

RESEARCH BRIEF

**Increasing Maine's High School Graduation Rate:
Necessary But Not Sufficient**



Prepared by

**David L. Silvernail
Director**

**Leanne C. Walker
Policy Research Analyst**

**Ida A. Batista
Policy Research Analyst**

**Center for Education Policy, Applied Research and Evaluation
University of Southern Maine**

October 2011



UNIVERSITY OF
SOUTHERN MAINE

Center for Education Policy,
Applied Research, and Evaluation

Copyright © 2011, Center for Education Policy, Applied Research, & Evaluation.

Published by the Center for Education Policy, Applied Research, and Evaluation (CEPARE) in the School of Education and Human Development, University of Southern Maine.

CEPARE provides assistance to school districts, agencies, organizations, and university faculty by conducting research, evaluation, and policy studies.

The University of Southern Maine does not discriminate on the basis of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, disability, or veteran's status and shall comply with Section 504, Title IX, and the A.D.A in employment, education, and in all other areas of the University. The University provides reasonable accommodations to qualified individuals with disabilities upon request.

Executive Summary

Increasing high school graduation rates has become a top priority of education public policy, but simply increasing the number of high school graduates is not enough to ensure that graduating students are prepared for work or continuing education.

This study was designed to determine how many Maine 9th graders graduate in four years proficient in reading and mathematics. Unfortunately the evidence reveals that the chances are not great. While more than eight of 10 Maine students graduate from high school in four years, only one in three graduates ready for work or college.

Additional findings of the study include:

- Maine is doing much better than the national average for high school graduation, and better than Rhode Island, but trails Vermont, New Hampshire and Massachusetts.
- While eight of 10 high school freshmen graduate on time, the average hides considerable differences among schools. In 2010, graduation rates ranged from 66 percent to 100 percent.
- Statewide, only 39 percent of 2010 high school graduates met proficiency standards in both reading and math during their junior year.
- As with graduation rates, the percent of students meeting proficiency also varies greatly among schools, ranging from 9 percent to 100 percent.
- Sixty-nine percent of students who are not proficient in mathematics in the 3rd grade are still not proficient by fifth grade. The pattern repeats itself throughout elementary, middle and high school. Among eighth graders who are not proficient in math, 88 percent are still not proficient by the end of the 11th grade.
- While teachers with a master's degree do not appear to correlate with graduation rates, it does appear to have some effect on proficiency. Poverty also contributes to lower graduation and proficiency rates.

The study discussed some limitations to the findings, but also highlights several public policy initiatives that have the potential to improve both graduation rates and proficiency. These include a mandate that by July 1, 2012, all schools must have in place a plan to provide both academic and behavioral support to struggling students.

Maine also is in the process of adopting the Common Core Standards and implementing standards-based education, which will require students to demonstrate proficiency before graduating from high school.

In addition, the Maine Education Policy Research Institute is identifying the distinguishing characteristics of higher performing schools with the goal of using the information to help other schools improve.

Increasing Maine's High School Graduation Rate: Necessary but Not Sufficient

David L. Silvernail

Leanne C. Walker

Ida A. Batista

High school graduation rates have been receiving considerable attention in recent years, from educators, policy makers, and politicians alike. There is an increasing awareness that improving graduation rates is important, not only for the future well-being of individuals but also for the economic and social well-being of the states and the nation. According to the U.S. Census Bureau, on average, high school dropouts earn 28% less per year than high school graduates, and over 61% less than college graduates.¹ The unemployment rate for high school dropouts is one-third higher than for high school graduates, and almost triple the level for college graduates with a Bachelor's degree or higher.² Over a lifetime it is estimated that a high school dropout earns over \$400,000 less than a high school graduate.³

Additionally, earning a high school diploma is even more important today, because it provides the gateway to the further education and training needed by the 21st Century workforce. According to the U. S. Department of Labor, over 90% of the fastest growing jobs in the future will require some type of post-secondary education or training.⁴ The Maine Department of Labor reported that, "as the mix of jobs increasingly shifts toward managerial, professional, and technical occupations, the education and training requirements of the labor force are rising because those occupations generally require some form of post-secondary education or training".⁵ By one estimate, the number of jobs in Maine requiring some type of post-secondary education or training will increase by 15,000 in the current decade.⁶

Thus, improving high school graduation rates is important. To help meet this goal, the Maine Legislature passed LD 1658 in 2010, mandating that all publically supported high schools achieve a graduation rate of 90% by the end of the 2015-16 school year. But in many cases a high school diploma is not sufficient to ensure readiness for future careers or post-secondary training for our young people because a large percentage of students who *do* receive high school diplomas may not be adequately prepared for college or careers.

