CALIFORNIA STATE BOARD OF EDUCATION

MAY 2004 AGENDA

SUBJECT	
Textbook Weight in California: Analysis and Recommendations	☒ **Action**
	☒ **Information**
	☐ **Public Hearing**

RECOMMENDATION

Review the final recommendations of the Curriculum Commission, and take action as deemed appropriate.

SUMMARY OF PREVIOUS STATE BOARD OF EDUCATION DISCUSSION AND ACTION

An initial version of the "Textbook Weight in California" report was presented to the State Board at its meeting on July 9, 2003, to serve as a starting point for dialogue between the State Board, the Superintendent of Public Instruction, the education community, the publishing industry, and other interested parties. Various options were discussed to move toward a system of textbook weight standards. The State Board forwarded the initial report to the Curriculum Commission, so that the Commission would report back to the Board in early 2004 to meet the statutory deadline of July 1, 2004.

SUMMARY OF KEY ISSUES

Assembly Bill 2532 authored by Assemblymember Pacheco, Chapter 1096 of the Statutes of 2002, requires the State Board to adopt maximum weight standards for elementary and secondary school textbooks by July 1, 2004. This legislation specifically requires the Board to take into consideration the health risks to students when devising these new standards.

Following the State Board's initial examination of this issue at its July 2003 meeting, a "working group" of stakeholders, members of the Curriculum Commission, and California Department of Education staff convened to discuss the data findings and options. The Executive Committee of the Curriculum Commission discussed the issue at its November 2003 meeting, and at its meeting of January 15, 2004, received a presentation from MeadWestvaco on the implication of using lighter basis weight papers in textbooks. Finally, at their meeting of April 9, 2004, the Commission reviewed a revised version of the textbook weight report that incorporated recommendations developed by the Department of Education, and moved to adopt final recommendations to forward to the State Board of Education at its May 2004 meeting.

The findings and recommendations of the Commission are as follows:

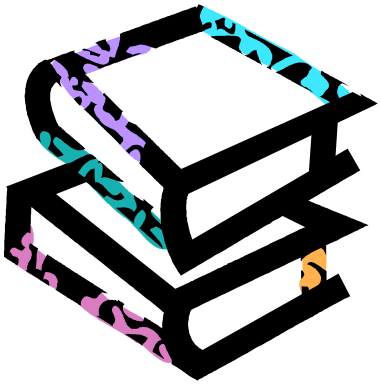
- **No single program is excessive, but together all present a danger.** The initial version of the accompanying report on textbook weight demonstrated that the combined weight of instructional materials in the four core areas exceed the maximum recommended weight for students to carry on a regular basis.
- **Setting an absolute weight cap alone is not the answer to the complicated issue of student burdens.** Putting strict caps on textbook weight raises new problems of cost, durability, and accessibility for local districts, and may in fact hinder the ability of students to gain access to high quality materials.
- Instead, **the State Board should consider requiring publishers to provide local districts with options for lighter-weight materials**, such as split volumes, electronic editions, or classroom sets. Many of these options already exist, but by disseminating information about these alternatives to districts, and by requiring publishers to provide this option, then districts, which are in the best position to judge the needs of their students, can choose the solutions that are best suited to their particular situation.
- Based on the study of current textbooks included in the accompanying report, **the Commission recommends the following threshold weights for requiring a lighter-weight option**. Any textbooks that are over the recommended weight for the appropriate grade level would have to be accompanied by a lighter-weight option that districts would have the option to purchase for their students.
  - **Grades K-4: 3 lbs**
  - **Grades 5-8: 4 lbs**
  - **Grades 9-12: 5 lbs**
- Furthermore, the Commission moved to **append the following additional recommendations** to the report:
  - Inform districts/parents of the textbook weight standards, the risks to student health from carrying heavy backpacks, and the options for lighter weight instructional materials;
  - Encourage districts to seek other alternative solutions to backpack weight, including utilizing lockers, maintained by school or community groups;
  - Periodically review adopted policy and textbook weight standards.

FISCAL ANALYSIS (AS APPROPRIATE)

The recommendations by the Curriculum Commission are anticipated to be cost-neutral with reference to instructional materials. Administrative costs for CDE would include staff time and mailing costs (approximately $3500) for preparing notification of publishers, districts, and other interested parties in the field regarding the textbook weight standards.

ATTACHMENT

Attachment 1: Textbook Weight in California: Data and Analysis (22 pages)



Textbook Weight in California: Data and Analysis

Revised with Feedback from the Curriculum Commission, the Education Community, and the Publishing Industry

A Report Prepared for the State Board of Education

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April 14, 2004

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Executive Summary
On AB 2532: Textbook Weight Legislation

Introduction:

Assembly Bill 2532 by Assemblymember Pacheco, Chapter 1096 of the Statutes of 2002, requires the State Board of Education to adopt maximum weight standards for elementary and secondary school textbooks by July 1, 2004. This legislation specifically requires the Board to take into consideration the health risks to students when devising these new standards.

This report outlines some of the major issues surrounding the topic of heavy textbooks and the impact on student health, including the research into student back injuries as a result of heavy backpacks. The report focuses on data collected by weighing State Board-adopted textbooks for the core subjects of Reading/Language Arts, Mathematics, History-Social Science, and Science for grades K-8, as well as a sampling of locally-adopted materials for grades 9-12 in the core areas. This data collection was conducted in order to establish a baseline understanding of the scope of the problem.

