## EA 2.1 Reading Proficiency for Children Ages 9, 13, and 17

In order to monitor progress in the reading achievement of students in the United States, the National Assessment of Educational Progress (NAEP) has conducted national assessments of the reading performance of 9-, 13-, and 17-year-olds. There are five levels of reading proficiency reported by NAEP, ranging from Level 150 (completing simple, discrete reading tasks) to Level 350 (learning from specialized reading materials). The following tables report the average reading proficiency scores of students in the three age groups between 1971 and 1999.

Differences by Age. Among 9-year-olds, average reading proficiency scores improved between 1971 and 1980, declined between 1980 and 1984, and remained steady until 1999, so that the average score in 1999 was similar to the score in 1975 (see Table EA 2.1.A). Among 13-year-olds, average reading proficiency scores varied from year to year and were similar in 1999 and 1971 (see Table EA 2.1.B). Among 17-year-olds, average scores increased between 1971 and 1988, remained stable between 1988 and 1992, and then showed a slight decline through 1999, so that the average score in 1999 was similar to the score in 1975 (see Table EA 2.1.C).

Differences by Gender. Females have scored consistently higher than males over time and for all ages. For example, among 13-year-olds in 1999, females had an average score of 265, compared with an average score of 254 for males (see Table EA 2.1.B).
Differences by Race and Hispanic Origin. ${ }^{20}$ There are large and consistent differences in reading proficiency by race and Hispanic origin among all age groups; for example, among 17-year-olds in 1999, Whites, non-Hispanic had higher average reading proficiency scores than either Blacks, non-Hispanic or Hispanics (see Table EA 2.1.C). However, the gaps in reading proficiency scores between Whites, non-Hispanic and Blacks, non-Hispanic have narrowed since the mid-1970s among 17-year-olds (see Figure EA 2.1).
Differences by Parents' Education Level. ${ }^{21}$ Average reading proficiency levels vary dramatically by parents' education level; for example, among 13 -year-olds and 17 -year-olds in 1999, the lowest average reading proficiency scores were among teens whose better-educated parent did not have a high school education, while the highest scores were among teens who had a parent with post-high school education (see Tables EA 2.1.B and EA 2.1.C).

Differences by Type of School. Average reading proficiency scores have been consistently higher among students attending nonpublic schools than among students attending public schools. This is true for every age group and every year reported (see Tables EA 2.1.A, EA 2.1.B, and EA 2.1.C).

[^0]
## Table EA 2.1.A

Average reading proficiency for children age 9 in the United States, by gender, race and Hispanic origin, a and type of school: Selected years, 1971-1999

|  | 1971 | 1975 | 1980 | 1984 | 1988 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total <br> Gender | 208 | 210 | 215 | 211 | 212 | 209 | 211 | 211 | 212 | 212 |
| $\quad$ Male | 201 | 204 | 210 | 208 | 208 | 204 | 206 | 207 | 207 | 209 |
| $\quad$ Female | 214 | 216 | 220 | 214 | 216 | 215 | 215 | 215 | 218 | 215 |
| Race and Hispanic origina |  |  |  |  |  |  |  |  |  |  |
| $\quad$ White, non-Hispanic | 214 | 217 | 221 | 218 | 218 | 217 | 218 | 218 | 220 | 221 |
| $\quad$ Black, non-Hispanic | 170 | 181 | 189 | 186 | 189 | 182 | 185 | 185 | 191 | 186 |
| $\quad$ Hispanic | - | 183 | 190 | 187 | 194 | 189 | 192 | 186 | 195 | 193 |
| Type of school |  |  |  |  |  |  |  |  |  |  |
| $\quad$ Public | - | - | 214 | 209 | 210 | 208 | 209 | 209 | 210 | 210 |
| $\quad$ Nonpublic | - | - | 227 | 223 | 223 | 228 | 225 | 225 | 227 | 226 |

