Solving the Puzzle of Failed Education Reforms

Doug Carnine, Professor Emeritus, University of Oregon

Founder, Evidence Advocacy Center

Executive Summary

The ongoing challenges in U.S. education are both well-documented and deeply entrenched, yet the solutions remain fragmented and elusive. "Solving the Puzzle of Failed Education Reforms" offers a comprehensive examination of these challenges, focusing on the disconnect between evidence-based practices and their widespread, sustained implementation. This paper serves as both a critique of existing systems and a blueprint for transformative change, aimed at fostering an equitable and effective education system.

"Solving the Puzzle" offers a stark overview of the current crisis, highlighting issues such as low reading proficiency rates and the inadequate preparation of high school graduates for college and career demands. It juxtaposes these systemic failures with the proven success of high-performing schools and districts, demonstrating that meaningful improvement is not only necessary but also achievable. In doing so, this article simultaneously invites readers to reflect on the urgency of the problem and argues that the field of education must evolve into a profession grounded in evidence and supported by systems designed to enable and sustain lasting reforms. It also analyzes the barriers to improvement, explores the potential of a Knowledge Management System (KMS) to align and elevate the field, and lays out a series of lessons drawn from self-regulating professions that could illuminate the path forward for education. Through its analysis and proposed solutions, this article seeks to equip educators, policymakers, and stakeholders with the tools and insights necessary to address the systemic deficiencies in U.S. education.

Solving the Puzzle of Failed Education Reforms

The U.S. education system faces stark challenges. In 2023, only one in five students graduated high school fully prepared for college-level coursework (Sparks, 2023). Ample research on reading and math proficiency clearly demonstrate that these problems began years earlier. According to the most recent National Assessment of Educational Progress, among fourth grade students, 69% score below proficient in reading and 61% score below proficient in math. By eighth grade these figures have only worsened, with 70% of students scoring below proficient in reading and 72% in math (NAEP, 2024). Given that reading and math proficiency determines a student's success in school and, in turn, their economic future, these alarming statistics indicate a nation in peril.

The persistent crisis in educational outcomes not only imperils the future of individual students but also endangers the nation's ability to compete in an increasingly global knowledge-driven economy. In a recent report, Senator Bill Cassidy—ranking member of the Health, Education, Labor and Pensions Committee—warns that our literacy crisis, "presents concerns for global competitiveness and national security. When students cannot read, they cannot master advanced concepts and topics – especially in the science, technology, engineering and mathematics (STEM) fields. If we do not improve literacy instruction and get students reading proficiently, we have no hope as a country to compete in a global marketplace where the STEM labor force is vital" (Preventing a Lost Generation, 2024). While low levels of performance are often attributed to broader societal issues such as poverty, unemployment, racism, and crime, many shortcomings are directly and fundamentally tied to significant deficiencies within the field of education.

Efforts to improve reading performance over the past three decades have, to say the least, failed to impress. According to the first NAEP assessment, in 1992 28% of U.S. fourth graders performed at or above proficiency. The next 42 years of reform, which was backed by over a trillion dollars, only managed to raise these numbers 5% so that 33% of fourth graders measured at or above reading proficiency levels in 2024 (NAEP). Despite a 5% across-the-board gain among fourth graders, many states continue to register declines in both reading and math. Only a few show modest gains. Louisiana, however, stand out as an outlier, showing solid gains in both reading and math at both fourth and eighth grades. Given that federal, state, and local sources spent $872.2 billion on K-12 education in 2024 alone, the results have been disappointing. The continued low levels of reading proficiency over the last three decades betray the significant advances the field of education has made in understanding the body of widely accepted, rigorous research on beginning reading instruction.

The literacy crisis has spurred 40 states and DC to legislate specific requirements for teaching K-2 and K-3 reading. The benefits resulting from this legislation will not be apparent in the near-term, however, given that NAEP studies do not begin to measure proficiency until grade four. In the interim, however, K-12 reading performance undoubtedly calls for transformative change.

This essay argues that radical and sustained change is necessary and quite possible. High-performing schools and districts, even those with students facing economic and social disparities, have demonstrated that well-designed reform efforts can succeed (Williams et al, 2005).[1] Bold reforms backed by a unified commitment to instructional practices based on

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[1] Among high-performing schools and districts, the following reforms have been proven to consistently elevate student outcomes: a) prioritization of student achievement and high expectations b) implementation of coherent standards and adequately-designed instructional programs c) ongoing professional learning and coaching for all educators, including principals and specialists d) use of assessment data to improve achievement and support

evidence from research findings can foster an equitable and effective education system. High-performing schools and districts that consistently demonstrate higher-than-expected achievement have clearly shown that implementing evidence-based teaching practices has the power to transform student outcomes.[2]