Analysis of Data Collection:

- **This report only analyzes the weight of textbooks**, and does not take into account the other materials that students may be carrying in their backpacks.
- **Pediatricians and chiropractors recommend that students not carry more than fifteen percent of their body weight in a backpack**, or risk negative health impacts.
- **The data demonstrates that the *individual weight* of State Board-adopted (for grades 1-8) and locally adopted (for grades 9-12) textbooks in the four core subjects of History-Social Science, Mathematics, Reading/Language Arts, and Science does not exceed the maximum weight that students should carry, as recommended by health professionals.** A selection of textbooks was weighed at various Sacramento area schools and Learning Resource Display Center (LRDC) sites.
- **However, the *combined average weight* of the textbooks in the four core areas does exceed this recommended maximum at nearly all grade levels from 1-12, presenting a health hazard for students.** For this grade range, the combined average weight of the four core textbooks ranges from just over 8 pounds at 1st grade to over 20 pounds at 11th grade. These totals represent as little as 11.3% of body weight for 12th grade boys to as much as 17.7% of body weight for 2nd grade girls. In the data summary, the combined average textbook weight for every grade level except for 10th grade boys and 12th grade boys and girls is over this recommended level.

Summary of Action:

An initial version of this report was presented to the State Board of Education at their meeting on July 9, 2003, to serve as a starting point for the dialogue between the State Board of Education, the Superintendent of Public Instruction, the education community, the publishing industry and other interested parties to discuss the options and the best interests of the students of California in moving toward a system of textbook weight standards. The State Board elected to forward the initial report to the Curriculum Development and Supplemental Materials Commission (Curriculum Commission), to report back to the Board in early 2004 in anticipation of final adoption of weight standards by the Legislative deadline of July 1, 2004.

A "working group" of stakeholders, members of the Curriculum Commission, and California Department of Education staff, convened to discuss the data findings and options related to this issue. The Executive Committee of the Curriculum Commission discussed the issue at their November 2003 meeting, and at their meeting of January 15, 2004, received a presentation from MeadWestvaco on the implication of using lighter basis weight papers in textbooks. Finally, at their meeting of April 9, 2004, the Commission reviewed a revised version of the textbook weight report that incorporated recommendations developed by the Department of Education, and moved to adopt final recommendations to be forward to the State Board of Education at its May 2004 meeting.

Recommendations:

- **No single program is excessive, but together all present a danger.** The initial version of this report on textbook weight demonstrated that the combined weight of instructional materials in the four core areas exceed the maximum recommended weight for students to carry on a regular basis.
- **Setting an absolute weight cap alone is not the answer to the complicated issue of student burdens.** Putting strict caps on textbook weight raises new problems of cost, durability, and accessibility for local districts, and may in fact hinder the ability of students to gain access to high quality materials.
- Instead, **the State Board should consider requiring publishers to provide local districts with options for lighter-weight materials**, such as split volumes, electronic editions, or classroom sets. Many of these options already exist, but by disseminating information about these alternatives to districts, and by requiring publishers to provide this option, then districts, which are in the best position to judge the needs of their students, can choose the solutions that are best suited to their particular situation.

- Based on the study of current textbooks included in this report, **the Commission recommends the following threshold weights for requiring a lighter-weight option**. Any textbooks that are over the recommended weight for the appropriate grade level would have to be accompanied by a lighter-weight option that districts would have the option to purchase for their students.
  - **Grades K-4: 3 lbs**
  - **Grades 5-8: 4 lbs**
  - **Grades 9-12: 5 lbs**
- Furthermore, at its meeting of April 9, 2004, the Commission moved to **append the following additional recommendations** to the report:
  - Inform districts/parents of the textbook weight standards, the risks to student health from carrying heavy backpacks, and the options for lighter weight instructional materials;
  - Encourage districts to seek other alternative solutions to backpack weight, including utilizing lockers, maintained by school or community groups;
  - Periodically review adopted policy and textbook weight standards.

The Scope of the Problem

Although the research on the subject of backpack-related injuries to students is fairly recent, there already exists conflicting views on the significance of the problem. The California legislation, Assembly Bill 2532, cited the raw data on various categories of injuries collected by the United States Consumer Product Safety Commission (CPSC) from emergency rooms, and concluded that in 1999, "more than 3,400 pupils between 5 and 14 years of age, inclusive, sought treatment in hospital emergency rooms for injuries related to backpacks or book bags." According to the CPSC data, over the period from 1994-2000, more than 23,000 youths ages 6 to 18 were treated in emergency rooms for backpack-related injuries.[1]

However, a recent article by Brent Wiersema, Eric Wall, and Susan Foad, entitled "Acute Backpack Injuries in Children," in the journal Pediatrics has raised some questions about this data. A panel of medical researchers analyzed the CPSC's data and found that only a small percentage of backpack injuries treated in emergency rooms are related to the weight of the backpack. According to this study, most backpack-related injuries correspond to "nonstandard" use of a pack, including tripping over it or getting hit with one. The study found that the most common means of injury were tripping over the backpack (28%), followed by wearing (13%), and getting hit by the backpack (13%). Back injuries comprised only 11% of the injuries suffered by students, with head injuries most common at 22%.[2]

