





## **Michigan State Board of Education**

**Kathleen N. Straus, President**  
Bloomfield Township

**John C. Austin, Vice President**  
Ann Arbor

**Carolyn L. Curtin, Secretary**  
Ewart

**Marianne Yared McGuire, Treasurer**  
Detroit

**Nancy Danhof, NASBE Delegate**  
East Lansing

**Elizabeth W. Bauer**  
Birmingham

**Reginald M. Turner**  
Detroit

**Eileen Lappin Weiser**  
Ann Arbor

**Governor Jennifer M. Granholm**  
Ex Officio

**Michael P. Flanagan, Chairman**  
Superintendent of Public Instruction  
Ex Officio

---

### **MDE Staff**

**Jeremy M. Hughes, Ph.D.**  
Deputy Superintendent and  
Chief Academic Officer

**Dr. Yvonne Caamal Canul, Director**  
Office of School Improvement

## OVERVIEW

In recent years, many states, including Michigan, have been debating whether state high school graduation requirements adequately prepare students. The concern is justified: According to the American College Test (ACT) report *Crisis at the Core: Preparing All Students for College and Work*, only 32 percent of U.S. students entering ninth grade graduate prepared for college. For African Americans, the number is 20 percent; for Latinos, it is 16 percent. In fact, most high school graduates readily admit they were not significantly challenged in school or ready for employment or college. Forty percent say they wished they had worked harder, especially in math, science and English.

Employers and college leaders say that graduates from high school need to master higher-level mathematics and communications skills than ever before. New research reveals the key to students succeeding in college or the workplace is taking high school courses in math beyond Algebra II and advanced courses in English and science.

To ensure Michigan's students have the skills and knowledge needed for the jobs of the 21st Century global economy, on April 20, 2006, Governor Jennifer M. Granholm signed into law a rigorous new set of statewide graduation requirements called the Michigan Merit Curriculum. (Public Acts 123 & 124)

The Michigan Merit Curriculum is a result of an extraordinary partnership between the Executive Branch, State Board of Education, Superintendent of Public Instruction, Legislature and numerous education associations who worked together to better prepare students for greater success and to secure the economic future of our state. It has transitioned Michigan from a state which had a graduation requirement of only one half credit in civics to the state with the most comprehensive requirements in the nation.

The impetus to revise Michigan's graduation requirements started over a year ago, when Governor Granholm appointed The Cherry Commission on Higher Education and Economic Growth. Following the release of the commission's report, the Michigan Department of Education (MDE) examined research, identified challenges students and school districts face, surveyed district graduation requirements, taped national and international experts and studied best practice or what is working in the area of high school reform across the country.

Equipped with this knowledge, on December 13, 2005, the State Board of Education unanimously approved a set of increased state high school graduation requirements for all Michigan students. This State Board action served as the basis for the Michigan Merit Curriculum credits now required for high school graduation.

### Michigan Merit Curriculum

The new graduation standards will be required starting students entering eighth grader in 2006. Yet, many school districts already are implementing the Michigan Merit Curriculum as their graduation requirement. The Merit Curriculum requires 16 credits for graduation, which could be acquired through subject and integrated (mixed subject) classes, as well as, career and technical education programs. Credits obtained prior to high school will also count. Required credits include:

4 Credits	Mathematics including Algebra I; Geometry, Algebra II; including one credit in senior year
4 Credits	English Language Arts aligned with subject area content expectations developed by MDE
3 Credits	Science including Biology; Physics or Chemistry; one additional science credit
3 Credits	Social studies including .5 credit in Civics; .5 credit in Economics; U.S. History and Geography; World History and Geography
1 Credit	Physical Education/Health credit guidelines to be developed by MDE
1 Credit	Visual, Performing, Applied Arts credit guidelines to be developed by MDE

#### Additional Graduation Requirements:

In addition to the credits outlined above, students must take an on-line course or learning experience; OR have the on-line learning experience incorporated into each of the required credits of the Michigan Merit Curriculum. Beginning with the Class of 2016 (Third graders in Fall 2006), students will need to complete 2 credits of a world language in grades 9-12; OR have an equivalent learning experience in grades K-12.

