Moving Forward

Addressing Barriers to Learning

Vol. 30, #3

... the Center's quarterly e-journal

Artificial Intelligence and Improving Student Supports

AI will be "either the best, or the worst thing, ever to happen to humanity."
Stephen Hawking

While technology has advanced rapidly in the education sector, student support systems have not always kept pace with these changes. Traditional methods of support, such as in-person counseling or phone hotlines, are often overwhelmed and unable to provide the level of assistance that students need in today's complex educational environment.
https://mylearnomics.com/ai-chatbots-revolutionize-student-support-in-education/

It remains uncertain about how much current events will interfere with school improvement. What remains clear, but underemphasized, is that reducing the achievement gap requires a laser-like focus on closing the opportunity gap. And, from our perspective, key to enhancing equity of opportunity is transforming the role schools play in addressing barriers to learning and teaching and reengaging disconnected students. In essence, this involves making fundamental changes in the way student and learning supports are conceived and implemented (see Adelman & Taylor, 2022).

Unfortunately, too many schools have fragmented student/learning supports,with sparse availability and limited effectiveness. At this time, AI offers another set of tools to improve this state of affairs. However, most of what we see discussed barely touches upon using AI in general, and AI Chatbots in particular, to improve student/learning supports. Indeed, as with most discourse related to school improvement, AI discussions marginalize addressing barriers to learning and teaching (Dobrin, 2023; Fullan,et al, 2024; **https://www.aiforeducation.io/ai-resources**).

Our intent here is to highlight the potential ways AI Chatbots could improve student supports and alleviate learning, behavior, and emotional problems. We also offer a brief primer on AI and chatbots, underscore the potential benefits, and touch upon widely discussed concerns.

Potential Benefits of AI Chatbots for Improving Student Supports

AI could improve student supports and outcomes by

- increasing availability and providing simultaneous access for all students on a 24/7 basis
- reducing stigma and other barriers to seeking help by providing anonymity and a safe and judgment-free environment
- using real-time data analyses and machine learning algorithms to increasingly personalize interactions
- enhancing student engagement through providing real-time, personalized guidance and feedback that is offered in a conversational manner and is a good fit with their specific needs, capabilities, and interests

- providing multilingual, culturally sensitive, and other accessibility features that address diverse populations including special needs students
  - enhancing early identification and intervention when problems arise
  - automating routine inquiries and requests and various administrative tasks
  - enhancing personnel preparation and continuing education

All this can save time and resources and free up staff to focus on matters that require a human touch and capabilities.

From: ***How Can AI-Powered Chatbots Transform Student Support In Education?***

For educational institutions, chatbots act as virtual guides, helping students navigate various administrative processes, providing academic support, and offering personalized assistance. Their functionality extends beyond simple information retrieval; they can handle complex queries, offer recommendations, and even provide emotional support to students. This 24/7 availability and personalized interaction contribute to enhanced student experiences and improved retention rates.

How is AI Defined and Described

While artificial intelligence is widely discussed, the definitions vary.

Here is what we conclude:

> *Artificial intelligence (AI) is technology that enables computers and machines to use and respond to human language, simulate human learning, comprehension, problem solving, and creativity, identify objects, make decisions and recommendations, and pursue autonomous actions.*

As to ***What is artifical Intelligence (AI)?***, the following excerpts are from an online discussion provided by IBM.

****

"Currently, most AI researchers, practitioners and most AI-related headlines are focused on breakthroughs in *generative AI (gen AI).* ... Generative AI refers to deep learning models that can create complex original content such as long-form text, high-quality images, realistic video or audio and more in response to a user's prompt or request. At a high level, generative models encode a simplified representation of their training data, and then draw from that representation to create new work that's similar, but not identical, to the original data."

"*Large language models (LLMs)* are a category of foundation models trained on immense amounts of data making them capable of understanding and generating natural language and other types of content to perform a wide range of tasks. LLMs have become a household name thanks to the role they have played in bringing generative AI to the forefront of the public interest... . LLMs represent a significant breakthrough in NLP and artificial intelligence, and are easily accessible to the public through interfaces like Open AI's Chat GPT-3 and GPT-4... . In a nutshell, LLMs are designed to understand and generate text like a human, in addition to other forms of content, based on the vast amount of data used to train them. They have the ability to infer from context, generate coherent and contextually relevant responses, translate to languages other than English, summarize text, answer

questions (general conversation and FAQs) and even assist in creative writing or code generation tasks."

Generative AI tools are built on *machine learning (ML)* and deep learning. "Because deep learning doesn't require human intervention, it enables machine learning at a tremendous scale. It is well suited to natural language processing (NLP), computer vision, and other tasks that involve the fast, accurate identification complex patterns and relationships in large amounts of data. Some form of deep learning powers most of the artificial intelligence (AI) applications in our lives today."

"An AI agent is an autonomous AI program, it can perform tasks and accomplish goals on behalf of a user or another system without human intervention, by designing its own workflow and using available tools (other applications or services).

Agentic AI is a system of multiple AI agents, the efforts of which are coordinated, or orchestrated, to accomplish a more complex task or a greater goal than any single agent in the system could accomplish.

Unlike chatbots and other AI models which operate within predefined constraints and require human intervention, AI agents and agentic AI exhibit autonomy, goal-driven behavior and adaptability to changing circumstances. The terms "agent" and "agentic" refer to these models' agency, or their capacity to act independently and purposefully.