This study raises doubts about the health dangers of heavy backpacks. However, it too fails to completely illuminate the scope of the problem. Both the often-cited CPSC data and the Pediatrics study deal only with emergency room data, while back injuries tend to be chronic and treated in a doctor's office rather than in an emergency room. In addition, the Pediatrics study dealt with a very small sample of injuries, including only 247 students in its results. No studies exist that examine the broader picture of student back injuries, so ultimately it is primarily anecdotal evidence and media coverage that have shaped this debate.[3]

One issue is the general trend of removing lockers where students can store books in between classes. Lockers have been removed in many schools due to the proliferation

[1] Assembly Bill 2532, Chapter 1096. See also Kathy Boccella, "Some see a book ban as the cure for backpack bloat," Philadelphia Inquirer, 15 November 2002 (story online at <http://www.philly.com/mld/inquirer/4522888.htm>, 24 February 2003). CPSC data can be accessed directly online at < http://63.74.109.9/neiss/default.html> (24 February 2003).

[2] Brent Wiersema, Eric Wall, and Susan Foad, "Acute Backpack Injuries in Children," Pediatrics vol 111, no. 1 (January 2003), 163-166. See also "Study: ER backpack pains rarely involve backs," CNN.com, <http://www.cnn.com/2003/EDUCATION/01/06/backpack.injuries.ap/> (25 February 2003); Bill Lindelof, "Packs may be a pain, just not in the back," Sacramento Bee, 29 Wednesday 2003, available online at <http://www.sacbee.com/content/news/education/story/6017951p-6973953c.html> (25 February 2003).

[3] For example, see Bocella, "Some see a book ban..."; Sam Dillon, "Heft of Students' Backpacks Turns Into Textbook Battle," New York Times, 24 December 2002, A1; Michael Flaherty, "Textbook Torture for Students," San Francisco Examiner, 19 September 2002, available online at <http://www.examiner.com/news/default.jsp?story=n.backpacks.0919w> (25 February 2003).

of both weapons and drugs in schools. Districts face a double-edged sword in terms of locker searches; if they conduct searches without adequate cause, they risk a lawsuit claiming violation of a student's Fourth Amendment protections, but if they fail to conduct a search and a student later conducts violence with a weapon, sells drugs, etc., the district faces liability suits from the parents of victims affected by those crimes.[4] Confronted with these difficulties, some districts decide that having lockers is simply not worth this cost.

Another issue that must be kept in mind is the fact that many of the items found in students' backpacks today are not textbooks. Again, without lockers that can serve as a storage space, students even at the elementary grades may be carrying food, additional clothing, electronic devices such as cellular phones, pagers, and game machines, binders, assorted school supplies, and various personal effects. While it may appear that a solution would be to ban unnecessary personal items on school campuses, this would be extremely unpopular, and impossible to implement without backpack searches that would likely run into the legal minefield of Fourth Amendment suits mentioned above. Efforts to ban just cellular phones on school campuses, for instance, have often run into difficulties.[5]

Assembly Bill 2532 added Section 49415 to the California Education Code. This section requires the State Board of Education to adopt maximum weight standards for student textbooks in elementary and secondary schools by July 1, 2004. The following section of this report provides data on the actual weight of textbooks adopted by the State Board for grades 1-8, and by local districts for grades 9-12, to assist the Board as it prepares to meet this mandate.

The Data

The following tables were compiled by weighing textbooks at various locations during January and February 2003.[6] The primary focus was on student edition textbooks for the four core content areas (Reading/Language Arts, Mathematics, History-Social

[4] The current standard defined by Supreme Court decisions is that school officials must have a "reasonable suspicion" that they will find something that is illegal or against school rules. Some districts create rules specifically defining the locker as school property and granting officials the right of search, but even these policies are no guarantee that a district will win an expensive lawsuit filed after the fact. See, for example, New Jersey v. T.L.O., 468 U.S. 1214 (1984).

[5] For examples of the debates over cell phones in schools, see Patti Ghezzi, "Cellphone ban likely will be softened, Atlanta Journal-Constitution, 30 July 2002, online at <http://www.accessatlanta.com/ajc/metro/backtoschool/dekalb/cell.html> (25 February 2003); also Michelle Galley, "Cellphone Bans Get a Second Look," Education Week, 31 October 2001, online at <http://www.edweek.org/ew/newstory.cfm?slug=09cellphone.h21> (25 February 2003).

[6] Textbooks were weighed at the following locations: California Department of Education, 1430 N Street, Sacramento, CA 95814; Elk Grove Unified School District, 9510 Elk Grove-Florin Road, Elk Grove, CA 95624; Sacramento County Office of Education, 9738 Lincoln Village Drive, Sacramento, CA 95827; Mira Loma High School, 4000 Edison Avenue, Sacramento, CA 95821. The books were weighed with a Pelouze 10lb. digital scale provided by the California Department of Education. The CFIR Division is grateful for the assistance of those individuals who made their collections of materials available for this project, particularly Carol Teresi, Andrea Fiske, and Edith Crawford.