One indicator of the magnitude of this problem is the percentage of first year college students who are enrolled in remedial courses. According to the U.S. Department of Education, 28% of all college freshmen nationwide need to take at least one remedial course. Among students entering community college, 42% required remedial education.⁷ In Maine, the most

recent available data (2004) estimates that 25% of students at the University of Maine System and 37% at the Maine Community College System are required to take at least one remedial class.⁸ Furthermore, data from the NCES shows that students who are enrolled in remedial courses are only half as likely to complete their degree program as those students not required to take any remedial courses.⁹ Remedial courses costs students and their families' money and make the challenge of earning advanced training even more difficult. The Alliance for Excellent Education describes it this way:

*“Because too many students are not learning the basic skills needed to succeed in college or work while they are in high school, the nation loses more than \$3.7 billion a year. This figure includes \$1.4 billion to provide remedial education to students who have recently completed high school. In addition, this figure factors in the almost \$2.3 billion that the economy loses because remedial reading students are more likely to drop out of college without a degree, thereby reducing their earning potential”.*¹⁰

As John Fitzsimmons, president of Maine’s Community College System, says, “Maine families are spending \$1 million more to get remediation”.¹¹ Lack of adequate preparation also affects Maine businesses. Employers that cannot rely on a high school diploma as a measure of basic student skills are required to spend additional resources on testing and training.

How is Maine doing today in its efforts to graduate high school students ready for college or career? This brief looks at Maine high school graduation rates and proficiency rates (the percentage of graduating students meeting or exceeding state standards) and explores the relationships between these measures across the state of Maine.

Maine’s High School Graduation Rate

After more than two decades of debate over how high school graduation rates should be calculated, the U.S. Department of Education has adopted a single, uniform definition. Beginning in 2012, all states must use this standard method when reporting their yearly high school graduation rates. In 2009, Maine and many other states began using the new definition, and it is now possible to begin to compare Maine with its neighboring states. According to the Maine Department of Education, Maine’s high school graduate rate in 2010 was 82.8%. This means that 82.8% of Maine’s 9th grade students who began high school in 2006-07 graduated from high school four years later. Table 1 reports graduation rates for New England and the nation for 2008-09. As may be seen from this data, Maine is doing much better than the national

average, and better than Rhode Island, but Maine’s high school graduation rate is still considerably lower than Vermont and New Hampshire, and slightly lower than Massachusetts.

Table 1: Recent High School Graduation Rates	
State	2008-09 High School Graduation Rate*
Vermont	85.6%
New Hampshire *	83.4%
Massachusetts	81.5%
Maine	80.4%
Rhode Island	75.5%
United States	74.9%
*Most Recent Rate is for 2007-2008	

In Maine the data reveals that, on average, 8 out of 10 high school freshmen graduate from high school four years later. But this is an average, and averages mask considerable differences across schools. In fact, high school graduation rates among Maine high schools in 2010 ranged from a low of 66% to a high of 100%. In other words, a student’s chances of graduating in four years was only two out of three in one Maine high school and virtually guaranteed to happen in another high school.

Figure 1 reports four different ranges of high school graduation rates by grouping the rates into quartiles, with the top quartile (yellow) including those high schools with the highest graduation rates in 2010, and the bottom quartile (red) including those with the lowest graduation rates. To see the graduation rate for a particular high school, click anywhere on the map to be taken to an interactive map of Maine. Place the cursor over one of the flags and click. Note: Because of mapping limitations, all three Portland high schools are included in a single location. To see each high school, click the Portland flag, and use the arrows at the bottom corner of the text box to scroll through the data for all three schools. This is true for all three figures in the report.

From examining the map it is clear that a student’s likelihood of graduating in four years does indeed depend upon the high school he or she attends. But it does not necessarily depend on what part of the state he or she lives in. For example, there are some high schools in southern and eastern Maine with fairly high graduation rates, but there are also some with much lower graduation rates. The same is true, in large measure, in all regions throughout the state.