[^1]Table EA 2.1.B
Average reading proficiency for children age 13 in the United States, by gender, race and Hispanic origin, ${ }^{\text {a parents' }}$, education level, , and type of school: Selected years, 1971-1999

|  | 1971 | 1975 | 1980 | 1984 | 1988 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 255 | 256 | 259 | 257 | 258 | 257 | 260 | 258 | 258 | 259 |
| Gender |  |  |  |  |  |  |  |  |  |  |
| Male | 250 | 250 | 254 | 253 | 252 | 251 | 254 | 251 | 251 | 254 |
| Female | 261 | 262 | 263 | 262 | 263 | 263 | 265 | 266 | 264 | 265 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 261 | 262 | 264 | 263 | 261 | 262 | 266 | 265 | 266 | 267 |
| Black, non-Hispanic | 222 | 226 | 233 | 236 | 243 | 242 | 238 | 234 | 234 | 238 |
| Hispanic | - | 233 | 237 | 240 | 240 | 238 | 239 | 235 | 238 | 244 |
| Parents' education level ${ }^{\text {b }}$ |  |  |  |  |  |  |  |  |  |  |
| Less than high school | 238 | 239 | 239 | 240 | 247 | 241 | 239 | 237 | 239 | 240 |
| Graduated high school | 256 | 255 | 254 | 253 | 253 | 251 | 252 | 251 | 251 | 251 |
| Some education after high school | 270 | 270 | 271 | 268 | 265 | 267 | 270 | 269 | 269 | 270 |
| Type of school |  |  |  |  |  |  |  |  |  |  |
| Public | - | - | 257 | 255 | 256 | 255 | 257 | 256 | 256 | 257 |
| Nonpublic | - | - | 271 | 271 | 268 | 270 | 276 | 276 | 273 | 276 |

[^2]
## Table EA 2.1.C

Average reading proficiency for children age 17 in the United States, by gender, race and Hispanic origin, aparents' education level, ${ }^{\text {b }}$ and type of schoo: Selected years, 1971-1999

|  | 1971 | 1975 | 1980 | 1984 | 1988 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 285 | 286 | 286 | 289 | 290 | 290 | 290 | 288 | 288 | 288 |
| Gender |  |  |  |  |  |  |  |  |  |  |
| Male | 279 | 280 | 282 | 284 | 286 | 284 | 284 | 282 | 281 | 282 |
| Female | 291 | 291 | 289 | 294 | 294 | 297 | 296 | 295 | 295 | 295 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 291 | 293 | 293 | 295 | 295 | 297 | 297 | 296 | 295 | 295 |
| Black, non-Hispanic | 239 | 241 | 243 | 264 | 274 | 267 | 261 | 266 | 266 | 264 |
| Hispanic | - | 252 | 261 | 268 | 271 | 275 | 271 | 263 | 265 | 271 |
| Parents' education level ${ }^{\text {b }}$ |  |  |  |  |  |  |  |  |  |  |
| Less than high school | 261 | 263 | 262 | 269 | 267 | 270 | 271 | 268 | 267 | 265 |
| Graduated high school | 283 | 281 | 278 | 281 | 282 | 283 | 281 | 276 | 273 | 274 |
| Some education after high school | 302 | 301 | 299 | 301 | 300 | 300 | 299 | 299 | 298 | 298 |
| Type of school |  |  |  |  |  |  |  |  |  |  |
| Public | - | - | 284 | 287 | 289 | 289 | 288 | 286 | 287 | 286 |
| Nonpublic | - | - | 298 | 303 | 300 | 311 | 310 | 306 | 294 | 307 |

a Persons of Hispanic origin may be of any race.
b Parents' education level refers to the highest level of education completed by either parent.
Note: The reading proficiency scale ranges from 0 to 350:
Level 150: Simple, discrete reading tasks
Level 200: Partial skills and understanding
Level 250: Interrelates ideas and makes generalizations
Level 300: Understands complicated information
Level 350: Learns from specialized reading materials
Source: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.8, B.13, B.17, B.20).