# SUMMARY

## Need to Improve

- Current high school graduation requirements reflect an economy and society that no longer exist<sup>1</sup> and do not represent the real-world demands of work and postsecondary education.<sup>2</sup>
- The skills and knowledge required in the workplace are no longer very different from those needed for success in college.<sup>3</sup>
- Business executives have said the exodus of U.S. jobs abroad was not to utilize cheap labor, but to access highly educated and conscientious workforces that were not available in the U.S.<sup>4</sup>
- In a 2005 survey of almost 1,500 recent graduates, just 24% of graduates said they were significantly challenged during high school. 1 in 5 recent high school graduates said that “expectations were low and...it was easy to slide by.”<sup>5</sup>
- National data indicate that academic achievement in high school reading, math and science has been mostly stagnant for decades.<sup>6</sup>

## Student Readiness

- Approximately 1 in 5 students are ready to enter college or the workplace. Only 22% of ACT-tested students met or exceeded all three ACT College Readiness Benchmarks—these students likely entered high school with the requisite foundational skills, took rigorous courses, worked hard in those courses, and are now ready to enter college and the workplace.<sup>7</sup>
- Only 32% of students who enter 9th grade and graduate four years later have mastered basic literacy skills and have completed the coursework necessary to succeed in a four-year college.<sup>8</sup>
- Improving college readiness is crucial to the development of a diverse and talented labor force that is able to maintain and increase U.S. economic competitiveness throughout the world.<sup>9</sup>
- Employers report that a majority of high school graduates are inadequately prepared to succeed in an increasingly competitive economy.
  - For example, more than 60% of employers report that recent graduates have poor math skills, while nearly 75% pointed to a deficiency in grammar and writing skills.
  - These high school graduates are likely to become trapped in unskilled, low-paying jobs that do not support a family well above the poverty level, provide benefits or offer a clear pathway for advancement.
- Employers estimate that 39% of recent high school graduates, with no further education, are unprepared for the expectations that they face in entry-level jobs. 45 percent are not adequately prepared for the skills and abilities they need to advance beyond entry level.<sup>10</sup>
- In a recent survey, 40 percent of high school graduates said they were not adequately prepared for employment or postsecondary education, and that if they could repeat their high school experience, they would work harder, especially in math, science and English.<sup>11</sup>

## Remedial College Courses

- Nearly 30% of college freshmen are immediately placed into remedial courses that cover material they should have learned in high school.<sup>12</sup>
- Students who require remediation are generally less successful in college and are less likely to earn degrees than their peers who do not require remediation. 76 percent of college students requiring remedial reading, and 63% requiring remedial math, do not earn either an associate’s or a bachelor’s degree.<sup>13</sup>
- Over the course of their college careers, more than 40% of postsecondary students will take at least one remedial course.<sup>14</sup>

## Courses Matter

- The quality of courses completed in high school is a greater predictor of college success than test scores, class rank, or grade point average.<sup>15</sup>
- Students are more likely to pass high-level courses than low-level courses. Thus, the research suggests that increasing access by all students to advanced academic course work will improve student academic achievement.<sup>16</sup>
- Those who enter high school with test scores in the lowest quartile learn more in academically rigorous courses than they do in either the low-level vocational or general courses in which they are traditionally enrolled.<sup>17</sup> Moreover, students enrolled in lower-level courses were more likely to earn a “D” or “F” in those courses despite their level of ability.<sup>18</sup>
- When minority students are required to take rigorous college preparatory curricula, they rise to the challenge:<sup>19</sup>
  - For example, the San Jose Unified School District in California recently showed dramatic results after it required all students to take the A–G curriculum required for admission to the University of California system. Between 1998 and 2002, test scores of African American 11th graders increased nearly seven times as much as those of African American students across the state. What’s more, the more rigorous requirements have not resulted in the increase in dropout rates that some had predicted.<sup>20</sup>
- Taking a rigorous high school curriculum that includes math, at least through Algebra II, cuts in half the gap in college completion rates between white students and African American and Latino students.<sup>21</sup>

