



## **Economic Impact Analysis Virginia Department of Planning and Budget**

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### **8 VAC 20-131 – Regulations Establishing Standards for Accrediting Public Schools in Virginia**

**Department of Education**

October 26, 2005

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The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with Section 2.2-4007.H of the Administrative Process Act and Executive Order Number 21 (02). Section 2.2-4007.H requires that such economic impact analyses include, but need not be limited to, the projected number of businesses or other entities to whom the regulation would apply, the identity of any localities and types of businesses or other entities particularly affected, the projected number of persons and employment positions to be affected, the projected costs to affected businesses or entities to implement or comply with the regulation, and the impact on the use and value of private property. The analysis presented below represents DPB's best estimate of these economic impacts.

### **Summary of the Proposed Regulation**

The Board of Education (board) proposes several amendments to these regulations, including: 1) new language on the consequences of accreditation denial, 2) allowing the "Conditionally Accredited" rating to be awarded to schools that are being reconstituted in accordance with these regulations upon agreement with the board, 3) raising the pass rate for accreditation to 75 percent in English and 70 percent in mathematics, science, and history/social science, 4) permitting students to earn a second verified credit for completing a career and technical program sequence and earning an industry certification, state license, or occupational competency credential, 5) new language to require counseling of students in obtaining industry certifications, occupational competency, or professional licenses in career and technical education fields, 6) changed requirements for the Governor's Seal on the Advanced Studies Diploma, 7) the establishment of the Board of Education's Seal for Excellence in Civics

Education, 8) requiring that middle schools make Algebra 1 available to all 8th grade students, 9) requiring secondary schools to offer at least three Advanced Placement, International Baccalaureate or college-level courses for degree credit, 10) giving the board the option to approve results of tests administered as part of another state's accountability assessment program to count toward verified credit, 11) elimination of a reporting requirement on the extent to which an unencumbered lunch is provided for all classroom teachers, 12) requiring that the number of students obtaining industry certifications and passing state licensure assessments and occupational competency assessments while still in high school be reported on the secondary school's School Performance Report Card, 13) specifying that the school administration shall "Provide facilities for the adequate and safe administration and storage of student medications," 14) adding "allergic reactions" to the list of examples of emergencies that the school is to have written procedures to follow, 15) specifying that schools have "Written procedures to follow for the safe evacuation of persons with special physical, medical, or language needs who may need assistance to exit a facility," 16) elimination of a waiver of specified regulatory requirements for schools that maintain a passing rate of 80 percent or higher on the SOLs or other board-approved tests, 17) permitting schools that maintain a passing rate of 95 percent or above in the four core academic areas (English, math, science, and history/social science) for two consecutive years to receive a waiver from annual accreditation, and 18) requiring that all elementary and middle school students participate in a program of physical fitness during the regular school year.

## **Estimated Economic Impact**

### **Consequences of accreditation denial**

In both the current and proposed regulations, schools cannot be rated Accreditation Denied prior to 2006. The current regulations only state the following concerning the consequences of accreditation denial. "In any school division in which 1/3 or more of the schools have been rated Accreditation Denied, the superintendent shall be evaluated by the local school board with a copy of such evaluation submitted to the board no later than December 1 of each year in which such condition exists." Otherwise, the current regulations are silent on the consequences of accreditation denial.

The board proposes to specify that any school rated Accreditation Denied be subject to sanctions prescribed by the state board. The sanctions would be "affirmed through a

memorandum of understanding between the state board and the local school board,” or alternatively the local school board could enter into an agreement with the state to reconstitute the school. The local school board may also close the school or combine it with a higher performing school in the division. The proposed regulations state that the memorandum of understanding may include but not be limited to:

1. Submitting status reports detailing implementation of corrective actions to the Board of Education. The status reports shall be signed by the school principal, division superintendent, and the chair of the local school board. The Board of Education may require the school principal, division superintendent, and the chair of the local school board to appear before the Board to present such status reports.
2. Undergoing an educational service delivery and management review. The Board of Education shall prescribe the content of such review and approve the reviewing authority retained by the school division.
3. Employing a turnaround specialist credentialed by the state to address those conditions at the school that may impede educational progress and effectiveness and academic success.

