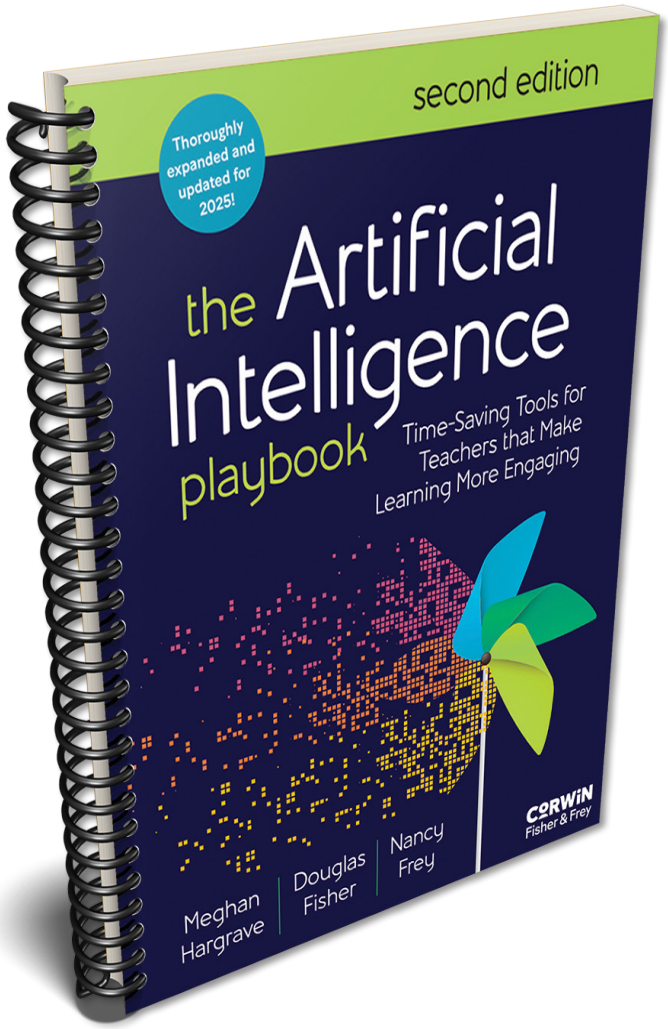

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INTRODUCTION

The Road Ahead: Navigating AI in Education

For many educators, the new technology came as an unwelcome surprise, particularly for those teachers who were suddenly asked to use it. Many teachers complained about the added work the new technology created for them, and some students refused to comply with the new rules established for it. In fact, the new technology sparked a rebellion of sorts. Some students walked out over the policies. Some students were expelled over it. Yes, in 1830, *when chalkboards were introduced at Yale University,* it was a bumpy road to implementation (Green, 2015). A young man named Alfred Stillé, who eventually went on to become a president of the American Medical Association, was just one of the students expelled from Yale because of this rebellion, and there were certainly many others.

Similarly, when television was introduced into the classroom, educators and family members expressed concern. Some even called it the "electronic chalkboard" or "a numbing substitute for real teaching" (Blubaugh, 1999). The controversy was exacerbated with the introduction of Channel One, a news program that included advertising targeted at youth. In fact, 20 percent of the broadcasting time was spent on ads. Although Channel One was banned in many states, the reach was significant, with millions of students watching daily. Our point here is that technology that exists in society will permeate schools, and we must learn how to use the tools effectively.

A NEW EDITION ALREADY?

The publication of a second edition of this book in such a short time is a testament to the breathtaking pace at which generative artificial intelligence (AI) is evolving and reshaping education. When the first edition was released in early 2024, many educators were just beginning to explore AI's potential in their classrooms. Since then, advancements in generative AI and its applications in education have progressed faster than anyone could have anticipated, introducing new tools, updated platforms, possible uses, and ethical questions at an unprecedented rate. What once seemed futuristic now feels urgent, and the need for educators to adapt and guide their students in this rapidly shifting landscape has never been more critical.

This expanded second edition reflects the transformative changes that have emerged since the first publication, offering updated strategies, insights, and examples that account for the latest developments in AI technology. It also recognizes the growing importance of AI literacy—not just as a specialized skill but also as a core component of modern education. As the role of AI expands across industries, preparing students to engage with it thoughtfully, critically, and responsibly has become an essential function of teaching. We are reminded of the words of Andreas Schleicher (2018), director of education for the Organisation for Economic Co-operation and Development (OECD): "We must educate students for their future, not our past." In these pages, educators will find the tools they need to embrace this challenge, not only to stay current but also to lead the way in shaping how AI supports and enhances learning in their classrooms.