The Conundrum: Successful Reforms Neither Spread nor Sustain

In order to transform the system, the field of education must continue to document academic successes within schools, districts, and, even, states that attain three criteria (1) levels of social importance, (2) scales of social significance, and (3) durations of social relevance. Numerous factors contribute to the unresolved paradox between the possible and the actual that stresses the need for the field of education to transform into a profession based on evidence. Such a transformation requires addressing systemic deficiencies, flawed explanations for underachievement, and persistent fragmentation. The field fails to acknowledge reliable evidence, too often dismissing research-backed practices and perpetuating deterministic beliefs about student characteristics (e.g. poverty, race) as barriers to successful school-level achievement. System fragmentation and conflicting educator belief systems further hinder the relinquishing of entrenched practices and perpetuate resistance to change. This resistance, in turn, prevents the widespread adoption and implementation of effective reforms. Because of weak accountability at almost all levels (school, district, state, federal), educators receive mixed directives and are bombarded by conflicting initiatives. Lack of accountability and consistency

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teachers e) ensuring the availability of resources f) principal leadership to manage, articulate, lead, and observe instruction and regularly study data g) district leadership to set expectations, monitor accountability, and provide support.

[2] Evidence-based teaching practices are developed from promising scientific studies that have been been proven to produce strong performance results in live classroom settings. Evidence-based practices go beyond theory to confirm effectiveness in real-world contexts, which is especially valuable in educational settings where consistent outcomes are required (Greenhalgh & Papoutsi, 2019). For a detailed explanation of how the word evidence is being used in this paper, see *The Evidence Advocacy Center Guide to Evidence*.

inhibits their ability to implement and sustain effective policies and practices that are designed to promote and sustain significant improvements. In addition, successful reforms are too often abandoned due to leadership changes at the school, district, state, and federal levels.

The Key to Professionalizing the Field of Education: A Knowledge Management System

Resolving the deficiencies, beliefs, and confusions in the field of education is an enormous challenge, in part, because each state has its own complex arrangement of the puzzle pieces that make up the state's education 'system.' More specifically, education in the United States is defined by 50 distinct state education systems (plus DC and U.S. territories) that include 13,452 school districts and 130,930 K-12 schools. In addition, there are 2,172 teacher preparation programs (as well as 719 alternative teacher prep programs). This decentralized structure faces expanding expectations with schools now responsible not just for the academic achievement of students in the core areas of literacy, math, science, and social studies, but also for student social behavior and overall well-being.

The necessity of using research evidence to align the pieces of these complex individual state puzzles is vividly illustrated through a personal anecdote of the author of this essay. While preparing a speech on the importance of evidence-based practices in education during a flight to Reagan National Airport (the recent scene of the tragedy for a passenger flight and a military helicopter), the author wrote, "In a complex system, such as an airplane, if one part fails—like the flaps—the entire plane can go down." At that moment, the captain's voice interrupted with an announcement, accompanied by the wail of an emergency siren: "It seems our flaps may not be working, so we're being diverted to Baltimore International Airport." This real-life scenario underscores that these are cohesive systems in which each component has been rigorously tested in both simulated and real-life scenarios to ensure that the system components work seamlessly

and successfully. Of course, in aviation, such cohesive systems are the difference between a smooth landing or a plane crash.

Like pilots, educators shoulder heavy responsibilities, as they are charged with teaching students the knowledge and critical skills that will determine if we have a cohesively functioning nation. Currently, each state builds its own education system that functions like a puzzle piece with the edges out of alignment with each adjoining state's piece of the puzzle. Unless the edges are shaped into a tight fit that enables each state to join with those around it to form a coherent national education system, each state's puzzle piece will continue to remain an isolated fragment of the whole. These fragmented pieces of each state's education puzzle must be aligned with reliable scientific evidence and evidence of results demonstrated by schools that consistently produce high achievement, especially for the most marginalized populations. Once in alignment, the pieces can then be assembled to create a clear and functional whole.

One way to hone each state's education system so that it works well and also aligns with those of the other states would be to implement a Knowledge Management System (KMS), a method that has enabled many professions to unite on the national level. Focused on transforming information and experience into actionable evidence-based knowledge, a KMS could provide the tools needed to shape education's puzzle pieces so that they fit together seamlessly to form a unified whole. In addition to transforming information and experience into evidence-based knowledge, a KMS also provides the means to manage information, ensuring that data remains accurate, accessible, and secure. A KMS is fundamental to any self-regulated profession and serves as a dynamic electronic repository based on current, rigorous evidence with updates as new evidence emerges. The KMS defines and regulates key policies, practices,

and protocols within a profession. It also outlines the coursework, training, and specialized knowledge required to become a licensed practitioner in the profession.