The Virginia Department of Education (department) has contracted with the University of Virginia Partnership for Leaders in Education, a partnership of the Darden Graduate School of Business Administration and the Curry School of Education (Darden/Curry Partnership), to deliver an executive education program specially designed for individuals who are charged with “turning around” consistently low-performing schools in the commonwealth. Experienced administrators are currently enrolled. Thus, there has been preparation to supply turnaround specialists credentialed by the state to address those conditions at the school that may impede educational progress and effectiveness and academic success. According to the department, the program is only enrolling administrators who have demonstrated some prior success. Presuming that the Darden/Curry Partnership does successfully teach effective school turnaround skills, then school divisions that employ and give authority to turnaround specialists credentialed by the state will likely see some improvement in school performance. Even if the Darden/Curry Partnership does not successfully teach effective school turnaround skills, the fact that only previously successful administrators may enter the program indicates that the turnaround specialists may have productive school management skills not previously employed in the failed school division.

Thus, if given significant authority, employing a turnaround specialist as part of a memorandum of understanding has the potential to improve school performance.

As stated above, rather than reaching agreement with the state board on a memorandum of understanding, the local board may alternatively enter into an agreement with the state to reconstitute the school. The reconstitution agreement must include at least one of the following:

1. Replacing all or a majority of the administrative staff and a substantial percentage of the instructional staff; or
2. Hiring a private or nonprofit management firm from a Board of Education reviewed list; or
3. Converting the school to a charter school in accordance with § 22.1-212.6 of the Code of Virginia, with consideration given to collaboration with an institution of higher education or other suitable entity.

Replacing all or a majority of the administrative staff and a substantial percentage of the instructional staff may or may not help improve affected schools. It of course depends on the quality of the new staff. Similarly, hiring a private or nonprofit management firm may or may not help improve affected schools, depending on the abilities and efforts of the hired management firm. The effects of conversion to a charter school are also uncertain.

Studies comparing student achievement in charter schools versus traditional schools have had mixed results. Solmon, Paark, and Garcia (2001) track student achievement in Arizona charter schools and find that students spending two to three years in charter schools outperformed conventional public school students. On the other hand, Bifulco and Ladd (2003) estimate the impact of charter schools in North Carolina for the 1995–96 to 2001–02 school years and find that student performance in charter schools was significantly worse than the performance of similar students in conventional public schools. Bettinger (2004) compares the test scores of charter and conventional public school students in Michigan. Controlling for relevant factors, he finds no significant differences in test scores for charter and conventional public school students.

The results of Grønberg and Jansen’s (2001) analysis of charter school versus traditional school performance in Texas may be particularly relevant for Virginia. Grønberg and Jansen found that charter schools that focus on at-risk students provided slightly more “value added”

than conventional public schools, while non-at-risk charters provided slightly less value added than conventional schools. They also examine the relative age of the charter schools and find that schools with two or more years of experience produced better academic outcomes. Since the provision for conversion to a charter school in these regulations concerns failed schools, the author's finding that charter schools that focus on at-risk students provided slightly more "value added" than conventional public schools provides some promise that conversion to a charter school as part of reconstitution has some promise.

Buddin and Zimmer (2005) point out that the inconsistency of results across studies may be partially explained by the varying charter laws and charter school types across states. They also note that most of the studies have shown age as an important contributing factor. Buddin and Zimmer examine California data and disaggregate their findings by charter school types and age. They distinguish "conversions" from "startup" charter schools. Conversion schools are schools that previously existed as conventional public schools and they typically retain an existing facility as well as faculty and students when they become charter schools. Startup schools, by contrast, are new entities that acquire facilities, faculty, and students at their inception. Further they distinguish charter schools in traditional classroom settings from charter schools that make extensive use of nonclassroom settings, such as homeschooling, independent study, and distance learning. Their results indicate that startup classroom-based charter schools provide the greatest promise of improving performance. They find that classroom-based conversion charter schools are, on average, performing only on par with conventional public schools, while nonclassroom-based charter schools are performing poorly. Overall, their results imply that conversion to a charter school as part of reconstitution would be more likely to be successful if combined with the first list option for reconstitution, replacing all or a majority of the administrative staff and a substantial percentage of the instructional staff.

