Leveraging AI in School Libraries

From Basics to Best Practices

Delandrus Lenet Ieashea Seales

ALA Editions
CHICAGO | 2026

AASL American Association of School Librarians
TRANSFORMING LEARNING

Delandrus Lenet Ieashea Seales, MLS, MAT, is a teaching and learning librarian at the University of North Carolina (UNC) Wilmington. With sixteen years of K–12 experience as a special education teacher, school librarian, public library branch manager, and now as an academic librarian, she brings diverse expertise to her role. Delandrus earned her bachelor's degree in biology from the University of Hawai'i at Mānoa and an MLS from East Carolina University as an Institute of Museum and Library Services Laura Bush Scholar, and she is currently a doctoral student at UNC Charlotte, researching learning, design, and technology. She serves as a board member for a North Carolina educational technology organization, serves on several Association of College and Research Libraries online learning and instructional technology committees, is a member of the Black Caucus of the American Library Association (ALA), and is an ALA Committee on Library Advocacy ecosystem representative.

Acknowledgment of AI Assistance

AI tools were used to generate results and responses to author-written prompts for the examples provided in this work. The author has critically evaluated and integrated these contributions, ensuring that the final work reflects the author's original thought and expertise.

ISBN: 979-8-89255-305-6 (paper)

Library of Congress Cataloging-in-Publication Data
Names: Seales, Delandrus Lenet Ieashea, author
Title: Leveraging AI in school libraries : from basics to best practices / Delandrus Lenet Ieashea Seales.
Description: Chicago : ALA Editions, 2026. | Includes bibliographical references and index.
Identifiers: LCCN 2025017256 | ISBN 9798892553056 paperback
Subjects: LCSH: Artificial intelligence—Library applications | Artificial intelligence—Educational applications | School libraries—Technological innovations | School libraries—Information technology
Classification: LCC Z678.93.A77 S43 2025 | DDC 027.90285/63—dc23/eng/20250604
LC record available at https://lccn.loc.gov/2025017256

Book design by Alejandra Diaz in the Utopia Std and Galano Classic typefaces.

♾ This paper meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

Printed in the United States of America

30 29 28 27 26 5 4 3 2 1

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Additional materials are available online at **alaeditions.org/AASLextras**, including

- the Sample Template for an AI Research Journal (from chapter 9),
- the Artificial Intelligence Needs Assessment Survey (from chapter 10),
- appendix A,
- appendix B, and
- several text boxes throughout the book, including
  - A CLEAR Framework for Prompt Engineering in K–12 Settings (from chapter 2),
  - AI and the Shared Foundations (from chapter 5),
  - A Clear Framework to Help Learners with Prompt Engineering (from chapter 6),
  - AI Reflective Research Practices (from chapter 9), and
  - Essential Steps for Developing AI Policy in K–12 Schools (from chapter 10).

INTRODUCTION

AI-Powered Learning

This book explores the exciting and transformative role of artificial intelligence (AI) in school libraries, offering practical strategies, insights, and tools for school librarians to integrate AI into their daily instructional and working practices. The content is structured to guide you in harnessing the power of AI to enhance school library services, support student learning, and streamline your own professional workflows.

Part I introduces the foundational concepts of AI. Understanding these core principles will provide the groundwork for effective prompt engineering, a key skill for engaging with AI tools in an educational setting. By mastering these concepts, school librarians can better support learners, staff, and other educators in navigating and using AI technologies effectively.

Part II covers the practical uses of AI for improving instructional practices and enhancing your productivity as a school librarian. This section will explore how AI can be leveraged to improve instructional practices, such as personalizing learning experiences for students, automating routine tasks, and providing data-driven insights to inform your teaching strategies. Also highlighted are ways in which AI can enhance your productivity by streamlining administrative duties, managing school library resources more efficiently, and facilitating better communication with learners and other educators. By integrating AI into daily operations, school librarians can create a more dynamic and responsive learning environment.