EDUCATION CONTINUES TO EVOLVE

It is important to note that for many teachers, the topic of AI and the pending changes can feel scary. As familiarity and comfort with classroom tools and routines decrease, anxiety increases. It is natural to mourn some of the aspects of the past that have been replaced. When we ask educators to talk about *what was* versus *what is*, they often identify some of the following changes:

What Was	What Is
Cursive skills	Print and typing skills
Long-division algorithm	Ability to explain math reasoning
Knowing to indent when paragraphing	Proficient with computer editing tools
Familiarity with Shakespeare	Understanding of author's craft and purpose (what authors seek to accomplish and techniques used)
Name and date a page	Submit assignments on a learning management system and independently navigate many digital assessment platforms

That's not to say that traditional skills like handwriting and cursive should be eliminated or that students should not know Shakespeare. It's just that given the technology that exists and the society in which we all live, some of those skills we may have enjoyed teaching in the past have evolved into other competences.

As students begin to use AI systems more and more frequently, they will still need to think about the information generated. In fact, critical-thinking skills will become increasingly valued as students receive an increasing number of synthetic texts generated by AI systems. Learning will continue to require core competencies such as analysis, inferencing, verbal reasoning, and problem-solving, but these skills might be applied in new ways and different contexts. Students who face challenges with these important critical reading skills will find themselves at an increased disadvantage as generative AI produces content that requires close reading and analysis. Writing original texts will also be highly valued. In fact, skills for writing prompts for the AI systems, which we will address in Module 2, are already being taught in schools.

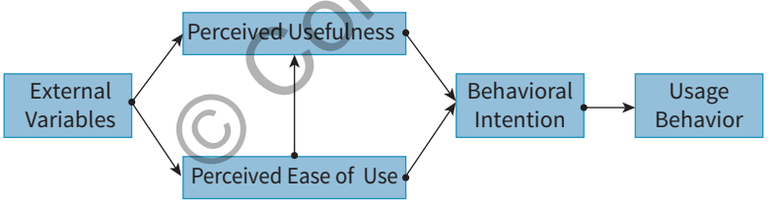
Stop and Jot

Reflecting on Transformative Technology

What other types of technology have been introduced into schools, and how have they been received?

Each innovation in technology requires careful consideration for educators. But, like chalkboards and TV, many popular technological innovations either will be here to stay or will impact what comes down the road. For example, the iPod is no longer widely used, but modern smartphones have the same features it offered and much more. The challenges associated with advancing technologies reminds us of the technology acceptance model (Venkatesh & Davis, 1996; see Figure i.1), which suggests there are a range of external variables—including quality of content, utility, price, and design features—which then impact decisions about technology adoption and use. In education, external variables also include the need for new or better instructional strategies and student needs that are not currently being met.

Figure i.1 • Technology Acceptance Model



Source: Adapted from Venkatesh & Davis (1996).

The eventual adoption of the technology, whether it be chalkboards, TV, or the internet, is influenced by perceived usefulness and ease of use. In other words, users ask questions like the following:

- Does it meet a need that I currently have (usefulness)?
- Can I easily learn how to use it (ease of use)?
- Is there a reason I must use it (required use)?

These variables impact the user's intention, which means the user forms a desire to incorporate the technology because the perception is positive. Our goal in this playbook is to show you not only how to use artificial intelligence, but also how it can meet your instructional needs in positive and productive ways.

THE INTRODUCTION OF GENERATIVE AI

On November 30, 2022, ChatGPT, the most widely known and used public artificial intelligence chatbot, was launched. It wasn't meant to be made public so quickly, but social media heard about it, and the rest is history (Marr, 2023). At first, many regarded ChatGPT as a playful online tool for exploration. However, within months, the buzz about its potential to significantly impact the world became apparent. This development presented an undeniable opportunity (and need) to reshape the landscape of education.

With the overwhelming pressure for educators to manage a growing list of responsibilities—and the stress that comes from these demands—change is imperative. Whether teachers are struggling with time constraints, job requirements, lack of materials, uncertainty about what to use and when, or the impossibility of being an expert in everything, educators face common challenges—and AI is a promising solution. Its ever-growing capabilities and user-friendly interfaces are now making it even easier for teachers and students to learn and grow. AI sites have shown great potential, with impressive performance in generating coherent, systematic, and informative content for those who learn to use it effectively (Lo, 2023).

