FEATURE

# A Century of Change

## The Evolution of School Library Resources, 1915–2015

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Complete with lantern slides and Victrola records, the Library of the Girls' High School in Brooklyn was featured in the September 1915 issue of *Library Journal*. Called "the best-equipped and most up-to-date high school library to be found anywhere in the country," this library represented the growing interest in providing students access to both books and other types of instructional materials beyond the textbook. Mary E. Hall, the school's librarian, stressed the importance of their "national campaign for better high school libraries" (Hall 1915, 627). The goal of advocates was to have a library in every city high school in the country.

The past century has seen tremendous changes in school library resources. However, the mission of school libraries has remained the same. Professional school librarians have sought to meet the informational and instructional needs of students along with helping them develop a lifelong passion for inquiry, reading, and learning. Over the past century, in what ways have school library resources evolved to meet the needs of teachers and students?

## Instructional Resources

A century ago school libraries weren't new, but they were just becoming widespread. One reason for this growth was a shift in teaching practices. Increasingly, teachers were moving away from lectures and the use of textbooks. Instead, schools were becoming viewed as laboratories where students used books and visual resources for information exploration, small-group discussions, and project-based learning. Over the past century, the resources available in the school library have expanded and evolved.

## Books

A century ago, youth read the works of Shakespeare in books much like they had done since the plays were first published. Over the past century, the plays became available as illustrated editions, comic books, audio recordings, and even feature-length films. Today, Shakespeare in Bits by MindConnex is a software app that provides hours of high-quality animation, professional audio, and easy-to-follow unabridged play text. Tools built into the text provide line-by-line translations to help with difficult words and antiquated phrases.

The evolution of the book from text on paper to multimedia digital formats occurred gradually as each new technology added a new dimension to the classic form.

Already in the 1910s, students listened to works of poetry on phonograph records. However, the short length of records made listening to books impractical. Although talking books for the visually impaired were introduced in the 1930s, it wasn't until the 1950s that records could handle forty-five minutes of content, making audiobooks a reality. Books on cassette tape became widespread in libraries during the 1970s. Many publishers created book sets containing a tape along with a picture book. Books on CD were introduced in the 1980s and were replaced by digital downloads in the 2000s.

While unabridged audiobooks are identical in content to their print counterparts, book adaptation for film is quite different. In the 1950s, many picture books, such as *The Little House* by Virginia Lee Burton, became Disney film shorts. Most children are familiar with the Disney adaptation of books like *Old Yeller*.

In 1992 the Living Books series featuring interactive, animated, multimedia children's books became popular on CD-ROM. Featuring well-known characters such as Little

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Critters and Berenstain Bears, they contained options for read-aloud and interactive play. Like many other CD-based software packages, these interactive books became mobile apps and are now distributed by Oceanhouse Media.

Over the past decade, electronic books have risen in popularity. E-books feature linear content equivalent to a print book. However, many of the e-book devices contain tools such as highlighters, dictionaries, and note-taking options. Enhanced e-books may contain links to images, websites, and embedded media. Specialized e-book readers, computers, tablets, and handheld devices can all be used to read e-books.

Recently, graphic novels designed specifically for children and young adults have gained popularity. Some are even available in interactive forms for free such as *The Big No-No!* by Geoffrey Hayes <www.professorgarfield.org/toon_book_reader>.

Transmedia storytelling involves a multimodal, multimedia story with nonlinear, participatory elements. Resources connect the story to print materials, documents, maps, web-based clues, social networks, games, and media. The main line of the story may or may not be in one location as in a traditional book. Authors like Patrick Carman have become known for their transmedia works.

It's likely that the interactive features of books will continue to be enhanced as new digital formats are developed.

## Information Collections

For much of the century, librarians spent hours locating and organizing materials for vertical files. Bulletins, circulars, and pamphlets for timely information were carefully sorted by subjects. Government publications were an important source of print materials. Today, libraries continue to make use of these publications. However, many agencies have extended their resources to include games and interactives specifically designed for youth. These are easily accessed through websites like usa.gov.