In order to illustrate the components and features of a KMS, Figure 1 provides a graphic example of just one component of a medical KMS—a clinical decision support system (CDSS), described in "Harnessing the power of clinical decision support systems: challenges and opportunities." The KMSs for medicine and other professions are unsurprisingly sophisticated and complex, which will eventually be the case for an education KMS.

Figure 1: Conceptual model of "Clinical Decision Support Systems" in medicine (Chen, Z., Liang, N., Zhang, H., Li, H., Yang, Y., Zong, X., Chen, Y., Wang, Y., & Shi, N. (2023, November 27).
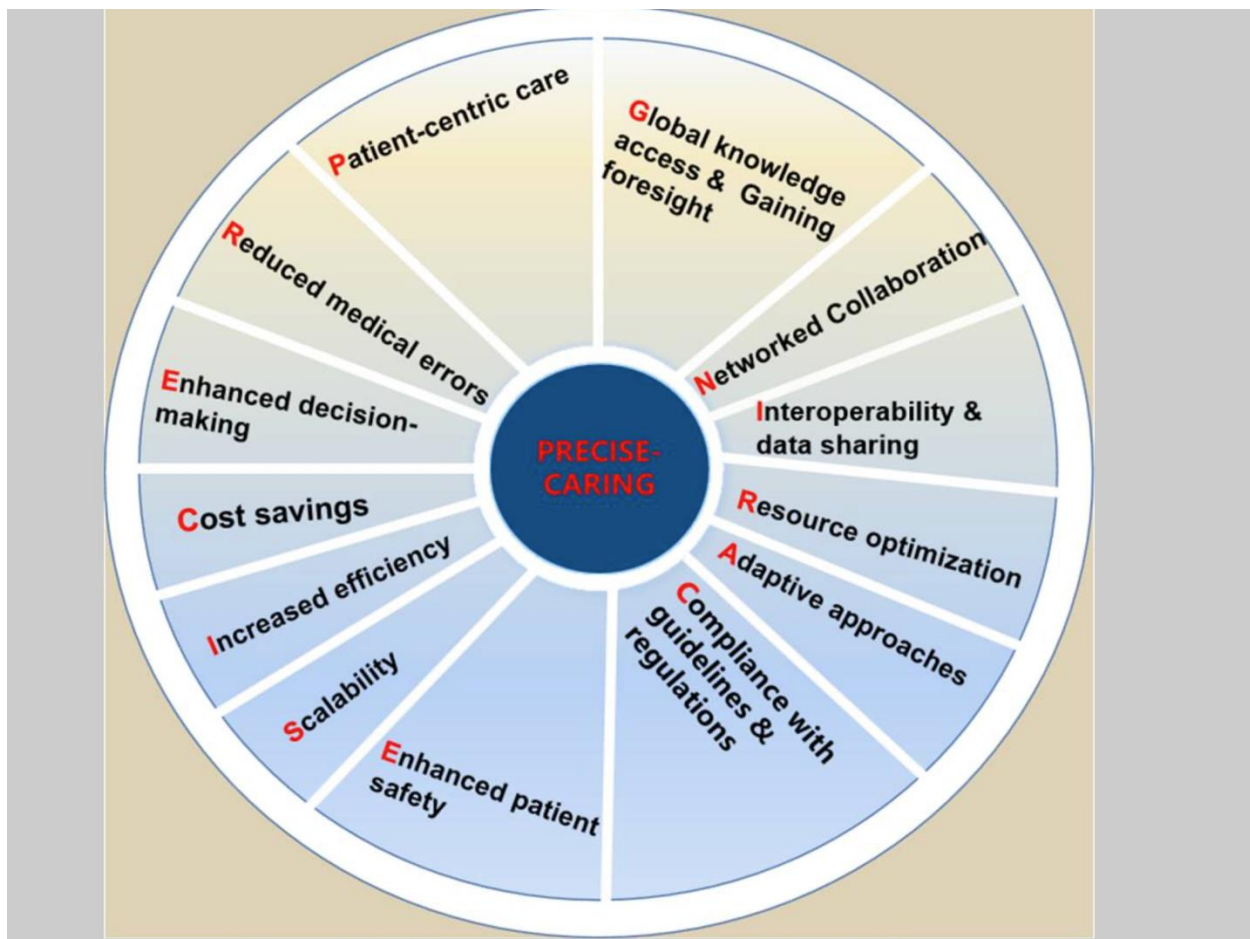
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The Clinical Decision Support Systems (CDSS) offers a model for creating one component of a KMS for education. In particular, enhanced decision-making can be implemented by direct service providers, such as teachers, special education teachers, and school psychologists. In the following description of a CDSS and its importance to the healthcare system provided by KnowledgeBase, the bracketed words include the terms that might be used in an education version of a CDSS for direct service providers. For ease of reading, the original medical term appears in blue directly before the bracketed term, which indicates how the description might be modified for an education KMS. The definition provided states that CDSS