Figure EA 2.1
Average reading proficiency for children age 17 in the United States, by race and Hispanic origin:a Selected years, 19711999


EDUCATION AND ACHIEVEMENT

## EA 2.2 Mathematics Proficiency for Children Ages 9, 13, and 17

In order to monitor progress in the mathematics achievement of students in the United States, the National Assessment of Educational Progress (NAEP) has conducted national assessments of the mathematics performance of 9-, 13-, and 17-year-olds. There are five levels of mathematics proficiency reported by NAEP, ranging from Level 150 (understanding simple arithmetic facts) to Level 350 (multi-step problem solving and algebra). The following tables report the average mathematics proficiency scores of students in the three age groups between 1973 and 1999.

Differences by Age. Among 9-year-olds, average mathematics proficiency scores remained the same between 1973 and 1982 and then increased substantially to 231 in 1994; scores remained stable from 1994 to 1999 (see Table EA 2.2.A). Among 13-year-olds, mathematics proficiency scores have slowly increased between 1978 and 1999 (see Table EA 2.2.B). Among 17 -year-olds, average proficiency scores declined between 1973 and 1982, after which they increased and stabilized at a level slightly higher than that obtained in 1973 (see Table EA 2.2.C).

Differences by Gender. Proficiency scores in 1999 were higher for males by an average of 2 points for 9 -year-olds and 13-year-olds and 3 points for 17-year-olds.
Differences by Race and Hispanic Origin. ${ }^{22}$ There are consistently large differences in mathematics proficiency by race and Hispanic origin. For example, among 17-year-olds in 1999, Blacks, non-Hispanic, and Hispanics had lower proficiency scores than Whites, nonHispanic (see Table EA 2.2.C); however, Black, non-Hispanic and Hispanic 17-year-olds have shown greater gains in achievement between 1973 and 1999 than their White, nonHispanic counterparts (see Figure EA 2.2).
Differences by Parents' Education Level. ${ }^{23}$ There are large variations in average mathematics proficiency levels by level of parental education for 13- and 17-year-olds (see Tables EA 2.2.B and EA 2.2.C). For example, in 1999, 13-year-olds whose better-educated parent did not have a high school education had the lowest average proficiency scores, while those whose parent(s) had graduated from college had the highest scores (see Table EA 2.2.B).

Differences by Type of School. Average mathematics proficiency scores among students in public schools have been consistently lower than average scores among students in nonpublic schools. This is true for every age group and every year reported (see Tables EA 2.2.A, EA 2.2.B, and EA 2.2.C).

[^3]
## Table EA 2.2.A

Average mathematics proficiency for children age 9 in the United States, by gender, race and Hispanic origin, a and type of school: Selected years, 1973-1999

|  | 1973 | 1978 | 1982 | 1986 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |  |  |  |
| Total | 219 | 219 | 219 | 222 | 230 | 230 | 231 | 231 | 232 |
| Gender |  |  |  |  |  |  |  |  |  |
| $\quad$ Male | 218 | 217 | 217 | 222 | 229 | 231 | 232 | 233 | 233 |
| $\quad$ Female | 220 | 220 | 221 | 222 | 230 | 228 | 230 | 229 | 231 |
| Race and Hispanic origin |  |  |  |  |  |  |  |  |  |
| $\quad$ White, non-Hispanic | 225 | 224 | 224 | 227 | 235 | 235 | 237 | 237 | 239 |
| $\quad$ Black, non-Hispanic | 190 | 192 | 195 | 202 | 208 | 208 | 212 | 212 | 211 |
| $\quad$ Hispanic | 202 | 203 | 204 | 205 | 214 | 212 | 210 | 215 | 213 |
| Type of school |  |  |  |  |  |  |  |  |  |
| $\quad$ Public |  |  |  |  |  |  |  |  |  |
| Nonpublic | - | 217 | 217 | 220 | 229 | 228 | 229 | 230 | 231 |

a Persons of Hispanic origin may be of any race.
Note: The mathematics proficiency scale ranges from 0 to 350
Level 150: Simple arithmetic facts
Level 200: Beginning skills and understanding
Level 250: Numerical operations and beginning problem solving
Level 300: Moderately complex procedures and reasoning
Level 350: Multi-step problem solving and algebra
Sources: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.9, B.14, B.21).