At the start of the 2023–2024 school year, after realizing what generative AI possibly had to offer, we started exploring some of the tasks this technology might be able to assist with. Together, with several groups of teachers, we quickly saw possibility. Here are some examples of tasks we used AI to assist with in those early days:

- Adjust mentor texts to topics relevant to students
- Generate lists of words and decodable sentences for foundational skills practice
- Help synthesize student responses into an exemplar essay
- Craft parent communication for conferences
- Generate some games to get eighth graders engaged in math fluency practice

Though not perfect, AI platforms quickly responded to requests (prompts) and generated content that days before would have taken hours to complete. These examples barely scratch the surface of what AI can offer. Nonetheless, the effective management and execution of these tasks left us, and continue to leave us, in awe.

Ask A Bot

Discussing the Potential of AI in Education

Generative artificial intelligence tools are designed to facilitate conversational interactions, allowing users to engage dynamically based on the human user's input. With that in mind, in this section, we encourage you to have a conversation reflecting on your thoughts thus far using the steps below.

Step 1: Visit www.chatgpt.com or another AI platform you are familiar with.

Step 2: Log in, start a chat, and share your initial thoughts or pose questions about the current role of AI in education and its future possibilities. Consider using some of the following prompts:

- How can using AI promote critical thinking?
- How does the integration of AI compare with the adoption of other technological advances?
- What implications does generative AI have for teaching and learning?
- I just read [insert text here]; can you help me understand what this means?

Step 3: Review the generated responses and reply as you would in a conversation with a colleague or another human. You might use one of the following prompts:

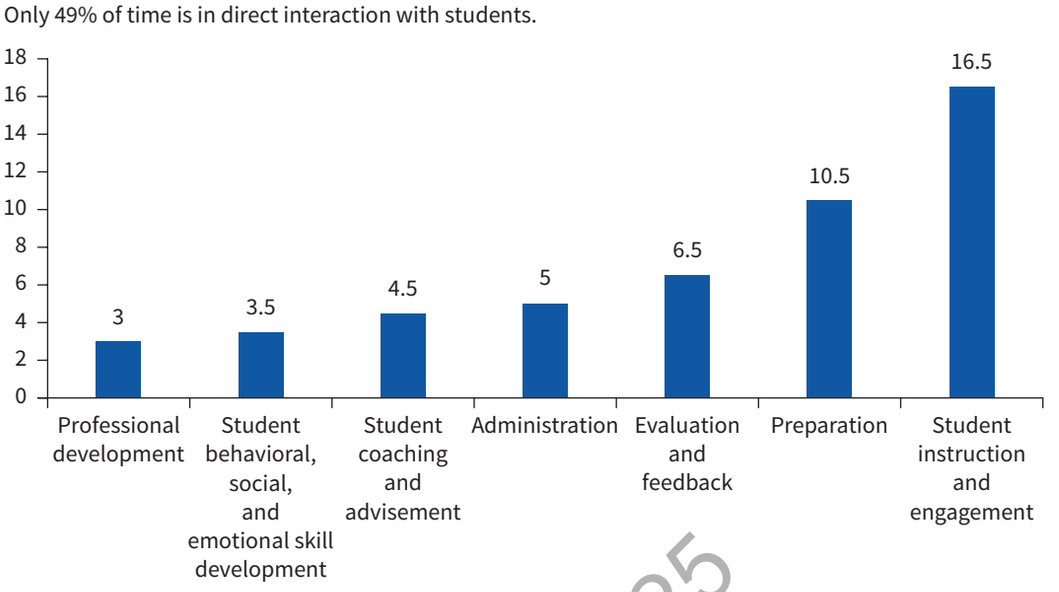
- What does this mean for someone who teaches [insert subject or grade]?
- I'm not sure about [insert idea], what else should I be considering about this?
- Can you provide examples of [insert topic]?
- What other considerations should we take into account?

Step 4: Reflect on the responses provided, any new insights, or the experience of engaging in this conversational style.

Of course, discerning between effective and less effective ways for teachers and students to use this technology is essential. The premise of this expanded second edition is to support educators in the adoption and use of AI by offering practical and impactful strategies for making it a valuable tool in the classroom. Our goal is simple: By engaging in the various modules and interactive components, you will explore the possibilities of AI and get practical ideas on how to use it immediately in your classroom and the classrooms you support.

McKinsey & Company (2020) surveyed more than two thousand teachers in four countries to find out how educators spend their time. As is evidenced in Figure i.2, teachers spend a lot of time preparing for lessons, engaging in evaluation and feedback, performing assessments, and completing professional development. On average, according to this data, more than half of the time, teachers are not directly interacting with students. We used this data to help decide what teaching functions to focus on in the modules that follow. Exploring how AI can assist with these time consuming tasks is the goal.