> are advanced tools that assist healthcare [education] professionals in making well-informed decisions about patient [student] care. With the rapid growth of medical [education] knowledge and the complexity of healthcare [education], CDSS plays a vital role in improving clinical [educational] decision-making, promoting evidence-based practices, and ultimately enhancing patient [student] outcomes.
> A CDSS is designed to provide healthcare professionals [educators] access to relevant and up-to-date information, guidelines, and best practices. By integrating vast amounts of medical [research-based education] literature, research studies, and clinical guidelines, CDSS ensures healthcare providers [educators] access to the latest evidence-based information. This wealth of knowledge empowers clinicians [educators] to make informed decisions that align with current best practices and optimize patient [student] outcomes. (Dunn)

A CDSS serves as a single component of a full medical KMS.

Education lacks a complete KMS. Instead individual schools, districts, or states have various Information Management Systems (IMS) that store student data, including grades, test

results, absences, and staffing data (such as numbers of teachers by grade). These systems primarily manage structured data and information within the specific school, district, or state. An IMS focuses on data storage as well as facilitates data retrieval and data sharing within that specific system. Education also has Learning Management Systems that are used in certain schools and universities to organize course assignments, projects, and learning materials. Blackboard is one example. While useful for individual teachers, schools, and districts, unlike a KMS, none of these systems enable access to and sharing of information among all members of the field and across all the states.

KMSs go beyond data storage and retrieval in one school, district, or state as they store and manage the important knowledge base needed by all members of a profession regardless of their locale. They also capture and share informed tacit knowledge held by individuals within the profession. In addition, individuals within the profession have ready access to valuable insights and best practices developed by members of the profession as they apply research-based methods.

The presence of information management systems in education in no way compensates for the absence of an education KMS, which explains, in part, how an ill-prepared education workforce contributes to the ongoing U.S. education crisis, which consequently caused 40 states and DC to legislate specific ways the field of education must adhere to the Science of Reading. A KMS for education, somewhat analogous to the KMSs in medicine and aviation, would include these six components and could remedy a number of identified problems:

1. Specialized Knowledge Base	This knowledge base would be grounded on research evidence that guides professional practices, which is regularly updated as new knowledge is acquired. Currently most states independently define

	and standardize the knowledge and skills required of their educators.
2. Educator Preparation	This element would provide guidance for course work and clinical practice to prepare future educators. The last NCTQ review found that only 28% of educator preparation programs fully prepare teachers to understand the components of what is needed to teach reading. In addition, 91% of programs that provided information to the NCTQ received a grade of C or below in clinical practice for future educators.
3. Educator Licensure	This component would ensure that practitioners demonstrate competence based on required coursework and training, with renewal and continuing education to ensure access to new advances. NCTQ found that over 50% of states do not require an evidence-based licensure exam for teaching reading.
4. Accreditation	This element would ensure that educator preparation programs (EPPs) align with KMS-based licensure requirements. NCTQ found that 72% of EPPs that are rated as inadequate for preparing teachers to effectively teach reading still received accreditation.
5. Accountability-Aligned Roles	Creating and enforcing strong accountability provisions and monitoring procedures could remedy the weakness of existing accountability provisions, which are currently not enforced.

6. Professional Infrastructure	This element should include the policies, funding, cost analyses, role definition, personnel allocation, and data systems needed for an effective, self-regulating profession.

The first component, a specialized knowledge base is the foundation for the other five components. For example, the Science of Reading, which 40 states currently mandate, contributes research-guided resources to a specialized knowledge base for reading. Specialized evidence-guided resources are also available in the arenas of teacher licensing and state policies found in the Institute of Education Sciences' (IES) Practice Guides. For example, a recent report identified several states that offer exemplary literacy policies in the following areas:

1. Standards for Educator Preparation Programs

2. EPP Educator Preparation Programs Approval and Renewal

3. Elementary Reading Licensure Tests

4. High-Quality Curriculum

5. Professional Learning

6. Screening and Assessment

7. Support for Schools and Educators

8. Intervention for Students Needing More Reading Support

An education KMS might at least be initially implemented in selected areas such as literacy, math, and behavioral wellness at the educator preparation, school, district, and state levels. Doing so would enable coherence within and across states by increasing each state's ability to develop, monitor, and manage their own education system. Initiating a KMS could eventually contribute to resolving the educator shortage problem by increasing portability of educator

licenses across state lines while ensuring that those educators are well prepared and have the skills and knowledge to ensure that all students achieve. One interesting example of a potential KMS in literacy can be found in The Reading League's Compass. Each of the 8 components contains knowledge information, resources, and guidance. It would not be considered a complete KMS but is an effective starting place for literacy.