## Table EA 2.2.B

Average mathematics proficiency for children age 13 in the United States, by gender, race and Hispanic origin, ${ }^{\text {a parents' education }}$ level,b and type of school: Selected years, 1973-1999

|  | 1973 | 1978 | 1982 | 1986 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 266 | 264 | 269 | 269 | 270 | 273 | 274 | 274 | 276 |
| Gender |  |  |  |  |  |  |  |  |  |
| Male | 265 | 264 | 269 | 270 | 271 | 274 | 276 | 276 | 277 |
| Female | 267 | 265 | 268 | 268 | 270 | 272 | 273 | 272 | 275 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 274 | 272 | 274 | 274 | 276 | 279 | 281 | 281 | 283 |
| Black, non-Hispanic | 228 | 230 | 240 | 249 | 249 | 250 | 252 | 252 | 251 |
| Hispanic | 239 | 238 | 252 | 254 | 255 | 259 | 256 | 256 | 259 |
| Parents' education level ${ }^{\text {b }}$ |  |  |  |  |  |  |  |  |  |
| Less than high school | - | 245 | 251 | 252 | 253 | 256 | 255 | 254 | 256 |
| Graduated high school | - | 263 | 263 | 263 | 263 | 263 | 266 | 267 | 264 |
| Some education after high school | - | 273 | 275 | 274 | 277 | 278 | 277 | 278 | 279 |
| Graduated college | - | 284 | 282 | 280 | 280 | 283 | 285 | 283 | 286 |
| Type of school |  |  |  |  |  |  |  |  |  |
| Public | - | 263 | 267 | 269 | 269 | 272 | 273 | 273 | 274 |
| Nonpublic | - | 279 | 281 | 276 | 280 | 283 | 285 | 286 | 289 |

[^4]Table EA 2.2.C
Average mathematics proficiency for children age 17 in the United States, by gender, race and Hispanic origin, ${ }^{\text {a }}$ parents' education level,, and type of school: Selected years, 1973-1999

|  | 1973 | 1978 | 1982 | 1986 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 304 | 300 | 299 | 302 | 305 | 307 | 306 | 307 | 308 |
| Gender |  |  |  |  |  |  |  |  |  |
| Male | 309 | 304 | 302 | 305 | 306 | 309 | 309 | 310 | 310 |
| Female | 301 | 297 | 296 | 299 | 303 | 305 | 304 | 305 | 307 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 310 | 306 | 304 | 308 | 310 | 312 | 312 | 313 | 315 |
| Black, non-Hispanic | 270 | 268 | 272 | 279 | 289 | 286 | 286 | 286 | 283 |
| Hispanic | 277 | 276 | 277 | 283 | 284 | 292 | 291 | 292 | 293 |
| Parents' education level ${ }^{\text {b }}$ |  |  |  |  |  |  |  |  |  |
| Less than high school | - | 280 | 279 | 279 | 285 | 286 | 284 | 281 | 289 |
| Graduated high school | - | 294 | 293 | 293 | 294 | 298 | 295 | 297 | 299 |
| Some education after high school | - | 305 | 304 | 305 | 308 | 308 | 305 | 307 | 308 |
| Graduated college | - | 317 | 312 | 314 | 316 | 316 | 318 | 317 | 317 |
| Type of school |  |  |  |  |  |  |  |  |  |
| Public | - | 300 | 297 | 301 | 304 | 305 | 304 | 306 | 307 |
| Nonpublic | - | 314 | 311 | 320 | 318 | 320 | 319 | 316 | 321 |

[^5]Figure EA 2.2
Average mathematics proficiency for children age 17 in the United States, by race and Hispanic origin:a Selected years, 1973-1999


EDUCATION AND ACHIEVEMENT

## EA 2.3 Science Proficiency for Children Ages 9, 13, and 17

In order to present time trends in science proficiency levels, the National Assessment of Educational Progress (NAEP) reports five different proficiency levels, ranging from Level 150 (knows everyday science facts) to Level 350 (integrates specialized scientific information). The following tables report the average science proficiency scores of students in the three age groups between 1970 and 1999.