# EDUCATION AND EMPLOYMENT

## Good Jobs Demand More Education

- According to a wide range of economic, education and business experts, good jobs require more math and English than ever before, and workers will need some postsecondary education or training—whether it is in the form of two- or four-year college course work, apprenticeships, or the military—to meet the needs of the high performance workplace. If U.S. workers cannot meet the demand, many of the highly skilled jobs may go to workers in other countries, such as China and India, which will have a significant impact on U.S. competitiveness in the global economy.<sup>22</sup>
- Bureau of Labor Statistics projections show that 80% of the top 50 fastest-growing jobs will require education beyond high school, and that 40% of all new jobs will require at least an associate's degree.<sup>23</sup>
- Two-thirds of all new jobs will require some postsecondary education.<sup>24</sup>

## Projected Job Growth 2000-2010<sup>25</sup>

- Highly Paid Jobs (Earnings \$40K+)
  - 25% share of jobs
  - Projected growth rate: 20%
  - Net new jobs: 7.5 million
  - Total job openings: 14.5 million (51% from job creation)
  - Jobs Include: Managers; Engineers; Legal Professionals; Licensed Medical Professionals, Teachers, Financial, Insurance, and Real Estate Professionals, Technical Knowledge Workers
- Well-Paid Skilled Jobs (Earnings \$25K- 40K)
  - 37% share of jobs
  - Projected growth rate: 12%
  - Net new jobs: 6.6 million
  - Total job openings: 17.9 million (32% from job creation)
  - White-Collar Jobs Include: Financial Services Support, Administrative Support, Health Technicians; Human Services; Sales Managers;
  - Blue-Collar Jobs Include: Protective Services; Crafts Workers; Mechanics, Repairers, and Service Technicians
  - Factory jobs which have now become more skilled have declined from 32 to 17% of all jobs between 1959 and 2000.<sup>26</sup>
- Low-paid or Low-skilled Jobs (\$25K or less)
  - 38% share of jobs
  - Projected growth rate: 15%
  - Net new jobs: 8.1 million
  - Total job openings: 25.2 million (32% from job creation)
  - Jobs Include: Clerical, Cashiers and Retail Sales Workers; Personal Services; Food Services; Child Care Services; Health and Recreation Services; Laborers; Transportation Operatives; Farming, Forestry, and Fishing

## Earning Potential

- High school graduate - \$25,900<sup>27</sup>
- Non-high school graduate - \$18,900<sup>28</sup>
- College graduate - \$45,400<sup>29</sup>
- Master's degree - \$54,500<sup>30</sup>
- Doctorate degree - \$81,400<sup>31</sup>
- Professional degree(M.D., J.D., etc.) - \$99,300<sup>32</sup>
- The average wages of high school graduates, and those individuals who never graduated high school, have fallen over the last two decades; the average incomes of those who went beyond high school have risen.<sup>33</sup>

## Graduation Requirements Across the Nation

- 42 states require students to take certain courses to graduate from high school.<sup>34</sup>
- 22 states have standards in all four subjects (English Language Arts, Mathematics, Science and Social Studies).<sup>35</sup>

# TRENDS FOR SUCCESS BY SUBJECT

## English Requirements and Trends for Success

---

- To be successful in college and well-paying jobs, high school graduates must have strong oral and written communication skills.<sup>42</sup>
- In English, the vast majority of workers in good jobs had taken “four years of English that is at least at grade level.”<sup>43</sup>

### National Trends

- 32 states and the District of Columbia require all students to take four English courses to graduate with a general diploma. Six other states require three courses.<sup>44</sup>
- Nearly one-third of high school graduates are not ready for college coursework in English Composition.<sup>45</sup>

### State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)

- Students will be required to complete 4 credits of English language arts for graduation.

## Mathematics Requirements and Trends for Success

---

- ACT reports that students taking Algebra I, Geometry, Algebra II and one additional higher-level course are more likely to succeed in college.<sup>47</sup>
- High school students who complete advanced math are 12.6 times more likely to earn a four-year degree at an in-state public institution than peers who stop at geometry.<sup>48</sup>
- 68% of students who completed Algebra II felt they were extremely or very well prepared for work.<sup>49</sup>
- College professors and employers agree that to be successful beyond high school, graduates should have mastered the content typically taught in a rigorous four-year course sequence of Algebra I, Geometry and Algebra II, as well as data analysis and statistics.<sup>50</sup>
- Just 40% of high school graduates are ready for their first course in college Algebra.<sup>51</sup>