Part III begins with an exploration of AASL's *National School Library Standards* and how AI can directly benefit learners in the school library setting. We'll explore how to guide learners in using AI for brainstorming, proofreading, research, and creativity. We'll also examine AI's applications across various content areas including science, language arts, and social studies. We'll give special attention to rethinking plagiarism in the age of AI, including creating strategies for facilitating learner reflection, using AI tools to detect potential plagiarism, and teaching learners how to properly cite AI-generated content using prompt generators. By mastering these techniques, school librarians can ensure that learners use AI ethically and effectively, while also enhancing their learning experiences.

Part IV delves into the expansive role of AI in the school library, with practical advice on formulating AI policies and procedures that align with your library's mission and goals, guiding and supporting other educators in integrating AI into their instruction, and promoting professional development that will equip educators with the necessary skills and knowledge to use AI tools confidently. We'll also discuss the importance of equity in AI, including how to evaluate AI tools for bias and fairness. This appraisal ensures that the AI technologies implemented are inclusive and beneficial for all learners. By addressing these aspects, school librarians will be prepared to create a more equitable and innovative learning environment in the school library.

The AI-generated example entries in this book have not been edited and are used verbatim. You will notice copyediting and stylistic errors in some of these entries. However, that is the point—for you to see and understand the raw output that learners and school librarians can expect from common and current AI tools. The images created using AI tools were converted to black and white for this book.

The book concludes with an insightful look at the future of AI in education, providing the knowledge to help you stay ahead of emerging trends and prepare for an AI-powered future. This section will help you anticipate and adapt to new developments, ensuring that your school library remains at the forefront of educational innovation. A glossary of key terms is included. These terms are italicized upon their first appearance in the book. The AASL Standards Frameworks Applied to Generative AI Practices that is featured in appendix A is also a digital download. When the digital download symbol is used in the text, that piece—text box, survey, template, or appendix—is available for download online at **alaeditions.org/AASLextras**. Through this journey, you'll discover not only how AI can be integrated into school library practices but also how to leverage it to foster a more personalized, equitable, and innovative learning environment for both learners and educators.

PART I

Understanding AI

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The Impact of AI on Daily Life

Advancements in technology have fundamentally reshaped learning environments and instructional methods. The integration of digital tools in education has made learning more interactive, engaging, and accessible, catering to diverse learning needs and styles. As technology continues to evolve, it is essential for educators to stay informed about these developments and emerging trends to effectively integrate them into their teaching practices. Among the most transformative of these innovations is the rise of artificial intelligence (AI), which has already begun to significantly influence educational technology and instructional practices. For school librarians, other educators, and learners, this shift presents new opportunities for innovation, efficiency, and personalized learning. AI is not just changing how we teach and learn—it's creating new possibilities for how we approach education in the twenty-first century.

The Evolution of AI

The term *artificial intelligence* often evokes images of science fiction films, TV shows, and books, in which AI is depicted through dystopian themes and advanced robotics. News reports, social media, and some educational institutions have contributed to growing fears and uncertainty surrounding the use of AI. However, the reality of AI in today's world is far less sensational and far more practical. Although it's important to acknowledge the challenges and ethical considerations that AI presents, much of the fear stems from a lack of understanding about how AI actually functions and the ways it can be harnessed for positive change.

Artificial intelligence did not just fall out of thin air and into our lives. AI has evolved from a desire for greater convenience and control over technology. In the early 2000s, smart home devices such as thermostats, lightbulbs, and hubs such as Amazon Echo and Google Home began transforming how we interact with everyday objects. Voice assistants like Siri (introduced in 2011), Alexa (2014), and Google Assistant (2016) further cemented AI's role in personalizing user experiences, from managing smart homes to answering queries instantly. Streaming services such as Netflix, Hulu, and Amazon also refined their *algorithms* to suggest content based on viewing history. Further breakthroughs, such as parking-assist technologies and Tesla's Full Self-Driving software (2020), began to change transportation. Despite mixed success, these advancements set the stage for AI-powered applications in multiple industries. Many of these AI-powered technologies were developed to facilitate our desire for personalized automation, and AI's ability to learn from user preferences and routines has led to more efficient and sustainable technologies, increasing productivity and enhancing safety. As with the introduction of many technological innovations and inventions throughout history, initial fears surrounding AI will eventually give way to its broader integration into everyday life.