Whether the local board enters into a memorandum of understanding with the state board, or chooses to enter into an agreement to reconstitute the school, the proposed regulations require that parents of enrolled students and other interested parties be provided with: 1) written notice of accreditation denial within 30 calendar days of the school's receiving notification from the department, 2) a copy of the school division's proposed corrective action plan, including a timeline for implementation, to improve the school's accreditation rating, and 3) an opportunity to comment on the division's proposed corrective plan. Public disclosure of school ratings has

been shown to significantly affect localities beyond the schools. For example, Figlio and Lucas (2002) found that new information about schools provided by ratings on "school report cards," significantly affects housing prices. Thus, even childless adults have financial reasons to care about school ratings in their localities. The proposed requirements for timely and open disclosure of the rating and plan for corrective action should help create local public pressure for positive change.

The proposed regulations do not specifically address the repercussions if a local school board that has one or more schools with Accreditation Denied ratings either fails to live up to a memorandum of understanding or reconstitution agreement, or refuses to enter into either type of agreement. Section 22.1-253.13:8 of the Code of Virginia does give the board the authority to petition the court for failure to meet the Standards of Quality (SOQ); and the SOQ includes the provision that all schools be fully accredited. Thus it does appear that the state board has recourse if the local school board with one or more schools with Accreditation Denied ratings is entirely recalcitrant.

Research has shown that when there are consequences, state school accountability programs such as Virginia's Standards of Learning do have a positive impact on student achievement. For example, Hanushek and Raymond (2005) found consistent evidence that the introduction of state accountability had a positive impact on student performance during the 1990s. Specifically, states that introduced consequential accountability systems early displayed more rapid gains in NAEP<sup>1</sup> performance, holding other inputs and policies constant. Therefore the proposed specification of sanctions described above will be beneficial in that it helps solidify that there are consequences to school failure. Since the proposed language does leave some flexibility to adapt the sanctions to what best fits the situation, the proposed specification of sanctions is not costly. Thus, the proposal should produce a net benefit.

### **Conditional accreditation**

Under the current regulations, new schools that are comprised of students from one or more existing schools in the division are rated conditionally accredited for one year pending an evaluation of the school's eligible students' performance on SOL tests or additional tests. The

board proposes to award the “Conditionally Accredited” rating to schools that are being reconstituted in accordance with these regulations upon agreement with the board. Since reconstituted schools are changed to the extent that they are no longer essentially the same school, treating reconstituted schools as new schools for rating purposes is logical.

### **Raising pass rates**

Under the current regulations, a school is rated Fully Accredited when its eligible students meet or exceed the pass rate of 70 percent in each of the four core academic areas, except for third and fifth grade English where the minimum pass rate is 75 percent, and third grade science and history/social science where the minimum pass rate is 50 percent. The board proposes that beginning with ratings earned in 2010-2011 and beyond (based on assessments in 2009-2010 and beyond), the pass rate for accreditation be raised to 75 percent in English for all grades and 70 percent in mathematics, science, history and social science for all grades. Raising the pass rate for accreditation is consistent with the federal No Child Left Behind Act (NCLB). NCLB requires that each state set steadily increasing goals for student achievement, with the ultimate goal of all students meeting the state's standard for "proficient" in language arts and math by 2014.

### **Industry certifications, state licenses, and occupational competency credentials**

It is the board’s current policy to allow students who complete a career and technical program sequence and pass an examination or occupational competency assessment in a career and technical education field that confers certification or an occupational competency credential from a recognized industry, or trade or professional association or acquires a professional license in a career and technical education field from the Commonwealth of Virginia to substitute the certification, competency credential, or license for the student selected verified credit. The board proposes to specify this policy in the regulations. The examination or occupational competency assessment must be approved by the board as an additional test to verify student achievement.

Additionally, the board proposes that for a standard diploma, when the certification, license, or credential confers more than one verified credit, a second verified credit could be

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<sup>1</sup> The National Assessment of Educational Progress (NAEP) is often referred to as the “nation’s report card.” NAEP tests are given in schools throughout the country. NAEP provides a consistent measure of student performance that allows comparisons of students across time and across states.



substituted for a verified unit of credit in science or history/social science. This proposed change will encourage the pursuit of certifications, competency credentials, and licenses for high school students. It will, of course, also result in some students taking one less science or history/social science class. It is not entirely clear whether the benefit of potential increased pursuit of certifications, competency credentials, and licenses will outweigh the cost of lost knowledge from taking one less science or history/social science class.