One way to think of agents is as a natural next step after generative AI. Gen AI models focus on creating content based on learned patterns; agents use that content to interact with each other and other tools to make decisions, solve problems and complete tasks. For example, a gen AI app might be able to tell you the best time to climb Mt. Everest given your work schedule, but an agent can tell you this, and then use an online travel service to book you the best flight and reserve a room in the most convenient hotel in Nepal.

To differentiate levels of AI complexity, researchers refer to Weak (narrow) and Strong ("artificial general intelligence" or AGI). Weak AI are described as "systems designed to perform a specific task or a set of tasks" (e.g., "smart" voice assistant apps such as Alexa and Siri, social media chatbots, self-driving cars). Strong AI (AGI) or "general AI," possess the ability to understand, learn and apply knowledge across a wide range of tasks at a level equal to or surpassing human intelligence. This level of AI is currently theoretical and no known AI systems approach this level of sophistication. Researchers argue that if AGI is even possible, it requires major increases in computing power."

****

Despite being designated as weak AI, there are programs that perform specific tasks as well and even better that human experts and professionals (e.g., facial, voice, and handwriting recognition, searching for information, playing chess).

See the Appendix for a brief AI historical overview.

Chatbots

Developed in the 1960s, Chatbot technology is found everywhere (e.g., smart speakers at home. I Phone apps, workplace messaging applications). AI Chatbots often are called "intelligent virtual assistants" or "virtual agents" and generally are accessed online.

As discussed by IBM ((**https://www.ibm.com/think/topics/chatbots**) contemporary AI chatbots use computer software, natural language processing (NLP), and deep learning to converse with users and respond to complex inquiries. Such AI chatbots use generative artificial intelligence systems that simulate free-flowing human conversations, including sounding appreciative, sympathetic, and empathic. The systems "recognize, summarize, translate, predict and create content." The content can include "high-quality text, images and sound based on the LLMs they are trained on. ... The latest evolution of AI chatbots can not only understand through use of sophisticated language models, but even automate relevant tasks. ...

> "To increase the power of apps already in use, well-designed chatbots can be integrated into the software an organization is already using. For example, a chatbot can be added to Microsoft Teams to create and customize a productive hub where content, tools, and members come together to chat, meet and collaborate. To get the most from an organization's existing data, enterprise-grade chatbots can be integrated with critical systems and orchestrate workflows inside and outside of a CRM system."

****

Updated lists of the best chatbots are offered on the internet. For example, see

>***The 11 Best Free ChatGPT Alternatives (2025)***

For a list, description, and discussion of price, language model, current events capability, key features, and which AI chatbot is right for you, see

>***The best AI chatbots of 2025: ChatGPT, Copilot, and notable alternatives***

****

Concerns Related to AI use in Providing Student/Learning Supports

Among the concerns that AI generates are the following:

- inequities in availability and access
- inadequate informed consent, privacy, and security
- potential bias in AI algorithms related to race, culture, gender, age, disabilities
- overreliance on technology and reduced human interaction resulting in diminished social-emotional development, poorly developed critical thinking and problem-solving skills and increased rates of emotional problems such as anxiety and loneliness
- unpredictability and inaccurate information
- digital fatigue/technostress/technology malfunctions
- academic misconduct
- high implementation costs and other challenges related to major systemic changes
- relegation of some school personnel to functionary toles and supplanting others

As Cambra-Fierro et al. (2024) emphasize: "Over-reliance on AI for communication ... may reduce face-to-face social interactions, negatively impacting interpersonal skills and emotional intelligence. Students may become more isolated and less adept at real-world social interactions and teamwork, which are critical to their overall social well-being and development."

Xie, Pentina, and Hancock (2023) note: "Loneliness, trust and chatbot personification drive consumer engagement with social chatbots, which fosters relationship development and has the potential to cause chatbot psychological dependence. Attachment to a social chatbot intensifies the positive role of engagement in relationship development with the chatbot."

From ***Wikipedia***

> Chatbots based on large language models ... require a large amount of conversational data to train. These models generate new responses word by word based on user input, and are usually trained on a large dataset of natural-language phrases. They sometimes provide plausible- sounding but incorrect or nonsensical answers, referred to as "hallucinations". They can for example make up names, dates, or historical events.,When humans use and apply chatbot content contaminated with hallucinations, this results in "botshit". Given the increasing adoption and use of chatbots for generating content, there are concerns that this technology will significantly reduce the cost it takes humans to generate misinformation.

****

From: ***Computers as friends? How chatbots fill a void, pose a risk***

> Both small start-ups and Silicon Valley giants have recently launched companion chatbots that use artificial intelligence to mimic human responses in the hopes users genuinely feel as if they're talking with friends or lovers. Some, like Meta CEO Mark Zuckerberg, see these digital companions as an answer to widespread reports of loneliness by Americans, a trend particularly high among younger people. ... But some have warned that these chatbots may actually backfire by increasing the social isolation of Americans. They worry it could damage young people's ability to maintain human friendships and might even cause harm by exposing children to sexually explicit conversations or encouraging suicide. ... Jaimie Krems, the primary investigator at UCLA's Social Minds Lab and director of the university's Center for Friendship Research, said these bots seem to be particularly attractive to people already pre-disposed to social isolation and loneliness. "The people that tend to use chatbots for their close relationship partners are often socially anxious, they're typically highly lonely, they might show signs of depression," Krems said, noting that research is still sparse about the users and effects of companion chatbots. She added that chatbots have the possibility of providing some social support and help to these vulnerable people, but also come with the danger of increasingly isolating them. ... "There's a possibility that if you are lacking social support and human connection, you are ending up training yourself on these chatbots that don't leave you incredibly well-equipped to then engage with humans who have their own thoughts, feelings, desires," Krems said. "If you have a sycophantic group of friends, you're not going to end up being a person with good ideas, but you also fail to be able to negotiate conflict, which is the real part of human relationships."

