 49–52, 57–61, 124–125; in learning technology, 49–50; in Milwaukee Public Schools, 110, 113–131; policy implications of, 129–131; practice implications of, 129–131; protean approach to, 110–131; risk and uncertainty in, 98, 101; for scaling up constructivist pedagogies, 27–46, 49–50; for scaling up educational improvement, 110–131; for science curriculum reform, GLOBE program, 176–195; for science curriculum reform in Detroit, 49, 51–52, 54–64; for skill acquisition *versus* learning transformation, 97–98; teacher empowerment via, 120–123; in urban districts, 111–113, 117, 127, 171, 172–173. *See also* Internet and Web-based technologies; Learning technology innovations; Student data analysis software
- Technology Innovations Challenge Grant, 74, 76, 80, 86, 87
- Technology Literacy Challenge Fund (TLCF) grants, 123–124, 126
- Telecommunications, 120, 124
- Telephone effect, 32, 42
- Tennessean, The*, 77, 80, 87
- Tennessee: class size reduction in, 180; Schools for Thought in, 74–88
- TetraData, 142–143
- Texas: accountability and assessment system in, 199, 203–205, 203–221; African American student performance in, 200–201, 202–208, 213, 218, 221; student performance in, statistical analysis of, 198–224
- Texas Assessment of Academic Skills (TAAS), 200–215, 217, 220
- Texas Assessment of Knowledge and Skills (TAKS), 217–218
- Texas Education Agency, 204, 216, 217–218, 219, 225, 226
- Texas Learning Index (TLI), 199
- Texas State Board of Education, 218
- Textbooks and materials: coherence in, 5, 9, 11; for early literacy program, 19–20; selection of, 85
- Theory-of-change approach, 175; of GLOBE program, 183–185
- Third International Mathematics and Science Survey, 189
- Three Little Pigs, The*, 10
- Time frame: changing contexts and, 228–229, 232; of LeTUS-Detroit Public Schools collaboration, 62; of New Jersey's curriculum reform, 24; of Schools for Thought funding, 87; of student data analysis software implementation, 146, 147–148, 151; of sustainable individual change, 73; of WIDE World's professional development program, 40
- Time management and structure: for literacy reform, 12, 18; for school-university collaboration, 62, 233
- Times Educational Supplement, 101
- Tipping points, 231
- "Training the trainers" model: in Chile, 104; in GLOBE science education program, 183, 185; in Singapore, 102–103; telephone effect in, 32, 42
- Travel costs, 32, 43
- Trust building, 128
- ## U
- Understanding, teacher: of curricular reform, 4; learning with, 72, 85; professional development for, 72, 83–85; Teaching for Understanding (TfU) framework for, 35, 38–39
- Unified curriculum, 168, 171, 174. *See also* Coherence; Curriculum reform

- Union City, New Jersey: constituent support in, 230, 231; curriculum reform in, 1–25, 234; evolutionary progression of reform in, 228–229; generalizability of, 130–131; Web site, 11
- United Kingdom, professional development in technology in, 97–98, 98–101; Chile compared with, 103, 105; critique of, 105; Singapore compared with, 101–102
- U.K. Department of Education and Employment, 99, 109
- U.S. Department of Education, 18; PT3 catalyst grant, 121, 126, 127; Schools Interoperability Framework (SIF) and, 150; Technology Innovations Challenge Grant, 74, 76, 80, 86, 87
- U.S. Department of Labor, SCANS report, 79
- U.S. policymaking, on professional development in technology, cross-cultural comparison for, 97–108
- University of Michigan, Detroit Public Schools collaborations with, 51–52, 57–64, 230–231
- University of Wisconsin System, 114
- University of Wisconsin-Milwaukee, 118, 121
- University-school collaborations, 48–64, 233–234
- Urban outliers, 156–159
- Urban school districts: barriers to reform of, 164, 171–172; challenges facing, 160–162; concerns about undercutting achievement of excellence in, 172; faster-improving, 155, 156–173; focus on lowest-performing schools in, 168, 172; focus on reading and math in, 163, 171; GLOBE program in, 186; operational/facility challenges and changes in, 161–162, 166; practices of lower-performing, 163–164; preconditions for reform of, 162, 165–166, 174; progress report on, 155–159; scaling up technology-reliant innovations in, 111–113, 117, 127, 130; strategies for reform of, 162–163; technology in, 111–113, 117, 127, 171, 172–173; wide-scale improvement in, 153–175. *See also* Council of Great City Schools; Detroit Public Schools; Milwaukee Public Schools (MPS); Union City, New Jersey
- Urban school in Texas, statistical analysis of test scores in, 200–221
- Usability cube, 55–56, 236–237
- Usability gaps: in Artemis Web browser project, 57–60; collaborative challenges and, 61–64; in handheld computers program, 60–61
- Usable knowledge, 30, 72, 227
- Use-oriented research, 70
- User interface, 103–104, 139

## V

- Validity, of high-stakes test data, 198, 199, 200, 214–215, 219
- Vanderbilt University: Cognition and Technology Group, 74, 84, 91, 95; Learning Technology Center, 74; Schools for Thought and, 74
- Variability of performance by objective, 199
- Variation problems, 32–33, 34, 42, 199, 213–214, 221, 222, 224
- Very Hungry Caterpillar* (Carle), 10
- Video technologies, 120
- Videoconferencing, 120, 122, 123
- Virtual EDucation, 142–143
- Virtual Teacher Center, 100
- Virtual town square, 104
- Vision, 128, 162

## W

- Wall Story technique, 14
- Web browser, 57–60
- Web-based technology. *See* Internet and Web-based technologies
- What Works Clearinghouse, 177–178
- White student performance, in Texas, 201, 202, 218
- Whole school reform, 22

WIDE (Wide-scale Interactive Development of Educators) World, 28, 35–46; scaling model of, 41–45; Teaching to Standards with New Technologies (TSNT) course of, 38–39; Web site of, 37

WiggleWorks, 20

Wisconsin Department of Public Instruction, 121

Work samples, student: on-line access to, 140; using, in professional development discussions, 83

## Z

Zone Integration Server, 149–150; Web site for, 150