Figure 2: The Reading League Compass (Open Source)

Other examples of knowledge base sources for the literacy component of an education KMS are available from The National Center on Improving Literacy, The Reading Universe, and the Deans for Impact. Still other organizations, including the National Center for Systemic Improvement, which has a special education focus, and the Evidence Advocacy Center curate

resources that extend beyond literacy. Their extensive resources will be useful in initiating an education KMS. Examples of research-based resources from the Evidence Advocacy Center may be found at the [Curated Resources Research-Based Menus](#).

A Collaborative to Initiate a KMS

The Evidence Advocacy Center (EAC) proposes a Collaborative[3] to support and advocate for the use of an education KMS. The Collaborative would need to be a multi-interest membership organization made up of educators from higher education and the K-12 system, including educator unions and associations; researchers, including content researchers and researchers in AI and other technologies; policymakers; funders; consumers, including business, social justice groups, community colleges and technical schools, and KMS-based professions; as well as parents and families. By leveraging cross-sector expertise and advocacy, the Collaborative would be positioned to ensure that the KMS addresses diverse stakeholder needs and promotes sustainable improvements. Initially, the intent would be to create a scalable system focused on critical areas such as literacy and mathematics. For example, the Collaborative could advocate for the adoption and translation to practice of existing research findings for use by state and district administrators. The Collaborative would lack authority to impose any policy changes, however, given the decentralized nature of education in the United States. As a result, the Collaborative would need to generate support for an education KMS through an advocacy campaign.

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[3] The *Call to Action*: *Education Desperately Needs a Knowledge Management System Based on Evidence* describes the rationale and steps that set the stage for a collaborative model for developing and implementing a KMS.

Transforming the Field of Education: Jump-Start with a Flexner-Type Report

Even before initiating a KMS, an early task of the "KMS Collaborative" effort might be to issue a comprehensive report that would advocate for the creation of a KMS to centralize research-based knowledge, practices, and procedures. In 1910, the medical field released such a study, the Flexner Report, which had a profound impact, leading to dramatic changes in medical practices over the subsequent decades. By advocating for evidence-based standards, centralized curricula, and rigorous accountability measures, the Flexner Report fundamentally reshaped medical education, resulting in higher standards for doctor training. In particular, many schools and programs that trained medical professionals were closed because they failed to meet the new criteria. The knowledge base report became the foundation for achieving adequate medical preparation, resulting in better trained doctors. It also became the foundation on which the medical KMS was built. Despite its systemic impact, however, the report also had serious negative consequences that must be avoided in the development of a KMS for education (Stahnisch & Verhoef, 2012). In particular, the Flexner Report exacerbated racial inequities. In order to avoid such unintended consequences, the Collaborative must include diverse representation to act as a preventative guardrail.

How a Knowledge Management Can Address Systemic Issues

An education KMS could begin to address the following systemic issues in education: a lack of public trust, the crisis in math education, and the abandonment of successful reform efforts. In math U.S. students continue to lag significantly behind many other countries, and despite abundant evidence from cognitive science about learning, most math instruction relies on a constructivist or discovery approach. However, robust research supports the potential of evidence-based approaches, such as explicit and systematic instruction to improve student

outcomes. Unfortunately, such methods are rarely incorporated into teacher training programs or utilized in classroom instruction. Critics of math education in the 1990s highlighted similar issues, noting the neglect of skills like basic arithmetic in favor of exploratory learning models (U.S. Department of Education, 2003). This ongoing mismatch between research and practice underscores the need for systemic changes to align teacher preparation and continuing education with proven evidenced-based methodologies.

The erosion of public trust in education could also be addressed with a KMS that is based on the use of evidence and establishes guardrails to protect against unproven practices. A Gallup poll revealed that only 26% of Americans express a "great deal" or "quite a lot" of confidence in public schools, marking a near-record low (Catalyst, 2023). A survey conducted by the teletherapy organization Presence found that two-thirds of parents worry that their children are not reaching their full potential, with concerns spanning emotional well-being, social development, future preparedness, and behavioral issues (Presence, n.d.). When asked to indicate their top concerns, parents shared the following:

- **Emotional Well-being:** 37% of parents identified emotional well-being, reflecting widespread anxiety about their children's mental health.

- **Social Development:** 28% of parents are worried about their children's social skills and interactions, indicating apprehension about socialization post-pandemic.

- **Future Preparedness:** 24% of parents express concern about their children's readiness for future challenges, including academic and career prospects.

- **Behavioral Issues:** 23% of parents are concerned about behavioral problems, which can impede academic success and social integration.