### Career Impact

- 84% of individuals who currently hold highly paid professional jobs had taken Algebra II or higher as their last high school math course.<sup>52</sup>
- Among those who hold well paid, white-collar, skilled jobs, 67% had taken Algebra II or a higher-level math course, and 84% had taken at least Geometry.<sup>53</sup>

### National Trends

- 29 states and the District of Columbia require students to complete three or more years of math.<sup>54</sup>
- 5 states — Alabama, Arkansas, Mississippi, South Carolina and West Virginia — require all students to complete four math courses to graduate.<sup>55</sup>
- 20 states had more than 60% of students taking Algebra II or Integrated Math III by graduation, and eight states had more than 75% of students at this level. Fifty-three percent of Michigan students took these courses.<sup>56</sup>
- In 2002, 41% of graduating high school students nationwide completed four years of challenging high school math.<sup>57</sup>
- In 2002, eight states had more than 50% of high school students taking trigonometry or precalculus by graduation.<sup>58</sup>

### State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)

- Students will be required to complete 4 credits of mathematics including: 1 credit each of Algebra I, Geometry, Algebra II, and an additional math or math-related credit in the senior year, or integrated math sequence, or CTE sequence for graduation.
- In 2002, 53% of high school graduates in Michigan took Algebra II, compared to 89% of the students in Missouri.<sup>60</sup>

# TRENDS FOR SUCCESS BY SUBJECT

## Science Requirements and Trends for Success

---

- Students taking courses in Biology, Chemistry, and Physics and upper-level mathematics beyond Algebra II (such as Trigonometry), are likeliest of all students to be college ready.<sup>61</sup>
- 26% of ACT-tested high school graduates met ACT's College Readiness Benchmark, demonstrating their readiness for their first credit-bearing college course in Biology.<sup>62</sup>
- 51% of high school graduates who have not attended college feel that there are gaps in their science preparation for entering the work force.<sup>63</sup>

### National Trends

- In 2002, 59% of students took chemistry by high school graduation, as compared to 45% in 1990, an increase of 14%. In Michigan, over 40% took chemistry.<sup>64</sup>
- In 2002, 25% of students took physics by graduation in 2002.<sup>65</sup>

### State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)

- Students will be required to complete 3 credits of Science including: Biology, Chemistry or Physics; 1 additional Science credit for graduation.
- In 2002, 42% of Michigan students are taking higher-level science courses by graduation.<sup>67</sup>

## Social Studies Requirements and Trends for Success

---

- Taking more social studies coursework increases students' ACT reading test scores.<sup>68</sup>
- In 1999, students in the United States ranked 10th of 28 countries in knowledge of basic concepts of democracy and government.<sup>69</sup>
- The 28th Annual Phi Delta Kappa/Gallup Poll, conducted in 1996, asked respondents what they considered to be the most important purpose of the nation's schools, apart from providing a basic education. The goal of a school considered "very important" by more people than any other goal was "to prepare students to be responsible citizens." When Phi Delta Kappa/Gallup conducted a follow-up poll of teachers, the results were very similar, 84% of America's teachers said, "to prepare students for responsible citizenship" was "very important," while another 15% called it "quite important."<sup>70</sup>
- Americans between 15 and 26 years of age, born after 1976, are two to three times more likely to say that they are engaged in political activities if they have taken a civics or American government class than those who have not.<sup>71</sup>
- In a recent survey of 55 of the nation's elite colleges and universities, 81% of the students surveyed earned a grade of "F" or "D" when asked to answer 32 basic questions drawn from a typical high school history curriculum. For example, only 23% correctly identified James Madison as the "Father of the Constitution," 24% thought the Magna Carta was the charter document signed on the Mayflower.<sup>72</sup>
- The voting rate among younger voters in presidential elections from 1972 to 2000, declined by a total of 13 points and, across all states, younger voter turnout was on average 28 points lower than the turnout among adults age 25 and older.<sup>73</sup>

### National Trends

- On average, states require three social studies courses, and all but seven states specify at least the equivalent of one full course that students must take.<sup>74</sup>
- 34 states and the District of Columbia require students to study U.S. history, 32 states and the District of Columbia require U.S. government, and seven states and the District of Columbia require state or local history or government.<sup>75</sup>
- 21 states and the District of Columbia require students to study world history or civilizations, and 19 states and the District of Columbia require world geography.<sup>76</sup>
- 19 states require students to study economics, whether economics is included among the social studies course requirements or listed as a separate area of study.<sup>77</sup>

### State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)

- Students are required to complete 3 credits of Social Studies including: .5 Civics, .5 Economics, US History and Geography; World History and Geography for graduation.