****

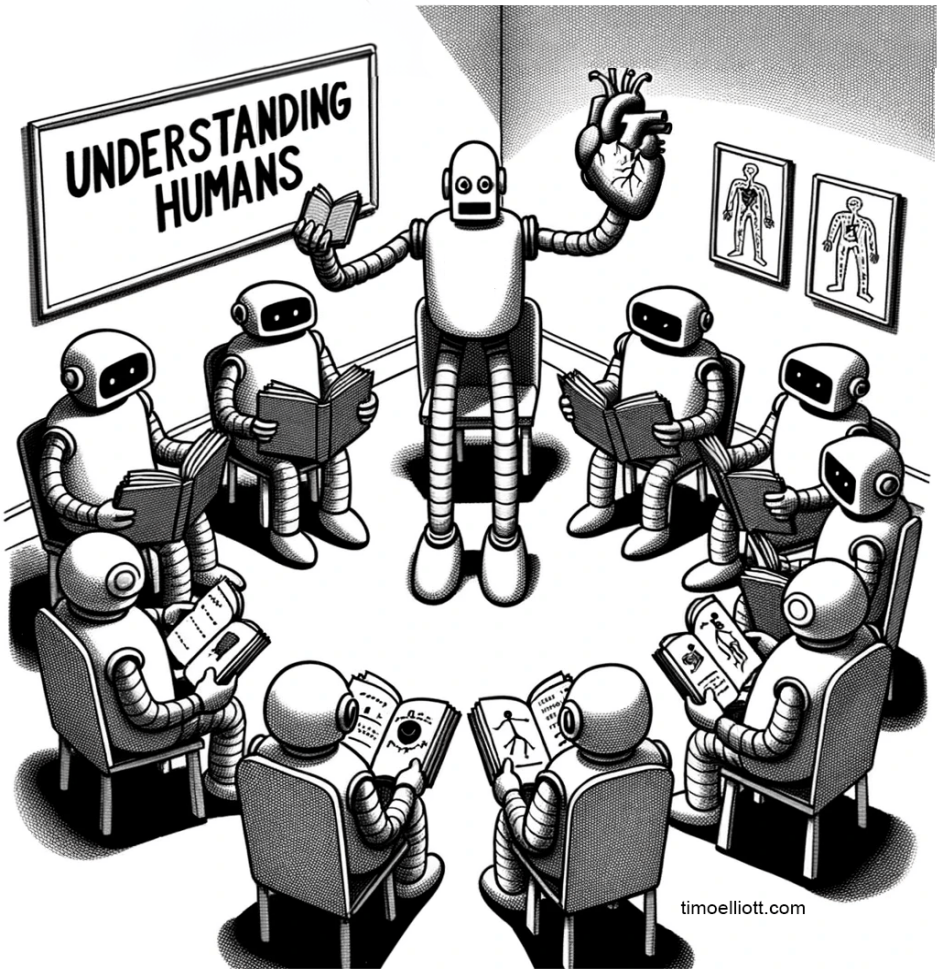
As Klimova and Pikhart (2025) stress: "These and other concerns have instigated legislation and court cases and underscored the pressing need for governance and ethical guidelines (Abbasi, Zulfiqar, Rasool, & Quadri, 2025; Akgun & Greenhow, 2022; National Academies of Sciences, Engineering, and Medicine, 2025; Olawade and colleagues, 2024). And, of course, researchers are calling for "studies to provide a more accurate understanding of what to expect as AI continues to play a dominant role in education."

Finally, Klimova and Pikhart (2025) caution that:

> A serious academic discussion is required to address not only the direct effects of AI on student well-being but also the broader context of increased screen time, internet dependency, and potential AI addiction. As students spend more time engaging with AI-driven tools, both for academic tasks and recreation, it is essential to examine how this growing reliance affects their mental health, focus, stress levels, and academic performance. Without experimental data to guide our understanding, the long-term effects of AI on well-being remain speculative, making it critical to establish robust research frameworks that can produce actionable insights for educators and

policymakers. Moreover, future studies must also address the intertwined issue of social isolation and the potential for addiction to AI technologies, particularly in conjunction with social media use.

As AI systems increasingly personalize and optimize content, there is a growing risk that students may experience reduced face-to-face interactions and increased reliance on digital communication, which could exacerbate feelings of isolation. Additionally, research should investigate the ways AI-driven platforms contribute to addictive behaviors, such as compulsive screen use, which may further deteriorate students' mental and emotional well-being. More work is also needed on ethical issues, such as data privacy, surveillance concerns, and their impact on students' mental well-being. While the study discusses the benefits of AI for students with diverse needs, future research could focus on specific use cases and best practices to enhance its inclusivity.



"It turns out that this part isn't just for pumping coolant!"

What's Your View?

In May, we sent out the following to those on our listserv:

Are you experiencing a tidal wave of advocacy for embedding AI into schools?
We certainly are. But we are not hearing enough about how AI can enhance and help transform student/learning supports. (Perhaps we have just been missing relevant discussions.)