For some students it may slightly increase the probability of graduating from high school. For example, say a student is determined to become an automotive technician and is bored with academic-oriented classes. This student sees that he can get a job with the car repair skills that he has developed. He is considering dropping out of school to start working full time at such a job. The proposal to permit a student who has obtained a certification, license, or credential that confers more than one verified credit to substitute that second verified credit in lieu of a verified unit of credit in science or history/social science may be enough for a small number of such students to remain in school and get their diploma rather than dropout.

The board also proposes to add language to require counseling of students in obtaining industry certifications, occupational competency credentials, or professional licenses in career and technical education fields. This may have some impact in school divisions where students who may benefit by earning these credential are not currently being informed. Students who are interested in pursuing work for which there are industry certifications, occupational competency, or professional licenses will likely be better off if they pursue and obtain these credentials, then if they just seek to work in these areas without them.<sup>2</sup>

### **Diploma seals**

The board proposes to increase the requirements for the Governor's Seal on the Advanced Studies Diploma. Under both the current and proposed regulations, an Advanced Studies Diploma with an average grade of "B" or better is required for the Governor's Seal. The current regulations further require successful completion of at least one Advanced Placement (AP) or International Baccalaureate (IB) course, or one college-level course for credit. The proposed regulations require completion of college-level course work that will earn the student at



least 9 transferable college credits in Advanced Placement (AP), International Baccalaureate (IB), Cambridge, or dual enrollment courses. The proposed change to the requirements for the Governor's Seal on the diploma will likely increase demand from interested students in taking additional AP, IB, and Cambridge courses. This will enable such affected students to enter college needing fewer credits to graduate. This in turn is potentially beneficial to the Commonwealth in that in the long run there may be less financial stress in finding space for students at Virginia colleges and universities.

Pursuant to Section § 22.1-253.13:4 of the Code of Virginia, the proposed regulations also include a new diploma seal, the Board of Education's Seal for Excellence in Civics Education. The Board of Education's Seal for Excellence in Civics Education will be awarded to students who earn either a Standard or Advanced Studies Diploma and do the following.

- i) Complete Virginia and United States History and Virginia and United States Government courses with a grade of "B" or higher; and, ii) Have good attendance and no disciplinary infractions as determined by local school board policies and, iii) Complete 50 hours of voluntary participation in community service or extracurricular activities. Activities that would satisfy the requirements of iii) include: a) Volunteering for a charitable or religious organization that provides services to the poor, sick or less fortunate; b) Participating in Boy Scouts, Girl Scouts, or similar youth organizations; c) Participating in JROTC; d) Participating in political campaigns or government internships, or Boys State, Girls State, or Model General Assembly; or e) Participating in school-sponsored extracurricular activities that have a civics focus. Any student who enlists in the United States military prior to graduation will be deemed to have met this community service requirement.

The introduction of this seal may encourage some students who otherwise would have met most, but not all of the requirements, to pursue additional activities in order to earn the seal. For example, some students who have completed Virginia and United States History and Virginia and United States Government courses with a grade of "B" or higher and have good attendance

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<sup>2</sup> While most industry certifications, occupational competency credentials, and professional licenses are considered valuable or even required to do work in their applicable fields, there are likely some credentials that are modestly valued at best.

and no disciplinary infractions, but have completed fewer than 50 hours of voluntary participation in community service or extracurricular activities, may respond to the opportunity to earn the Board of Education's Seal for Excellence in Civics Education by participating in additional voluntary, community service or extracurricular activities. To the extent that students do react in this manner, and those qualifying activities do benefit the public, the establishment of the Board of Education's Seal for Excellence in Civics Education may be beneficial.

### **Required course offerings**

The board proposes to require all middle schools to make Algebra 1 available to all 8th grade students. There will be no impact initially, since according to the department, all middle schools currently comply. Secondary schools are currently required to offer at least two Advanced Placement or college-level courses for degree credit. The board proposes to require secondary schools to offer at least three Advanced Placement, International Baccalaureate or college-level courses for degree credit. This is necessary to enable all students the opportunity to earn the Governor's Seal on the Advanced Studies Diploma. As far as the department knows, all schools currently comply with this requirement. The department also points out that schools can easily comply by making use of the Virtual Advanced Placement School.<sup>3</sup>

### **Out-of-state test results**

Under the current regulations the board may approve tests administered on a multi-state or international basis for verified credit. Under the proposed regulations the board may also approve tests administered as part of another state's accountability assessment program for verified credit. The board can determine whether the other state's test is sufficiently rigorous to count toward Virginia verified credit. Thus, the proposed language will not cause a dilution in the value represented by verified credit. Allowing the board this flexibility will help transfer students achieve credits for graduation to the extent that it is used. Given the benefit for qualified transfer students and lack of cost to the public, this proposed amendment will create a net benefit.