Science, and Science) for grades 1-12. Kindergarten materials were not weighed due to the fact that there is typically not a single student edition textbook for most programs at that grade level. Due to the incredible variety of supplemental materials, workbooks, homework assignments, literature libraries, experiment kits, and other materials that are included in these programs, ancillary materials were not weighed.

Grades 1-8

Materials from grades 1-8 were taken from the State Board's adoption lists from the four most recent standards-aligned adoptions: 1999 History-Social Science, 2000 Science, 2001 Mathematics, and 2002 Reading/Language Arts/English Language Development. An effort was made to be comprehensive; however, programs that did not rely primarily on a text, or reflect a regular course of study (e.g. the Reading/Language Arts/English Language Development Intervention Programs), were not included in the data summaries.

Grades 9-12

Data from grades 9-12 reflects more of a general sampling than a comprehensive list of available materials. Materials at these grade levels are adopted at the local level by resolution of the governing board of a local education agency (LEA), and no centralized listing of such materials is maintained by the State Board or the Department of Education. As a result, there is a broader range of materials available at these grade levels. The data provided for grades 9-12 demonstrates a selection of materials that includes both regular and honors high school texts.

Publisher names are anonymous throughout the data tables; however, a full listing of all publishers cited in this report is provided in Appendix 1.

Programs that contained more than one text per grade level (i.e. a multi-volume series) were averaged and that average entered in the data field for that grade level. Such programs have been marked with a footnote.

Table 1: Reading/Language Arts, Grades 1-8

Grade Level **Publisher**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Publisher A	11.2oz[7]	2lbs, 14oz[7]	2lbs, 6.6oz[7]	4lbs, 0.6oz	3lbs, 14.2oz	3lbs, 11.2oz		
Publisher B	2lbs, 2.5oz[7]	2lbs, 9.2oz[7]	2lbs, 2.4oz[7]	3lbs, 8.0oz	3lbs, 14.6oz	4lbs, 0.6oz		
Publisher C						4lbs, 7.4oz	4lbs, 10.0oz	4lbs, 13.6oz
Publisher D						3lbs, 12.2oz	3lbs, 13.8oz	4lbs, 0.4oz
Publisher E						4lbs, 12.6oz	4lbs, 14.4oz	5lbs, 3.8oz
Publisher F						4lbs, 2.6oz	4lbs, 4.4oz	4lbs, 12.0oz
Average for grade level	1lb, 6.9oz	2lbs, 11.6oz	2lbs, 4.5oz	3lbs, 12.3oz	3lbs, 14.4oz	4lbs, 2.4oz	4lbs, 6.7oz	4lbs, 11.5oz

[7] This program has a multiple-volume set of textbooks at this grade level; the value provided here is an average of those volumes.

Table 2: Mathematics, Grades 1-8

Grade Level **Publisher**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Publisher A	3lbs, 6.6oz	3lbs, 6.8oz	3lbs, 10.0oz	3lbs, 10.8oz	3lbs, 8.8oz			
Publisher E[8]						2lbs, 3.8oz	2lbs, 7.2oz	3lbs, 3.6oz
Publisher E						[9]	4lbs, 3.4oz	3lbs, 2.0oz[7]
Publisher F							4lbs, 3.0oz	3lbs, 6.0oz
Publisher G	3lbs, 5.4oz	3lbs, 4.4oz	3lbs, 10.0oz	3lbs, 10.8oz	3lbs, 13.2oz	4lb, 1.0oz		
Publisher H	2lbs, 14.6oz	2lbs, 15.8oz	3lbs, 12.2oz	3lbs, 14.2oz	3lbs, 14.8oz	3lbs, 14.4oz		
Publisher I	1lb, 14.8oz	1lb, 14.8oz	2lbs, 11.0oz	2lbs, 11.2oz	2lbs, 10.8oz			
Publisher J	2lbs, 13.8oz	2lbs, 13.4oz	2lbs, 8.4oz	2lbs, 8.8oz	2lbs, 10.4oz	2lbs, 12.0oz		
Publisher K			2lbs, 8.6oz	2lbs, 10.8oz	3lbs, 5.0oz	4lbs, 4.0oz		
Average for grade level	2lbs, 14.2oz	2lbs, 14.2oz	3lbs, 2.0oz	3lbs, 3.1oz	3lbs, 5.2oz	3lbs, 7.0oz	3lbs, 9.9oz	3lbs, 3.9oz

Table 3: History-Social Science, Grades 1-8

Grade Level **Publisher**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Publisher A			2lbs, 4.2oz	2lbs, 6.4oz	3lbs, 11.0oz	3lbs, 3.2oz	3lbs, 4.4oz	4lbs, 2.4oz
Publisher C								4lbs, 7.4oz
Publisher D								4lbs, 11.4oz
Publisher D								2lbs, 15.0oz
Publisher F								4lbs, 5.4oz

[8] This publisher submitted two programs that were both adopted.
[9] The student edition textbook for this grade level was not available for weighing.