A KMS would not only provide research-based resources but also house and describe well-studied practices that have demonstrated effectiveness. Access to these vetted materials would enable educators to directly address major public and parental concerns by focusing on key areas of emotional, social, and academic development. A KMS, for example, can equip educators with vetted resources and practices to improve social interactions. Among these would be interventions that have been proven to improve classroom behavior and discipline while maintaining a supportive school environment. Equipped with research-based resources and research-backed practices, educators can ensure that their students achieve academically and are prepared for higher education and careers. If educators can rely on the knowledge base and resources in a KMS, school achievement and behavior will likely improve, enabling the public to once again trust schools with the education of their children.

One of the biggest challenges in education has been maintaining effective initiatives long enough to see results. A recent report from American Public Media (APM) by Emily Hanford spotlights the 25-year success of Steubenville schools in Ohio (2025). According to Hanford the district was almost at risk of losing their successful reading program because of state textbook requirements. Fortunately, the state added the Steubenville reading program to their required list. However, the United States has a history of successful initiatives disappearing. Cases in Texas and California exemplify the severity of this problem.

In the late 1990s and early 2000s, Texas and California implemented ambitious statewide-reading initiatives to address declining literacy rates. Both initiatives—the Texas Reading Initiative (TRI) and California's late-1990s Reading Initiative—were rooted in evidence-based practices and demonstrated promising results. However, despite the improvements in many school districts, these initiatives were abandoned. The Texas Reading

Initiative, launched in 1996 under Governor George W. Bush and supported by members of the business community, aimed to ensure that all Texas children could read at grade level or above by third grade. The Texas Reading Initiative emphasized:

- **Research-Based Instruction**: the specification of [12 essential Research-based components for beginning reading instruction](#)

- **Teacher Training**: comprehensive professional development to equip educators with evidenced-based reading strategies

- **Early Intervention**: targeted early support for struggling readers through additional resources and remediation

- **Assessment and Accountability**: regular monitoring of student progress to evaluate the effectiveness of instruction

The initiative led to significant improvements in reading scores, particularly for low-income and minority students. The National Assessment of Educational Progress (NAEP) showed that during the program's peak years Texas outperformed national averages (McCombs et al., 2005).

California's late-1990s Reading Initiative arose in response to a literacy crisis exacerbated by the state's department of education endorsement of whole-language instruction in the late 1980s. By 1994, California's reading scores ranked near the bottom nationally, prompting the state to adopt a more balanced approach to literacy instruction, emphasizing phonics alongside comprehension strategies (Fuller & Wright, 2007). Key components included:

- **Phonics Instruction**: incorporating systematic phonics to help students decode words effectively, a tactic that research (Carnine, 1989) confirmed led to measurable improvements in early literacy skills

- **Teacher Professional Development**: training educators in research-based reading practices (Pearson et al., 2007)

- **Curriculum Reforms**: mandating the use of instructional materials aligned with a new state framework that included phonics instruction

- **Assessment and Standards**: setting clear benchmarks for reading proficiency at each grade level

The initiative yielded early improvements in reading scores in a number of school districts, reversing some of the previous declines and restoring confidence in the state's literacy framework (Fuller & Wright, 2007).

Despite their early successes, both the Texas and California reading initiatives were ultimately discontinued due to a combination of political, economic, and systemic factors. In more detail, the factors included:

- **Political Turnover and Shifting Priorities**: In both states, the programs were closely tied to specific political leaders—Governor George W. Bush in Texas and Governor Pete Wilson in California. When new administrations took office, priorities shifted to broader education reforms, such as standardized testing and class size reductions, sidelining targeted literacy efforts (Fuller & Wright, 2007).

- **Budgetary Constraints**: Economic downturns in the early 2000s forced cuts to education budgets. Professional development, instructional materials, and intervention programs—critical components of both initiatives—were among the first to be defunded (Odden & Picus, 2014; Carnine, 1995).

- **Ideological Divides**: The emphasis on phonics-based instruction sparked controversy. Critics argued that the programs lacked flexibility and marginalized other teaching

methods. In California, this tension reignited debates over the whole-language approach, while in Texas, local districts pushed back against state mandates (Coles, 2000; Carnine, 1989).

- **Implementation Challenges**: Both initiatives faced difficulties in scaling up. In Texas, rural schools struggled to access high-quality teacher training, while in California, disparities in resources and infrastructure hindered consistent implementation. These gaps undermined the programs' effectiveness and contributed to waning support (Darling-Hammond, 2010).

- **Failure to Institutionalize Reforms**: Neither program was fully embedded into the broader education systems. As a result, when funding and political backing declined, the initiatives lacked the structural support needed to sustain their progress (Finn et al., 2006; Carnine, 1997).