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<sup>3</sup>The Virtual Advanced Placement School is described in detail at the following website:  
[www.doe.virginia.gov/VDOE/Technology/VAPS.html](http://www.doe.virginia.gov/VDOE/Technology/VAPS.html)

**Reporting requirements**

The current regulations require that each school report the extent to which an unencumbered lunch is provided for all classroom teachers. An unencumbered lunch is time for classroom teachers to have lunch without responsibility to supervise students. The board proposes to eliminate this text. According to the department, some teachers have misinterpreted the requirement that each school report the extent to which an unencumbered lunch is provided for all classroom teachers to mean that schools must provide an unencumbered lunch for all classroom teachers. This is not the intent of the language. Removing the language may reduce some conflict between teachers and schools. The department can still request this data if desired without this language in the regulations. Thus, this proposal will produce a net benefit since some conflict between teachers and schools may be reduced, while the department and board retain the right to request the data.

The board proposes to require that the number of students obtaining industry certifications and passing state licensure assessments and occupational competency assessments while still in high school be reported on the secondary school's School Performance Report Card. The collection of accurate data is necessary to enable informed policy decisions. Since students receive verified credit for these activities, the schools should already have records of their occurrence. Thus, the costs of adding this information to the school's School Performance Report Card should be small. Thus, this proposal will likely produce a net benefit.

**Health and safety**

The board proposes to require that school administrations: a) provide facilities for the adequate and safe administration and storage of student medications, b) ensure that the school has written procedures to follow in emergencies such as fire, injury, illness, and violent or threatening behavior, and c) have written procedures to follow for the safe evacuation of persons with special physical, medical, or language needs who may need assistance to exit a facility. As far as the department knows, all schools currently comply with these requirements. Nevertheless, it is beneficial to bring to their attention in case of oversights.

## Waivers

The current regulations include a waiver of specified regulatory requirements for schools that maintain a passing rate of 80% or higher on SOLs or other board-approved tests. The board proposes to eliminate this waiver since no school has requested nor is expected to request the waiver. Since no school has requested nor is expected to request the waiver, elimination of this waiver should have no effect.

The board proposes to permit schools that maintain a passing rate of 95% or above in the four core academic areas (English, math, science, and history/social science) for two consecutive years to receive a waiver from annual accreditation for three years. However the school shall continue to annually submit documentation in compliance with the pre-accreditation requirements. Since schools that maintain a passing rate of 95% or above in the four core academic areas for two consecutive years are very unlikely to fail to qualify for full accreditation in the next three years without the waiver, and those schools will still be required to annually submit documentation in compliance with the pre-accreditation requirements, the proposed waiver has little value.

## Physical Fitness Program Requirement

Under the current regulations elementary and middle schools are required to provide instruction in physical education, but there is no requirement that every student participate in physical activity. The board proposes to "...require students to participate in a program of physical fitness during the regular school year in accordance with guidelines established by the Board of Education."

According to the department, no data is currently collected concerning students' participation in physical fitness programs at Virginia schools. The department believes that most or all elementary and middle schools currently do have all students participate in some form of physical fitness activities. For those schools where all the students do not currently participate in physical fitness activities, complying with the proposed requirement will create both benefits and costs. Increasing exercise will likely improve student health.<sup>4</sup> Healthier students will likely be

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<sup>4</sup> DuRant et al (1993) and Williams et al (1992) find that children with the lowest physical activity or fitness levels and highest percentage of body fatness are most likely to develop other risk factors for cardiovascular disease, including elevated blood pressure and serum cholesterol levels. Roccini et al (1988) show that weight and blood pressure can be lowered in children when physical activity is an integral part of the treatment regimen.

able to focus better and perhaps learn more.<sup>5</sup> On the other hand, given a fixed length of the school day, newly devoting time to physical fitness activities will necessitate taking time away from other pursuits. Also, in some cases schools may require additional space to house the physical fitness activity.