Grade Level **Publisher**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Publisher G	1lb, 12.4oz	1lb, 14.0oz	2lbs, 8.0oz	2lbs, 12.8oz	3lbs, 11.0oz	2lbs, 15.2oz		
Publisher H	2lbs, 1.0oz	2lbs, 4.4oz	2lbs, 8.8oz	3lbs, 0.8oz	3lbs, 15.8oz	3lbs, 8.2oz		
Publisher L								3lbs, 15.6oz
Publisher M[10]					1lb, 9.2oz			1lb, 9.2oz
Publisher N[11]	10.4oz	10.4oz	13.4oz		14.4oz	6.9oz		
Average for grade level	1lb, 7.9oz	1lb, 9.6oz	2lbs, 0.6oz	2lbs, 12.0oz	2lbs, 12.3oz	2lbs, 8.4oz	3lbs, 4.4oz	3lbs, 11.8oz

Table 4: Science, Grades 1-8

Grade Level **Publisher**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Publisher A	1lbs, 14.0oz	1lbs, 14.0oz	2lbs, 9.4oz	10.2oz[12]	10.9oz[12]			
Publisher C						3lbs, 1.8oz[7]	3lbs, 5.0oz[7]	3lbs, 0.2oz[7]
Publisher D						3lbs, 8.8oz	3lbs, 13.0oz	3lbs, 10.2oz
Publisher F						4lbs, 1.8oz	4lbs, 5.4oz	4lbs, 10.4oz
Publisher G	2lbs, 4.6oz	2lbs, 6.0oz	2lbs, 10.8oz	2lbs, 13.6oz	3lbs, 2.2oz	3lbs, 3.4oz		
Publisher H	2lbs, 7.4oz	2lbs, 7.0oz	2lbs, 10.4oz	2lbs, 12.8oz	3lbs, 0.6oz			
Average for grade level	2lbs, 3.3oz	2lbs, 3.7oz	2lbs, 10.2oz	2lbs, 1.5oz	2lbs, 4.6oz	3lbs, 8.0oz	3lbs, 13.1oz	3lbs, 12.3oz

[10] This program was adopted for grades 5 and 8 and consists of an eleven volume series. The value given is an average of these titles.
[11] This publisher's programs are multimedia-based. The values given are for the student activity books that accompany the program.
[12] This program has unit books for this grade level, rather than a single text. The value given is an average of the different books.

Table 5: Reading/Language Arts, Grades 9-12[13]

Grade Level **Publisher**	**9**	**10**	**11**	**12**
Publisher D	4 lbs, 14.6oz	4lbs, 9.2oz	5lbs, 10.2oz	5lbs, 1.0oz
Publisher H				2lbs, 10.0oz[14]
Average for grade level	4lbs, 14.6oz	4lbs, 9.2oz	5lbs, 10.2oz	3lbs, 13.5oz

Table 6: Mathematics, Grades 9-12[15]

Domain **Publisher**	**Algebra**	**Geometry**	**Trigo-nometry/ Algebra II**	**Precalculus/ Calculus/ Advanced Mathematics**
Publisher A			3lbs, 0.8oz	6lbs, 3.4oz
Publisher C	4lbs, 10.4oz	4lbs, 14.6oz	5lbs, 8.2oz	4lbs, 10.0oz
Publisher E	3lbs, 3.6oz	4lbs, 3.4oz		3lbs, 11.6oz
Publisher F	3lbs, 6.0oz			
Publisher O				4lbs, 6.4oz
Average for grade level	3lbs, 12.0oz	4lbs, 9.0oz	4lbs, 4.5oz	4lbs, 11.9oz

[13] Frequently, high school reading/language arts programs focus primarily on reading novels, rather than a single unified student edition textbook.
[14] This is an anthology for an honors literature course.
[15] The *Mathematics Content Standards* and the *Mathematics Framework for California Public Schools* do not mandate which domains are covered at each grade level, instead providing a range of levels at which each domain may be taught. Since there is such a range of students at the secondary level, and great variety between programs, the categories here offer only one possible progression from grades 9-12.

Table 7: History-Social Science, Grades 9-12

Grade Level **Publisher**	**9**	**10**	**11**	**12**
Publisher C	4lbs, 5.8oz		5lbs, 4.4oz	3lbs, 14oz[16]
Publisher E		4lbs, 0.6oz	6lbs, 0.0oz	
Publisher F		4lbs, 11.6oz	4lbs, 15.6oz	
Publisher G		5lbs, 0.6oz		
Publisher P				3lbs, 8.2oz
Average for grade level	4lbs, 5.8oz	4lbs, 9.6oz	5lbs, 6.7oz	3lbs, 11.1oz

Table 8: Science, Grades 9-12[17]

Domain **Publisher**	**Earth Science**	**Chemistry/ Physical Science**	**Biology/ Life Science**	**Physics**
Publisher C	4lbs, 5.4oz	4lbs, 5.4oz	5lbs, 4.4oz[18]	3lbs, 9.8oz
Publisher D		4lbs, 3.0oz	4lbs, 5.8oz[18]	
Publisher F			5lbs, 12.2oz	4lbs, 14.4oz
Publisher H		5lbs, 13.4oz		
Publisher O		4lbs, 2.4oz	6lbs, 6.6oz	2lbs, 13.2oz
Publisher Q		3lbs, 2.4oz		
Average for domain	4lbs, 5.4oz	4lbs, 5.3oz	5lbs, 7.3oz	3lbs, 12.5oz

[16] This publisher offers both a government and an economics text at this grade level; the value given here is an average of these two.
[17] The *Science Content Standards* are not defined by grade level, but rather by domain. Thus the exact progression of grades through these subjects may vary by LEA; the progression given here is only a common example for grades 9-12.
[18] This publisher offered more than one program for this grade level (including both honors and standard level programs). The value given here is an average of the publisher's offerings at this level.