Proficiency Levels for Maine Students

The high school a student attends also plays a significant part in determining whether the student will graduate ready for college or career. As noted earlier, colleges report that a large portion of their entering freshmen class has to complete remedial courses. Employers also report that many of their new high school graduates lack basic skills. What about Maine high school graduates? How many are actually academically ready for college and career? Assuming that

Figure 1: Maine High School Graduation Rates 2010



Key: ■ 65.6%-<77.8% ■ 77.8%-<83.5% ■ 83.5%-<90.6% ■ >90.6%

academically prepared means, at a minimum, reaching proficiency on the reading and mathematics components of the state assessments, the evidence is not very encouraging. Figure 2 displays Maine's high schools by the percent of 2010 *graduates* that demonstrated proficiency in both reading and mathematics in the 11th grade (2008-2009), as measured by the SAT tests.

Statewide, only 39% of 2010 high school graduates had met proficiency standards in both reading and mathematics during their junior year. In other words, in 2008-09 only about 2 in 5 juniors who then graduated high school one year later were proficient in reading and mathematics. This statistic is disconcerting. But as with the high school graduation rates described above, the percent of students meeting proficiency also varies a great deal among different schools; the range varies from approximately 9% to 100%. Figure 2 displays Maine's high schools by the percent of 2010 graduates that demonstrated proficiency in both reading and mathematics in the 11th grade (2008-2009), as measured by the SAT tests. As before, to see the

Figure 2: Percent High School Juniors Proficient in Math and Reading 2008-2009



Key: ■ <26% ■ 26%-<33.3% ■ 33.3%-<41.2% ■ >41.2%

the proficiency rate for a particular high school, click anywhere on the map to be taken to an interactive map of Maine. Place the cursor over one of the flags and click.

It is clear from this data that both high school graduation rates and proficiency rates are important. What if one combines high school graduation rates with proficiency rates? What is a student's chance of both graduating from high school *and* being proficient in both mathematics and reading? By multiplying the graduation rates by the proficiency rates one may estimate a 9th grade student's chances of graduating high school and meeting state standards. The overall state level estimate is 31.9%. This means that 9th graders who began high school in Maine in 2006-07 had about one chance in three of graduating four years later being proficient in both reading and mathematics. And like the graduation rates and proficiency levels, those chances vary considerably across the state's high schools. Figure 3 divides the high schools into quartiles again, but this time by chances of graduating proficient from high school. In one high school

Figure 3: Likelihood of 9th Grader (2006-2007) Graduating in Four Years and being Proficient in Both Mathematics and Reading



Key: ■ <21.2% ■ >21.2%-<27% ■ >27%-<34% ■ >34%

a student's chances of graduating and also being proficient was about 7%, while in another it was over 86%. To see the graduating proficiency rate for a specific high school, click anywhere on the map to be taken to an interactive map of Maine. Place the cursor over one of the flags and click.

Understanding Student, School, and Community Factors

Why do Maine's high school graduation rates and high school proficiency rates vary so widely? Many reasons may be offered as explanations, including differences in poverty levels in communities, differences in per pupil expenditures among high schools, differences in teacher quality, or the size of the high school. Another reason that has been given considerable credence in recent years, ever since Maine started requiring all juniors to take the SAT examination, is that many students may not take the SAT examination seriously enough and do not try to do their very best on the examination.

Do Maine's juniors try to do their best on the SAT? Or do too many of them not take it seriously, and consequently pull their schools' average SAT scores down? The data suggest that the answer to the second question is "No". Beginning in 2009, all juniors complete a survey when they take the SAT examination in which students are asked how important their SAT score is to them. Approximately 81% of all juniors who took the test in 2009 reported it was important to them. Fewer than 5% reported that it was not very important.¹² Thus, it is unlikely that the performance of Maine students may be explained by their attitudes toward test-taking.

What about the other reasons mentioned above? How accurate are they in explaining Maine's performance? One way to explore these potential explanations for the results is to examine the relationships between some of these factors and student performance. This may be done by calculating what is known as a correlation coefficient; a number that represents the level of relationship. A correlation coefficient may range between +1.00 to -1.00 where the plus (+) or minus (-) sign accompanying a correlation denotes the direction of the relationship. A correlation of near Zero indicates little, if any relationship between factors.

