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NATIONAL WILDLIFE FEDERATION

NewPage

A Research Study on Textbook Recycling in America

Recommendations for Proper Disposal and Repurposing at the End of a Textbook's Useful Life

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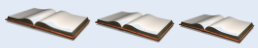
This report is the culmination of many months of research, not only by NWF and its Campus Fellows, but also our program partners – McGraw-Hill and NewPage Corporation. The National Wildlife Federation is greatly appreciative of the many hours that key staff from McGraw-Hill and NewPage Corporation devoted to this effort. Key collaborators include Mr. David W. Schaefer, Vice President, Paper Operations, McGraw-Hill; Mr. Brian Kozlowski, Director, Sustainable Development, NewPage Corporation; Mr. David Bonistall, Vice President, Environmental Health and Safety, NewPage Corporation; Ms. Kelly Xydis, Corporate Sales, NewPage Corporation; Ms. Laura Banken, NWF's Campus Fellow from the College of Saint Scholastica in Duluth, Minnesota, and Ms. Courtney Cochran, Coordinator, NWF's Campus Ecology Program.



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NewPage is the leading producer of printing and specialty papers in North America with $3.5 billion in net sales for the year ended December 31, 2011. NewPage is headquartered in Miamisburg, Ohio, and owns paper mills in Kentucky, Maine, Maryland, Michigan, Minnesota and Wisconsin. These mills have a total annual production capacity of approximately 3.5 million tons of paper. The company's product portfolio is the broadest in North America and includes coated, specialty, supercalendered and uncoated papers. These papers are used in commercial printing to create corporate collateral, magazines, catalogs, books, coupons, inserts and direct mail as well as in specialty paper applications including beverage bottle labels, food and medical packaging, pressure-sensitive labels and release liners. To learn more, visit www.NewPageCorp.com.

Since its formation in 1936, **National Wildlife Federation** has worked with affiliates across the country to inspire Americans to protect wildlife for future generations. NWF seeks to engage and educate its 4 million members, partners and supporters with a focus on restoring habitat, confronting global warming and connecting people with nature. To learn more about NWF's environmental education programs, visit the Eco-Schools USA and Campus Ecology web pages.

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Please Note: While many companies and associations are referenced throughout this report as a result of our research, it is not intended to suggest any endorsement, recommendation, or superiority of one company, product or service over another company, product or service.

Introduction

In late 2010, the National Wildlife Federation was awarded a grant from the McGraw-Hill Companies to develop and conduct a pilot textbook recycling project which would benefit McGraw-Hill's sustainability commitment, NewPage Corporation's desire to increase recovered fiber in the U.S., and National Wildlife Federation's (NWF) environmental education and sustainability programs, Eco- Schools USA and Campus Ecology.

Preliminary Textbook Recycling Project Objectives

- Perform research functions on textbook lifecycle/supply chain in K-12 and higher education markets;
- Research pilot regions and national textbook recycling initiatives, if any;
- Develop and implement two pilot textbook recycling events in two pilot regions (Minnesota and Wisconsin) during the school year;
- Conduct evaluation of pilot program effectiveness in both increased recovered fiber collection as well as integrating environmental education into school curriculum and practices; and
- Research pilot project expansion potential.

Preliminary Textbook Recycling Project Expected Outcomes

- Increased awareness of textbook recyclability;
- Increased awareness and education of consumption and waste, and the recycling process;
- Increased awareness of McGraw-Hill's and NewPage Corporation's commitment to sustainability; and
- Increased enrollment in NWF's Eco-Schools USA K-12 green schools program.

An integral component to this grant was to perform research functions on the textbook lifecycle and supply chain in K-12 and higher education markets and research each pilot region and national textbook recycling initiatives.

Preliminary Scope of Work

The National Wildlife Federation proposed selecting two Campus Ecology Fellows for research and coordination of this pilot program. Campus Ecology Fellowships allow students to pursue their vision of an ecologically sustainable future through tangible projects to confront global warming on campus and in the community. Fellows gain practical experience in the conservation field and first-hand knowledge of the challenges and opportunities inherent in successful conservation efforts. Campus Ecology Fellowships are available to undergraduate and graduate students depending on the experience level needed for the specific project. For this particular project, NWF felt that an undergraduate student with strong research and organizing skills would bring great energy to this project. Two Fellows were brought on to research and coordinate textbook recycling efforts in two pilot states, Wisconsin and Minnesota. The preliminary selection of these two states was made based on the physical proximity to the NewPage Duluth, Minnesota deinking facility so as to keep recycling transportation costs in check. The two Fellows selected were Laura Banken from the College of St. Scholastica, in Duluth, Minnesota, and Andrea Kent from the University of Wisconsin, La Crosse, Wisconsin.

Specific tasks for each of the Campus Ecology Fellows included research and event/logistics coordination with the schools, communities, and NewPage Corporation. Research tasks included:

- Research into lifecycle/supply chain of textbooks in the K-12 market as well as higher education. Research included online as well as interviews with key staff at each school. This research was intended to help identify trends and priorities for this initiative moving forward and be used in the education component of the effort.
- Research into how – and if – textbooks are currently recycled in two pilot regions. A majority of this research was done by interviewing staff at each school to find out if each location offered textbook recycling, how often, how many textbooks were recycled per location, and where the recycled books are taken for processing.

- Research into how – and if – textbooks are currently recycled nationally. A majority of this research was done online.
- Research on organizing and conducting promotional efforts at each school to develop a diverse strategy to promote the textbook recycling events. This research was done through case studies of schools that have participated in recycling events or other school-wide events. This research helped to identify successful strategies for promoting events as well as learning about policies and rules at the different locations related to hosting and promoting events.
- Research into special needs and other "materials processing" organizations in both Wisconsin and Minnesota that could take on the task of processing textbooks for recycling. Certain facilities, including the NewPage Duluth mill, need to have the hard-cover and bindings removed prior to recycling the text paper.
- Research to identify K-12 and higher education institutions in both Wisconsin and Minnesota.

A Change in Project Scope and Outcomes

A few months into the project, it was collectively determined that we needed to prioritize the research aspects of the project to determine both the technical and economic feasibility, as well as the challenges and opportunities for textbook recycling before we moved forward with hosting the events on campus. Preliminary research showed that collection did not seem to be the most challenging obstacle, but that the processing of the collected books could be problematic. So that the Campus Fellows had a better sense and increased knowledge of the book publishing, manufacturing, and recycling processes, a meeting was held with representatives from NWF, its Campus Fellows, NewPage Corporation, and McGraw-Hill at the NewPage Duluth, Minnesota deinking facility in June 2011.

Although research was an integral component in the original project's scope of work, it became even more important based on the discussions before and during the NewPage Duluth deinking facility visit. It was decided that a thorough research project needed to be conducted to determine the national and regional recycling landscape, if and how book printers and schools recycle casebound and softbound books, and the method that is used to recycle these books, and by whom.

Additional research tasks were added to the original scope of work and included outreach to:

- Over twenty book printers in ten states plus Canada that provided us with high-level information on recycling of printer overruns or damaged/incorrect book inventories;
- Over 45 waste haulers and recyclers in Minnesota and 150 haulers/recyclers in Wisconsin;
- 695 companies in the Solid Waste Association of North America (SWANA) recycling subcommittee listserv were sent requests for information;
- K-12 and higher education institutions in both Minnesota and Wisconsin, as well as nationally through a SurveyMonkey tool;
- Determine locations of deinking facilities in the U.S.; and
- Possible manufacturers of book de-binding equipment.

The more we learned through the extensive research process, the more the project changed. Our original assumption that textbook recycling was generally done through de-binding/de-casing the book proved incorrect. While there are some companies that go that route, the overwhelming majority of them actually grind or shred the whole book (covers and all), which meant that NewPage could not utilize that fiber in its deinking facility. Other mills can – and do – use this fiber source, as we found out through our research. And, there are certainly challenges to working with a variety of educational institutions on the physical logistics and coordination involved with recycling textbooks. One thing remains unchanged, though – there is definitely a demonstrated need and a desire for increased book recycling in the U.S.

Executive Summary

For the purposes of this report, we focused on the K-12 educational sector, the higher education sector, and book publishers. Our research project was designed to review the lifecycle of textbooks from production through disposal, and identify decision points that the general public must make, as well as recommendations for recycling of books at their end of useful life.

This report is based primarily on what currently happens to textbooks at the end of their useful life. While many schools and higher education students' dispose of books through selling them or donating them to any number of third parties, the book still is being used, and therefore is not part of our study. There is some reference to book donation programs in the case studies, however, where this practice occurred. We focused instead on those books that are either damaged, unwanted, or have no other useful purposes that are currently being sent to landfills. This "waste" is what we focused our research and evaluation on, with an intended outcome consisting of a set of recommendations that students and schools could adopt and implement.

Our original assumption was that recycling books would be relatively easy, but our research indicates that it requires discipline, structure, organization, an outlet and method for disposal and processing of books, and a change in behavior when it comes to educating the public about the recyclability of books. Some municipalities will accept books in their waste stream; others will not. Some recyclers will de-case the book (remove the cover and binding); others grind or shred the entire book. The positive news is that when books are recycled, the recovered fiber is being put to good re-use – generally in tissue, cardboard, linerboard, boxboard, or insulation, thereby saving virgin resources. The bad news is that not enough books are currently being recycled; however, this is a situation that can be changed – given enough incentive, education, and implementation of proven methods of disposal and processing.

Books to the ceiling,

Books to the sky,

My pile of books is a mile high.

How I love them! How I need them!

I'll have a long beard by the time I read them.

\- *Arnold Lobel*

The intent of this report is to highlight the lifecycle of textbooks, from production through disposal, and to provide needed information and recommendations to various interested sectors on how they might establish a textbook recycling program at their school, university, or in their community.

After all, an unusable or unwanted book is a terrible thing to waste.

Intended Audiences for this Report

Educational Institutions

With over 150,000 K-12 public, private, charter, and magnet schools in the U.S., there is a significant market for educational textbooks. Our research indicates that K-12 schools want to recycle textbooks, but generally do not have enough information on how to institute a textbook recycling program.

There are also over 4,100 higher education institutions in the U.S. today, a combination of 2-year and 4-year colleges and universities. While many have paper recycling programs, textbooks are generally not included in their recycling mix.

It should be noted that most educational institutions contract with different and multiple waste vendors which contributes to a lack of consistent methods for collection.

Publishers

There are currently 33 textbook publishers in the U.S., and 310 "General Education" publishers. Combined, they produce over 4.3 billion books annually, and are also responsible for disposing of obsolete book inventories over which they have control.

Books in the Landfill – An Avoidable Waste

The U.S. Environmental Protection Agency (EPA) produces a biannual in-depth report of materials in the solid waste stream, titled "*Municipal Solid Waste in the United States, 2009 Facts and Figures*." Books fall into the "Paper and Paperboard Non-durable Goods" category, and the 2009 EPA report indicates that while 33.3 percent of books in the waste stream are recovered, approximately **640,000 tons** are discarded into the landfill.[12] Books comprise roughly 0.4 percent of total municipal solid waste generation.

[1] U.S. EPA, *Municipal Solid Waste in the United States, 2009 Facts and Figures,* p.78.
[2] It should be noted that during our peer review, several questions arose about the reliability of the EPA MSW Characterization Report regarding whether or not EPA's numbers were based on the total number of books sold versus sampling landfills to statistically determine the percentage. However, we are not aware of other waste characterizations that include books so this could not be verified.

Lack of Consistent Methods for Collection

While some educational institutions may have recycling programs, they tend to focus on materials that are most commonly recycled, such as copy paper, aluminum and steel cans, plastics, and glass. Schools, both K-12 and higher education, tend to follow the same recycling processes and systems already in place by municipalities. Single-stream recycling is being adopted by an increasing number of American communities with mandates to increase diversion rates, lower local governmental costs and/or increase recycling program efficiencies. Curbside collection programs commonly require residents to do at least some sorting of the recyclable materials put at the curb. In recent years, however, there has been a trend toward single-stream curbside collections programs, in which no sorting is required of the residents. The American Forest & Paper Association (AF&PA) estimated that 50 percent of curbside recyclables collection programs were single-stream in 2007.[3]

Single-Stream Recycling:

Refers to a system in which all paper fibers, plastics, metals, and other containers are mixed in a collection truck, instead of being sorted into separate commodities. In single-stream, both the collection and processing systems are designed to handle this fully commingled mixture of recyclables, with materials being separated for use at a materials recovery facility (MRF).

These programs require that the materials be taken to a Materials Recovery Facility (MRF) for processing. Although EPA does not provide exact numbers of municipalities that participate in single-stream recycling, the number is expected to be higher than 50 percent at this time. Correspondingly, the number of MRFs has also grown from 70 in 2001 to over 160 in 2009.[4]

Survey Data on Recycling at Educational Institutions

As part of our research, we conducted several surveys of both K-12 and higher education institutions on recycling practices, with a specific emphasis on textbook recycling. These surveys were sent to schools in Minnesota and Wisconsin because of our plan to implement pilot projects in those two states due to their close proximity to the NewPage deinking facility in Duluth, Minnesota. Although we requested survey responses from over 570 K-12 schools in Minnesota and Wisconsin, only 27 responded to the survey. ***Because the survey response was so low, we did not feel we could extrapolate the data; therefore, we have treated it as anecdotal rather than statistical certainty.*** The majority (89 percent) of K-12 survey questions were answered in full by a school administrator. There was a good balance of elementary, middle, and high school respondents, fairly evenly split between public and private schools. Of these, more than 60 percent of the schools recycle, and the decision to do so is predominantly decided upon at the individual school level.