Differences by Age. Average science proficiency scores have increased among all age groups over the last three decades. Among 9 - and 13 -year-olds, average science proficiency scores increased between 1977 and 1992 before declining slightly in the latter half of the 1990s (see Tables EA 2.3.A and B). Among 17-year-olds, average science proficiency scores declined between 1969 and 1982, after which they rebounded somewhat, but are still below their 1969 high (see Table EA 2.3.C).

Differences by Gender. Average science proficiency scores have been consistently higher for males than females over time and for all age groups, though differences are smaller among 9 -year-olds. Among 13 -year-olds in 1999, boys scored on average 6 points higher than girls; among 17-year-olds, the average difference was 9 points; and among 9 -year-olds, males scored on average 3 points higher than females.
Differences by Race and Hispanic Origin. ${ }^{24}$ There are large differences in science proficiency scores by race and Hispanic origin among all age groups. For example, among 17-year-olds in 1999, Whites, non-Hispanic had higher average science proficiency scores than Blacks, non-Hispanic or Hispanics (see Table EA 2.3.C).
Differences by Parents' Education Level. ${ }^{25}$ Average science proficiency levels vary dramatically by level of parents' education. For example, among 13 -year-olds and 17 -year-olds in 1999, the lowest average science proficiency scores were among teens whose better-educated parent did not have a high school education, while the highest scores were among teens who had a parent who had graduated from college (see Tables EA 2.3.B and EA 2.3.C).

Differences by Type of School. Average science proficiency scores have been consistently higher among students attending nonpublic schools than among students attending public schools. This is true for every age group and every year reported (see Tables EA 2.3.A, EA 2.3.B, and EA 2.3.C).

[^6]Table EA 2.3.A
Average science proficiency for children age 9 in the United States, by gender, race and Hispanic origin, a and type of school: Selected years, 1970-1999

|  | 1970 | 1973 | 1977 | 1982 | 1986 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 225 | 220 | 220 | 221 | 224 | 229 | 231 | 231 | 230 | 229 |
| Gender |  |  |  |  |  |  |  |  |  |  |
| Male | 228 | 223 | 222 | 221 | 227 | 230 | 235 | 232 | 232 | 231 |
| Female | 223 | 218 | 218 | 221 | 221 | 227 | 227 | 230 | 228 | 228 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 236 | 231 | 230 | 229 | 232 | 238 | 239 | 240 | 239 | 240 |
| Black, non-Hispanic | 179 | 177 | 175 | 187 | 196 | 196 | 200 | 201 | 202 | 199 |
| Hispanic | - | - | 192 | 189 | 199 | 206 | 205 | 201 | 207 | 206 |
| Type of school |  |  |  |  |  |  |  |  |  |  |
| Public | - | - | 218 | 220 | 223 | 228 | 229 | 230 | 229 | 228 |
| Nonpublic | - | - | 235 | 232 | 233 | 237 | 240 | 242 | 238 | 239 |

a Persons of Hispanic origin may be of any race.
Note: The science proficiency scale ranges from 0 to 350:
Level 150: Knows everyday science facts
Level 200: Understands simple scientific principles
Level 250: Applies general scientific information
Level 300: Analyzes scientific procedures and data
Level 350: Integrates specialized scientific information
Source: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.10, B.15, B.22).