## Visual & Performing Arts Requirements & Trends for Success

---

- High school students who study the arts earn better grades and scores; are less likely to drop out of school; watch fewer hours of television; are less likely to report boredom in school; have a more positive self-concept; and are more involved in community service.<sup>80</sup>
- Research shows that education in the arts has the capacity to provide additional pathways or avenues for student achievement. Subsequent studies show that many students who have difficulty learning through traditional methods can benefit from teaching strategies that include other means of learning and subject areas, such as the arts.<sup>81</sup>
- US Department of Labor recognized the role of arts education as key to skill development in: creative thinking, decision making, problem solving, and modeling in its Secretary's Commission on Achieving Necessary Skills (SCANS) Report 2000.<sup>82</sup>

### National Trends

- 37 states currently have high school graduation requirements in statute or code that include the arts. These requirements range from .5 to 2 credits in the fine and performing arts.<sup>83</sup>
- Music and visual arts instruction were offered in over 90% of the nation's public secondary schools in 1999-2000. Over 70% of the nation's secondary school administrators indicated that individuals at the school, and parents, considered the arts an essential part of a high quality education.<sup>84</sup>

### State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)

- Students are required to complete 1 credit of Visual, Performing, Applied Arts for graduation.

## Technology Requirements and Trends for Success

---

- 38 million fulltime workers in the nation have Internet access at their jobs and two-thirds of them (67%) go online at least once per day. 72% of full-time workers with Internet access at work say it has improved their ability to do their jobs.<sup>91</sup>
- In 2003, 97% of high school students used computers and 80% used the internet.<sup>92</sup>

### National Trend

- During the 2002–03 twelve-month school year, about one-third of public school districts (36 percent) had students in the district enrolled in online distance education courses.<sup>93</sup>
- In 2002-2003, the percent of districts with students enrolled in online distance education courses ranged from 59-80%.<sup>94</sup>

### State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)

- Students must take an on-line course or learning experience; OR have the on-line learning experience incorporated into each of the required credits of the Michigan Merit Curriculum.

## Health/Physical Education Requirements & Trends for Success

---

- 73% of adults from a nationally representative sample felt that health education should be a top priority for high school graduation.<sup>96</sup>
- Effective health education helps students stay in school and do better in their classes.
  - Several research studies confirm a strong relationship between student involvement in risk behaviors and negative school outcomes such as graduation rates, grades, performance on standardized tests, attendance, dropout rates, and homework completion.<sup>97</sup>
  - Students who participate in health education classes that use effective curricula show decreases in these risk behaviors.<sup>98</sup>
- A meta-analysis of nearly 200 studies of the effectiveness of exercise on cognitive functioning found that regular physical activity supports better learning.<sup>99</sup>

### National Trends

- 35 states currently have high school graduation requirements in statute or code that include health education. These requirements range from .5 to 1.5 credits for health education alone; and 1 to 2 credits when combined with physical education.<sup>100</sup>
- 40 states currently have requirements for high school physical education. Nine states have a requirement of two semesters of physical education. Two states have one credit and one state has a 1.5 credit requirement. Some states list requirements in minutes and they vary from 100 minutes in each of the 9-12 grades to 270 minutes over the entire high school career.



- During the past 20 years there has been a dramatic increase in obesity in the United States. Today, seven states have obesity prevalence rates of 15–19%; 33 states had rates of 20–24%; and nine states, including Michigan, had rates of more than 25%.<sup>101</sup>

### **State of Michigan Graduation Requirements (Beginning with students entering eighth grade in 2006)**

- Students are required to complete 1 credit of Physical education/Health for graduation.