K-12 SURVEY RESPONSES

K-12 survey respondents indicated the following:

- More than 57 percent participate in book donation or "give away" programs for obsolete textbooks.
- Approximately 37 percent of respondents said that they store obsolete or damaged books at the school because they are unsure what to do with them from a disposal standpoint.
- In terms of the volumes (numbers of books) that a school recycles annually for both hard cover/casebound textbooks and soft-cover workbooks, the quantities vary from 100 books (54 percent) to over 500 books (14 percent).

[3] American Forest & Paper Association, 2007 Community Survey Executive Summary
[4] Columbia University, Earth Engineering Center, *Comparison of Green House Gas Impacts of Dual-Stream vs. Single-Stream Collection and Processing of Recyclables, A Study for Waste Management.*

- Reasons why schools no longer use a specific textbook also vary – usually it is because a textbook has been replaced by a newer edition (93 percent), has become obsolete (90 percent), has been damaged beyond repair (78 percent), or has been replaced by a different textbook through adoption (70 percent).
- Over 50 percent of respondents felt that textbooks and workbooks are under-recovered for recycling.
- A majority (80 percent) of K-12 respondents indicated that June would be the optimum time to host a textbook recycling event.

HIGHER EDUCATION SURVEY RESPONSES

We had much greater success with survey responses from higher education institutions. Online survey requests were sent to 2,000 higher education campuses, and we received 374 responses from 149 schools in 37 states as well as Puerto Rico and British Columbia. Respondents were a combination of students, faculty, and staff. The majority of responses came from private schools, followed closely by public schools and also included tribal colleges, Historically Black Colleges and Universities (HBCU's), Hispanic Serving Institutions (HSI's), and Land Grant Universities (LGU's).

Higher education survey respondents indicated that:

- In terms of whether or not the campus currently recycles textbooks, over 36 percent responded that they did recycle both hardbound and softbound textbooks.
- 4 percent of respondents said that they only recycled soft-cover books.
- 26 percent said that they did not recycle either type of textbook.
- 33 percent of respondents were unsure whether or not the campus recycled textbooks of either type at all.
- An overwhelming number of respondents indicated an overall interest in book recycling.
- When asked what time of year would be the best time to host such an event, 93 percent of higher education institutions said that in late spring after final exams would be the optimum time, and 55 percent said that after the winter finals would be the second preferred date.

Projected Impact of Textbook Recycling Projects

As stated previously, an estimated 640,000 tons of books are sent to the landfill annually. At an assumed average weight of 4 pounds each[5] that equates to approximately 320 million books that are discarded each year and not being recycled. With even a modest 10 percent increase in book recycling, we can avoid landfilling 32 million books annually, and put the fiber to good re-use.

There are approximately 150,000 K-12 school. Even if an additional 5 percent of these schools recycled textbooks, there would be a significant reduction in the number of textbooks going to landfills annually.

However, to get a sense of how practical it is to actually recycle textbooks, there needs to be an adequate understanding of the educational publishing sector, the volumes of books produced, the manufacturing requirements and standards, as well as the parties that are involved in the production and disposal processes.

[5] Note that textbooks can weigh between 2 to 10 pounds each, but that many paperbacks, children's books, and other mass market books can weigh significantly less. For illustration purposes, we used the 4 pound average. In any case, too many books of all weights and formats are being landfilled instead of recycled.

Educational Publishing

There are a number of U.S.-based publishing markets and categories, but for the purposes of this report, we are focusing on the educational textbook market and specifically on the K-12 and Higher Education categories. However, to give context to the size of these categories, some overall U.S. publishing data will be referenced.

U.S. Book Publishing Market

General Categories

The U.S. publishing industry has five general markets, or categories: Trade (fiction, non-fiction and religious content for adult and young consumers), K-12 School, Higher Education, Professional (journals, databases and other digital content for professionals in science, medicine, business, law and the humanities) and Scholarly.

Highlights: 2011

CATEGORY	PUBLISHER NET SALES REVENUE ($ BILLION)	PUBLISHER NET UNITS SOLD (BILLION)
Trade	$13.94	2.26
K-12 School	$5.51	0.826
Higher Education	$4.55	0.503
Professional	$3.75	0.171
Scholarly	$0.19	0.564

The data above is from *BookStats*, a joint venture between the Association of American Publishers (AAP) and the Book Industry Study Group (BISG). It provides annual publisher net revenue across three dimensions:

- Formats (physical, non-physical, and bundles)
- Categories (listed above)
- Channels (physical retail, online retail, institutional sales, direct-to-consumer, wholesalers, book fairs, and export sales)

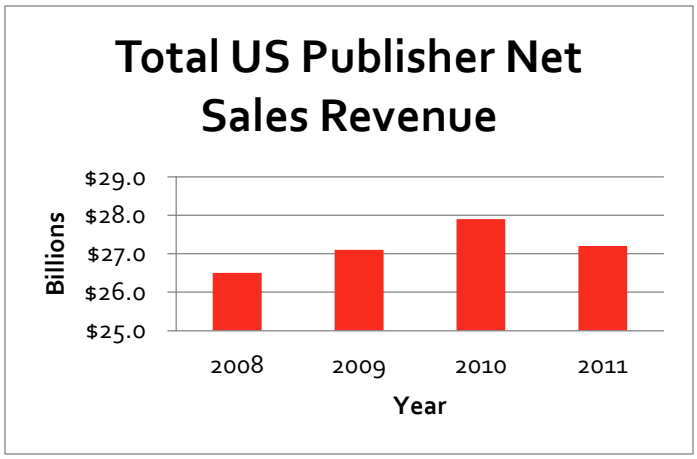


Table 1 *BookStats* 2008-2011

EDUCATIONAL PUBLISHING CATEGORIES

K-12 SCHOOLS

Teaching and learning materials for K-12 education in public and private schools.

Second largest U.S. publishing category based on net sales volume and revenue.

This market is affected by changes in federal and state funding and the legacy state adoption market systems.

HIGHER EDUCATION

Multiplatform course learning systems and materials for college and university students and faculty.

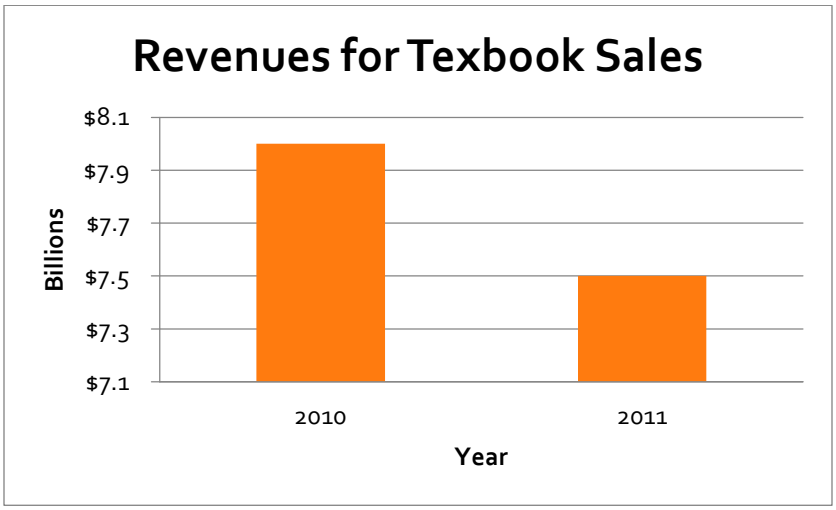
Impressive growth in this category over the past three years.

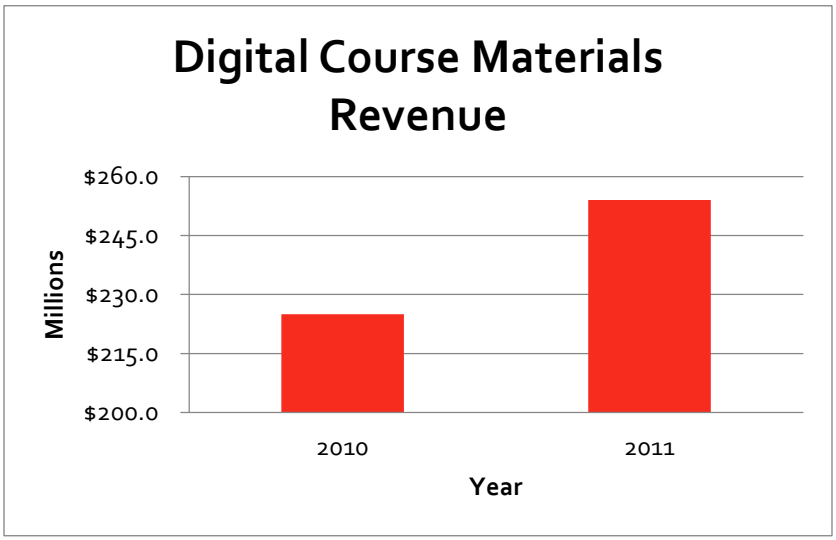
Higher education publishers have been actively developing, producing and marketing the next generation of premium multiplatform learning solutions.

In the 2012 BookStats, an Annual Comprehensive Study of the U.S. Publishing Industry, BISG and AAP asked publishers to report textbook data separately. The textbook format includes sales of titles specifically developed for use in an educational setting either in K-12 education or higher education. What BookStats showed for the textbook format in 2011 was that textbook sales (including both print textbooks and digital course materials) declined by $508 million between 2010 and 2011, or 6.2 percent.

Although textbook revenues dropped slightly between 2010 and 2011, it is still the single largest format in terms of revenue for the past two years. In 2011, textbooks were almost dead-even with hardcover revenues selling just over $100 million more than the hardcover total of $7.3 billion.

BookStats reports that at the same time that there was a reduction in publisher sales of many kinds of physical books, 2011 saw publishers' investments in digital publishing gaining traction. Since 2008, all digital sales have grown by 153.8%. Sales in 2011 for all digital products came in at $3.3 billion.





Tables 2 and 3, *BookStats* 2012

K-12 Publishers

Publisher	Publisher	Publisher
Academic Innovations	Great River Technologies	Peter Li Education Group
Achieve 3000, Inc.	Hachette Book Group (20 separate companies)	Rowland Reading Foundation
CAST, Inc.	Houghton-Mifflin Harcourt (4 separate companies)	Scholastic Testing Service
Cengage Learning - Hampton Brown - National Geographic School Publishing	LA Theatre Works	Scholastic, Inc.
CGP Education	LAD Custom Publishing	Shell Education
Columbia University Press	Learning Ally	Sourcebooks, Inc.
Current Publishing Corp	McGraw-Hill Companies - Entrepreneur Press	Star Bright Books
Data Recognition Corp	Mondo Publishing	Teaching Strategies
Educational Testing Service	National Science Teachers Association	Vista Higher Learning
Gibbs Smith Education	Parmenides Publishing	Wisconsin Historical Society Press
Goodheart-Wilcox Company	Pearson Education - Addison Wesley	Zaner-Bloser, Inc.

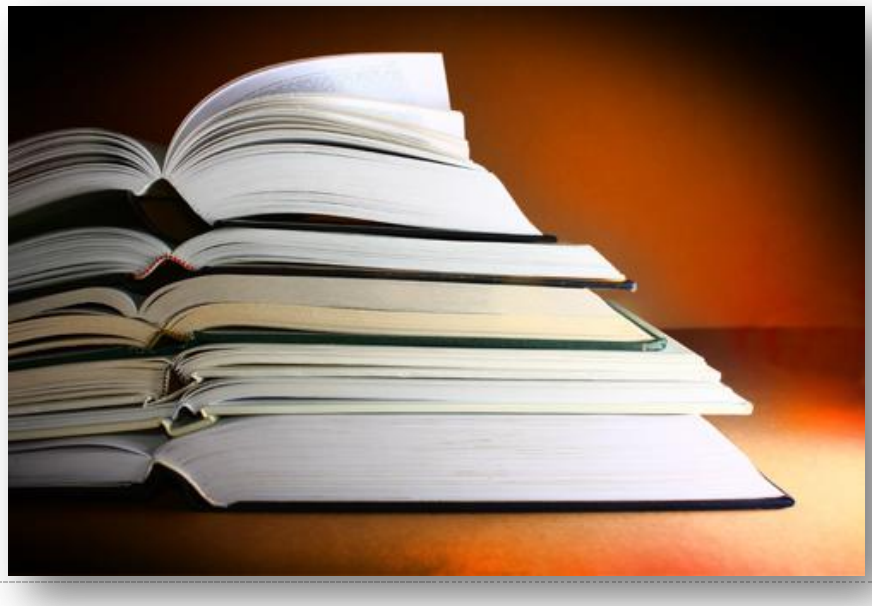
Source: Association of American Publishers

MARKET SIZE BY GRADE LEVEL
Source: Education Market Research.com
K-12 Market Size By Grade, 2011-12 SY
(Excluding technology sales)
(in millions of dollars)

Grade Level	% of Total	Text Mkt. Size	Supp. Mkt. Size	Total
Pre-K-5	45%	1,617	2,668	4,285
6-8	25%	899	1,482	2,381
9-12	30%	1,078	1,779	2,857
Total	100%	$3,594	$5,929	$9,523

TOTAL K-12 MARKET SIZE ESTIMATES
Source: Education Market Research.com
K-12 Market Size (in millions of dollars)

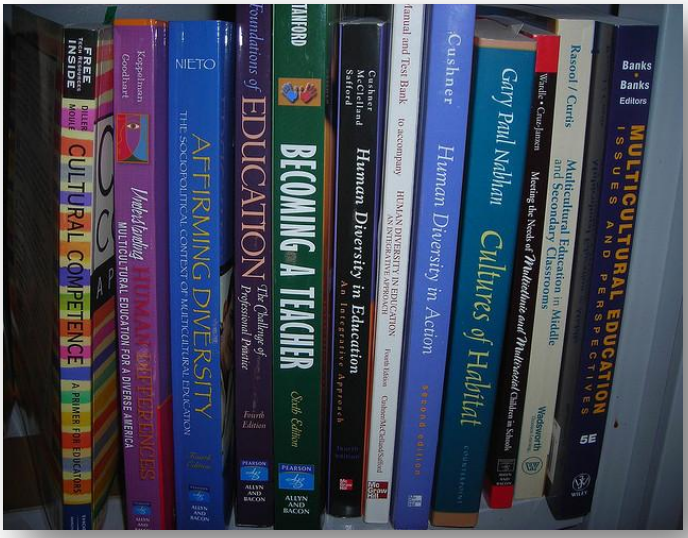
MARKET SEGMENT	2004-05 SY	2010-11 SY
Technology products: - Hardware - Software - Internet	6,351	8,085
Instructional Materials: Textbooks	2,903	3,506
Instructional Materials: Supplements	2,054	2,406
Other Supplements: - Trade books - Periodicals - Tests	2,445	3,271
TOTAL	$13,753	$17,268



Higher Education Publishers

Publisher	Publisher	Publisher
Cengage Learning - Hampton Brown - National Geographic School Publishing	McGraw-Hill Companies - Entrepreneur Press	Sage Publications - CQ Press
John Wiley & Sons Inc - Jossey-Bass - Wiley Blackwell Publishing	Morton Publishing Company - CustomLab	W.W. Norton & Company - Countryman Press - Liveright & Company
Jones & Bartlett	Pearson Education - Addison Wesley	Wolters Kluwer (4 separate companies)
Macmillan (12 separate companies)		

Source: Association of American Publishers



HIGHER EDUCATION TEXTBOOK MARKET

- HIGHER EDUCATION

  Revenue from new textbook sales is the sole source of funding for the development and production of educational materials and support services for both instructors and students.