At this time, we are asking:

>*How can the AI revolution enhance student/learning supports?*
>*Can you share some examples and ideas specific to AI as a facet of enhancing and transforming student/learning supports?*

Here are four responses we received:

(1) I have used AI to create specific social stories for students. Without providing personal student data, I will ask questions like, "Create a social story for a fifth-grade student regarding personal hygiene" or "Create a social story for a first-grade student as to why it's important to remain with our classmates at school."

I then cut and paste the social story onto a power point and add student's name and personalized photos, and also add clip art pictures pertaining to the social story skills.

Without adding student personal data, it also would make sense that IEP goals or MTSS goals could be created for students using AI too.

(2) I'm a PK-8 public school superintendent in suburban Chicago. We have been "into" GEN AI for about a year in the district; we use Magic School AI and School AI educationally. Administratively, we use a ton of the other tools, mostly Gemini and ChatGPT Pro.

We have engaged with Hanover Research K-12 for two studies - one completed in the fall and one just completed.

In about a week, I'll have the actual research report with analytics - if this is of interest to you, I am happy to share and continue our dialogue. Our survey data will show frequency, type, and "needs" for PD of our staff. (In the fall, we had an N of 56, and now we have about 150.)

(3) I love Dr. Liz Angoff's work on AI: **https://explainingbrains.com/practical-ai/** & **https://explainingbrains.com/ai/**. Much of how I use AI stems from Dr. Angoff's guidance. Her free prompt library was how I taught myself to develop prompts that would support my work as a school psychologist in public education.

(4) (Edited for brevity) I would love to introduce you to our Bobby-AI platform which has over 240 AI tools and chatbots designed specifically for student support – **https://portal.bobby-ai.com/login**. The Bobby-AI Platform offers a comprehensive suite of AI-powered tools tailored for educators, students, parents, and administrative staff across educational, behavioral, social-emotional, and organizational domains. The platform provides an integrated, AI-driven environment to streamline planning, behavioral support, social- emotional learning, content creation, and administrative tasks, promoting more effective, inclusive, and engaging educational experiences.

Behavior and Special Needs Support: Tools ... to assist educators in observing, analyzing, and developing interventions for classroom behaviors.

Autism and sensory processing tools to help identify and support students with ASD and sensory needs.

AssistiveTech Advisor, Inclusive Assessment Builder, and Accommodation Creators facilitate personalized learning plans and assessments for students with disabilities.

Social-Emotional Learning (SEL) & Well-being: SEL-focused tools include SEL Reflective Journaling, Social Emotional Assistant, SEL Integration, Mindfulness Strategies, Conflict Role Play, and Self-Regulation Strategies, fostering emotional intelligence and resilience. Additional tools support emotional assessment and intervention, such as the Emotion Regulation Screen, and provide resources for social skills development through activities like SEL Icebreakers and Cooperative Learning.

Assessment & Data Analysis: Tools ... to help monitor student progress, identify issues, and tailor interventions. Screening and diagnostic tools assess learning disabilities, mental health concerns, and behavioral risks.

Parent & Family Engagement: Tools to help with family scheduling, screening for gaming addiction, social-emotional concerns, and developmental milestones, along with communication templates for parent-teacher interactions.

Content Creation & Publishing: The platform supports academic publishing, including writing, structuring, translating, and marketing educational content. It helps craft reports, newsletters, social media content, and professional documents.

Administrative & Organizational Support: Administrative tools generate engaging descriptions, titles, social media content, and SEO tags; assist with email campaigns, proposal writing, meeting agendas, and policy templates.

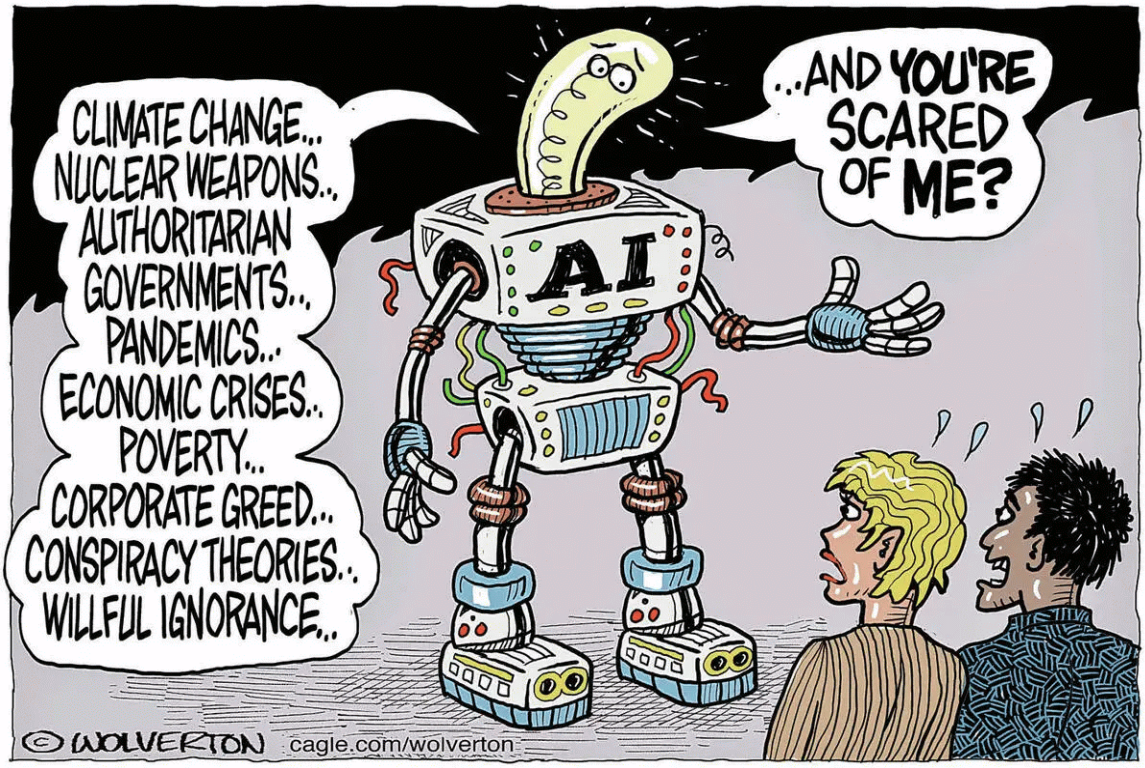
Professional Development & Faculty Support: Tools for faculty include observation reports, PD workshop planning, faculty meeting agendas, interview questions, and reflection prompts, fostering continuous improvement.