### **World Languages Requirements and Trends for Success**

- Students who study two years of a language other than English score an average of 60 points higher on the SAT I verbal test and 48 points higher on the math than students who do not complete two years of a language.<sup>86</sup>
- For students who go on to study four years of a language in high school, the average gains are 149 and 150 points on the verbal and math tests, respectively.<sup>87</sup>
- Foreign language completion in high school also is linked to higher wages in the workplace. Studying a language other than English for two years raises a graduate's wages by an average of 4%.<sup>88</sup>
- A survey of 400 faculty and staff members from 20 research universities concluded that learning a language other than English improves performance in English as well, because it introduces students to a theoretical view of language that aids the study of English.<sup>89</sup>

### **National Trends**

- District of Columbia and Texas require two years, and New Jersey and New York require one year of a foreign language.<sup>90</sup>

### **State of Michigan Graduation Requirements (Beginning with students entering third grade in 2006)**

- Students will need to complete 2 credits of a world language in grades 9-12; OR have an equivalent learning experience in grades K-12.

# BIBLIOGRAPHY

- <sup>1</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>2</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>3</sup> Somerville & Yi, 2002.
- <sup>4</sup> *The Demographics and Academics of College Readiness in Illinois*, Jennifer B. Presley and Yuqin Gong, Illinois Education Research Council.
- <sup>5</sup> Hart, *Rising to the Challenge*.
- <sup>6</sup> U.S. Department of Education, NCES. 2000. *NAEP Trends in Academic Progress: Three Decades of Student Performance (NCES 2000-469)*. Washington, DC.
- <sup>7</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>8</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>9</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>10</sup> Peter D. Hart Research Associates/Public Opinion Strategies, *Rising to the Challenge: Are High School Graduates Prepared for College and Work?* prepared for Achieve, Inc., 2005.
- <sup>11</sup> Peter D. Hart Research Associates/Public Opinion Strategies, *Rising to the Challenge: Are High School Graduates Prepared for College and Work?* prepared for Achieve, Inc., 2005.
- <sup>12</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>13</sup> National Center for Education Statistics, *The Condition of Education*, 2004.
- <sup>14</sup> National Center for Education Statistics, *Access to Postsecondary Education for the 1992 High School Graduates*.
- <sup>15</sup> Barth, P. (2003). *A common core curriculum for the new century*. *Thinking K-16*, 7(1), 3-25.
- <sup>16</sup> Hallinan, Maureen T. "Ability Grouping and Student Learning." Prepared for Brookings Papers on Education Policy Conference: *The American High School Today*, The Brookings Institution. Washington, DC, May 14-15, 2002.
- <sup>17</sup> Levesque, K. et al. *Vocational Education in the United States: Toward the Year 2000*. NCES 2000-029. U.S. Department of Education, NCES, 2000. <http://nces.ed.gov/pubs2000/2000029.pdf>.
- <sup>18</sup> Cooney, S., & Bottoms, G. (2002). *Middle grades to high school: Mending a weak link*. Atlanta, GA: Southern Regional Education Board, 2004.
- <sup>19</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>20</sup> Education Trust–West, *The A–G Curriculum: College-Prep? Work-Prep? Life-Prep. Understanding and Implementing a Rigorous Core Curriculum for All*, 2004.
- <sup>21</sup> National Center for Education Statistics, *Condition of Education 2004, Indicator 22, Supplemental Table 22-2*.
- <sup>22</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>23</sup> U.S. Department of Labor, Bureau of Labor Statistics (2000). *The Outlook for College Graduates, 1998-2008*.