The Hidden Costs of AI—Balancing Innovation with Sustainability

Artificial intelligence has already become an integral part of our daily lives, influencing aspects from personalized recommendations on streaming platforms to automated customer service. However, the environmental impact of AI is significant and often overlooked. Training AI models, especially large ones like those used in *natural language processing* (NLP), requires substantial computational resources, which in turn consume a considerable amount of energy. NLP is a type of AI that helps computers understand and respond to human language (e.g., when you talk to Alexa or Siri). As an example of the magnitude of energy consumption, training a state-of-the-art NLP model can emit as much carbon dioxide as the lifetime emissions of five cars.[1] This high energy consumption not only leads to increased carbon emissions but also contributes to the depletion of nonrenewable energy sources, exacerbating climate change.[2]

AI's environmental footprint extends beyond carbon emissions to include water usage. Data centers, which house the servers running AI models, consume vast amounts of water for cooling purposes. For example, training the

GPT-3 model in Microsoft's data centers requires the evaporation of more than 700,000 liters, or approximately 184,920 gallons, of clean fresh water.[3] This water consumption is particularly concerning given the growing scarcity of freshwater resources available globally. Addressing AI's environmental impact requires a holistic approach that includes developing energy-efficient algorithms, transitioning to renewable energy sources, and improving water usage efficiency in the data centers. By understanding and mitigating these impacts, we can ensure that AI continues to benefit society without compromising our planet's health.

AI as Educational Technology

Believe it or not, educational technology predates the age of computers and the internet (figure 1.1)! The introduction of blackboards revolutionized classroom instruction in the 1800s by providing a shared visual space for both learners and educators. In the 1920s, moving picture projectors transformed the learning experience, introducing dynamic visual content into the classroom. The 1970s saw the arrival of personal computers, which gave learners access to vast amounts of information and opened the door to individualized learning. By the 2000s, unprecedented flexibility and accessibility increased with the emergence of online learning platforms, allowing students to learn at their own pace and from anywhere. Today, learners—with or without guidance from school librarians and other educators—are already engaging with AI through the apps, websites, and digital tools they use daily.

Once AI-powered tools entered our personal lives, it was not long before they made their way into schools. Google increased the functionality of its search engines with advanced algorithms to produce more relevant results by attempting to predict search queries. In schools, AI-powered tools such as *predictive text* and *smart compose* began assisting learners with writing assignments and online research. Other applications emerged to help learners solve math problems, watch instructional videos for reteaching, and even translate languages in real time via smartphones. Some school libraries also embraced AI, integrating *smart devices* such as Alexa Dots and Siri-enabled iPads to support learners as ready reference assistants. Today, AI tools are a readily available part of the editing and revision process, aiding learners in refining their work. School librarians can use these tools to guide learners as they brainstorm ideas and navigate research and to improve their own professional workflows.

FIGURE 1.1

Educational technology: A timeline

1800s	**Chalk** • Full-sized chalkboards introduced	• Handheld slates with chalk used for learners' note-taking
EARLY 1900s	**Pencils and Paper** • Mass production of pencils and notebooks makes slates obsolete	• Stereoscope allows for viewing 3D images
1920s	**Distance Education** • First lessons broadcast on radio	
1930s	**Educational Film** • Filmstrip projectors introduced and used in classrooms	
1940s	**Class Equipment** • Mimeograph invented and used to make copies for learner assignments	• Overhead projectors invented and used during World War II to train soldiers
1950s	**Theory and Television** • Learning Labs introduced for foreign language instruction	• B. F. Skinner invents the Learning Machine • Television increases in popularity
1960s	**Live from the Studio** • Educational television trends	• *Sesame Street* becomes a popular children's television show
LATE 1970s	**Computing** • Handheld calculators invented	• Apple computers invented
1980	**PCs** • Personal computers added in schools and classrooms	
LATE 1980s	**Software** • Graphing calculators invented	• PowerPoint software introduced

continued on next page

As technology continues to evolve and become more embedded in daily life, school librarians and school libraries must also prepare to guide learners in understanding and using cutting-edge tools like AI. School libraries are uniquely positioned to help learners explore AI applications and unlock new possibilities for learning and critical thinking. AI is an instructional technology that can serve a meaningful purpose in developing the skills necessary for learners' success in college, career, and life.