The lessons from the Texas and California reading initiatives highlight the need for and importance of robust systems and practices that ensure long-term sustainability and equity in education reforms. Incorporating practices from research and phased implementation into KMSs can strengthen and sustain successful initiatives

The Importance of Self-Regulation

Self-regulation is a hallmark of trusted professions. The knowledge base provided by a KMS enables a profession to self-regulate, giving practitioners the authority to consistently manage the day-to-day technical aspects of their jobs. Self-regulating professions are given this authority because the government recognizes that the professionals have the specialized knowledge, robust operational procedures, and expert preparation to govern themselves. Medicine and aviation demonstrate the effectiveness of a KMS to foster ethical behavior,

accountability, and justifiably earned professional autonomy. These professions adhere to their KMS to maintain public trust, enhance expertise, and minimize external oversight. Similarly, an education KMS would also help the field gain public trust, enhance expertise, and minimize external oversight.

Historically, many well-respected professions did not at first have the trust of the public. That was certainly the case with medicine and seafaring. Soon after the Titanic disaster and the resulting public outcry, the 1913 International Convention for Safety of Life at Sea convened and quickly made rules that are still models of good practice in seafaring. Those rules have been codified by the U.S. Coast Guard and have guided legislation, eventually becoming part of Homeland Security. Consequently, seafaring regained the public trust and has been able to largely self-regulate. Gaining the public trust in medicine took much longer—more than a century. As discussed earlier, the Flexner Report of 1910, despite unintended negative consequences, successfully laid the groundwork for the medical profession to be based on evidence and accountability.

External pressure on medicine, however, was also propelled by life insurance companies that demanded quantitative measures about the health of applicants and, in part, by workers who did not trust medical doctors. The field was further standardized after the thalidomide tragedy of the 1950s and 1960s, when thousands of children were born with severe birth defects after their mothers took the sedative drug during pregnancy. The field responded by standardizing medical practice, including training and preparation, licensure, and the use of evidence. Today medical professionals use KMSs to access a common knowledge base derived from research evidence that includes recommended protocols for treatment and diagnoses. As a result, medicine is largely regarded as trusted (with some more recent exceptions), and its practitioners can self-

regulate the decisions and technical procedures they use while adhering to state and local regulations that govern local requirements for licenses. KMSs provide professionals with access to a rigorously tested knowledge base and are more likely to protect the public from harm, thus warranting the public trust and therefore the ability to largely self-regulate their day-to-day practices.

Legislating Education Instructional Practices Instruction: A Short-term Necessity

At present, 41 states and the District of Columbia have passed laws to regulate the technical details of how educators should teach reading (Schwartz, 2022). Such regulation is unique to education and is clearly caused by the field's repeated failure to achieve strong student results in teaching children to become proficient readers. The need for this legislation can be explained by comparing the quality and implementation of literacy education policies with those of healthcare and accounting. Healthcare via the Liaison Committee on Medical Education (LCME) and accounting via the International Federation of Accountants (IFA) benefit from centralized, evidence-based standards and mandatory continuing medical and accounting education. In contrast, literacy policies in education remain fragmented, with inconsistent adherence to research-driven practices. Despite the fact that state legislation directly impacts the quality and effectiveness of classroom instruction, the 41 states and DC each enact their own policies, which vary in specificity, focus, and the elements they require their school systems to implement. The states' urgent need to dictate how educators teach reading underscores the need for education policies to adopt cohesive frameworks similar to healthcare, seafaring, and accounting, aiming for more equitable societal outcomes. If education becomes a profession based on the use of evidence from research findings and incorporates effective practices from schools that consistently produce high achievement, especially for marginalized populations,

state legislation would no longer have to specify the technical day-to-day details of the profession. Instead, education legislation would regulate the profession, the same way states currently regulate all KMS-based professions. For example, in medicine, states have their own ethical codes, mechanisms for disciplinary hearings and sanctions, and other jurisdictional requirements.

Economic Costs and Benefits of Implementing a KMS

Clearly, developing an education KMS is not without costs. However, the cost of development and dissemination would be offset by the benefits. These include:

- ensuring research-based educator professional preparation programs, thus reducing costs for in-service retraining

- establishing ongoing effective professional learning on best practices and new findings

- expanding access to high-quality clinical placements during educator preparation

- providing efficient development of governance policy frameworks

- streamlining technological access and the ability to collaborate for members of the profession