The data support the conclusion that textbooks are a significant percentage of a student's overall backpack weight. Chiropractors, physical therapists, and pediatricians have recommended that backpacks do not exceed fifteen percent of a child's body weight.[19] Table 9 offers a comparison of the combined weight of textbooks in the four core content areas with the average weight of a student at each grade level. The ratio of these two weights is provided as a percentage, which can be compared with the fifteen percent goal. Since average student weight data per grade level varies by gender, results for both genders was provided in this table. While statistically the difference in weights across gender is minor (<5%) through the elementary and middle grades, it becomes quite significant in high school.

Table 9: Combined Weight of Average Textbooks as a Percentage of Average Student Weight

Grade Level	Average Textbook Weight, Four Core Content Areas	Average Student Weight, Boys[20] (pounds)	Book Weight as Percentage of Student Weight, Boys	Average Student Weight, Girls (pounds)	Book Weight as Percentage of Student Weight, Girls
1	8lbs, 0.3oz	48.5	16.5%	47.5	16.9%
2	9lbs, 7.1oz	54.5	17.3%	53.5	17.7%
3	10lbs, 1.3oz	61.25	16.5%	60.75	16.6%
4	11lbs, 12.9oz	69	17.1%	69	17.1%
5	12lbs, 4.5oz	74.5	16.5%	77	15.9%
6	13lbs, 9.8oz	85	16.0%	87.5	15.6%
7	15lbs, 2.1oz	89	17.0%	94	16.1%
8	15lbs, 7.5oz	99	15.6%	103	15.0%
9	17lbs, 5.8oz	112	15.5%	109	15.9%
10	18lbs, 1.1oz	123	14.7%	114	15.8%
11	20lbs, 12.7oz	134	15.5%	118	17.6%
12	16lbs, 1.0oz	142	11.3%	121	13.3%

The most basic conclusion evident in this table is immediately clear: the combined average weight of **student textbooks in just the four core subjects meets or exceeds the recommended total backpack weight for students in grades 1-9, for girls in grade 10, and both genders in grade 11.** For 10th grade boys and both genders in grade 12, the weight of the four books did not exceed the fifteen percent

[19] Assembly Bill 2532, Chapter 1096 of the Statutes of 2002, Section 1.(d); Flaherty, "Textbook Torture..."
[20] Source: National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000), charts available at <http://www.cdc.gov/growthcharts> (25 February 2003).

threshold, but still represented a considerable burden exclusive of all other backpack content.

It must be kept in mind that the textbooks weighed indicate only a portion of a student's total backpack weight, and that the values given are an average. Textbooks for other subjects, novels, homework assignments, gym clothes, food, school supplies, and personal possessions are all commonly found in a student's backpack but are beyond the scope of this report. Thus, it would not be surprising to find students carrying backpacks heavier than recommended by health professionals.

The Challenges of Reducing Textbook Weight

This report has demonstrated that current textbook weights exceed the maximum total burden recommended by health professionals, when books from the four core subjects are carried all at once by a student in a backpack. But simply mandating that publishers reduce the weight of their books is a problematic solution.

Content

Part of the issue with the weight of textbooks is the requirement placed upon publishers by the State Board to include instruction tailored to California's rigorous content standards. Thirty months before an adoption of instructional materials, publishers are presented with an evaluation criteria that outlines the bases upon which a submitted program will be evaluated. These criteria documents can be quite extensive. For example, the evaluation criteria adopted by the State Board and used in the 2002 Reading Language Arts/English Language Development Primary Adoption included nearly one hundred individual items in five criteria categories, the overwhelming majority of which were required to be provided in materials suitable for state adoption. This criteria included requirements for publishers to include materials tailored to the educational requirements of special needs students and English learners, in addition to the regular curriculum. This has placed publishers in the position of having to provide materials that thoroughly cover the content standards and meet the requirements of the State Board-adopted criteria, while maintaining standards of quality for their books and keeping them affordable for their customers. Publishers themselves have stated that the increase in the weight of their materials has been driven by the content requirements established by the state.[21] However, no study has been conducted directly comparing the weight of standards-based vs. non-standards-based instructional materials.

Lighter Materials

If content cannot reasonably be reduced, what about reducing the weight of the material from which the book is made?

[21] Flaherty, "Textbook Torture..."

The publishing industry has responded that it cannot reduce the weight of textbooks without compromises in terms of cost and quality. At its meeting of January 15, 2004, the Curriculum Commission heard a presentation by Gene Malarsky of MeadWestvaco. MeadWestvaco is the largest textbook paper producer in the nation, and provides paper for the majority of textbook publishers that sell instructional materials in California. Mr. Malarsky examined the specific question of whether reducing the weight of paper used from the current basis of weight of 45 lbs., to a lighter weight of 40 lbs. would be a workable step in reducing the overall weight of student textbooks.