One common way to interpret a correlation coefficient is to determine how often you can correctly predict one variable from another.

What are the correlation coefficients between the factors mentioned above which may help explain Maine's results? Table 2 on the next page reports the correlations based on 2009 data. Several of these correlations are noteworthy. It appears that proficiency levels are not very related to per pupil expenditures or high school size. The correlation between per pupil

expenditures and proficiency levels is $-.162$, meaning predicting proficiency levels from per pupil expenditures would only be accurate in about 3% of the cases. And predicting proficiency levels from school size would only be accurate about 10% of the time.

Table 2: Correlations between 2009 Student Performance and School and Student Characteristics

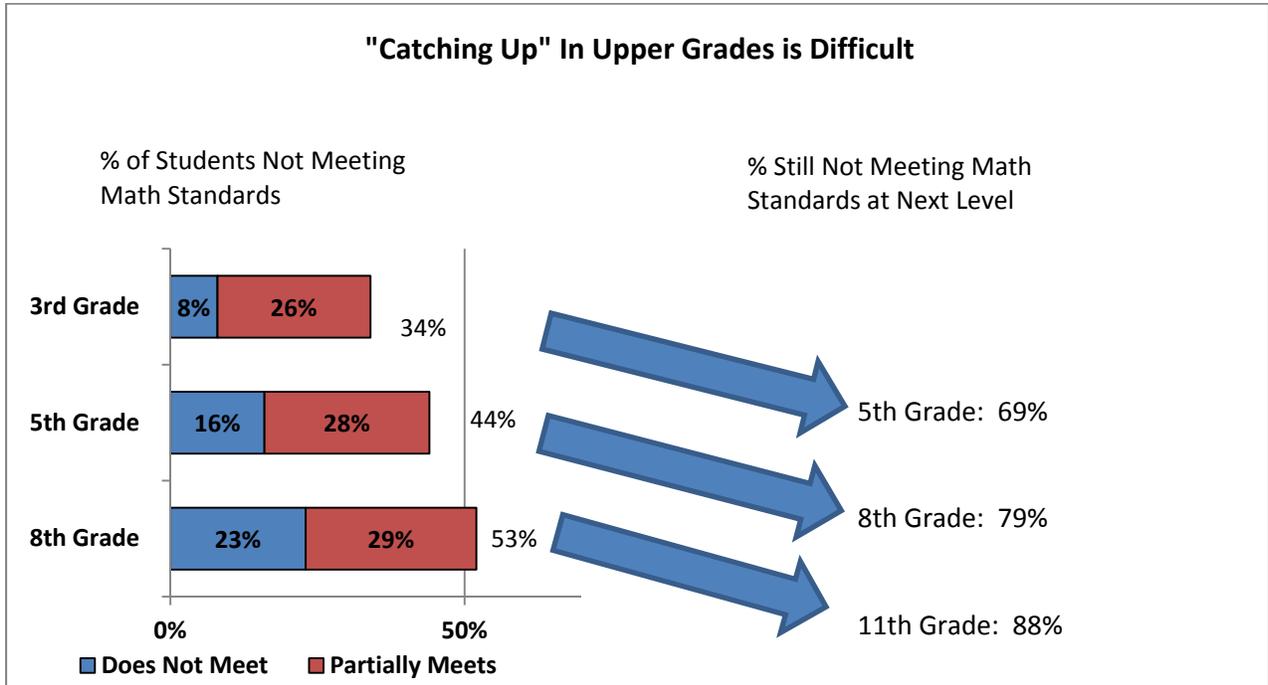
Factor	% Qualify Free/Reduced Lunch in High School	Per Pupil Expenditures	% Masters Level Teachers	Enrollment Size of High School	% SAT Proficiency	Graduation Rate
% Qualify Free/Reduced Lunch in High School	1.00					
Per Pupil Expenditures	.071	1.00				
% Masters Level Teachers	-.523	-.027	1.00			
Enrollment Size of High School	-.412	-.521	.289	1.00		
% SAT Proficiency	-.672	-.162	.495	.312	1.00	
Graduation Rate	-.401	.314	.127	-.145	.223	1.00

In other cases, the correlations do suggest some significant relationships. The percent of teachers with a master’s degree is not highly correlated with graduation rates (i.e., $.127$), but it is moderately correlated with whether or not students meet state proficiency standards in mathematics and reading. In this case, the correlation is $.495$, which indicates that in approximately 25% of the cases, the percent of teachers with master’s degrees in a high school is related to student proficiency levels. And in the case of poverty, the correlation is even higher. In about one-half the cases (45%) the poverty level found in a school is related to student performance.