- Today approximately one-third of the textbooks purchased annually are used, not new, books.

- In 2006, there were over 262,000 different titles offered for sale in college bookstores across the country.

Source: The Higher Education Textbook Market, Association Of American Publishers, Sept 15, 2006

- Digital textbook sales at the higher education level are rapidly increasing.

Source: Xplana, digital textbook Sales In U.S. Higher Education, A Five-Year Projection, April 2010

Major Educational Publishers

There are 33 textbook publishers and 310 "General Education" publishers in the U.S. Many of these are smaller publishers who also cater to the K-12 and higher education market segments. There are, however, five major education and textbook publishers who generate the bulk of sector sales and units sold. These publishers are:

Cenage Learning: Cenage Learning is a publisher of print and digital information services for the academic, professional, and library markets, and sells textbooks, educational software, and training programs. In the academic marketplace, Cenage Learning serves secondary, higher education, and graduate level students, teachers, libraries, government agencies, and corporation in both traditional and distance learning environments.

Houghton Mifflin Harcourt: The 2007 acquisition of Harcourt Publishing changed the name of this company to Houghton Mifflin Harcourt (HMH), a publisher of textbooks, instructional technology, assessments, and other educational materials for students of every age. They provide a variety of books, print, and electronic learning materials as well as professional development programs. Some HMH Companies include School Division, Great Source Education Group, and Holt McDougal.

McGraw-Hill Education: McGraw-Hill Education addresses virtually every aspect of the education market from Pre-K through professional learning. Using traditional materials, online learning and multimedia tools, they empower the growth of teachers, professionals and students off all ages. Some McGraw-Hill Education Companies include Macmillan/McGraw-Hill, SRA/McGraw-Hill, Wright Group/McGraw-Hill, and Glencoe/McGraw-Hill.

Pearson Education: Pearson Education publishes textbooks, multimedia programs and online services; they develop, process, analyze and report tests and produce software that powers the management of textbooks for the Pre-K through higher education levels. Some Pearson Education Companies include Pearson Scott Foresman, Pearson Learning Group, Pearson Digital Learning, and Pearson Longman ESL.

Scholastic: One of the world's largest publishers and distributor of children's books. Scholastic creates educational materials for use in school and at home, including children's books, magazines, technology-based products, teacher materials, television programming, film, video, and toys. It distributes its products and services through a variety of channels, including proprietary school-based book clubs and book fairs, continuity programs, retail stores, schools, libraries, and television networks. The Scholastic Education division is a publisher of print and technology products designed to raise reading achievement in grades Pre-K-12.

Educational Publishing Supply Chain

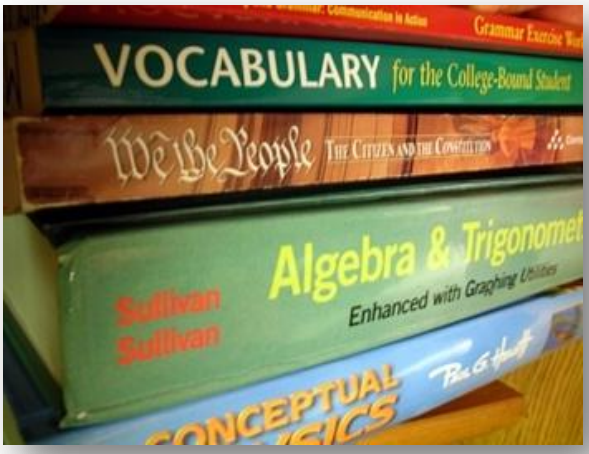
Textbook Construction and Manufacturing

Education publishers select appropriate printers for the types of textbooks that they wish to produce. School textbooks are developed and printed in accordance with The Manufacturing Standards and Specifications for Textbooks (MSST). These standards and specifications are developed by the State Instructional Materials Review Association (SIMRA), in consultation with Association of American Publishers (AAP) and the Book Manufacturers' Institute (BMI). MSST standards and specifications are intended as a guide to aid the manufacturer, the publisher, the textbook administrator, and the general public. The purpose of the MSST is to maintain appropriate physical standards of quality and performance for elementary and high school textbooks. It should be noted that different standards exist for different grade levels.

Conformity, durability, and consumer safety are three of the reasons for the development of such stringent standards for textbook construction. All textbooks are tested prior to printing and finishing, and there are standards for the following textbook properties:

Breaking Strength	Internal Bond	Folding Endurance
Elongation	Blocking	Stability to Light
Tear Resistance	Abrasion	Water Spotting Resistance

The Advisory Commission on Textbook Specifications (ACTS) is made up of representatives of SIMRA, AAP, and BMI. The purpose of the commission is to conduct studies and research to determine durability and other pertinent performance factors of elementary and high school instructional materials. The commission makes recommendations to the ACTS Committee of SIMRA regarding standards and specifications on manufacturing processes and materials in order to maintain appropriate standards of quality and performance.



Casebound: Most common type of bookbinding for hardcover books. Pages of the book are arranged in signatures, sewn or glued together, and hard covers (cloth, vinyl, or leather cases) are attached.

Soft-cover: A type of book characterized by a thick paper or paperboard cover, and often held together with glue rather than stitches or staples. Typical examples include paperbacks, phone books, manuals, workbooks, notebooks

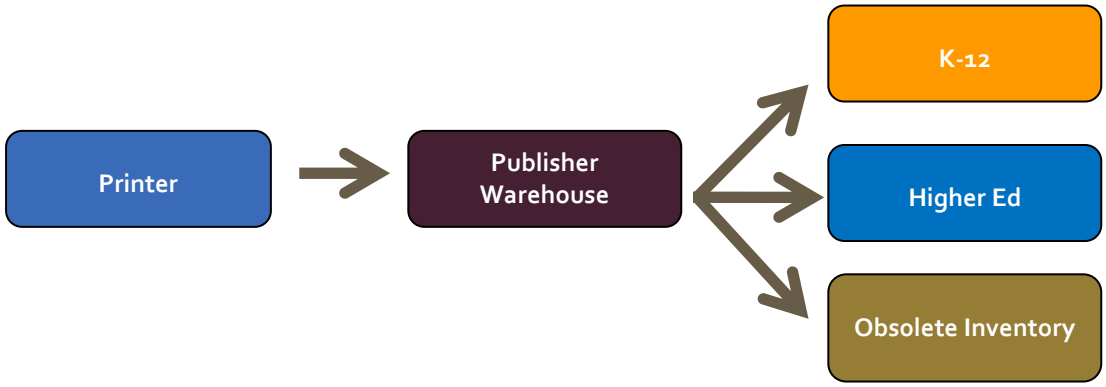
Textbook Printers

Out of some 50,000 printers in the U.S., there are about 100 printers that either *specialize* in printing books or where printing books make up a significant portion of their work. Textbook publishers choose their printer based on their capabilities, print and bindery quality, equipment, distribution methods, and cost. *Book Business* magazine published the top 30 list of book manufacturers in 2010, based on revenue. That list appears below:

Printing Company	Printing Company	Printing Company
Arvato Print US	The P.A. Hutchinson Co.	Solisco
Bookmasters	Lehigh Phoenix	Taylor Specialty Books
Bradford & Bigelow	MacNaughton Lithograph/Command Web Offset	Thomson-Shore
CJK: Print Possibilities	Malloy, Inc.*	Transcontinental
Commercial Communications, Inc	The Maple-Vail Book Mfg. Group	Versa Press
Courier Corp.	McNaughton & Gunn, Inc.	Victor Graphics
Dickinson Press	NPC, Inc.	Walsworth Publishing
Edward Brothers*	Quad Graphics (Quebecor World)	Webcom, Inc.
Friesens Corp.	R. R. Donnelley	Webcrafters, Inc.
Hess Print Solutions	Sheridan Books	Worzalla
Note: Edward Brothers and Malloy are now one company called Edward Brothers Malloy.		

Textbook End-Of-Life Cycle

STEP 1: Distribution to Schools and/or Disposing of Obsolete Inventory



After a textbook has been printed, the publisher works with its own distribution chains to deliver the finished books to K-12 or higher education learning institutions. The publisher also manages its own inventory and makes decisions on how to handle obsolete inventory. From a publisher's perspective, obsolete inventory can contain unsold textbooks, inventoried textbooks that have been replaced by more current editions or titles, or printer overruns.

The vast majority of books that have reached the end of their useful life at publisher warehouses that cannot be used in some other manner are to a very large extent recycled.

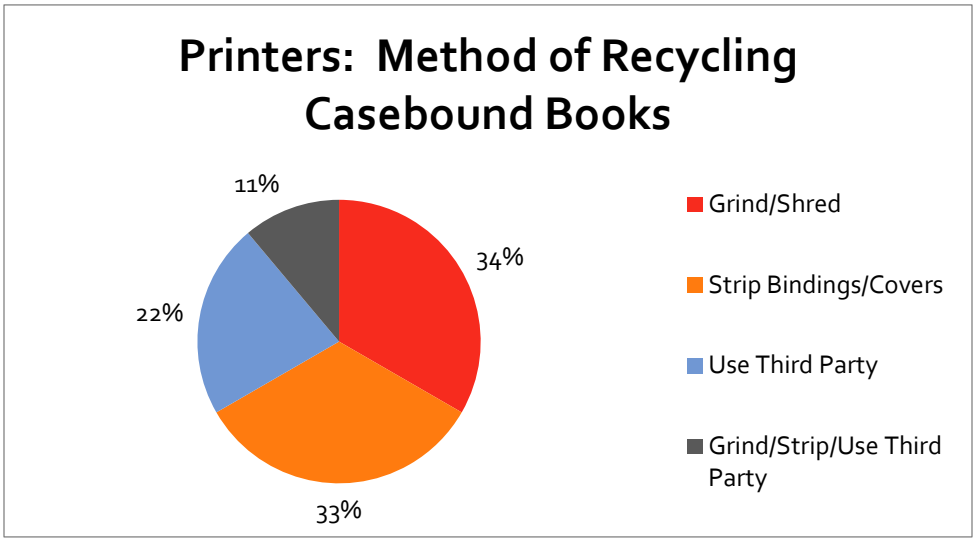
Economies of scale, cost efficiency, and environmental stewardship combine to make the process of recycling much more prevalent.

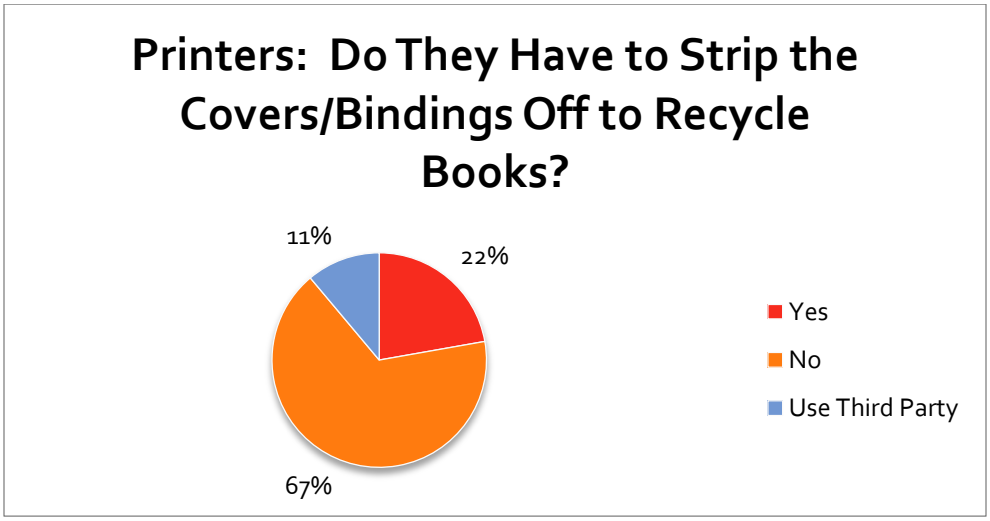
Conversely, while educational institutions share a desire to process hard-cover books in a responsible manner, they lack the aforementioned scale and cost advantage.