It is not clear whether the proposed additional requirement will create a net benefit. Students in schools that are not already effectively meeting the requirement will likely benefit from additional exercise, but will have less time for other school activities. The proposed language is phrased in a manner that permits flexibility in how such programs of physical fitness are designed. If the Board of Education were to create guidelines that permitted schools to satisfy the proposed requirement in a manner that took minimal time away from academic instruction and other productive activities, then there would likely be minimal costs and the benefits would likely exceed those costs. Programs that use minimal time will likely have less benefit to student health than more time consuming programs, though.

### **Businesses and Entities Affected**

The proposed amendments affect the 132 school divisions in the Commonwealth. Businesses throughout the state may be affected by improved skills in workers graduating from Virginia schools. Educational consulting and management firms may obtain new business as a result of the reconstitution of schools.

### **Localities Particularly Affected**

The proposed amendments affect all Virginia localities.

### **Projected Impact on Employment**

The proposed amendments may have a positive impact on student learning. In the long run, a more knowledgeable work force leads to higher job growth for two reasons. Higher-skilled labor is more productive; and increased productivity leads to a higher rate of economic growth. Accelerating economic growth creates employment and creates pressure for higher wages. A more knowledgeable work force also makes the Commonwealth more attractive for firm location. In the short run as well as the long run, educational consulting and management

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<sup>5</sup> Studies such as Caterino and Polak (1999) suggest that concentration can improve significantly with physical activity.

firms may obtain new business as a result of the reconstitution of schools. This additional business will create jobs in educational consulting and management.

### **Effects on the Use and Value of Private Property**

Educational consulting and management firms may obtain new business and increase their value as a result of the reconstitution of schools. In the long run, businesses may encounter better-skilled, more productive job applicants. More productive workers would reduce long-run costs and increase the value of firms.

### **Small Businesses: Costs and Other Effects**

In the long run, small businesses may encounter better-skilled, more productive job applicants. More productive workers would reduce long-run costs. In the short run as well as the long run, small educational consulting and management firms may obtain new business as a result of the reconstitution of schools.

### **Small Businesses: Alternative Method that Minimizes Adverse Impact**

The proposed amendments do not adversely affect small businesses.

## References

- Bettinger E P, “The effect of charter schools on charter students and public schools,” *Economics of Education Review*, Vol. 24, No. 2, 133-147, (2004).
- Bifulco R and H Ladd, “The impacts of charter schools on student achievement: Evidence from North Carolina, Terry Sanford Institute of Public Policy, Duke University Working Paper Series SAN04-01, (August 2004).
- Buddin R and R Zimmer, “Student achievement in charter schools: A complex picture,” *Journal of Policy Analysis and Management*, Vol. 24, No. 2, 351–371, (2005).
- Caterino M and E Polak, “Effects of two types of activity on the performance of second, third, and fourth grade students on a test of concentration,” *Perceptual and Motor Skills*, Vol. 89, No.1, 245-248, (1999).
- DuRant RH, Baranowski T, Rhodes T, Gutin B, et al, “Association among serum lipid and lipoprotein concentrations and physical activity, physical fitness, and body composition in young children,” *Journal of Pediatrics*, Vol. 123, 185-192, (1993).
- Figlio D N and M E Lucas, “What’s in a Grade? School Report Cards and House Prices,” NBER working paper 8019, (2002), forthcoming in *American Economic Review*.
- Grønberg T J and D W Jansen, “Navigating newly chartered waters: An analysis of Texas charter school performance,” Texas Public Policy Foundation: San Antonio and Austin, TX, (2001).
- Hanushek E A and M E Raymond, “Does school accountability lead to improved student performance?” *Journal of Policy Analysis and Management*, Vol. 24, No. 2, 297–327, (2005).
- Roccini A P, Katch V, Anderson J, Hindliter J, et al, “Blood pressure in obese adolescents: Effects of weight loss,” *Pediatrics*, Vol. 82, 16-23, (1988).
- Solmon L, Paark K and D Garcia, “Does charter school attendance improve test scores? The Arizona results,” Phoenix, AZ: Goldwater Institute Center for Market Based Education, (2001).
- Williams DP, Going SB, Lohman TG, Harsha DW, et al, “Body fatness and risk for elevated blood pressure, total cholesterol, and serum lipoprotein in children and adolescents,” *American Journal of Public Health*, Vol. 82, 358-363, (1992).