But even in the case where there is higher poverty, it alone does not explain the performance. In fact, it only explains about half of the difference found between high schools. Another factor that may explain differences is prior student performance. It appears that many 9th graders enter high school inadequately prepared to learn the high school curriculum. Figure 4 on the next page presents statewide evidence describing student performance in earlier grades. Evidence on a specific cohort of pupils for grades 3 through 11 is not available, but if one looks

at cohorts of pupils and track their performance over two or three years, the evidence is quite telling.

Figure 4:



As shown in the graphic, 69% of the students who are not proficient in mathematics in the 3rd grade are still not proficient by the fifth grade, 79% of the students not proficient in mathematics in the 5th grade are still not proficient by the 8th grade, and 88% of the 8th graders not proficient in mathematics are still not proficient by the end of the 11th grade. The same general pattern may be found for reading. Although not displayed here, the evidence indicates that 38% of 9th graders statewide are not proficient in reading as they enter high school and 88% of *those* students are still not proficient as they approach their senior year. It is evident from this data that some students enter high school not well prepared to excel in their studies, and, in fact, for many of these students their academic struggles began much earlier in their schooling years.

Data Limitations

Given all the evidence described above it is clear that many of Maine’s high school students are not graduating prepared for college or career. There are several cautions to keep in mind, however, when interpreting the results presented in this *Research Brief*. First, for some high schools, the graduation rates might be quite different if five-year graduates were considered. Second, in the case of small high schools, one or two students not graduating or not meeting

proficiency can significantly change the rates for those schools from year to year. Additionally, the SAT tests in mathematics and reading do not provide comprehensive information about all of the areas that are important to consider when evaluating career and college readiness. Students require knowledge and skills in many additional areas in order to succeed in life after high school. However, these data do provide a look at two very important skills. Finally, some students, although not meeting proficiency on the 11th grade SAT, may reach proficiency in their senior year.

Furthermore, extreme caution must be exercised in not painting *all* high schools and teachers with a single broad brush. Individual schools and teachers that are very successful in helping their students to excel and graduate ready for college and career can be found all across the state and in every type of school. The challenge ahead is to spread the good practices in those schools and classrooms to others across the state that are in need of assistance.

Next Steps

Despite the evidence that many Maine high school students lack the preparation they need to succeed in their future endeavors, there is considerable room for optimism when one considers the current efforts being undertaken to improve these outcomes. First, some good news is that Maine may be embarking on a new path that should lead to significant improvements in performance in earlier grades. By state statute, all Maine schools, at all grade levels, must by July 1, 2012 have in place in their schools a program called Response to Intervention (RTI). According to the Maine Department of Education (MDOE), RTI “provides a framework in which schools can deliver early intervening services” and provides “supplementary supports and interventions, both academic and behavioral...to struggling students based on data collection and analysis.”¹³ As described by MDOE, RTI has six key components: 1) high quality, scientifically-based instruction and behavioral support, 2) universal screening to determine monitoring and additional interventions, 3) tiers of instructional strategies that are progressively more intense 4) continuous monitoring of student performance during interventions, 5) use of collaborative or problem-solving approaches, 6) follow-up measures, and 7) parent involvement throughout the process.¹⁴ Schools all across Maine report that they are using a variety of strategies in developing their RTI programs, and anecdotal evidence suggests that many programs hold potential promise for significantly improving the performance of all pupils. As successful programs are identified and developed they may not only help pupils in

those schools, but also serve as exemplary programs that other schools and teachers may learn from and emulate.

Second, in the near future there will be another way struggling schools may learn from some of their peer schools. In 2010-11, at the direction of the Joint Committee for Education and Cultural Affairs of the Maine Legislature, the Maine Education Policy Research Institute has been conducting a study of Maine's higher performing, more efficient schools. The goals are to identify and describe the distinguishing characteristics of these schools, and to discover what makes them both higher performing and more efficient. To date, approximately 90 Maine schools at all grade levels and all across the state have been identified as meeting these criteria. Teams of educators are conducting case studies in approximately 20 of these schools. The evidence collected from these case studies will provide information to other schools searching for ways to improve. Early findings from these cases suggest that while resources are important, they alone will not ensure being a successful school. It is the way these schools choose to go about their business of educating their pupils that makes the difference. These schools have dedicated teachers, strong leadership, and a clear focus on academic performance.