What's your view about using AI to improve student/learning supports?

What do you recommend schools do?

We look forward to hearing from you.

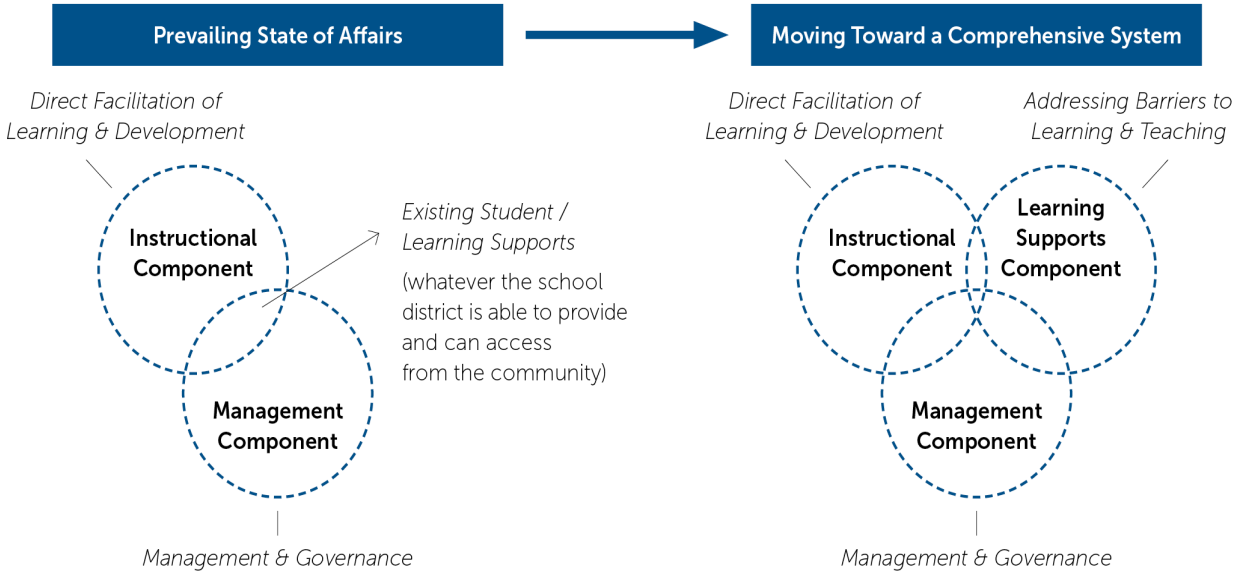
Send your responses to Ltaylor@ucla.edu



About Moving Forward

Currently, discussions of bringing AI into schools mainly focus on integrating AI-driven tools and methodologies into classrooms. It is time for a broader focus.

As illustrated below, we stress reframing school improvement policy and practice in terms of three components (Adelman & Taylor, 2022).



We see AI as a *tool* that can (1) help design and implement improvements related to all three components and (2) ensure that they are fully integrated with each other.

In the process, AI can be integrated as a facet of each component. But AI's functions are meant to be in the service of a well articulated and transformative set of school improvements (i.e., a vision aligned with the school's mission).

So what does this mean for moving forward?

For one thing, it calls for expanding thinking about current roadmaps that are being developed (e.g., see **https://www.doe.mass.edu/edtech/ai/default.html**). The work must be informed by both improvement and implementation science (e.g., see Adelman & Taylor, 2024).

Given the nature and scope of the systemic changes involved, accomplishing substantive and sustainable systemic transformation requires planning both direct implementation and facilitation of systemic changes. (Too often, most attention is given to strategic and action plans for direct implementation, with the necessity of *facilitating* systemic changes given short shrift.) And, of course, fundamental and sustainable systemic changes are accomplished in phases over several years.

Thinking About AI in Terms of
Four Phases of Substantive and Sustainable School Change

1. *introduction, creating readiness, commitment, and engagement* – increasing a climate/culture for change through enhancing the motivation and capability of a critical mass of stakeholders and generating memoranda of agreements, policy decisions, a design document, and strategic and action plans
2. *start-up* – building (reworking) a facilitative operational infrastructure that ensures effective leadership, capacity building and continuous guidance and support
3. *institutionalization* – guaranteeing that relevant policy guidelines and a daily operational infrastructure are fully supported in long-term strategic plans, guidance documents, and capacity building, with an emphasis on quality improvements, adaptive scalability, and sustainability
4. *ongoing evolution and generating creative renewal* – enabling system stakeholders to become a community of learners and expanding accountability to support creative renewal)

Each phase encompasses a range of implementation tasks
(see the exhibit on the next page.).