- David W. Schaefer
  Vice President, Paper Operations
  Global Procurement &
  Manufacturing Services
  The McGraw-Hill Companies

Printer Surveys

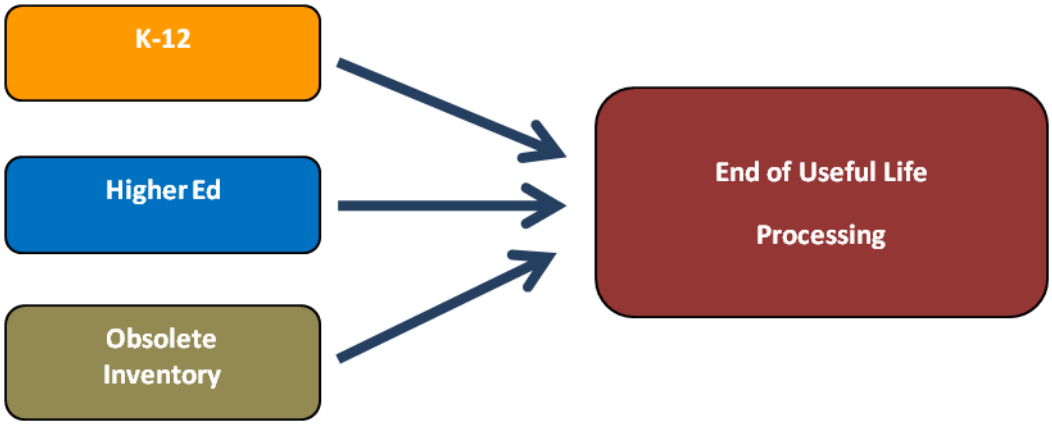
In reviewing the textbook manufacturing supply chain, we felt that it was important to understand how textbook printers address recycling of rejected casebound books, i.e., from the production/quality control process and/or via obsolete inventories that might be stored for a publisher at the printer's facility. Survey emails were sent to 25 printers located in multiple states. We received ten in-depth responses. All respondents reported that at any given time, they can have rejected casebound books and/or obsolete publisher inventory, and that they recycle what they have through a variety of processes. Some survey responses are below:





Several surveyed printers indicated that the method of handling casebound books for recycling varied depending upon where the books were physically located, the volume of books that needed processing, and the size and composition of the books. For example, one large national printer indicated that if a particular plant possessed a large enough shredder, the books could be shredded "as is," meaning with the covers and bindings intact. Other options would be to send the books out "as is" to a local processor who would either shred them, blend them as is into baled low grades, or remarket them to a processor in the region that possessed the specialty equipment to "de-case" the books, thereby allowing the recycling of each component separately.

STEP 2: Barriers to and Opportunities for End of Useful Life Processing



As indicated previously, both K-12 and higher education institutions are interested in finding ways to recycle their textbooks at the end of the book's useful life. However, both survey groups indicated that there are barriers and challenges to recycling textbooks and that these would need to be addressed so that they could make better informed decisions. Over 50 percent of both respondent sectors felt that textbooks and workbooks are under-recovered for recycling.

Perceived K-12 Barriers and Challenges to Textbook Recycling

Based on the 27 K-12 survey respondents, perceived barriers to recycling textbooks include:

- Highly labor intensive with no assigned personnel to do it
- Too much cost involved to recycle them
- Lack personnel to remove the covers and bindings
- Lack of information and awareness regarding recycling of textbooks
- Lack of locations on where books could be sent for recycling
- Lack of recycling incentives
- Lack of protocols for disposal of paper-based materials
- Having a convenient option for recycling textbooks

Perceived Higher Education Barriers and Challenges to Textbook Recycling

Based on the 374 higher education survey respondents, perceived barriers to recycling textbooks include:

- Student interest and buy-in
- Storage of books until a disposal action is taken
- Advertising the event with enough notice prior to the event
- Finding staff time and resources to manage such a program
- Not having multiple, convenient drop-off locations on campus
- Books that are bound with spiral wiring cannot be recycled
- Convenience and education about the program
- Labor and transport after collection

Perceived Hauler/Recycler Barriers and Challenges to Textbook Recycling

Eighteen haulers/recyclers responded to our survey posted on a SWANA listserv. Over 61 percent felt that books (both casebound/hard-cover and soft-cover) are under-recovered, and that the main barriers and challenges to recovering more books are:

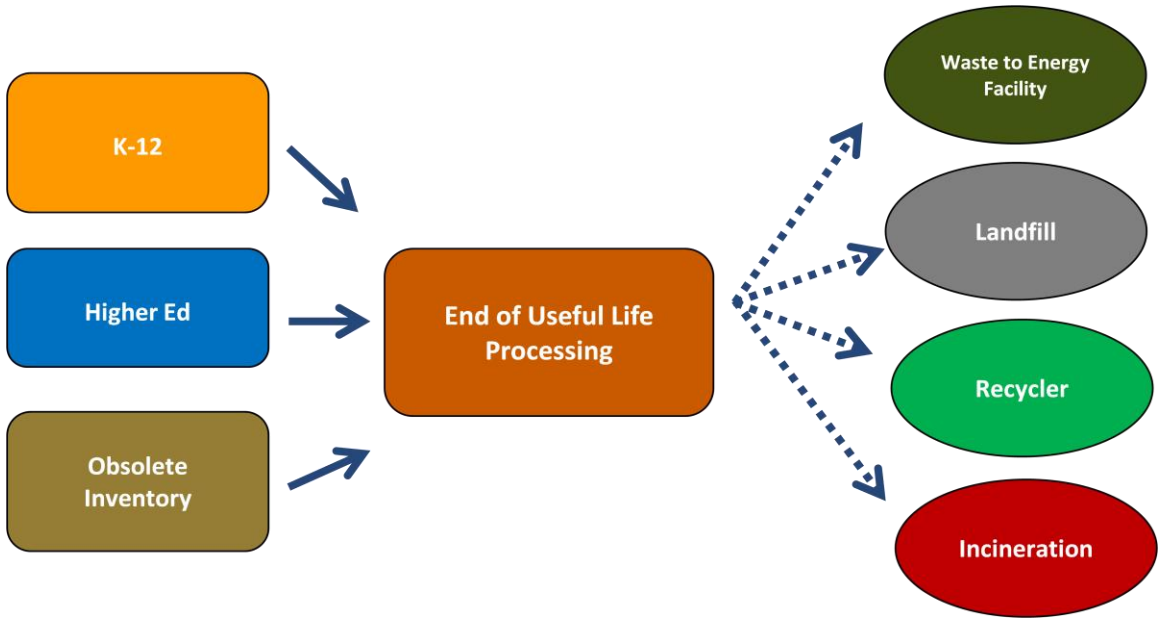
- Education to the schools about local recycling opportunities and programs
- Collection and transportation costs
- Binding removal costs
- Steady markets creating economical means for generators, brokers, and consumers

Perceived Opportunities by Learning Institutions

Our survey respondents – both K-12 and higher education – indicated that most of them have some sort of paper recycling in place, but lack knowledge on how to effectively and efficiently recycle textbooks as part of their overall program. This is a huge informational and knowledge gap that needs to be addressed with both sectors so that the perceived barriers can be overcome.

School districts use valuable time and storage space packing, stacking, moving, and storing obsolete materials, such as used textbooks. Additionally, the disposal costs for a large quantity of used textbooks can be significant. At the end of a book's useful life, schools need to know that recycling the books can provide maximum environmental efficiency and value, and that several different avenues for instituting the recycling processes exist.

STEP 3: End of Useful Life Processing



There are a number of choices to be made by various sectors and individuals at the end of a textbook's useful life. Although donating or selling a book after one has used it is always an option, the book still has a "useful life," albeit with a new owner. Therefore, we have not addressed these options in this study and instead have focused on what choices occur when a book can no longer be used, donated, or sold. Primary options at the end of a book's useful life are four-fold: sent to a waste-to-energy facility; sent to the landfill; recycled; or incinerated. There is an acknowledged hierarchy of waste reduction and waste management that is helpful in reviewing options for when a product has met its useful life end. This chart prepared by the Columbia University Earth Engineering Center shows that – from an environmental standpoint – landfills are the least desirable option, and recycling is the most desirable option. There are, however, some intermediary options that are also choices that schools and publishers sometimes consider.

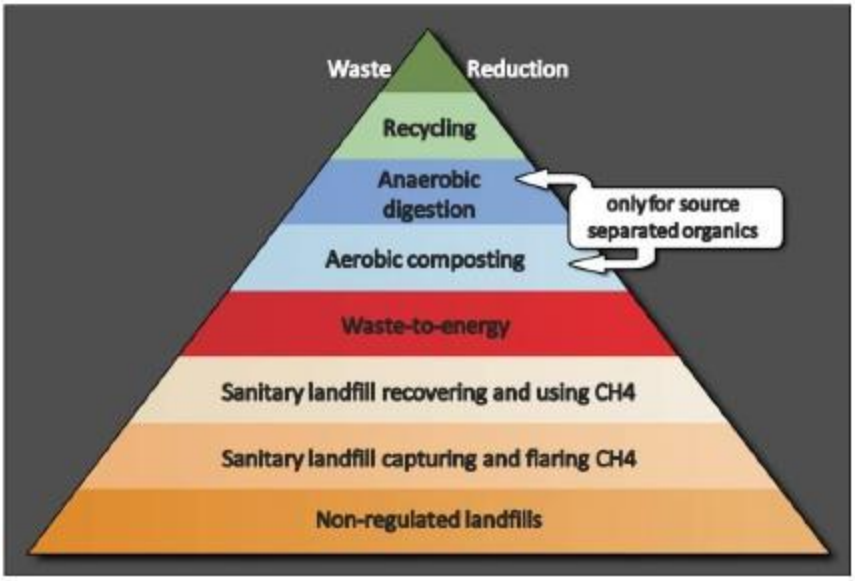


Figure: EEC Hierarchy of Waste Management, Columbia University, Earth Engineering Center

Least Environmentally Preferable Option: Landfills

Municipal Solid Waste (MSW)—more commonly known as trash or garbage—consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This waste comes from our homes, schools, hospitals, and businesses. The U.S. EPA reports in their 2010 MSW Characterization Report that books make up a small portion (0.4 percent) of the municipal solid waste disposed of each year.[6]

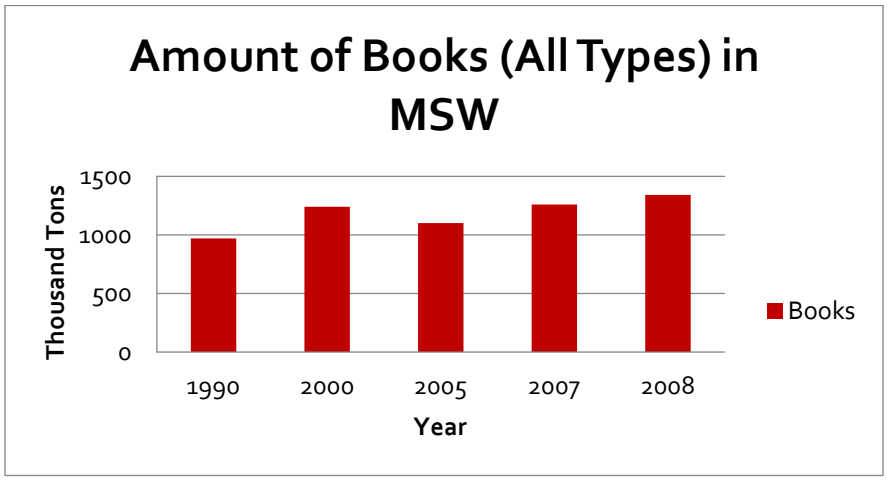


Figure: U.S. EPA MSW 2010 Characterization Report

The waste hierarchy generally refers to the three (or four) **R's** of **Reduce**, **Reuse**, **Recycle (and Recover)**, and **Re-Think**. In Europe, the waste hierarchy has five steps: Reduce, Reuse, Recycle, Recovery, and Disposal. The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste.

In the U.S., while the millions of tons of MSW generated has increased, so too has the amount of waste that has been recovered for recycling. In 2005, 245.7 million tons of MSW was generated, and 58.4 million tons were recovered for recycling and 20.6 million tons recovered for composting. This has increased dramatically from 29 million tons for recycling and 4.2 million tons for composting in 1990. That said, there still remains a large component of paper-based products that are being sent to landfills instead of recovered and diverted from landfills[7]. The *2011 State of the Paper Industry Report* prepared by the Environmental Paper Network indicates that while paper is the most commonly recycled product, it is still one of the largest single components of U.S. landfills, comprising over 16% of landfill deposits equaling 26 million tons annually.[8]

[6] It should be noted that during our peer review, several questions arose about the reliability of the EPA MSW Characterization Report regarding whether or not EPA's numbers were based on the total number of books sold versus sampling landfills to statistically determine that percentage. However, we are not aware of other waste characterizations that include books so this could not be verified.
[7] U.S. EPA, Municipal Solid Waste 2010 Characterization Report
[8] *The State of the Paper Industry, 2011*, Environmental Paper Network, p.4.

In 2009, there were 1,908 municipal solid waste landfills reported in the U.S. The following table shows the number of landfills in each region. The South and West had the largest number of landfills. Thirty-eight percent of the landfills are located in the West, 35 percent in the South, and 21 percent in the Midwest. Less than 7 percent are located in the Northeast.