The publishing industry follows the national manufacturing standards adopted by the National Association of School Textbook Administrators (NASTA), which is comprised of state textbook adoption boards, publishers, and book manufacturers. NASTA sets specifications for paper to be used in elementary and secondary student texts. These specifications include targets for quality, readability, and durability, by setting basis weight, opacity, and tear strength standards. In his presentation to the Commission, Mr. Malarsky noted that lighter weight papers are difficult to manufacture, more expensive, and less durable than the paper in current use. Furthermore, the lighter paper may impact both the opacity of the paper and the surface smoothness, features that both affect the readability of the text. Mandating a switch to 40 lb. paper would involve both a difficult switchover in the paper manufacturing process and a higher cost passed on to the publishers, which would most likely have to be passed on to districts, for at most a marginal gain in terms of lighter overall weight. Therefore, it is unlikely that such a reduction would be a workable solution to the problem of heavy textbooks.[22]

Alternative Solutions

However, other solutions do exist, and are currently available to districts purchasing state-adopted programs. One strategy for the Board to adopt would be to notify districts of these alternative solutions, and to encourage publishers to continue developing these lower-weight alternatives when marketing textbooks for sale in California.

Split Volumes

The tactic of dividing large textbooks into multiple volumes is already frequently practiced, and several of the programs adopted by the State Board of Education at the K-8 level already use this strategy. In particular, textbooks from the State Board-adopted programs at the lower elementary grades are frequently split into multiple volumes. While splitting volumes obviously reduces the weight that must be carried by the student, as the unused volume(s) can be left at the school site or at home, this practice creates additional impacts that must be considered. Some extent of the weight is duplicated in the split volumes, both in terms of absolute physical concerns like covers and binding, and in terms of duplicate content that appears in every volume, like

[22] PowerPoint Presentation, "Textbook Paper Presentation," by MeadWestvaco, presented to the Executive Committee of the Curriculum Development and Supplemental Materials Commission on January 15, 2004.

tables of contents and glossaries. In almost all cases, the weight of the split volumes collectively is significantly greater than a single-volume text would otherwise be. Care must be taken in the preparation of lesson plans to reflect the split in the material; if a student is frequently required to reference earlier material for review, for instance, and that material is only found in the earlier volume, the intent of splitting volumes may actually backfire as the student ends up carrying both volumes to and from the school site and home.

A related concern is the impact in terms of cost. Since the multiple volumes must each be bound, the cost for producing a multi-volume text may be greater than the cost of producing an equivalent single-volume edition. This additional cost may be passed on to districts. For example, the two K-6 reading programs adopted in the 2002 Reading/Language Arts/English Language Development adoption each offer a split-volume 3rd grade student anthology, and a single-volume 4th grade student anthology. The first publisher's two third grade books contain only 105% of the page count of the fourth grade book, but their combined cost is 149% as much as the fourth grade text. The second publisher's third grade books contain 102% of the page count of the fourth grade book, and cost 137% as much. Similarly, one of the Board-adopted mathematics programs has an 8th grade algebra book that comes in a single-volume and two-volume edition; the two volumes, purchased separately, cost 152% the price of the single volume.[23]

The split volume does offer a solution when single volume editions of a given text are excessively heavy. The State Board could encourage this solution by mandating that particularly large books that are over a particular weight be split into smaller volumes or offer another of the solutions discussed in detail below. These solutions include the Board requiring publishers to inform districts of their low-weight options.

Electronic Publishing

Currently, a lot of attention is being paid to the possibilities offered by technology to alleviate the problem of weighty, expensive textbooks. Indeed, programs already exist that utilize computer-based or multimedia presentation in lieu of traditional textbooks. Sun Valley High, a public charter school near San Diego, uses a combination of online services and CD-ROM based programs that has eliminated the need for textbooks in some subjects. Many of the currently adopted programs at the K-8 levels already have significant elements that are technology based, and it is anticipated that more fully technology-based programs will be developed in future years. In addition, improvements in "e-book" technology offers students the prospect of carrying all of their instructional materials and supplemental readings in a single portable electronic device that is lighter than a single current textbook.[24]

[23] Price quotes for the Board-adopted K-8 programs are contained on the CDE Web site at <http://www.cde.ca.gov/cfir/pl/index.asp> (18 February 2004).
[24] Denis Poroy, "Electronic assignments eliminate a pain the... back," USA Today, 10 November 2002, online at <http://www.usatoday.com/tech/news/2002-10-10-kids-computers_x.htm> (27 February 2003).

While technology-based programs seem to offer a perfect solution to the problem of weighty backpacks—since a single CD-ROM can contain all of the information contained in a hefty hardbound text—there are still important concerns involved with this approach. Perhaps the most significant issue is the fact that these programs require a computer. While computers are increasingly common at schools, they are not always available for a student at home. This situation is particularly pronounced in low-wealth urban and rural districts, where the rate of computer ownership at home is very low in comparison to middle-class suburban districts. Thus the utilization of computer-based curriculum on a broad scale raises a substantial equity issue that will have to be addressed as these programs become more widely available.

However, having publishers offer an e-text alternative of their program, either via a CD-ROM or the Internet, may give local districts added flexibility in addressing the issue of students burdened with weighty textbooks. Furthermore, online or CD-ROM based texts can furthermore provide the opportunity for interactive assignments and/or assessments that can help the student in assimilating the curriculum.