Table EA 2.3.B
Average science proficiency for children age 13 in the United States, by gender, race and Hispanic origin, ${ }^{\text {a }}$ parents' education level, , and type of school: Selected years, 1970-1999

|  | 1970 | 1973 | 1977 | 1982 | 1986 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 255 | 250 | 247 | 250 | 251 | 255 | 258 | 257 | 256 | 256 |
| Gender |  |  |  |  |  |  |  |  |  |  |
| Male | 257 | 252 | 251 | 256 | 256 | 259 | 260 | 259 | 261 | 259 |
| Female | 253 | 247 | 244 | 245 | 247 | 252 | 256 | 254 | 252 | 253 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 263 | 259 | 256 | 257 | 259 | 264 | 267 | 267 | 266 | 266 |
| Black, non-Hispanic | 215 | 205 | 208 | 217 | 222 | 226 | 224 | 224 | 226 | 227 |
| Hispanic | - | - | 213 | 226 | 226 | 232 | 238 | 232 | 232 | 227 |
| Parents' education level ${ }^{\text {b }}$ |  |  |  |  |  |  |  |  |  |  |
| Less than high school | - | - | 224 | 225 | 229 | 233 | 234 | 234 | 230 | 229 |
| Graduated high school | - | - | 245 | 243 | 245 | 247 | 246 | 247 | 248 | 243 |
| Some education after high school | - | - | 260 | 259 | 258 | 263 | 266 | 260 | 261 | 261 |
| Graduated college | - | - | 266 | 264 | 264 | 268 | 269 | 269 | 266 | 268 |
| Type of school |  |  |  |  |  |  |  |  |  |  |
| Public | - | - | 245 | 249 | 251 | 254 | 257 | 255 | 255 | 254 |
| Nonpublic | - | - | 268 | 264 | 263 | 269 | 265 | 268 | 268 | 269 |

[^7]
## Table EA 2.3.C

Average science proficiency for children age 17 in the United States, by gender, race and Hispanic origina, parents' education levelb, and type of school: Selected years, 1969-1999

|  | 1969 | 1973 | 1977 | 1982 | 1986 | 1990 | 1992 | 1994 | 1996 | 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total | 305 | 296 | 290 | 283 | 289 | 290 | 294 | 294 | 296 | 295 |
| Gender |  |  |  |  |  |  |  |  |  |  |
| Male | 314 | 304 | 297 | 292 | 295 | 296 | 299 | 300 | 300 | 300 |
| Female | 297 | 288 | 282 | 275 | 282 | 285 | 289 | 289 | 292 | 291 |
| Race and Hispanic origin ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |  |
| White, non-Hispanic | 312 | 304 | 298 | 293 | 298 | 301 | 304 | 306 | 307 | 306 |
| Black, non-Hispanic | 258 | 250 | 240 | 235 | 253 | 253 | 256 | 257 | 260 | 254 |
| Hispanic | - | - | 262 | 249 | 259 | 262 | 270 | 261 | 269 | 276 |
| Parents' education level ${ }^{\text {b }}$ |  |  |  |  |  |  |  |  |  |  |
| Less than high school | - | - | 265 | 259 | 258 | 261 | 262 | 256 | 259 | 264 |
| Graduated high school | - | - | 284 | 275 | 277 | 276 | 280 | 279 | 282 | 281 |
| Some education after high school | - | - | 296 | 290 | 295 | 297 | 296 | 295 | 297 | 297 |
| Graduated college | - | - | 309 | 300 | 304 | 306 | 308 | 311 | 308 | 307 |
| Type of school |  |  |  |  |  |  |  |  |  |  |
| Public | - | - | 288 | 282 | 287 | 289 | 292 | 292 | 295 | 293 |
| Nonpublic | - | - | 308 | 292 | 321 | 308 | 312 | 310 | 304 | 311 |

[^8]Figure EA 2.3
Average science proficiency for children age 17 in the United States, by race and Hispanic origin:a Selected years, 19771999


EDUCATION AND ACHIEVEMENT

## EA 2.4 Arts Proficiency for Children in Grade 8

Artistic expression is one of the key vehicles for individual creativity and for the reflection and transmission of cultural messages. An understanding and appreciation of the arts therefore helps to nurture human creativity and fosters the celebration of a diverse cultural heritage. Recent research suggests that arts education can improve student performance in other intellectual and academic areas, including math and science. ${ }^{26}$ College Board data show that children who have participated in sequential arts programs outperform their peers who have not had arts training on both the verbal and math components of the SAT. ${ }^{27}$

The National Assessment of Educational Progress (NAEP) completed assessments of 8th graders' music and visual arts skills in $1997{ }^{28}$ For the music and visual arts assessments, data were collected on students' ability to respond to, analyze, or evaluate musical pieces or works of art. ${ }^{29}$ Average scores were coded on a scale of 0 to 300 . Because ability scores had different ranges across music and the visual arts, comparisons should not be made between student results across disciplines. In other words, a score of 100 in the visual arts is not necessarily "better" than a score of 90 in music.