Landfill Facilities, 2009	
Region	**Number of Landfills**
Northeast	**128**
South	**668**
Midwest	**394**
West	**718**
U.S. Total Landfills (2009)	**1,908**

U.S. Landfills, 2009, BioCycle October 2010

A March 2012 report by *Waste & Recycling News*[9] indicated that there is a proposal in the New York Assembly which would ban hard-cover books from disposal in solid waste landfills or by incinerator. Assembly Bill 9574 would also force every municipality in the state to establish a program to recover, redistribute, reuse or recycle hard-cover books within two years of the bill's passage. Under this bill, municipalities may establish joint programs with other municipalities or contract a third party to handle the program. The bill is sponsored by Assemblyman Alan Maisel, D-Brooklyn, and has been sent to a committee on environmental conservation.

Most Environmentally Preferable Option: Recycling

After a textbook has met the end of its useful life, the most environmentally preferable option for disposal is to recycle the book responsibly. There are several methods for doing so, but they are not well known or widely advertised and will be discussed in more detail in the next report section.

As part of our research, National Wildlife Federation joined the Solid Waste Association of North America (SWANA) as a way to gather information from national haulers and recycling organizations, including municipal recycling and landfill entities. We received 18 survey responses from haulers/recyclers and municipal solid waste agencies in 14 states and Canada.

Of the respondents, more than 60 percent were local recyclers; 25 percentwere regional recyclers; and approximately 15 percent were national recycling companies. Surprisingly, more than 80 percent of the respondents said that they do recycle hard and soft-bound books, and the volumes recycled were relatively high. Almost half pick up

[9] Waste & Recycling News, March 26, 2012, "*New York May Ban Hardcover Books from Landfills*."

books weekly or bi-weekly, and is evenly split between whether or not the recycler picks up the books themselves or if they use a third-party hauler. Fifty percent use a guillotine flatbed cutter to remove the bindings/covers, but 70 percent of those who don't remove the covers, chip and shred them together. For those that do remove the covers and binding, 25 percent send these materials to a landfill; 25 percent send them to energy recovery; and 50 percent of them send the covers and binding to paperboard or corrugated manufacturers.

We also asked the frequency of textbook pick up from K-12 schools or higher education institutions, and 40 percent indicated that they pick up weekly. In terms of how the books are prepared for pick up, 27 percent of respondents said that students deposited the books in mixed paper recycling bins; while 46 percent reported that books are collected by the school and placed on a skid. Another 27 percent reported that books are dropped off at a special book recycling bin left at the school by the recycler.

There are national recycling resources, such as Earth911, that help groups identify recycling companies in their areas that will accept textbooks and it seems that soft-cover books are now being collected more easily in paper recycling bins. There is no special preparation necessary if the soft-cover's binding is stapled or glued; if it has a spiral, wire or plastic binding, recyclers request removal of the binding before discarding the soft-cover into a bin.

Recyclables Processing

Processing recyclable materials at the municipal level is usually performed at Materials Recovery Facilities (MRFs), mixed waste processing facilities, and waste composting facilities. Some materials are sorted at the curb and require less attention, while others are sorted into broad categories at the curb (such as a paper category and a container category), with additional sorting at a facility (MRF). There is a trend towards MRFs that can sort recyclable materials that are picked up unsorted (single-stream recycling).

Materials Recovery Facilities, 2009

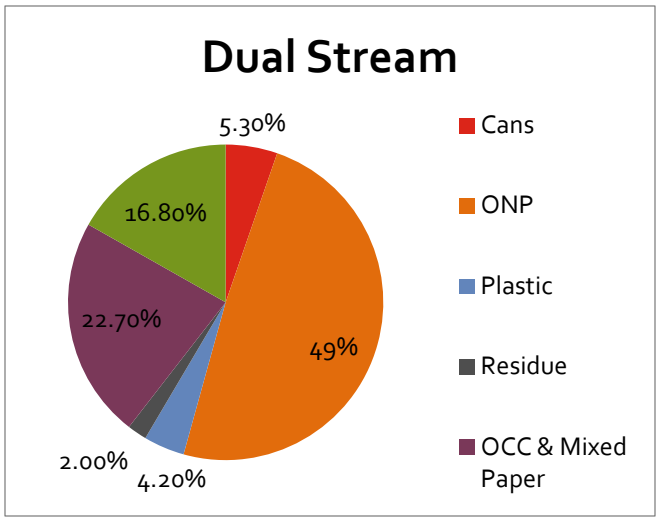
Region	Number	Estimated Throughput (TONS PER DAY)
Northeast	**147**	**23,769**
South	**161**	**19,699**
Midwest	**144**	**21,320**
West	**126**	**21,565**
U.S. TOTAL:	**578**	**86,353**

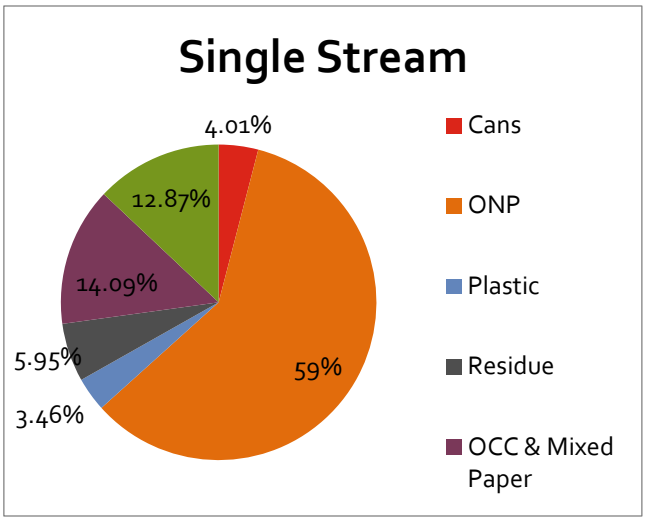
Source: Governmental Advisory Associates, Inc.

There are many debated advantages and disadvantages associated with the single-stream recycling method. A table of these is provided as follows:

ADVANTAGES	DISADVANTAGES
Reduced sorting effort may mean more recyclables placed at curb and increased participation in recycling	Initial cost for new carts, different collection vehicles, upgraded the processing facility
Reduced collection costs because single-compartment trucks are cheaper to purchase and operate	Processing costs may increase compared to multiple stream systems
Collection can be automated	Possible reduced commodity prices due to contamination of paper
Collection routes can be serviced more efficiently	Increased "down-cycling" of paper, i.e., use of high quality fibers for low-end uses like boxboard due to presence of contaminants
Worker injuries may decrease because the switch to single-stream is often accompanied by a switch from bins to cart-based collection	Possible increase in residual rates after processing (due chiefly to increased breakage of glass)
Can provide an opportunity to add new materials to the list of recyclables accepted	Potential for diminished public confidence if more recyclables are destined for landfill disposal due to contamination or unmarketability
More paper grades may be collected, including direct mail, telephone books, and mixed residential paper	

One analysis of the change in MRF product streams was performed for a specific location, Vadnais Heights, MN, as illustrated below[10]:

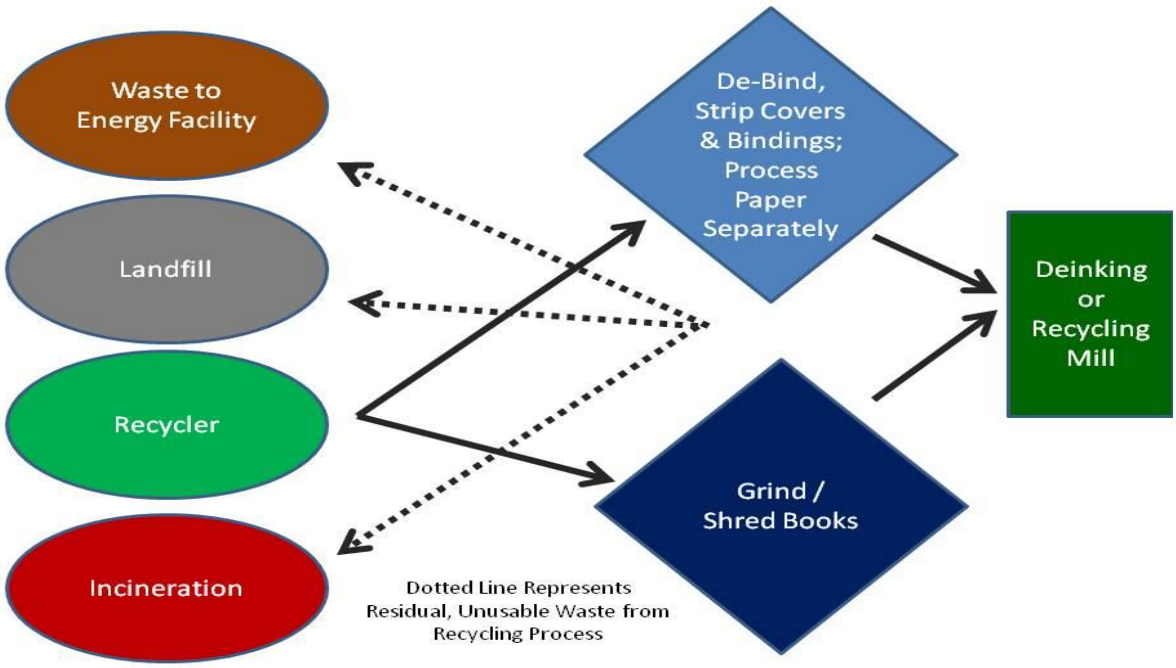




While recovery of some recyclables increased (i.e., old newspapers [ONP]), others such as old corrugated containers (OCC) and Mixed Paper decreased dramatically most likely due to source contamination.

[10] Ibid.

STEP 4: Textbook Recovery and Recycling



Choices for Disposed Textbook Processing for Recycling: De-Casing or Grinding/Shredding

The most prevalent options for processing of disposed textbooks are de-casing and grinding or shredding. Each has its own unique advantages as described in the following sections.

Book De-Binding or De-Casing Process and Equipment

NorTech™ Incorporated

NorTech, Incorporated
P. O. Box 5
50 Lower Street
Valley, AL 36854
P: (334) 756-0296
W: www.nortech-incorporated.com
E: sales@nortech-incorporated.com

Through all of our research, we were only able to find one equipment manufacturer in the U.S. that produces equipment solely designed for de-binding or de-casing books – NorTech, Incorporated, located in Valley, Alabama.

NorTech, Incorporated was founded by Norman Milner in Lanett, AL as a machinery and electronics manufacturer in 1954. Since 1978, NorTech has manufactured a "book de-binder" that separates paper from covers and bindings. Many innovations in book feeding, paper separation and process automation have been developed since their first binder remover was built. Today, NorTech Book DeBinders™ are machines that feed books from a hopper to automated binder removal, with paper separation from covers and output of paper to a conveyor at a rate of approximately 1,800 books per hour. With the addition of an automated book feeder, random and different size books can be processed during the same run.

Additionally, Mr. Milner indicates that at the de-binding level, coated freesheet and groundwood could be separated which would create added value in the waste fiber collected. NorTech's de-binding machine can be equipped with

computers and scanners that are capable of grading the books based on paper grade. To determine the economic advantage of de-binding versus shredding a book, Mr. Milner suggests that the books be either graded manually or with an automatic machine using ISBN numbers, but there exists potential problems with this method due to changes made by publishers in papers used. If less than 25 percent of the books are constructed of groundwood body stock, he indicated that it would be more cost-effective to de-bind them. If the percentage of groundwood is higher than 25 percent, then he suggested that it would be more economical to shred the entire book rather than debinding and de-casing it due to the higher value of freesheet paper versus groundwood. The book titles are read and run through conveyors to sort them by paper grade, with freesheet having the higher value. He indicated that he thought that most of the books being processed today are coated groundwood. These de-binding machines may be better suited at facilities such as printing companies where there is a more steady volume and known fiber types.

NorTech produces two models of book de-binders. One is the Model # AFS1800s with a Random Auto Book Feeder and Separator. This equipment can process up to 1,800 books per hour, and costs approximately $55,000; the other is Model # DB1000, with a manual feed that can process up to 1000 books per hour and an approximate cost of $24,000. NorTech does not rent or lease their equipment; all equipment is made to order four weeks after receipt of order and deposit. NorTech indicated that there are approximately 60 of their de-binders in operation nationwide, but would not provide contact information so that we could verify claims of processing quantities, return on investment and net profit, ease of operation, or target markets.