Classroom Sets

A final option to the problem of overweight backpacks that is currently available to districts is the purchase of more than one set of materials, one for the classroom and another that students could take home for an entire term. This solution has been already implemented in a number of districts, but can be expensive. However, this may actually save districts some money in the long run, as the use of classroom sets of textbooks may reduce wear-and-tear on books and make them last longer. And when applied on the scale of an entire district, the marginal increase of an additional set can be mitigated. For instance, if a course is taught five times a day in a given room, then the cost of an additional set of books for the room is only 20% greater than the cost of just providing books to the five groups of students that take the course.

Those who support the concept of classroom sets and wish to mitigate the cost impacts have suggested working with publishers to make second sets of instructional materials available to districts at a reduced cost and eliminate gratis components. This may be an option that the State Board may wish to facilitate, allowing publishers with books that are heavier than the maximum standard to meet the requirement for lighter options by providing classroom sets of their programs to districts at a discounted rate.

Conclusions

This report has shown that textbooks in the four core areas exceed the maximum recommended weight for students to carry on a regular basis. With this information, it is clear that the actual weight of backpacks, given the presence of other materials carried by an average student, far exceeds the recommendations of health professionals.

However, it is not clear that the solution to this problem is imposing a strict maximum weight standard, as required by the Legislature with the passage of AB2532. First off,

consultation with publishers and the review of this subject by the Curriculum Commission has indicated that reducing the raw weight of texts is not feasible without sacrificing durability, readability, and cost. Even if publishers switch to lighter basis weight papers and alternative cover materials, for example, the improvement in terms of lessening weight would be at best marginal, in exchange for structurally weaker books that would also cost more.

While this report has demonstrated that the information about injuries related to heavy textbooks is at best anecdotal, it does not deny that a problem exists. However, the issue of weighty backpacks is primarily a local one, and the solutions that come from Sacramento should ideally facilitate local solutions. Mandating that books be lighter is not going to reduce the quantity of additional materials that students carry around in their backpacks, nor is it going to address the problem of backpacks that are worn improperly, or the absence of lockers or other convenient places to store books when a student is in the classroom. The best course is likely to promote the options that are available to districts right now, and to encourage publishers to develop and facilitate these options so that districts are in a position to choose the materials that best meet the needs of their students.

Appendix 1: Publisher Key

The following table lists the publishers referenced in the data tables within this report.

Publisher A	Houghton Mifflin
Publisher B	SRA/McGraw-Hill
Publisher C	Glencoe/McGraw-Hill
Publisher D	Holt, Reinhart and Winston
Publisher E	McDougal Littell
Publisher F	Prentice Hall
Publisher G	McGraw-Hill School Division
Publisher H	Harcourt
Publisher I	CSL Associates
Publisher J	Sadlier
Publisher K	Saxon
Publisher L	Scott Foresman
Publisher M	Oxford University Press
Publisher N	Decision Development Corporation
Publisher O	Addison Wesley
Publisher P	Longman
Publisher Q	Brooks/Cole

Appendix 2: Assembly Bill 2532

BILL NUMBER: AB 2532 CHAPTERED
BILL TEXT

CHAPTER 1096
FILED WITH SECRETARY OF STATE SEPTEMBER 29, 2002
APPROVED BY GOVERNOR SEPTEMBER 29, 2002
PASSED THE ASSEMBLY AUGUST 28, 2002
PASSED THE SENATE AUGUST 27, 2002
AMENDED IN SENATE AUGUST 15, 2002
AMENDED IN ASSEMBLY MAY 23, 2002
AMENDED IN ASSEMBLY MAY 1, 2002

INTRODUCED BY Assembly Members Rod Pacheco, Bogh, and Frommer
(Principal coauthor: Senator Speier)
(Coauthors: Assembly Members Longville, Reyes, and Zettel)

FEBRUARY 21, 2002

An act to add Section 49415 to the Education Code, relating to pupil health.

LEGISLATIVE COUNSEL'S DIGEST

AB 2532, Rod Pacheco. Textbook weight.

Existing law requires the governing board of a school district to give diligent care to the health and physical development of pupils.

This bill would require the State Board of Education, on or before July 1, 2004, to adopt maximum weight standards for elementary and secondary school textbooks.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. The Legislature finds and declares all of the following:

(a) Backpacks of elementary and secondary school pupils often contain textbooks, binders, calculators, personal computers, lunches, a change of clothing, sports equipment, and more.

(b) Elementary and secondary school pupils are carrying backpacks weighing as much as 40 pounds.

(c) Chiropractors, physical therapists, and pediatricians are seeing an increased number of children for spinal column injuries, nontraumatic back pain, and significant postural changes from overloaded backpacks.

(d) Chiropractors and pediatricians recommend that backpacks not exceed more than 15 percent of a pupil's body weight.

(e) In 1999, more than 3,400 pupils between 5 and 14 years of age, inclusive, sought treatment in hospital emergency rooms for injuries related to backpacks or book bags according to the United States Consumer Product Safety Commission.

SEC. 2. Section 49415 is added to the Education Code, to read:

49415. On or before July 1, 2004, the State Board of Education shall adopt maximum weight standards for textbooks used by pupils in elementary and secondary schools. The weight standards shall take into consideration the health risks to pupils who transport textbooks to and from school each day.