In the 1920s and 1930s libraries began converting books, manuscripts, and eventually newspapers to microfilm. By the mid-1960s a microform reader could be found in most libraries. Like many other information sources, microforms have been converted to a digital format in recent years.

Mass digitization of books and other documents through projects like HathiTrust, American Memory, The Internet Archive, Project Gutenberg, and Google Books has made access to huge amounts of information a reality. Many of these titles are open-access and in the public domain.

Increasingly, reference materials are available through online subscriptions. In addition, many are being redesigned as single-subject apps. These resources provide nonlinear access to records of information previously found only in print materials. Medical databases and field guides are particularly popular in this format.

As the cost of physical media continues to increase, digital alternatives are likely to increase in popularity.

## Visuals

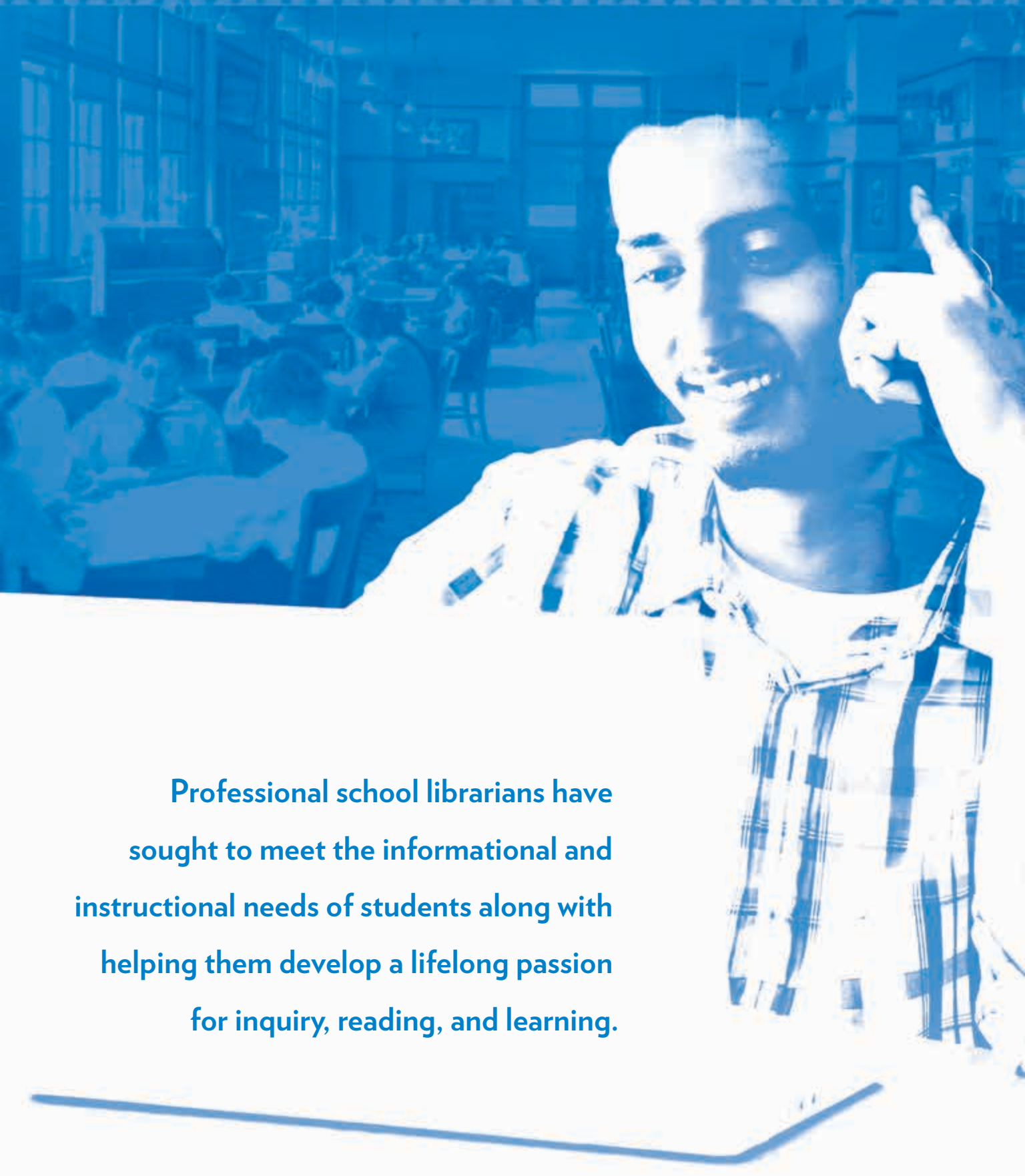
Applied to the use of everything from historical photos to reproductions of artwork, the term "visual instruction" has been used for over a century to describe the use of graphic representations of information in teaching and learning (Ward 1913).