Differences by Gender. Girls outperformed boys in responding to and analyzing musical pieces (see Figure EA 2.4.A). For example, 8th-grade girls had an average music score of 160, whereas boys had an average score of 140. For evaluating visual artwork, girls' scores were 8 points higher than boys' scores (see Table EA 2.4).
Differences by Race and Hispanic Origin. ${ }^{30}$ There are significant differences in students' artistic evaluation skills by racial/ethnic group (see Table EA 2.4). White, nonHispanic and Asian students had higher average music scores than did Black, non-Hispanic and Hispanic students. A similar pattern is seen for the visual arts (see Table EA 2.4).
Differences by Parents' Education Level. ${ }^{31}$ Consistent with other NAEP assessments, higher levels of parental education were associated with higher levels of student performance in both music and the visual arts. For example, 8th graders whose better-educated parent had graduated from college had higher music and arts scores than students whose parent(s) graduated high school and students whose better-educated parent did not finish high school.

Differences by Type of School. Students from nonpublic schools had higher scores for the visual arts than did students from public schools. The same pattern held true for music scores (see Table EA 2.4).

[^9]
## Table EA 2.4

Average music and visual arts proficiency" for children in grade 8 in the United States, by gender, race and Hispanic origin, ${ }^{\text {b }}$ parents' education level,' and type of school: 1997

|  | Music | Visual Arts |
| :--- | :---: | :---: |
| Total | 150 | 150 |
| Gender |  |  |
| Male | 140 | 146 |
| Female | 160 | 154 |
| Race and Hispanic origin ${ }^{\text {b }}$ |  |  |
| White, non-Hispanic | 158 | 159 |
| Black, non-Hispanic | 130 | 124 |
| Hispanic | 127 | 128 |
| Asian | 152 | 153 |
| Parents' education levelc | 129 | 125 |
| Less than high school | 139 | 138 |
| Graduated high school | 150 | 153 |
| Some education after high school | 159 | 158 |
| Graduated college |  |  |
| Type of school | 149 | 148 |
| Public | 158 | 167 |
| Nonpublic |  |  |

a The music and visual arts scale scores range from 0 to 300 .
b Persons of Hispanic origin may be of any race.
c Parents' education level refers to the highest level of education completed by either parent.
Source: National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1997 Arts Assessment. As published in Persky, Sandene, and Askew, 1999, (Tables 6.4, 6.5, 6.7, 6.8, 6.10, 6.11, 6.13, and 6.14).

## Figure EA 2.4.A

Average music and visual arts proficiency scores ${ }^{\text {a }}$ for children in grade 8 in the United States, by gender: 1997

a The music and visual arts scale scores range from 0 to 300 .
Source: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), (Tables 6.4 and 6.5).

## Figure EA 2.4.B

Average music and visual arts proficiency scores ${ }^{\natural}$ for children in grade 8 in the United States, by parents' education level:b 1997


[^10]
[^0]:    20 Parents' education level refers to the highest level of education completed by either parent. It is not reported at age 9 because approximately one-third of these students did not know their parents' education level.
    21 Persons of Hispanic origin may be of any race.

[^1]:    a Persons of Hispanic origin may be of any race.
    Note: The reading proficiency scale ranges from 0 to 350:
    Level 150: Simple, discrete reading tasks
    Level 200: Partial skills and understanding
    Level 250: Interrelates ideas and makes generalizations
    Level 300: Understands complicated information
    Level 350: Learns from specialized reading materials
    Source: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.8, B.13, B.20).