Book Grinding or Shredding Process

BOOK DESTRUCTION

Book-Destruction.com

52 Westerville Sq. #317, Westerville, Ohio 43081

P: (614) 895-1303

F: (614) 895-9330

E: Steve @Creativegreenmarketing.com

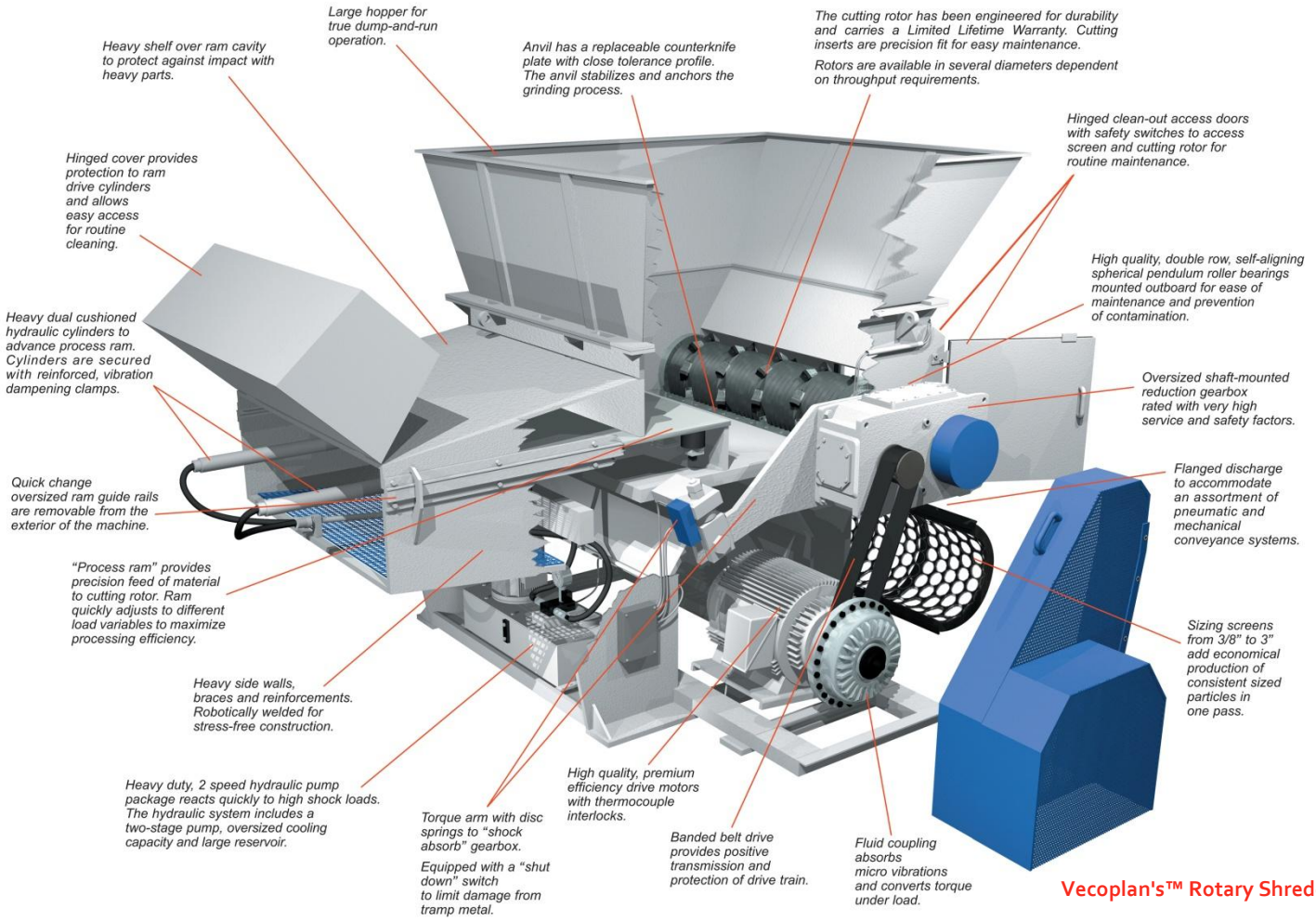
W: http://book-destruction.com/

There are several firms that recycle both casebound and soft-cover textbooks, and the process that they utilize is grinding or shredding the entire book. This is a much less labor intensive process than stripping off the cases or bindings. One company that we surveyed, Book Destruction.com, is owned and operated by Mr. Steve Grossman, and is located in Westerville, Ohio. Book Destruction.com and its sister company, Green Marketing, LLC, focuses solely on recycling books of all varieties: hard-cover, soft-cover, spiral bound books and pamphlets. They recycle in excess of 500 tons of books per month, and cover the entire continental U.S. and parts of Canada.

Vecoplan™ RG42U Rotary Shredder

Book Destruction.com utilizes a third-party hauler to pick up books and deliver them to specified locations. They pick up from both K-12 and higher education institutions. The books are gathered by the schools through students, faculty, or volunteers, and are placed in cardboard boxes, large Gaylord boxes[11], and on skids. Because the covers and bindings are not removed prior to destruction, the resultant fiber is sold as mixed paper and is generally used to make newsprint, commercial toweling and tissue as well as cellulose insulation. Their process of destruction is to chip and shred the book. Mr. Grossman indicated that there could be multiple phases of grinding necessary, depending on the book's construction. The finished size is approximately thumb sized, and goes into a vertical baler. They sell the chipped/shredded fiber to a variety of deinking and recycling pulp or paper mills, including Georgia Pacific and Kimberly Clark. Mills that can receive this type of fiber must have the ability to screen out contaminants in the hydropulper.

One of the manufacturers of rotary shredding equipment, Vecoplan™, has a video that demonstrates how the equipment works, and is worth viewing. It can be accessed at http://www.youtube.com/watch?v=FTc5izTzdAo.



Vecoplan's™ Rotary Shredder

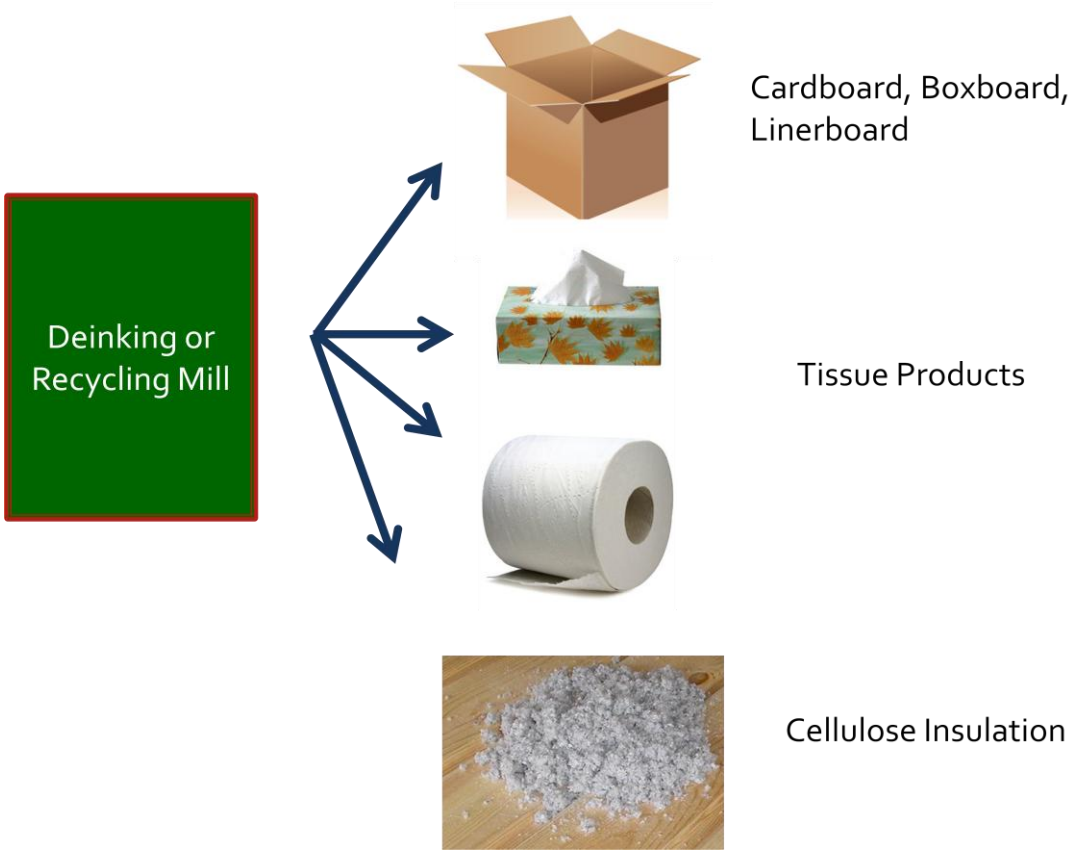
[11] The term "Gaylord box" is sometimes used to refer to triple-wall corrugated pallet boxes used for storage and shipping of bulk quantities.

Vecoplan, LLC
5708 Uwharrie Road
Archdale, NC 27263
P: 336-861-4329
E: info@vecoplanllc.com
W: www.vecoplanllc.com

In terms of the types of recovered fiber that can be produced through this process, these include purely groundwood, freesheet, and a combination of groundwood and freesheet. Mr. Grossman said that about 75 percent of what he processes and/or sells is in the mixed or groundwood grades.

End Use of Recovered Fiber

For the most part, the recovered fiber from both the book de-binding and book grinding/shredding processes usually does not go back into printing and writing grade papers, but rather is used for lower grades such as cardboard, linerboard, boxboard, tissue paper, and insulation. While the recovered fiber is not replacing virgin fiber in office paper per se, it is still being used as a replacement for virgin fiber in other products, thereby freeing up other, higher grade recovered fibers for use in printing and writing grade papers.



Pilot Projects and Case Studies

Through the course of our research as well as conducting pilot recycling projects at the College of St. Scholastica in Duluth, MN, and the Duluth K-12 Public School system, we have gathered best practices related to recycling textbooks. Several of the case studies are listed below and more may be found on the NWF web pages dedicated to this project.

Pilot Projects

The College of St. Scholastica: Pilot Project

The College of St. Scholastica is a private, four-year college located at 1200 Kenwood Ave., Duluth, MN 55811. The current enrollment of the school accounting for graduate and undergraduates is around 4,000 students.

Campus Sustainability:

The College of St. Scholastica has a student-led organization on campus devoted to environmental sustainability known as "Earth Actioners." Earth Actioners take on environmentally friendly initiatives to raise student awareness of the impact they can have on the environment and encourage environmentally responsible practices. Another group on campus, the Environmental Stewardship Advisory Committee is dedicated to sustainability and is comprised of students, faculty and staff. This organization functions as an advisory board to the President's Staff about green initiatives on campus.

For More Information:

Laura Banken (student)

P: (763) 226-6954

E: lbanken@css.edu

Graduation date: 05/2014

TEXTBOOK RECYCLING

The College of St. Scholastica was the site of our higher education pilot recycling project under this grant, and the textbook recycling event on campus was held in May 2012 during the week of Spring finals. Three Gaylord boxes of both hard- and soft-cover books were collected during this event. The event was coordinated by National Wildlife Federation Campus Ecology Fellow Laura Banken in coordination with the Environmental Stewardship Advisory Committee on campus. The progress of the event relied on coordination with the scheduling department on campus as well as on cooperation with the facilities department and custodial staff.

Books were collected in multiple locations on campus. Gaylord boxes were set up in the main building outside the bookstore and another set up in the Student Union; two boxes were set up in the Science Building; one box was located in a main lounge and another outside of a commonly used computer lab. There were also boxes located in the main lounge of the freshman dorm and one in a central upper classmen apartment building.

The effort was communicated on campus in a student bulletin that is emailed out to the student body daily. It was also in the faculty/staff bulletin which is emailed to the faculty and staff daily. Posters were hung throughout campus in advance.

The campus responded with enthusiasm to the event, hoping that it would be an annual process. Temporary storage for the boxes before they were distributed throughout the campus was coordinated with the facilities department. A challenge involved students taking some of the books out of the boxes to try and sell them. The custodial staff mentioned that they would have preferred for the boxes to be smaller as they would be easier to maneuver around and

collection easier to implement. A possible way to counter both of these challenges would be to find a smaller container with a slot that allows for the books to be deposited into the box but prevents people from gaining access to the books.

The pilot event was funded by a combined effort from the National Wildlife Federation, McGraw-Hill Companies and NewPage Corporation. Approximately 8,000 pounds of books were collected at this pilot event.

Duluth K-12 Public School District: Pilot Recycling Project

The Duluth K-12 Public School District was the site of our K-12 textbook recycling pilot project. National Wildlife Federation coordinated with staff at the Duluth Public Schools (DPS) District Central Administration offices to host a pilot textbook recycling project involving the District's 13 schools -- nine elementary schools, two middle schools and two high schools.

Over the past two years, Duluth Public Schools have gone through many changes including some schools closing and merging with others, and teachers have been encouraged to get rid of curriculum that is not current and no longer useful. The unwanted material was sent to the Central Administration Building to be sorted and packaged for recycling.

It is not a policy of the DPS to ask teachers to give up old curricular materials, however there is a process in place for when teachers have materials that are no longer wanted. Materials are reviewed before being put into the recycling pile; those that are still current are used to supplement classroom libraries. Materials not donated to the library or other educational causes are sent to a local recycler for processing - removing the front and back covers and bindings so that the pages can be recycled.

For More Information:

Carla Harrold

District K-12 Reading & Language Arts
English Language Learners Curriculum Specialist
Duluth Public Schools
Duluth, MN

P: (763) 336-8700 ext. 1117

In June 2012, Duluth Public Schools packaged four pallets of books for recycling, about 6,300 pounds; the pallets were approximately 4 x 4 x 4. The District's receiving department, helped coordinate this effort. Hartel's DBJ Disposal Companies in Duluth (http://www.hartels-dbj.com/) picked-up the books and transported them to a NewPage storage facility. The books were then combined with another load from the College of St. Scholastica's textbook recycling pilot project hosted in mid-May. The two collections were combined because a larger load of books was more cost effective than arranging pick-up and recycling for two smaller loads. The total load of books that were collected for recycling was 12,000 pounds. While we initially intended these books to be processed and sent to NewPage Corporation's Duluth deinking facility, the mill could not use them because the covers and bindings were still in place. Therefore, it was arranged with International Paper to collect the full load of books and transport them to their facility in Rosemont, Minnesota. According to International Paper, the waste recovered most likely was manufactured into new tissue paper.

Examples of what can occur if proper packaging, strapping and securing of collected books is not done are shown below. The books picked up from Duluth Public Schools were stacked in many individual boxes on the pallets with no shrink-wrap to secure the load.