- <sup>24</sup> Carnevale, Anthony P. and Donna M. Desrochers, *Standards for What? The Economic Roots of K–16 Reform*, Educational Testing Service, 2003.
- <sup>25</sup> American Diploma Project: *Workplace Study*. Source: Analysis of Bureau of Labor Statistics Employment Projections, 2000-2010. The distribution of jobs may differ from that derived from other data sources for several reasons. First, the distribution of jobs is based on a "jobs count," which includes all full- and part-time jobs. Other job analyses, which often use survey data, only include a person's primary job; therefore, only one job is counted even if a person works two jobs (either one full-time and another part-time, or two part-time jobs). Because low-paid or low-skilled jobs are more likely to be part time, the largest differences in the number of jobs occur at the bottom of the employment scale.
- <sup>26</sup> American Diploma Project: *Workplace Study*.
- <sup>27</sup> U.S. Census Bureau [www.census.gov/prod/2002pubs/p23-210.pdf](http://www.census.gov/prod/2002pubs/p23-210.pdf)
- <sup>28</sup> U.S. Census Bureau [www.census.gov/prod/2002pubs/p23-210.pdf](http://www.census.gov/prod/2002pubs/p23-210.pdf)
- <sup>29</sup> U.S. Census Bureau [www.census.gov/prod/2002pubs/p23-210.pdf](http://www.census.gov/prod/2002pubs/p23-210.pdf)
- <sup>30</sup> U.S. Census Bureau [www.census.gov/prod/2002pubs/p23-210.pdf](http://www.census.gov/prod/2002pubs/p23-210.pdf)
- <sup>31</sup> U.S. Census Bureau [www.census.gov/prod/2002pubs/p23-210.pdf](http://www.census.gov/prod/2002pubs/p23-210.pdf)
- <sup>32</sup> U.S. Census Bureau [www.census.gov/prod/2002pubs/p23-210.pdf](http://www.census.gov/prod/2002pubs/p23-210.pdf)
- <sup>33</sup> 2005 National Education Summit on High Schools.
- <sup>34</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>35</sup> "Quality Counts 2003." *Education Week*. February 5, 2003. Available [www.edweek.org/sreports/qc03](http://www.edweek.org/sreports/qc03).
- <sup>36</sup> Michigan Public Act 205 of 1931.
- <sup>37</sup> Michigan State Board of Education State Board of Education Action on Improving Student Outcomes, December 13, 2005.
- <sup>38</sup> Michigan State Board of Education State Board of Education Action on Improving Student Outcomes, December 13, 2005.
- <sup>39</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.a
- <sup>40</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.a
- <sup>41</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>42</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>43</sup> Carnevale and Desrochers, Educational Testing Service, *Connecting Education Standards and Employment: Course-Taking Patterns of Young Workers*, American Diploma Project: *Workplace Study*, 2002.
- <sup>44</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>45</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>46</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>47</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>48</sup> Perna, Laura and Titus, Mavin, "Understanding Difference in the Choice of College Attended," April 2003.
- <sup>49</sup> Peter D. Hart Research Associates/Public Opinion Strategies, *Rising to the Challenge: Are High School Graduates Prepared for College and Work?* prepared for Achieve, Inc., 2005.
- <sup>50</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>51</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>52</sup> Carnevale and Desrochers, Educational Testing Service, *Connecting Education Standards and Employment: Course-Taking Patterns of Young Workers*, American Diploma Project: *Workplace Study*, 2002.
- <sup>53</sup> Carnevale and Desrochers, Educational Testing Service, *Connecting Education Standards and Employment: Course-Taking Patterns of Young Workers*, American Diploma Project: *Workplace Study*, 2002.