In 1923 school librarian Anne Eaton described the visual materials she shared with her students:

> The out-door books on the list for summer reading and for use in making summer collections were placed on tables in the library class room. Plates illustrating insect, plant, and animal life, and United States geological survey topographic maps were displayed on the bulletin board, and the children were given the opportunity to look over the books and discuss them with teachers and librarian. (Eaton 1923, 12)

Today, many of these same resources would be used with two key differences. A quick search of the Web would provide students with access to millions of visuals including easy-to-access digital collections. In addition to print maps, interactive, web-based maps and satellite imagery like Google Maps would allow youth to easily navigate to locations around the world.

In the 1920s photographs, slides, and filmstrips commonly were used in classrooms. Visuals might include line drawings and basic diagrams. However, by the 1940s charts, graphs, posters, maps, and cartoons began to play more important roles in learning materials. Recently, this list has expanded to include high-quality infographics and data visualizations. Today's digital images often include interactive components that allow students to click for additional information or easily reuse data to build their own



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graphic representations. Online tools allow students to create professional-quality visual products.

Currently, search engines have only a limited ability to search by image. In the future, it's likely that more sophisticated tools will be able to assist school librarians in locating relevant images for learning.

### Audio

From listening to famous speeches on the Victrola to downloading science podcasts, throughout the past century audio has been an important channel of communication for learning.

In the 1920s and 1930s instructional radio made a brief appearance with some schools hosting their own radio shows, often coordinated with music programs. Unfortunately, battles between commercial broadcasters and educators over allocation of frequencies marked the decline of the movement. In the 1960s and 1970s, audio tutorials were set up in library study carrels. These were frequently used as part of language-learning laboratories. Today, audio has been woven into instructional software tools such as Rosetta Stone and Mango Languages for language instruction.

During the middle part of the century, audio materials frequently shifted formats: vinyl records, reel-to-reel tapes, 8-track tapes, audio cassettes, CDs, and, ultimately, digital audio recordings. Today, music and spoken-word content can be found online at poetry websites and in oral history digital collections, for example.

The availability of built-in microphones on many devices has made audio production easy. Students can narrate their presentations, add audio to animations, or record their own music.

In the future, digital downloads will continue to be a popular way to access both music and spoken-word files. More sophisticated search engines will allow more effective audio searches.

## Motion: Film, Television, and Video

Most of the early films used in schools were theatrical releases adapted to the educational environment. However, some short-subject films were produced for education. For instance, Percy Smith's *The Birth of a Flower* (1910) used time-lapse photography to show the opening of flowers.

During the 1910s film companies began producing low-cost, portable projectors for school use, and a few companies produced films specifically for instruction. Thomas Edison proclaimed the educational value of film, stating, "books will soon be obsolete in the public schools." Edison even planned an education division in his film company (Smith 1913).