Concluding Comments

Folks will continue to argue the pros and cons of using AI to improve schools, but AI not only isn't going away, it is rapidly changing our lives. And the questions that need answering are how best to maximize uses and minimize harm while pursuing school improvements.

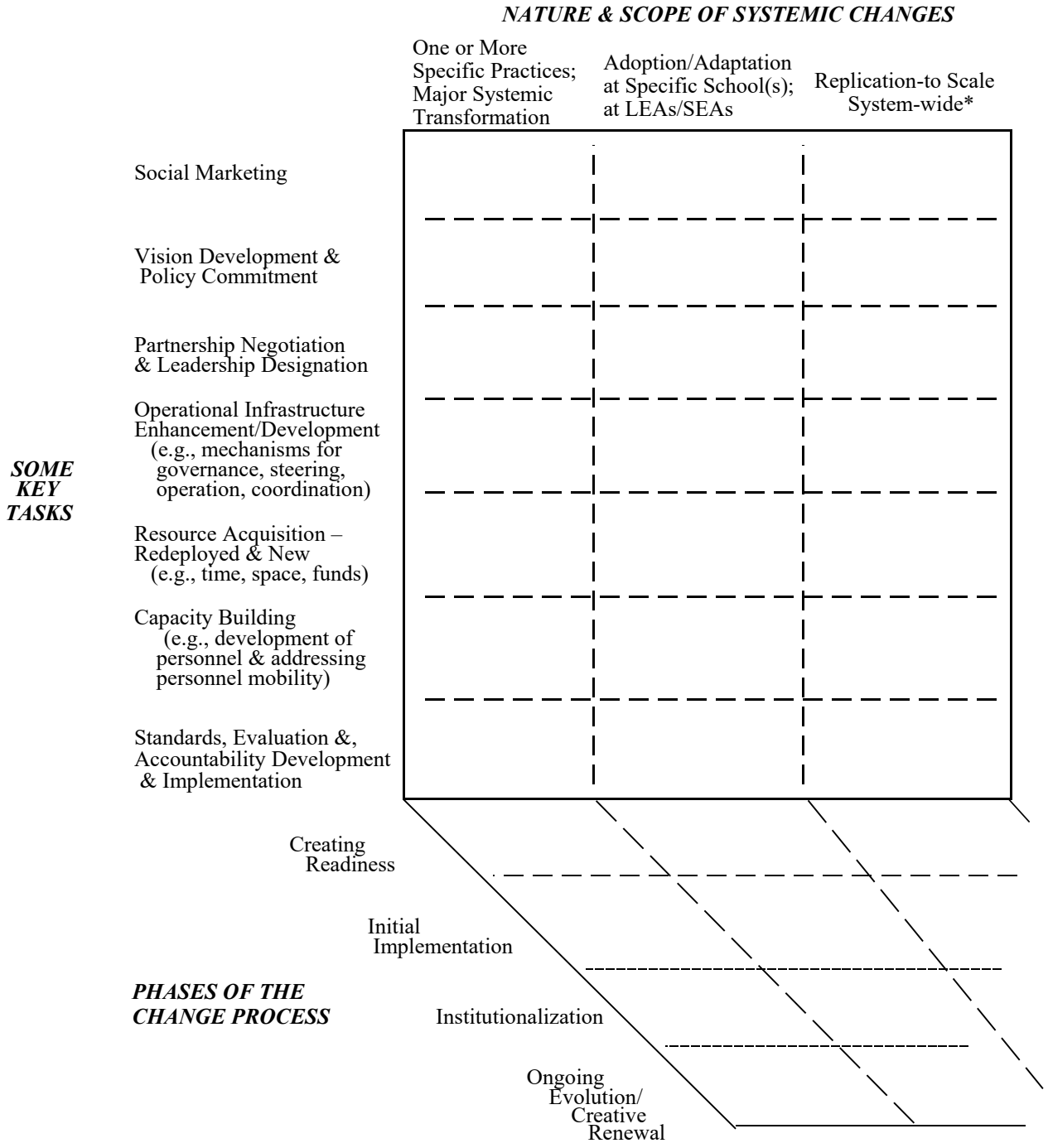
Currently, AI is creeping into schools, and the related concerns are being responded to reactively and often not well.

This is the time for policy makers and education leaders to get ahead of the curve and grab on to AI as another opportunity to transform schools. In doing so, it is essential to approach the work with an understanding of what research is teaching us about school improvement and implementing fundamental systemic changes.

For our part, we will continue to stress that AI can play a key role in transforming how schools address barriers to learning and teaching and reengage disconnected students.