[^2]:    a Persons of Hispanic origin may be of any race.
    b Parents' education level refers to the highest level of education completed by either parent.
    Note: The reading proficiency scale ranges from 0 to 350:
    Level 150: Simple, discrete reading tasks
    Level 200: Partial skills and understanding
    Level 250: Interrelates ideas and makes generalizations
    Level 300: Understands complicated information
    Level 350: Learns from specialized reading materials
    Source: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.8, B.13, B.17, B.20).

[^3]:    22 Persons of Hispanic origin may be of any race.
    23 Parents' education level refers to the highest level of education completed by either parent. It is not reported at age 9 because approximately one-third of these students did not know their parent's education level.

[^4]:    a Persons of Hispanic origin may be of any race.
    b Parents' education level refers to the highest level of education completed by either parent.
    Note: The mathematics proficiency scale ranges from 0 to 350:
    Level 150: Simple arithmetic facts
    Level 200: Beginning skills and understanding
    Level 250: Numerical operations and beginning problem solving
    Level 300: Moderately complex procedures and reasoning
    Level 350: Multi-step problem solving and algebra
    Sources: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.9, B.14, B.18, B.21).

[^5]:    a Persons of Hispanic origin may be of any race.
    b Parents' education level refers to the highest level of education completed by either parent. Note: The mathematics proficiency scale ranges from 0 to 350:
    Level 150: Simple arithmetic facts
    Level 200: Beginning skills and understanding
    Level 250: Numerical operations and beginning problem solving
    Level 300: Moderately complex procedures and reasoning
    Level 350: Multi-step problem solving and algebra
    Sources: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.9, B.14, B.18, B.21).

[^6]:    24 Persons of Hispanic origin may be of any race.
    25 Parents' education level refers to the highest level of education completed by either parent. It is not reported at age 9 because approximately one-third of these students did not know their parents' education level.

[^7]:    a Persons of Hispanic origin may be of any race.
    b Parents' education level refers to the highest level of education completed by either parent.
    Note: The science proficiency scale ranges from 0 to 350 :
    Level 150: Knows everyday science facts
    Level 200: Understands simple scientific principles
    Level 250: Applies general scientific information
    Level 300: Analyzes scientific procedures and data
    Level 350: Integrates specialized scientific information
    Source: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.10, B.15, B.19, B.22).

[^8]:    a Persons of Hispanic origin may be of any race.
    b Parents' education level refers to the highest level of education completed by either parent.
    Note: The science proficiency scale ranges from 0 to 350:
    Level 150: Knows everyday science facts
    Level 200: Understands simple scientific principles
    Level 250: Applies general scientific information
    Level 300: Analyzes scientific procedures and data
    Level 350: Integrates specialized scientific information
    Source: Campbell, Hombo, and Mazzeo, 2000, (Tables B.1, B.10, B.15, B.19, B.22).

[^9]:    ${ }^{26}$ Kane, E., and Frankonis, E. May. 1998. Arts Education in the New Millennium. Education New York, 2 (5):3.
    ${ }^{27}$ Childress, J. May. 1998. Art Education Pays Off. Education New York, 2(5):5.
    28 Unlike other NAEP assessments that are typically conducted on nationally representative samples of students in grades 4, 8, and 12, the 1997 arts assessments were conducted on grade 8 students only. Finally, although NAEP conducted an arts assessment in music and visual arts in 1974 and 1978, considerable changes were made to the 1997 assessment such that comparable data for trends analyses are not possible. Therefore, only results from the 1997 NAEP music and visual arts assessments are presented here.
    ${ }^{29}$ Students were also scored on their ability to create and perform works of art; however, only students' ability to respond to art will be discussed here.
    ${ }^{30}$ Persons of Hispanic origin may be of any race.
    ${ }^{31}$ Parents' education level refers to the highest level of education completed by either parent.

[^10]:    a The music and visual arts scale scores range from 0 to 300 .
    b Parents' education level refers to the highest level of education completed by either parent.
    Source: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, (Tables 6.13 and 6.14).