School library standards established in 1920 identified the need for centralization and distribution of visual materials including "portable motion picture machines" and "moving picture films" to increase efficiency (Certain 1920, 21). A film such as *A Tale of Two Cities* could be integrated into both literature and history classes.

When audio was introduced to film in the 1920s, some educators rejected sound as a technical novelty without instructional merit. Yet a decade later, many school librarians became caught up in the film-appreciation movement. While censorship of the film industry was pervasive in society during this time period, educators wished to help young people critically evaluate the contents of film and hoped to turn passive viewers into critical thinkers.

In the *North Carolina School Library Handbook* published in 1942, it was noted that "only a few schools are acquiring large film libraries, but many schools own projectors and are renting films of educational nature" (Douglas 1942). After World War II a wave of new instructional research and techniques learned during the war were applied to the production of instructional films.

In 1952 the Federal Communications Commission set aside a channel exclusively for educational broadcasting. Early research showed that instructional television programs were just as effective as live lectures. Researchers found that differences in learning were due to the follow-up activities by teachers in the classroom (Saettler 1968). This research continues to be used to show why skilled teachers are needed to make effective use of technology.

From the 1960s through the 2000s, many older films were repurposed in new formats, including videotape, laserdiscs, CDs, and DVDs. Many instructional producers developed learning guides to go with these films. Each new technology added interactive features. Barcodes with laserdiscs allowed quick access to film segments. Hypermedia tools in the 1990s allowed developers to incorporate video into computer-based lessons.

Today, streaming-video services allow students to quickly locate and view single-concept videos and clips along with full programs. Nonprofit organizations such as Khan Academy provide high-quality instructional videos at no cost.

As bandwidth continues to increase, streaming video will become more accessible in schools, and better search engines will allow visual and audio searches of videos.

## Screens, Projectors, and Interaction with Data

The ability to display and interact with information on a wall or large screen is an important instructional option for teachers. A century ago, school librarian Mary Hall noted that "a radiopticon or lantern with the projectoscope in which a teacher can use not only lantern slides but postcards, pictures in books and magazines, etc. is a most important part of the equipment" (1915, 629).

Film, slide, opaque, and overhead projectors along with television sets dominated the middle part of the last century. However, they've been replaced by data projectors and electronic whiteboards for large-group instruction. Small, personal screens found on laptops, tablets, and handheld devices have replaced the larger computer screens of the past. Screen-reader software and other assistive technologies have made resources more accessible to those with special needs.

In the future, viewing devices are likely to evolve to meet changing needs. Already, touch screens and voice-activation tools are commonplace. Touchless options

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such as eye controls currently being used in assistive technology and robotics are likely to become mainstream along with holograms and screens that roll up.

### Kits, Games, and Realia

From museum exhibit cases containing skulls and beehives to globe displays, school libraries in the last century have contained many tangible items.

Following the launch of Sputnik in 1957, the United States established attainments in math and science as high priorities. As a result, a large influx of money became available in the 1960s through the Elementary and Secondary Education Act. The section known as Title II funded school library resources, textbooks, and other instructional materials. Instructional materials—including learning kits, models, study prints, recordings, film loops, transparencies, flash cards, games, specimens, puppets, musical instruments, and other materials—were purchased.

Hands-on experiences continue to be important to school library programs. However, these hands-on experiences are often paired with digital tools and electronic resources.

### Teaching Machines to Computer-Based Instruction

The rise of individualized instruction during the twentieth century provided the foundations for many of the learning apps produced today. Individualized instruction allowed students to work at their own pace through paper-based learning materials. New information and examples were provided in very small increments. Then, learners answered questions and received feedback on their responses. Additional instruction was provided as needed before proceeding to the next concept. Introduced a century ago, these types of self-instructional booklets are still used to teach some subjects today.

The Pressey machine was introduced in the 1920s to automate individualized instruction, but the device never caught on. Then, in 1954 B. F. Skinner introduced the idea of programmed instruction using a "teaching machine." By the 1960s the programs were adapted for use on computers, and the teaching machines abandoned. However, the ideas were recycled by other educational producers. For instance, in the early 1960s World Book Encyclopedia introduced the Cyclo-Teacher Learning Aid, a self-paced learning and testing tool.