# BIBLIOGRAPHY

- <sup>54</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>55</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>56</sup> State Indicators of Science and Mathematics Education 2003, R. Blank & D. Langesen, CCSSO, 2003.
- <sup>57</sup> CCSSO, *State Indicators of Science and Mathematics Education: 2003*
- <sup>58</sup> CCSSO, *State Indicators of Science and Mathematics Education: 2003*.
- <sup>59</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>60</sup> CCSSO, *State Indicators of Science and Mathematics Education: 2003*
- <sup>61</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>62</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT 2004.
- <sup>63</sup> Peter D. Hart Research Associates/Public Opinion Strategies, *Rising to the Challenge: Are High School Graduates Prepared for College and Work?* prepared for Achieve, Inc., 2005.
- <sup>64</sup> CCSSO, *State Indicators of Science and Mathematics Education: 2003*.
- <sup>65</sup> CCSSO, *State Indicators of Science and Mathematics Education: 2003*.
- <sup>66</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>67</sup> CCSSO, *State Indicators of Science and Mathematics Education: 2003*.
- <sup>68</sup> *Crisis at the Core: Preparing All Students for College and Work*, ACT, 2004.
- <sup>69</sup> Judith Torney-Purta and colleagues, *Citizenship and Education in Twenty-Eight Countries: Civic Knowledge and Engagement at Age Fourteen*, International Association for the Evaluation of Educational Achievement (IEA): Amsterdam, 2001. (Chapter 3)
- <sup>70</sup> Response to Findings of the NAEP 1998 Civics Report Card for the Nation  
Charles N. Quigley, Executive Director, Center for Civic Education.
- <sup>71</sup> Kurtz, Karl T., Rosenthal, Alan, and Zukin, Cliff, "Citizenship: A Challenge for All Generations. National Conference of State Legislatures, September 2003.
- <sup>72</sup> Jerry L. Martin and Anne D. Neal, *Losing America's Memory: Historical Illiteracy in the 21st Century*, Washington, DC: American Council of Trustees and Alumni, p. 3 and Appendix A, p. 2, February 11, 2000.
- <sup>73</sup> Carrie Donovan and Mark Hugo Lopez, "Youth Voter Turnout in the States, During the 2000 Presidential and 2002 Mid-Term Elections," Center for Information and Research on Civic Learning and Engagement, School of Public Affairs, University of Maryland, <http://www.civicyouth.org/>.
- <sup>74</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>75</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>76</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>77</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>78</sup> Michigan Public Act 205 of 1931.
- <sup>79</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>80</sup> *Critical Links: Learning in the Arts and Student Academic and Social Development*. Arts Education Partnership. 2002.
- <sup>81</sup> *Disciplined Mind: Beyond Facts Standardized Tests K 12 education that Every Child Deserves*. Howard Gardner, 2000.
- <sup>82</sup> *What Work Requires of Schools: A SCANS Report for America 2000*. The Secretary's Commission on Achieving Necessary Skills, a publication of the US Department of Labor, June 1991.
- <sup>83</sup> *Instruction and Graduation Requirements – Arts in Education*. ArtsScan Database Report. Education Commission of the States, 2005.
- <sup>84</sup> *Arts Education in Public Elementary and Secondary Schools: 1999-2000*. National Center for Education Statistics. Statistical Analysis Report. 2002.
- <sup>85</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>86</sup> College Board, 2002 College Bound Seniors, Table 3-3
- <sup>87</sup> College Board, 2002 College Bound Seniors, Table 3-3
- <sup>88</sup> Altonji, Joseph, "The Effects of High School Curriculum on Education and Labor Market Outcomes," *Journal of Human Resources*, summer 1995, p. 424
- <sup>89</sup> *Standards for Success*, 2003, p. 67
- <sup>90</sup> Achieve, Inc., *The Expectations Gap: A 50-State Review of High School Graduation Requirements*, 2004.
- <sup>91</sup> *The Internet and Education: Findings of the Pew Internet & American Life Project*.
- <sup>92</sup> U.S. Department of Education, Institute of Education Sciences NCES 2005.
- <sup>93</sup> U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Distance Education Courses for Public Elementary and Secondary School Students: 2002-03," FRSS 84, 2003.
- <sup>94</sup> U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Distance Education Courses for Public Elementary and Secondary School Students: 2002-03," FRSS 84, 2003.
- <sup>95</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>96</sup> *What Americans Believe Students Should Know*. (1998). Mid-continent Research for Education and Learning Survey.
- <sup>97</sup> Symons, C. W., Cinelli, B., James, T. C. & Groff, P. (1997). Bridging Student Health Risks and Academic Achievement Through Comprehensive School Health Programs. *Journal of School Health*, 67(6), 220-227.
- <sup>98</sup> Botvin, G.J., Griffin, K.W., Diaz, T., Ifill-Williams, M. (2001). Preventing binge drinking during early adolescence: one- and two-year follow-up of a school-based preventive intervention. *Psychology of Addictive Behaviors*, 15(4), 360-365.
- <sup>99</sup> Etnier JL, Salazaw W, Landers DM, Petruzzello SJ, Han M, Nowell P. The influence of physical fitness and exercise upon cognitive functioning: a meta-analysis. *Journal of Sport and Exercise Physiology*. 1997; 19(3): 249-77.
- <sup>100</sup> National Association of State Boards of Education Policy Database. [http://nasbe.org/HealthySchools/States/State\\_Policy.asp](http://nasbe.org/HealthySchools/States/State_Policy.asp).
- <sup>101</sup> Center for Disease Control and Prevention: *Overweight and Obesity: Obesity Trends: U.S. Obesity Trends 1985-2004*.
- <sup>102</sup> Michigan Department of Education High School Graduation Requirements Survey, October 2005.
- <sup>103</sup> Michigan School Health Profile, 2004.
- <sup>104</sup> Michigan School Health Profile, 2004.