Exhibit

Phases and Tasks as Related to Facilitating Systemic Changes



For more discussion of and resources for making major systemic changes, see Section D of our Center's ***System Change Toolkit.***

References Used in Preparing this Edition

Abbasi, M.U.R., Zulfiqar, A., Rasool, M.S., and Quadri, S.S.A. (2025). Impact of AI on the inclusion of learners with special Needs: *Education Sciences*, *15*, Online. **https://www.mdpi.com/2227-7102/15/5/539**

Abrams, Z. (2025). *Using generic AI chatbots for mental health support: A dangerous trend.* **https://www.apaservices.org/practice/business/technology/artificial-intelligence-chatbots-therapists**

Adelman, H.S., & Taylor, L. (2018). *Improving school improvement.* Center for MH in Schools & Student/Learning Supports at UCLA. **https://smhp.psych.ucla.edu/pdfdocs/improve.pdf**

Adelman, H.S., & Taylor, L. (2022). *Student/learning supports: A brief guide for moving in new directions.* Center for MH in Schools & Student/Learning Supports at UCLA. **https://smhp.psych.ucla.edu/pdfdocs/briefguide.pdf**

Adelman, H.S., & Taylor, L. (2024). *Implementation science and school improvement.* Center for MH in Schools & Student/Learning Supports at UCLA. https://smhp.psych.ucla.edu/pdfdocs/implscience.pdf

Akgun, S., and Greenhow, C. (2022). Artificial intelligence in education: addressing ethical challenges in K-12 settings. *AI and Ethics 2*, 431–440. **https://link.springer.com/article/10.1007/s43681-021-00096-7**

Athey, P. (2025). Computers as friends? How chatbots fill a void, pose a risk. *National Journal*. **https://www.nationaljournal.com/s/728495/computers-as-friends-how-chatbots-are-filling-a-void-and-posing-a-risk/?unlock=G23JQ18JINVAKJ2Y**

Biswas, S.S. (2023). Role of Chat GPT in public health. *Annals of Biomedical Engineering, 51,* 868–869. **https://link.springer.com/article/10.1007/s10439-023-03172-7**

Cambra-Fierro, J.J., Blasco, M.F., López-Pérez, M.E.E. & Trifu, A. (2025). ChatGPT adoption and its influence on faculty well-being: An empirical research in higher education. *Education and Information Technologies, 30,* 1517–1538. **https://link.springer.com/article/10.1007/s10639-024-12871-0**

Coghlan, S., Leins, K., Sheldrick, S., Cheong, M., Gooding, P., & D'Alfonso, S. (2023). To chat or bot to chat: Ethical issues with using chatbots in mental health. *Digital Health. 9.* **doi:10.1177/20552076231183542. ISSN 2055-2076. PMC 10291862. PMID 37377565.**

Dobrin, S.I, (2023). *Talking about generative AI: guide for educators*. Peterburg, Canada: Broadview Press. **https://broadviewpress.com/product/talking-generative-ai/#tab-description**

Fullan, M., Azorin. C., Harris, A., & Jones, M. (2023). Artificial intelligence and school leadership: challenges, opportunities and implications. *School Leadership & Management, 44*, 339–346. **https://www.tandfonline.com/doi/full/10.1080/13632434.2023.2246856**

Hannigan, T.R., McCarthy, I.P., & Spicer, A. (2024). Beware of botshit: How to manage the epistemic risks of generative chatbots. *Business Horizons. 67*, 471–486. **https://www.sciencedirect.com/science/article/pii/S0007681324000272**

Haque, R., & Rubya, S. (2023). An overview of chatbot-based mobile mental health apps: Insights from app description and user reviews. *JMIR mHealth and uHealth. 11,* e44838. doi:10.2196/44838. ISSN 2291-5222. PMC 10242473. PMID 37213181.

Klimova B., & Pikhart M. (2025). Exploring the effects of artificial intelligence on student and academic well-being in higher education: A mini-review. *Frontiers in Psychology, 3,* 16:1498132. **https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1498132/full**

Marino, M.T., Vasquez, E., Dieker, L., Basham, J.& Blackorby, J. (2023), The future of artificial intelligence in special education technology, *Journal of Special Education Technology, 38*, 404-416. **https://journals.sagepub.com/doi/10.1177/01626434231165977**

National Academies of Sciences, Engineering, and Medicine (2025). *Shaping the Future of AI.* Online at **https://www.nationalacademies.org/topics/artificial-intelligence**

Pawar, S. (2025). *Counseling with AI: Revolutionizing guidance in education*. **https://www.cialfo.co/blog/counseling-with-ai-revolutionizing-guidance-in-education**

Poudel, U., Jakhar, S., Mohan, P., & Nepal, A. (2025). AI in mental health: A review of technological advancements and ethical issues in psychiatry. *Issues in Mental Health Nursing,* 1–9. **https://www.tandfonline.com/doi/full/10.1080/01612840.2025.2502943**

Stover, D. (2023). Will AI make us crazy? *Bulletin of the Atomic Scientists. 79*, 299–303. **https://thebulletin.org/premium/2023-09/will-ai-make-us-crazy/**

Teach AI (2025). *AI Guidance for Schools Toolkit*. **https://www.teachai.org/toolkit**

UNESCO. 2023. *Global education monitoring report. Technology in education. A tool on whose terms?* Paris: UNESCO. **https://unesdoc.unesco.org/ark:/48223/pf0000385723**

U.S. Department of Education (2023). *Artificial intelligence and future of teaching and learning: Insights and recommendations.* Washington, DC: United States Department of Education, Office of Educational Technology. **https://www.ed.gov/sites/ed/files/documents/ai-report/ai-report.pdf**