Figure i.2 • 50 Average Hours of Working Time per Week for a Teacher



Source: Adapted from Bryant et al. (2020).

ORGANIZATION OF THE EXPANDED SECOND EDITION

This playbook is designed for educators, with the specific intention of lightening the load. In this spirit, we invite you to consider AI as a virtual teaching assistant that can provide helpful support. We hope that the tools in this playbook provide teachers with more opportunities to directly interact with learners, which not only is the reward of teaching but also is irreplaceable by a computer.

To accomplish our goal of increasing the amount of time you can spend with your students by using AI to accomplish other time-consuming tasks, we have organized this playbook into specific modules that align with the major functions that teachers must accomplish each day like those in Figure i.2.

- Module 1 provides an overview of AI in K–12 education, including updated research studies on its usage, the many types of AI platforms and their uses, and a deep dive into the important terms to know.
- Module 2, which is new to this edition, focuses on the skill of prompt writing. This section is fully dedicated to helping readers learn what to include in prompts, how to engage in follow-up prompting, and important ways to analyze output and prompt accordingly.

- Module 3 focuses on the responsible use of generative artificial intelligence. This section will help build an understanding of when to trust AI, highlight considerations for its use, and address ethical challenges such as plagiarism and citation that confront educators and policymakers.
- Module 4 shifts the focus from the logistics of AI to exploring specific teaching functions this technology can assist with. This section is dedicated to looking closely at how AI can help manage content, whether it's unit planning, unpacking standards, or sorting student data.
- Module 5 addresses another important function of a K–12 teacher's day: engaging all learners. This section offers tools for increasing relevance and motivation, and ideas for using AI to create and modify learning experiences.
- Module 6 explores how teachers can use AI to meet the instructional needs of students. It focuses on differentiating experiences without lowering expectations, designing inclusive lessons, and introducing specific AI tools to support diverse learning needs.
- Module 7 is dedicated to developing and providing useful and effective feedback for all learners using AI and gives responsible and practical ways the technology can assist with this time consuming, but important, teaching function.
- Module 8 is fully dedicated to assessment—whether it's creating assessments, adjusting them to be AI resistant, or exploring new ways to assess learning. This section dives into how AI can assist in this area.
- Module 9 is a completely new section for this edition. It explores the critical task of preparing students for an AI-powered future, offering practical ways to engage students in experiences that prepare them for effective and responsible AI use, both now and in the future.
- Module 10 addresses the final teaching function: lifelong learning. This section is dedicated to ways AI can provide teacher feedback, help build content knowledge for new topics, and offer insights into using this technology as a thought partner for one's own learning.

Like other Fisher and Frey playbooks, *The Artificial Intelligence Playbook, Second Edition*, is designed to guide readers through an interactive experience by putting ideas into practice while reading. With that goal in mind, we have crafted a series of features, mostly repeated in each part of the playbook, that deepen engagement and understanding. The following chart provides more information on each feature.

Feature	Purpose
Ask a Bot	The Ask a Bot sections provide questions and prompts that guide users through a chatbot conversation related to the content. These sections also allow users to experience the power of using AI as a productive thought partner.
Stop and Jot	The Stop and Jot sections ask readers to think and reflect on a guiding question or prompt. Use these reflective opportunities to pause and process while learning about the many ways AI can assist teaching and learning.
Task Takeover	The Task Takeover is a way for educators to consider how AI can work for them and imagine ways the technology can take over tasks specifically related to the content of the module.
Try It Out	In the Try It Out portions of the playbook, we provide users with step-by-step directions to walk through a focused learning experience. These sections are an opportunity to put learning into practice.
Self-Assessment	Each module offers a Self-Assessment specific to one aspect of the content presented. It is an opportunity for readers to quantify where they are and where they are going through a self-assessment scale.
Classroom Connection	The Classroom Connection section is dedicated to helping teachers think through AI usage with students. These sections will offer a glimpse into a topic that is further developed in Module 9.
Check Your Understanding	Each module ends with a Check Your Understanding review. This feature is not only a way to look back on the big ideas of the section, but also a model for a type of AI-generated assessment (all created with the assistance of various AI tools).

We generated these modules, and the interactive features, from the questions we have been asked by thousands of educators about the potential of AI for teaching and learning. Importantly, while AI has the potential to reduce the workload, it is not replacing teachers, which is why throughout the book we stress responsible use, give strategies for effective output analysis, and continuously stress keeping the human in the loop. The growth-producing and caring dynamic between teachers and students remains central to the work we do. It's our *why*. But as you will see in the pages that follow, AI can help with the *how*.