Thirdly, Maine has joined 48 other states in adopting the national Common Core Standards, and has committed to future implementation of new statewide assessments that are aligned to the Standards. Those assessments are currently under development, but have been promised to include measures of skills and learning that are absent in existing measures. If designed as planned, the new tests should better measure the types of skills that are critical to success in the workforce, and will give practitioners and policymakers additional insights into the true college and career readiness of Maine students.

Fourth, in June 2011 the Maine Legislature passed, and the governor signed into law, a Resolve requiring the Maine Department of Education to develop and submit to the Legislature a plan for implementing a standards-based education system here in Maine. Such a system is designed to assess students' learning in terms of achieving proficiency rather than simply accumulating time and course credits. In the case of Maine, such a standards-based system would require students to *demonstrate* proficiency in meeting all the Learning Results before graduating from high school. And as such, would go a long way toward insuring that Maine's students graduate high school ready for college careers.

Summary

The evidence presented in this *Research Brief* reveals that in far too many cases Maine's high school seniors are not graduating high school ready for work or ready to continue their post-secondary education. The evidence indicates only about one in three students are ready. Many factors may be contributing to these dismal results. Clearly schools need to take steps to improve outcomes for their pupils, and there may be some important ways schools, teachers and administrators all across Maine may work together to accomplish this. But it is also evident that they cannot do it alone. Parents, students, and community members must also do their part. We all have a role in preparing Maine's youth for the 21st century, and each of us must take greater responsibility for achieving this goal.

References

-
- ¹ National Center for Education Statistics, Table 385: Distribution of earnings and median earnings of persons 25 years old and over, by highest level of educational attainment and sex: 2008. http://nces.ed.gov/programs/digest/d09/tables/dt09_385.asp, March 14, 2011
- ² Alliance for Excellent Education Straight A's, *The High Cost of High School Dropouts: New Alliance Brief Says Dropouts from the Class of 2009 Represent \$335 Billion in Lost Income*, Volume 9, Number 17, September 14, 2009, pg. 1.
- ³ Northeastern University - Center for Labor Market Studies and Alternative Schools Network in Chicago, *Left Behind in America: The Nation's Dropout Crisis* (2009). Center for Labor Market Studies Publications. Paper 21. <http://hdl.handle.net/2047/d20000598>, Page 3.
- ⁴ U.S. Department of Labor Projections, 2016.....need to complete
- ⁵ Maine Department of Labor Center for Workforce Research and Information, *The Maine Labor Market 2010 Trends and Issues*, page 13.
- ⁶ Carnevale, Anthony P., Smith, Nicole, Strohl, Jeff, *Help Wanted Projections of Jobs and Education Requirements Through 2018* (Washington DC: Georgetown University – Center on Education and the Workforce, (June 2010), Maine Report (Available at: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/maine.pdf>)
- ⁷ National Center for Education Statistics, *The Condition of Education 2004, Section 5 – Contexts of Postsecondary Education*, page 84. Washington, DC: U.S. Department of Education.
- ⁸ Maine Compact for Higher Education, Indicators of Higher Education Attainment in Maine, August 2009, page 16.
- ⁹ National Center for Education Statistics (NCES) (2004). *The condition of education 2004, indicator 18: Remediation and degree completion*. Washington, DC: U.S. Department of Education.
- ¹⁰ Alliance for Excellent Education, *Paying Double: Inadequate High Schools and Community College Remediation*. Washington, DC: Alliance for Excellent Education, 2006.
- ¹¹ Metzler, Rebekah *High schools 'need to do better,' Gov. Paul LePage says*, Portland Press Herald, February 25, 2010. Available at: http://www.pressherald.com/news/high-schools-need-to-do-better-lepage-says_2011-02-08.html
- ¹² Maine Department of Education Data, data from all 11th graders in 2008-2009 as recorded on the MHSA.
- ¹³ Maine Department of Education website, Frequently Asked Questions, (Available at: <http://www.maine.gov/education/rfi/index.shtml>)
- ¹⁴ Ibid