The costs of developing a comprehensive KMS for education could be substantial. These include the cost to establish the specialized knowledge base for effective instruction from existing and ongoing research, building the technological system to house and maintain the KMS, funding ongoing professional development for educator preparation program staff and for current educators around the specialized knowledge base, revising licensure and license renewal requirements consistent with the specialized knowledge base, and funding for substantially improved clinical practice and supervision. Other costs would accrue from increased development and use of technological systems such as Generative AI, intelligent tutoring

systems, informatics, and data science. While the economic costs of implementing a KMS in education are significant, the potential benefits justify the investment. The experiences of other professions—such as healthcare, engineering, legal services, and the pharmaceutical industry—demonstrate the transformative impact of well-implemented knowledge systems. Those sectors have successfully standardized practices, improved efficiency, and enhanced outcomes through similar systems, offering valuable lessons for education stakeholders. A KMS represents a critical step toward professionalizing teaching, optimizing resource allocation, and improving educational outcomes. By centralizing resources and fostering the use of effective research-based practices, such systems can enhance teacher preparation, increase teacher portability across states, reduce turnover, and ensure equitable access to high-quality education. Additionally, the broader economic impacts—such as developing a workforce equipped for the demands of a rapidly evolving economy—reinforce the strategic importance of this initiative. A KMS will require phased implementation and continuous monitoring to ensure that its content is kept up-to-date in a timely manner. In order to mitigate the economic challenges of developing a well-equipped education workforce and of implementing and maintaining a KMS, existing resources must be leveraged and public-private partnerships must be sustained and new ones must be continually developed. By learning from other professions and addressing the unique needs of education, decision-makers can maximize the potential cost benefit of a KMS to transform teaching and learning in the U.S. education system.

A KMS Can Help Solve Educator Burnout

A KMS for education might also provide a means of overcoming some of the problems that lead to educator burnout and to fewer people becoming educators, top among these being lack of respect, challenging work conditions, and economic constraints. The economic barriers

that hamper education include stagnant wages and inadequate resource allocation. A well-implemented KMS can mitigate these issues by professionalizing teaching, streamlining workflows, and fostering consistent high-quality standards. Improving teacher retention and satisfaction requires that the field of education address the systemic issues that contribute to poor working conditions. The implementation of a KMS can:

- **Improve the quality of state standards and associated effective instructional practices.** Quality will be improved by requiring practitioners to utilize the evidence from research and the evidence of results from high performing educators who have demonstrated their capability to raise the achievement of all students.

- **Align assessments with standards and make them useful.** Identify assessments that are aligned to the standards from the specialized knowledge base for evaluating schools and programs and also identify assessments for determining instructional needs for specific students**.** Reducing testing and ensuring that schools have assessments that more accurately provide information that addresses specific student needs will minimize stress and foster confidence, improving morale and working conditions (*EdWeek*, 2023).

- **Address Student Behavior.** Equip educators with comprehensive, evidence-based strategies to manage disruptive behaviors effectively (National Center for Education Statistics, 2022).

- **Improve Quality of Professional Learning.** Provide all educators with high-quality, research-backed professional learning opportunities (Desimone & Garet, 2015).

- **Streamline Workflows.** Reduce workloads by providing accessible, ready-to-use, evidence-based curriculum resources and protocols.

- **Maintain Consistent Standards and Effective Instructional Practices.** Maintaining consistency rather than changing standards and practices every few years would provide stability for educators, students, and curriculum developers. Consistent standards allow teachers to refine their instructional methods over time, to better align curriculum resources, and to effectively address student learning needs without the disruption and stress caused by frequent adjustments. This stability fosters long-term improvement in teaching practices and reduces the administrative burden of adapting to new requirements. Additionally, consistent standards build trust among stakeholders, as they demonstrate a commitment to sustained educational goals (*EdWeek*, 2023).

Conclusion

The persistent challenges in the U.S. education system demand urgent and transformative action. Despite decades of reform efforts and significant financial investments, the system continues to fall short in preparing students for academic and career success. The data is clear: low proficiency rates in reading and math, coupled with inadequate preparation for college and the workforce, signal a nation at risk.

This paper highlights the critical need for a cohesive, evidence-based approach to education reform. High-performing schools and districts have demonstrated that meaningful improvement is achievable through the implementation of proven, research-backed practices. However, the widespread adoption and sustainability of these practices are hindered by systemic fragmentation, resistance to change, and weak accountability.

To address these barriers, the field of education must evolve into a profession grounded in evidence and supported by robust systems designed to enable and sustain lasting reforms. A KMS offers a promising solution, providing a centralized repository of research-based

knowledge, best practices, and professional standards. By aligning the fragmented pieces of the education system, a KMS can foster consistency, improve educator preparation, and enhance student outcomes.

The proposed effort to support and advocate for a KMS represents a critical step toward professionalizing the field of education. By leveraging cross-sector expertise and advocacy, the Collaborative can ensure that the education KMS addresses diverse stakeholder needs and promotes sustainable improvements. The economic costs of developing a KMS are justified by the long-term benefits, including improved teacher retention, enhanced professional learning, and increased public trust in the education system. By making a firm commitment to transforming the field of education into a profession, educators, policymakers, and stakeholders can work together to solve the puzzle of failed education reforms and build a brighter future for educators and *all* their students.

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