AI and the AASL Standards

Integrating AI into school library instruction can significantly enhance the learning experience, transforming both how school libraries operate and how learners engage with information. AI offers new ways to personalize learning,

EARLY 1990s	**Interactivity** • Interactive whiteboards introduced
1994	**Connected** • World Wide Web invented
LATE 1990s	**Connected 2.0** • First wiki site goes live • Google is incorporated • First blogging site (LiveJournal) goes live
2000s	**Web 2.0 and Mobile** • E-learning platforms, online courses, and e-textbooks emerge • Virtual Learning Environments • Web 2.0 tools (blogs, wikis, social media) • Smartphones, tablets, and cloud computing impact education
2010s	**Ed Tech Revolution** • Massive open online courses (MOOCs), learning management systems (LMSs), response tools, and gamification gain traction in education • Virtual reality (VR) and augmented reality (AR) become instructional tools • Artificial intelligence (AI), personalized learning, and adaptive tools emerge
2020s	**Pandemic** • Remote and flipped learning are widespread in response to the COVID-19 pandemic • One-to-one device programs widely implemented • Learning analytics inform instruction • AI-integrated ed tech tools and LMSs

Sources consulted: F. Martin, V. P. Dennen, and C. J. Bonk, "A Synthesis of Systematic Review Research on Emerging Learning Environments and Technologies," *Educational Technology Research and Development* 68, no. 4 (2020): 1613–33; M. Molenda, "Historical Foundations," in *Handbook of Research on Educational Communications and Technology*, 3rd ed., edited by D. Jonassen et al. (Routledge, 2008); S. J. Warren, J. Lee, and A. Najmi, "The Impact of Technology and Theory on Instructional Design Since 2000," in *Handbook of Research on Educational Communications and Technology*, 4th ed., edited by J. Spector, M. Merrill, J. Elen, and M. Bishop (Springer, 2014).

streamline research processes, and support critical thinking. This potential aligns closely with the American Association of School Librarians (AASL) *National School Library Standards for Learners, School Librarians, and School Libraries,*[4] which outlines the essential knowledge, skills, and dispositions learners need to effectively navigate and use information and technology. The AASL Standards also guide school librarians and school libraries as they empower learners to think critically, create new knowledge, share their learning, and grow as individuals—objectives that AI can support in powerful ways.

The AASL Standards Frameworks Applied to Generative AI Practices, detailed in appendix A and available as a web extra at **alaeditions.org/AASLextras**, was developed to integrate AI practices within the existing AASL Standards. This framework was created to provide a structured approach for school librarians to incorporate AI tools into their instructional practices, ensuring that learners can benefit from the latest technological advancements while adhering to established educational standards. The framework is organized into six Shared Foundations: Inquire, Include, Collaborate, Curate, Explore, and Engage. Each Shared Foundation outlines specific applications of generative AI that align with the AASL Standards, offering examples and best practices for implementation.

To use this framework effectively, school librarians can refer to the detailed tables in appendix A, which provides a comprehensive guide on how to apply generative AI in various instructional scenarios. For example, the Inquire Shared Foundation emphasizes using AI to help learners formulate questions, recall prior knowledge, and create visual aids. This framework also highlights the importance of reviewing AI-generated content for accuracy, ensuring that learners develop critical thinking skills and rely on trustworthy information. By following the AASL Standards Frameworks Applied to Generative AI Practices, school librarians can enhance their instructional practices, support learner engagement, and foster a deeper understanding of generative AI's impact on information literacy in the digital age.

NOTES

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