Lessons Learned:

- Use an existing recycling company with whom the school or organization already works. Contact the company to see if they can pick-up and process books for recycling. If not, research other recycling companies in the community that accept books. A good resource to locate local recycling options is Earth 911 (http://earth911.com/).
- Prepare your books for pick-up: Use Gaylord boxes, if possible, and use shrink wrap to secure each package. This ensures containment of the material and also the safety of the workers. Send pictures of the current state of the boxes of books and packing to the recycler before pick-up to ensure that everything is packaged appropriately for pick-up day.

Case Studies

University of Wyoming

The University of Wyoming is a public, four-year school with an enrollment of 13,000, located in Laramie, Wyoming.

For More Information:

Tod R. Scott

Waste Stream Manager

University of Wyoming

P: (307) 766-3590

E: TodS@uwyo.edu

Campus Sustainability:

The University of Wyoming (UW) is positioning itself to become more sustainable in a logical and deliberate way. Over the last five years, significant advances have been made. President Buchanan created the Campus Sustainability Committee (CSC) in 2005 "to serve in an advisory capacity to all campus departments, colleges and other entities in an effort to advance environmental and economic sustainability at the University of Wyoming." In 2007, President Buchanan signed the American College and University Presidents Climate Commitment (ACUPCC), committing UW to become carbon neutral by 2050. In 2009, UW submitted its Climate Action Plan (CAP), UW's guiding document to reducing carbon emissions and becoming more sustainable. Campus sustainability website: http://www.uwyo.edu/sustainability/index.html

TEXTBOOK RECYCLING

The University of Wyoming (UW) has been recycling textbooks, both soft- and hard-cover, for more than ten years. UW donates about 10,000 pounds of books to Better World Books each year to support literacy programs in the U.S. and across the world; the books that are not donated are recycled with other paper recycling. An estimated 20,000 to 30,000 pounds of books are recycled each year (2 to 3 times the amount donated). More than half of the books collected are hard-cover books (60 percent hard-cover and 40 percent soft-cover).

The recycling department (four full time employees and 11 part time students) coordinates this effort, including collecting and processing the books, with assistance from the bookstore, one campus club, and some individual staff and faculty members.

Bins are put out during book buyback times at the book buyback area of the bookstore. UW also collects books year round from students, faculty and staff in the regular recycling bins.

As mentioned, UW works with Better World Books (BWB) to donate books that are in good shape and valuable. BWB provides a scanner to plug into a computer and log on to their website; BWB also provides boxes to ship the books. UW scans the ISBN numbers to see if they are wanted for donation; if so, shipment is arranged and paid for by BWB (each shipment is a pallet or two, about 90 boxes). The books that are not donated (through BWB) are processed for recycling - a paper cutting machine is used to remove the spines and covers and the paper is recycled. The paper cutting machine is a Horizon PC-45 which has a 22-inch paper knife that works hydraulically/electrically. The campus uses a mix of recycling staff and volunteers, both students and community members in this effort. The paper is sold to ARK Regional Services; the campus paper is combined with ARK's other customer's similar commodities and sold by the semi load to mills.

UW doesn't do much in the way of promotions other than placing bins in good locations. There are a few other organizations on campus that also collect books as a fundraiser and they promote their efforts separately. On occasion, this effort has been featured in the campus paper.

The biggest challenge in this effort is that more books are collected than can be handled by the existing staff and volunteers so advertising this opportunity has not been a priority. There are plans to create a website featuring this effort; however that has been on a slow timeline.

Financing for book recycling comes from three sources: sale of commodities, student fees, and Pepsi contract with UW. There is no profit, but between the three funding sources, the campus breaks even.

Student employees get paid $7.50/hour, spending three or four hours a week on books, specifically. Full time staff collects the books with other recycling, so the books don't really add to the time spent in collection.

See Appendix A for more information on national resources, including Better World Books.

Columbia College

Columbia College is a private four-year college with 12,000 students enrolled located at 600 S. Michigan Ave., Chicago, IL 60605.

For More Information:

John Wawrzasek
Recycling Manager

P: (312) 369-7675

E: recycling@colum.edu

Campus Sustainability:

In 2005, Columbia made the effort to replace thousands of inefficient fluorescent lights in academic buildings. Classrooms have now been fitted with heating and cooling controlled by self-monitoring equipment with sensors and time-of-day scheduling that is coordinated with class schedules. Newly renovated bathrooms, office suites, conference rooms and classrooms have been equipped with motion sensor lights. Columbia College purchased renewable energy certificates in an amount equal to 30 percent of its electrical energy from Community Energy, a Pennsylvania-based developer of wind energy.

TEXTBOOK DONATION/REUSE

Columbia College has collected textbooks for recycling since 2007. Each year approximately 2,760 pounds of both soft- and hard-cover books are donated from the library bookstore and dorms to be recycled. Recycling Manager John Wawrzasek coordinates the effort and has student employees who help with the labor logistics.

Books are collected in a few locations on campus. A cart in the library and bins are also available inside and near the bookstore so it's easy for bookstore employees to help direct students and others to drop off their unwanted books.

This opportunity is advertised to the student body and campus community with emails as well as posters and weekly printed calendars which are hung in main lounges around campus.

The biggest hurdle to overcome was finding where the major book sources are on campus and coordinating an effort between them. The only cost incurred by the college was that of student workers. The collected books are sent to Better World Books for donation distribution.

Hamilton College

Hamilton is a four-year private liberal arts college located at 198 College Hill Road, Clinton, NY 13323; the enrollment is 1,820 students.

Campus Sustainability:

Hamilton College is committed to protecting and sustaining the environment through institutional processes, management facilities and curriculum. Hamilton College has established goals to reduce its carbon emissions 50 percent by the year 2020 through use of renewable energy. Further goals include development of programs to raise awareness of conservation, use of Leadership in Energy and Environmental Design (LEED) in new construction and major renovations, and improvement of recycling. Hamilton College makes use of the Cram & Scram program to reduce landfill waste from the college by 28 percent each May. This program has been used by the college since 2007 and is a student-run program. The program removes items that could be left behind in a dorm including textbooks, furniture, kitchen supplies, clothing, bedding, etc.
http://www.hamilton.edu/sustainability

For More Information:

Terry Hawkridge
Assistant Director of Grounds, Horticulture and Arboretum

P: (315) 859-4075

TEXTBOOK DONATION/REUSE

Hamilton College's Cram & Scram, started in 2007, is a non-profit, student-run recycling program aimed at reducing the waste that comes every summer as students move out of their residence halls. The annual Cram & Scram reduces Hamilton's landfill waste each year by 28 percent. The program removes nearly every type of item that could feasibly be left behind in a dorm room, including textbooks, furniture, kitchen supplies, toys, clothing, bedding, food, and small appliances. Under the Cram & Scram program, items are recycled, donated or sold back to students in the fall to be reused. The Cram & Scram program has allowed the college to reduce its landfill waste by more than 90 tons in previous years, according to a May 22, 2012 article, Cram & Scram Makes Tons of Difference in Recycling Effort.
http://www.hamilton.edu/news/story/cram-scram-makes-tons-of-difference-in-recycling-effort

In 2012, an estimated 3,500 pounds of both soft- and hard-cover books were recycled, up from 2,300 pounds in 2011.

Terry Hawkridge, Hamilton's Assistant Director of Grounds, Horticulture and Arboretum, is the major coordinator from the administrative perspective. Twenty students are hired on a stipend for three weeks to sort through everything that is left for Cram & Scram beginning the week of finals in May. Students work on this project ranging from 10-40 hours for three weeks; costing $10,000 for stipends and another $3,000 to feed them. When the program started 149 tons of materials (books included) were sent to landfills in May. Since the program started, the number has been reduced down to 79 tons of materials sent to landfills in May.

Materials are collected in May. There are collection areas in place in all of the dorms. Students may also leave items in clear plastic bags they wish to donate when moving out. Those items are picked up by the student workers and sorted through.

Books are picked up and weighed by Prevent Child Abuse NY to whom the books are donated.

Emails to students, faculty and staff are sent out along with the link to the Prevent Child Abuse website.

This effort has been met largely with approval from the administration. The students find this a convenient program because if there are things they no longer want, they can get rid of those materials in an environmentally responsible way with little to no effort on their part. This also makes sense because the custodians need to clear out all of the dorms on campus and clean them within ten days of the end of the semester. Before this program came into place, this constituted mandatory overtime for the custodians. Now that there are students hired to help clear out the rooms, it cuts back on the work load of the custodians.

Two ten-foot U-hauls cost around $800 for the amount of time they are needed on campus. Rental trailers cost $150 per month per unit. $1,800 is needed for storage. $3,000 - $4,000 for students to stay to sort and sell the items. Administration prepays money for expenses. Sale money goes towards labor initially. Overall, it is estimated that this program is a wash financially for the administration.

University of North Carolina at Greensboro (UNCG)

The University of North Carolina Greensboro is a four-year public school with a total student enrollment of roughly 18,000. The campus is located at 1400 Spring Garden St., Greensboro, NC 27412

For More Information:

Ben Kunka

Waste Reduction and Recycling

P: (336) 334-5192

E: bakunka@uncg.edu

Campus Sustainability:

In 2009, sustainability became one of University of North Carolina at Greensboro's five core values. Therefore, the campus has required all new building and major renovation projects to attain LEED Silver standards. Energy consumption has dropped 14 percent since 2002 and heating and cooling systems have been updated to provide maximum levels of efficiency.

TEXTBOOK RECYCLING AND DONATION/REUSE

The University of North Carolina at Greensboro (UNCG) has recycled hard-cover books for more than seven years with an estimated 60-100 tons of hard-cover books recycled each year; soft-cover books are collected with the comingled recycling streams and are not part of this estimate. Ben Kunka from the office of Waste Reduction and Recycling coordinates with the campus library and its staff on this effort.

The books are collected at the library loading dock in large Gaylord boxes on a pallet or around campus in 95-gallon two wheeled roll carts which are then containerized into a Gaylord box on a pallet. Year round collection on campus is offered.

Student volunteers from service learning classes sort through the books following the process set up by Better World Books, who pays for the books. Unwanted books (not accepted by Better World Books) are sold primarily to one of three recycling brokers based on price offered: Green Day Waste and Recycling; Recycling Management Resources; and Carolina Fibre. A paper recycling broker offers UNCG $70-$140 per ton of fiber content. Books are collected whole and paper fiber mills are in charge of de-binding and shredding. This effort requires 30 hours per year. Lately the cost to gather the books has been less than the money paid by Better World Books meaning the college generates slight revenue from this effort.

There is not a lot of outreach and promotion of this effort since most students sell their books to Barnes and Noble on campus; the rest of the books that are received are from the library. The challenges faced with this effort include collecting books separately from the single-stream recycling, the use of special containers and forklifts, and employee safety is also a concern because of the heavy materials collection and processing.

Conclusions

People value books either because of their contents or because of their physical characteristics. The Rare Books and Manuscript Section (RBMS) of the Association of College and Research Libraries, reports, that "First editions of important literary or historical works and reports of scientific discoveries or inventions are prime examples of books that are important because of their contents. Illustrated books that give a new interpretation of a text or are the work of an esteemed artist are also valued. Books that were suppressed or censored may be both important and scarce, since few copies may have survived. Physical characteristics, such as a special binding; an early use of a new printing process; or an autograph, inscription, or marginal annotations of a famous person; may also contribute to a book's importance and its market price."[12] Books are wonderful possessions – meant to convey knowledge, interest, or evoke emotion. As has also been illustrated throughout this report, books are often resold or donated when the original owners are finished using them.

When books are discarded, however, there are several challenges which need to be addressed to ensure that the books are recycled rather than ending up in the solid waste stream. There is significant fragmentation and disparity in how books are collected by schools, libraries, or municipalities, and a need exists to have better coordination between community entities so as to be able to aggregate volumes of books for recycling which allows economies of scale. There is also a significant need for better education regarding the recyclability of textbooks and the processes needed to be in place to effectively do so. To address these barriers, we offer the following recommendations:

Recommendation: Increasing Education and Knowledge on Book Recycling

While we did not have a good response rate from our K-12 survey, the responses we did receive were in line with those sent in by higher educational institutions. The majority of schools (60 percent) recycle paper, and the recycling policy is predominantly decided upon at the individual school level, although some states and districts have mandated paper recycling. While many K-12 and higher education institutions do participate in book donation or give-away programs for obsolete textbooks, almost 40 percent of schools report that they do not participate in those or are unsure of participation. That means that many end-of-life books are not being recovered or reused in some way.

Interestingly enough, the reasons given for no longer using a specific textbook include:

- The textbook is obsolete (89 percent)
- The textbook is damaged (78 percent)
- The textbook is replaced by a newer edition (93 percent)
- The textbook is replaced by a different textbook (70 percent)
- The curriculum or standards changed (44 percent)
- The textbook is replaced by a tablet or other electronic media (11 percent)

Most, if not all, of these reasons indicate that the book has met its intended end of life and should be discarded or disposed of in some way. More than one-third of schools reported that they store these unusable books at the school because they do not know what do to with them. One way to address this is to provide better information and education to schools, school administrators, and school facilities managers on options that exist for recycling these books.

[12] The Rare Books and Manuscript Section (RBMS) of the Association of College and Research Libraries (ACRL), a division of the American Library Association. http://www.rbms.info

Proposed Next Steps for Facilitating Increased Education

As has been mentioned, schools often hold on to books after their useful life mostly due to lack of knowledge and information on how to dispose of them properly. The follow are suggestions for how schools can increase knowledge about the recyclability of books and change the public perception regarding properly disposing of a book at the end of its useful life.