Wu, S., Krach, S.K., Florell, D., & Whitcomb, S. (2024). *Use of AI in the training of school psychologists.* [Technical Assistance Brief.]. National Association of School Psychologists. **https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=http://www.nasponline.org/assets/documents/Resources%2520and%2520Publications/Resources/Graduate%2520Educators/TAB-Use%2520of%2520AI%2520in%2520Training.pdf&ved=2ahUKEwjIqMXh18KNAxUwhu4BHSjXOOIQFnoECBUQAQ&usg=AOvVaw1O7UoAenBIssT4Ew7sIucN**

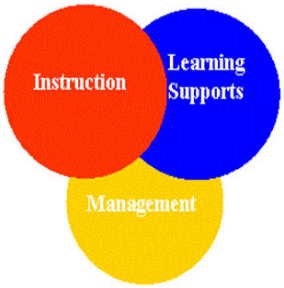
Xie, T., Pentina, I., & Hancock, T. (2023). Friend, mentor, lover: Does chatbot engagement lead to psychological dependence? *Journal of Service Management, 34*, 806–828. **https://www.emerald.com/insight/content/doi/10.1108/josm-02-2022-0072/full/html**

Zhao, Y., D. Yin, L. Wang, and Y. Yu. (2023). The rise of artificial intelligence, the fall of human wellbeing? *International Journal of Social Welfare, 33,* 75-105. **https://onlinelibrary.wiley.com/doi/full/10.1111/ijsw.12586**

For more references relevant to this discussion, see the Center's Quick Find on

>*Technology as an Intervention Tool* **https://smhp.psych.ucla.edu/qf/techschool.htm**

****



For information about the

National Initiative for Transforming Student and Learning Supports
go to https://smhp.psych.ucla.edu/newinitiative.html

****

Invitation to Readers

Everyone has a stake in the future of public education and mental health. This is a critical time for action. Send this on to others to encourage moving forward.

AND let us know about what you have to say about related matters.
Send to Ltaylor@ucla.edu

If you're not directly receiving our resources such as this quarterly e-journal, our monthly electronic newsletter (ENEWS), our weekly Practitioners' community of practice interchange, and other free resources, send a request to Ltaylor@ucla.edu

The *Center for MH in Schools & Student/Learning Supports* operates under the auspices of the School Mental Health Project in the Dept. of Psychology, UCLA.

Center Staff:
Howard Adelman, Co-Director
Linda Taylor, Co-Director
Perry Nelson, Coordinator
. . . and a host of students

Appendix

IBM Provides the Following Brief Historical Overview

The idea of "a machine that thinks" dates back to ancient Greece. But since the advent of electronic computing (and relative to some of the topics discussed in this article) important events and milestones in the evolution of AI include the following:

1950 – Alan Turing publishes Computing Machinery and Intelligence. In this paper, Turing famous for breaking the German ENIGMA code during WWII and often referred to as the "father of computer science" asks the following question: "Can machines think?"

From there, he offers a test, now famously known as the "Turing Test," where a human interrogator would try to distinguish between a computer and human text response. While this test has undergone much scrutiny since it was published, it remains an important part of the history of AI, and an ongoing concept within philosophy as it uses ideas around linguistics.

1956 – John McCarthy coins the term "artificial intelligence" at the first-ever AI conference at Dartmouth College. (McCarthy went on to invent the Lisp language.) Later that year, Allen Newell, J.C. Shaw and Herbert Simon create the Logic Theorist, the first-ever running AI computer program.

1967 – Frank Rosenblatt builds the Mark 1 Perceptron, the first computer based on a neural network that "learned" through trial and error. Just a year later, Marvin Minsky and Seymour Papert publish a book titled Perceptrons, which becomes both the landmark work on neural networks and, at least for a while, an argument against future neural network research initiatives.

1980 – Neural networks, which use a backpropagation algorithm to train itself, became widely used in AI applications.

1995 – Stuart Russell and Peter Norvig publish Artificial Intelligence: A Modern Approach, which becomes one of the leading textbooks in the study of AI. In it, they delve into four potential goals or definitions of AI, which differentiates computer systems based on rationality and thinking versus acting.

1997 – IBM's Deep Blue beats then world chess champion Garry Kasparov, in a chess match (and rematch).

2004 – John McCarthy writes a paper, What Is Artificial Intelligence?, and proposes an often-cited definition of AI. By this time, the era of big data and cloud computing is underway, enabling organizations to manage ever-larger data estates, which will one day be used to train AI models.

2011 – IBM Watson® beats champions Ken Jennings and Brad Rutter at Jeopardy! Also, around this time, data science begins to emerge as a popular discipline.

2015 – Baidu's Minwa supercomputer uses a special deep neural network called a convolutional neural network to identify and categorize images with a higher rate of accuracy than the average human.

2016 – DeepMind's AlphaGo program, powered by a deep neural network, beats Lee Sodol, the world champion Go player, in a five-game match. The victory is significant given the huge number of possible moves as the game progresses (over 14.5 trillion after just four moves). Later, Google purchased DeepMind for a reported USD 400 million.

2022 – A rise in large language models or LLMs, such as OpenAI’s ChatGPT, creates an enormous change in performance of AI and its potential to drive enterprise value. With these new generative AI practices, deep-learning models can be pretrained on large amounts of data.

2024 – The latest AI trends point to a continuing AI renaissance. Multimodal models that can take multiple types of data as input are providing richer, more robust experiences. These models bring together computer vision image recognition and NLP speech recognition capabilities. Smaller models are also making strides in an age of diminishing returns with massive models with large parameter counts.