Computer-assisted instruction (CAI) emerged in the 1960s, relying primarily on drill-and-practice and tutorials-presentation modes. Although the approach was later adapted for use on microcomputers in the late 1970s and 1980s, the impact on the educational market was never significant. With the focus of educators shifting toward cognitive psychology, computer-based instruction changed, too. New programs stressed simulations and problem solving. Students also began using the computer as a tool for writing and creation.

Today, software producers incorporate a spectrum of educational theories and technologies to produce educational games, interactive websites, and mobile apps. Social-media tools have provided new ways for learners to collaborate and share the learning environment. However, as with earlier attempts, the potential impact on education has not yet been fully realized.

### Access

It's not just the resources, but how we gain access to the information that has changed. School librarians have always been concerned with the ability to provide quick access to information. In 1921 school librarian Carrie Parks stated:

> "This illustrates one of the most important features of a library in close connection with classroom work—immediateness. A need arises suddenly and is promptly and adequately met. In a class in American history when General Sheridan was discussed, several pupils showed a hazy memory or ignorance of Reed's poem. The teacher sent to the library for it and read it to the class; thus the association was immediate and correspondingly impressive." (Parks 1921, 277)


This idea of immediacy has evolved over the past century. Today, a quick Google search reveals thousands of references to Thomas Buchanan Read's famous poem "Sheridan's Ride," along with a cover of *Harper's Weekly* showing Sheridan's famous ride. From discussions about the misspelling of the poet's name to in-depth analysis of the impact of the poem in promoting the Northern war effort, it's easy to see how instant access can be a benefit. However, new issues like information overload are still emerging.

In 1916 only 16.5 percent of school libraries in the South had card catalogs (Certain 1916). However by mid-century, card catalogs were seen as essential. With the introduction of microcomputers around 1980, many schools automated their catalogs, and today most are now available online. However, web-scale discovery systems are just beginning to impact school libraries. The trend is toward providing easy access to multiple data sources within a single search.

## Conclusion

School libraries have been in existence since at least the eighth century. However, it wasn't until

the twentieth century that the school library was seen primarily as "a source of enrichment for the curriculum, and a means of developing reading and study habits in the pupils" (Clyde 1981, 263).

In 1923 school librarian Ann Eaton described a timeless history project:

> "When a seventh grade history class was studying the medieval castle, materials were collected to aid the class in drawing a plan of a castle and then in planning its assault and defense. These materials, arranged on the display rack, consisted of books like Tappan's *When Knights Were Bold*, Quennell's *Everyday Things in England*, historical stories such as Pyle's *Men of Iron* and *Otto of the Silver Hand*, Marshall's *Cedric the Forester*, Longman's historical illustrations, and other pictures illustrating castles, sieges, and attacks. Later, pictures illustrating costumes, armor, and life in the middle ages were added. The librarian was present at the class period when the plans of attack and defense were explained, and helped in deciding which side won." (Eaton 1923, 11)

In the 1950s librarians recognized the importance of separating the content from the format.

> We give our readers not wax, not photographs, but the spoken word—the poem, the story, the drama told aloud. We give them not film, not projectors and beaded screens, but the vision of life recreated for their pleasure and understanding. These are the things that books are made of too, and therein lies real unity. When sight and sound are fully accepted in the world of books, when the unity of content is fully recognized, we will have better libraries, better readers, and better people. (Swank 1953, 1464)

While the formats available and tools for accessing information have changed, the school library's focus on providing access to quality content and designing engaging learning environments remains the same. It's likely that new formats for creating, organizing, and sharing ideas will continue to be invented, along with new ways to access this information. But as always, the excitement of hands-on, information-rich, project-based learning environments will continue to be the key to effective school library programs.

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