SUGGESTED WAYS THAT K-12 SCHOOLS CAN FACILITATE INCREASED EDUCATION ON TEXTBOOK RECYCLING

Work with the **International Facility Management Association (IFMA)** and specifically, their **Academic Facilities Council** on incorporating textbook recycling into their training programs. This would provide more consistency in recycling methodology and process for K-16 academic institutions. IFMA is the world's largest and most widely recognized international association for professional facility managers, supporting more than 22,655 members in 78 countries. IFMA's AFC also has a Sustainability Council and recycling programs would be a natural fit with them. The Sustainability Chair is Gregory Williams, CFM, FMP, at the University of Minnesota.

Contact **SchoolFacilities.com** to see if they will run an article on textbook recycling in their e-News. SchoolFacilities.com is a leading facility management web site that delivers the best of facility design, construction, maintenance, and management knowledge to professionals responsible for providing safe, comfortable and modern education facilities for students of all ages.

Contact the **Solid Waste Association of North America** regarding sharing information on the recyclability of books in the municipal solid waste streams with its members and member organizations. This will be of particular interest to SWANA's recycling subcommittee members.

Join **NWF's Eco-Schools USA**, a free K-12 green schools program, for accessing information on the promotion of recycling of textbooks through its website, partners, and email blasts and e-newsletters to school principals and educators. In addition, Eco-Schools USA is also working closely with its partner, Keep America Beautiful, on disseminating information to K-12 schools that participate in the national America Recycles Day.

SUGGESTED WAYS THAT HIGHER EDUCATION CAN FACILITATE INCREASED EDUCATION ON TEXTBOOK RECYCLING

Work with the International Facility Management Association (IFMA) and specifically, their Academic Facilities Council on incorporating textbook recycling into their training programs. This would provide more consistency in recycling methodology and process for K-16 academic institutions. IFMA is the world's largest and most widely recognized international association for professional facility managers, supporting more than 22,655 members in 78 countries. IFMA's AFC also has a Sustainability Council and recycling programs would be a natural fit with them. The Sustainability Chair is Gregory Williams, CFM, FMP, at the University of Minnesota.

Higher Education Institutions

Contact SchoolFacilities.com to see if they will run an article on textbook recycling in their e-News. SchoolFacilities.com is a leading facility management web site that delivers the best of facility design, construction, maintenance, and management knowledge to professionals responsible for providing safe, comfortable and modern education facilities for students of all ages.

Contact the Solid Waste Association of North America regarding sharing information on the recyclability of books in the municipal solid waste streams with its members and member organizations. This will be of particular interest to SWANA's recycling subcommittee members.

Join **NWF's Campus Ecology** program and access information on how to promote recycling of textbooks at two-year and four-year higher education institutions and campuses through its website, partners, and email blasts and e-newsletters. In addition, Campus Ecology is working more closely with Recyclemania staff on adding textbook recycling to its competitive program.

An encouraging event that will hopefully motivate more colleges and universities to recycle textbooks is **RecycleMania**. Recyclemania is a friendly competition among higher education campus recycling programs in North America and Canada. During eight weeks each spring, schools compete in different categories to see which institutions can collect the largest amount of recyclables per capita, collect the largest amount of total recyclables, demonstrate the least amount of waste per capita, or have the highest recycling rate. Currently, textbooks are included in the "paper" category and are not tracked separately; however, RecycleMania is considering offering a "book" category in the future. RecycleMania is not open for K-12 schools to compete in at this time.

SUGGESTED WAYS THAT PUBLISHERS CAN HELP EDUCATE THE PUBLIC ON TEXTBOOK RECYCLING

Book Publishers

Publishers like **McGraw-Hill** might consider promoting textbook recycling through package inserts to be disseminated to schools in new book cartons.

Additionally, through membership in a number of educational publishing and book publishing associations, textbook publishers could be instrumental in sharing information with fellow publishers on the need for education on textbook recycling processes and incentives.

Publishers can also help by sponsoring book collection events or a national book recycling day on June 1st to actively facilitate collection.

Recommendation: Proposed Efficient Processes and Procedures for the Collection and Processing of Textbooks for Recycling

As mentioned, there is significant fragmentation and diversity in the ways that educational institutions collect and process textbooks for recycling. Not only does this make it more difficult for haulers and recyclers to engage with them, it also makes it difficult for a school district or college campus to aggregate books from a number of participating schools and/or buildings. Most schools are used to recycling paper, but they are not necessarily versed in the best practices related to recycling books. Depending on the municipality, soft-cover workbooks and textbooks can most likely be recycled with other paper products at the school; hard-cover books are a different story however. Some basic guidelines might be useful tools for K-12 schools and higher education campuses that want to recycle textbooks.

Proposed Next Steps for Basic Guidelines and Tips for Schools on Textbook Recycling

NWF's Eco-Schools USA program can develop a basic handbook for K-12 schools that combines the research, case studies, and best practices that we have learned on the most efficient and effective ways to promote a textbook recycling event at the school and/or district; best practices on collection and packing; and options for whom to contact about recycling the gathered books. This guide would be available for download on the Eco-Schools USA website and would be promoted through our listservs and partners.

NWF's Campus Ecology program can produce a similar handbook for higher education institutions that would be available on its website and promoted through its listservs and partners.

NWF will reach out to the National Recycling Coalition (NRC) to see if they can provide input on basic best practices and guidelines for educational institutions, as well as helping to disseminate the information to its affiliate organizations and partners.

Best Practices

There are many ways to approach instituting a book recycling program and it depends on whether or not an infrastructure already exists in which to add this waste to other materials being recovered. From the many people we spoke with about how their educational institution implements book recycling, we have gathered some best practices that appear to work well for different educational institutions and/or groups. We offer these as examples of what could be put into place to achieve high-quality results.

Best Practices Methodology

Education

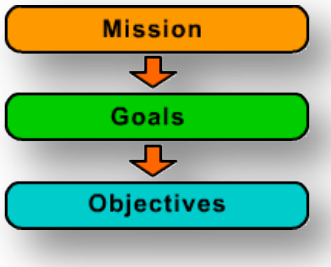
The key step in the development of any recycling program is the education of all the potential participants. Educational institutions interested in establishing a book recycling program need to educate not only the students, faculty, book stores, libraries, community neighbors, building and facilities staff, but the team that is organizing these efforts must be educated about setting achievable goals and implementing successful processes.

Some suggested best practices to ensure that the staff, program team, students, and interested parties are educated about the recycling process include:

Best Practices for Education:

- Assign or elect a point person for the book recycling program
- Work with your school's facility manager or school district's operational manager to find out what materials are currently being recycled at the school, and which company or companies handles the waste hauling and/or recycling
- Investigate whether or not the current waste hauler/recycler can accept hardcover and/or soft-cover books in the waste stream
- If the current waste hauler/recycler cannot accept books in their waste stream, review NWF's online resources to find other companies that can assist you
- Contact the local municipal recycling facility and request a meeting to discuss options for recycling books
- Contact your town/municipality's recycling coordinator to see if there is an opportunity to expand this event throughout the community

Mission, Goals, and Objectives



It is critical to the success of a book recycling program to have an established mission with specific goals and objectives. What do you hope to achieve? How will you reach your goals? Who will be part of the process? How will you measure your success? These are all important components to having a successful book recycling program.

Some suggested best practices to help you with this are included below:

Best Practices for Establishing Mission, Goals, and Objectives:

- As a team, establish a mission statement for the program, i.e., "Our goal is to recycle all textbooks that have reached the end of their useful life and can no longer be used"
- As a team, establish strategic goals, i.e, "Our goal is to recycle X pounds of textbooks in year 1, X pounds of textbooks in year 2, to engage 50 percent of the faculty and student population in the effort," etc.
- As a team, establish objectives that will help you to reach your goal. These can be objectives for partnerships, communication, education, implementation and evaluation
- Communicate your goals and objectives to school administration and faculty and facilities/operations staff as well as interested community partners and students

Communication

As with any project or program, communication is a key essential for the project's success. Sharing information on the project with peers, like-minded organizations, partners, and participants is critical to ensuring that everyone has common and shared goals, and works together to achieve those goals.

Some suggested best practices to enhance communication are listed below:

Best Practices for Communication:

- Set communication benchmarks and goals
- Create distribution and communication strategy plans
- Reach out to other book generators in the community (e.g., K-12 schools, libraries, universities) to coordinate events to achieve economies of scale needed for more cost-effective recycling of books
- Create and distribute flyers and/or other informational materials about the event
- Create updates and notices for online websites about the project and upcoming recycling events
- Involve each of the schools in the region in the communication and planning processes
- Involve local media with the event

Planning Process

The success of your book recycling program hinges on proper planning, communication, and implementation. For planning purposes, it helps to identify key stakeholders as well as the actions that each of them will contribute to the program. As Dwight Eisenhower put it, "The plan is nothing. The planning is everything."

Some best practices for establishing a planning process include:

Best Practices for Implementing a Planning Process:

- Remember that the hard part is not writing a plan. The hard part is doing the planning – thinking, negotiating, balancing, asking, listening, and thinking some more.
- A useful plan is much more than just a schedule or task list. it also includes:
  - Team roles and responsibilities
  - How you will recruit and train team members
  - Assumptions, dependencies, and risks
  - Establishing target dates for major deliverables
  - Identifying the "life cycle" of the project
  - How you will track and monitor the project
  - Metrics that you will collect and analyze
  - How you will manage any external and internal relationships
  - Project funding mechanisms

Facilitation

Someone has to facilitate the project to ensure that no stone goes unturned. The key point person would generally have that responsibility, but it can also be shared among the team members. The facilitation portion of the program ensures that communication lines are open, that expectations from each of the partners and team members are assigned and acknowledged, and that all the tasks flow into one another smoothly.

Some facilitation best practices include:

Best Practices for Facilitation:

- Work with team members to plan the process
- Ensure that all participants know the objectives and the intended outcomes
- Develop a common direction
- Manage the time properly for the project in order to achieve the objectives
- Guide the team's discussion, and ensure that points are understood by all members
- Ensure that program content (education, communication, etc.) is applicable and of high quality
- Manage the participation, energy, and group dynamics
- Actively listen
- Capture information in a comprehensive and organized manner
- Provide expertise. If you don't know the answer, find someone who does

Implementation

Implementing a book recycling program is where the "rubber hits the road." This is where the efforts you've expended through the education, communication, planning, and facilitation processes bear fruit. This is also where you need to have the best handle on program logistics and partner relationships.

Don't be afraid to ask for help – there are many people and organizations that can help you to succeed.

Here are some suggested best practices for implementation:

Best Practices for Implementation:

- Use existing recycling company with whom the school or organization already works, if possible
- Contact the recycler to see if they can pick-up and process books for recycling. If not, research other recycling companies in the community that accept books or online at www.nwf.org or www.Earth911.com
- Understand the economics involved in a recycling program – and the factors that can either make a program economically feasible or not. These economic factors can include transportation costs, processing materials (i.e., Gaylord pallets and/or cartons), staffing costs, market value/price of recovered fiber, etc.
- Ensure that notices have gone out to school faculty, administration, students, parents, and community members about the event well in advance, and again the week before the event
- Set out bins in heavily trafficked areas of the school or in a common area that has been agreed upon beforehand
- Ensure proper signage is in place for the event
- Ensure that the drop off location is staffed by team members or volunteers
- Prepare your books for pick-up: use Gaylord boxes, if possible, and use shrink wrap to secure each package. This ensures containment of the material and also the safety of the workers
- Send pictures of the current state of your books boxes and packing to the recycler before pick-up to ensure that everything is packaged appropriately for pick-up day.
- Have the recycling company weigh the books so that you know how much has been recycled
- If payment is involved, ensure that everything from pick-up to weighing to recycling is documented
- Document and photograph the process so that you have a record of your achievement
- Don't forget to thank everyone involved in the process and remind that this will be an annual event

Evaluation

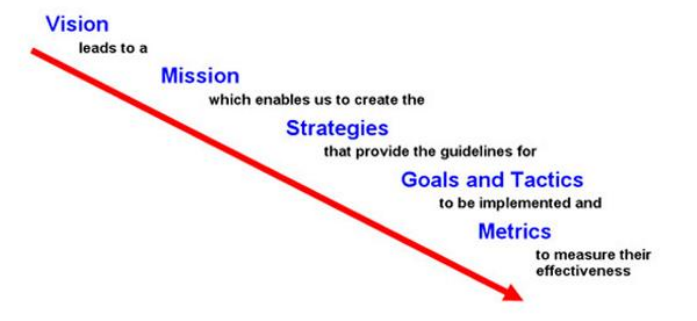
The project isn't over until you evaluate your progress against the goals and objectives you set out at the beginning. Evaluation includes assessing the planning and implementation processes, gathering the data, and reporting the results.

Here are some best practices that can help you with evaluation:

Best Practices for Evaluation:

- The purpose of evaluation is not only to gather metrics that measure the effectiveness of the project; it is also helpful to pinpointing areas that worked particularly well and those that did not
- Review the entire process from planning through implementation with your team
- Record information regarding what worked and what didn't as well as what might have worked better
- Gather data on the resources that you used, i.e., man hours, number of people engaged in the process, number of Gaylords, boxes, and pallets that you used, etc.
- Gather data on performance of partners – the recycling company, the staff and faculty, the community, the students, etc. How many participated? How was their performance? Did they meet expectations?
- Gather financial data associated with the project – both expense and revenue
- Prepare a report for administration on the success of the project. Identify what could be done to make the project even more successful for future years
- Communicate the results of the collection event back to the students and faculty, including how many books (or pounds of books) were collected and recycled.
- Include in the final report recommendations for future book collection events , i.e., making this an annual or semi-annual event.
- Celebrate your successes

This might help you to keep the entire process in perspective – it takes vision to implement a program, it takes strategies, goals and tactics to make it happen, and it takes metrics to measure success.



Appendices

Appendix	Focus/Subject
A	National Resources
B	State Resources