

Obsolete Schooling and the Courageous Minority: Rethinking Educational Change in the Age of Artificial Intelligence

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Abstract

Purpose: This article argues that schools must change if they are to remain relevant in the age of artificial intelligence (AI), and that the most important agents of such transformational change are the courageous minorities willing to act before the system is ready.

Design/Approach/Method: The article develops a conceptual analysis by bringing together recent evidence on the risks of AI and screen-based technologies with scholarship on the grammar of schooling, educational reform, and panarchy theory.

Findings: The article argues that current concerns about AI—cheating, weakened effort, cognitive dependence, and policy backlash—are symptoms of a deeper problem: Schools still teach and assess what AI can already do. Incremental improvement is therefore insufficient. What is required is transformational change that redefines what is worth learning and how learning should be organized. Yet such change is extraordinarily difficult because schools function as a political and social “peace treaty” that stabilizes competing interests and protects existing assumptions.

Originality/Value: The article advances a new theory of educational change centered on the courageous minority. Rather than waiting for top-down, whole-system reform, it argues that meaningful transformation can begin immediately in protected spaces where small changes may grow into broader paradigm shifts.

Keywords

Artificial intelligence, courageous minority, educational change, grammar of schooling, panarchy theory, school reform

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Introduction

Calls for fundamental change in schooling are not new. For decades, educators, policymakers, and scholars have argued that schools must be transformed to respond to changing social, economic, and technological conditions. Yet despite repeated reform efforts, policy waves, and pedagogical fashions, the basic structure of schooling has remained remarkably stable (Zhao, 2025a). In many parts of the world, schools continue to reproduce what Tyack and Cuban (1995) called the “grammar of schooling”: age-graded classrooms, standardized curricula, teacher-directed instruction, and assessment systems organized around uniform measures of performance (Tyack & Tobin, 1994). Reform has been constant; structural transformation has been rare.

Technology has long been expected to disrupt this pattern. From film and radio to television, computers, and the Internet, each major technological innovation has been accompanied by predictions that schooling would finally be transformed. Yet these predictions have repeatedly gone unfulfilled. As Cuban (1993) argued more than three decades ago, new technologies were largely absorbed into existing classroom routines and institutional logics rather than used to alter the underlying organization of schooling. More than 30 years later, that assessment remains largely valid (Zhao, 2025a; Zhao et al., 2015). Indeed, one of the great ironies of recent educational history is that governments and school systems invested enormous resources to connect schools and students to the Internet, treating digital access as essential to modernization and educational opportunity. Today, many of these same systems are investing substantial effort and policy attention in restricting or removing students’ access to smart devices connected to that same Internet (Ginsberg & Zhao, 2023). This reversal is telling. It reflects not only dissatisfaction with specific technologies, but also a deeper uncertainty about whether schools know how to make productive use of them.

The rapid development of generative artificial intelligence (AI) has brought this uncertainty into even sharper focus. Because AI can now perform many tasks traditionally assigned to students and teachers, it appears to offer yet another opportunity for educational transformation. But the real question is: Can schools actually change?

So far, the answer appears uncertain at best. Much of the emerging discussion of generative AI in education has focused on its risks: cognitive offloading, weakened student agency, academic dishonesty, shallow engagement, and new forms of technological dependence. These concerns have emerged alongside broader anxieties about digital technology, especially around screen time, distraction, and student well-being. In response, a growing number of schools and policymakers have moved toward restricting smart devices and limiting AI use in educational settings. Such responses are understandable, but also revealing. They suggest not merely concern about the dangers of a new technology, but also a broader loss of confidence in schools’ ability to incorporate powerful digital tools without fundamentally rethinking what counts as worthwhile learning, how learning should occur, and how it should be assessed in an AI-saturated world.

This article argues that many of these concerns are real, but often misdiagnosed. The negative outcomes associated with AI are frequently treated as evidence that the technology itself is inherently harmful to education. A more plausible interpretation is that AI is exposing the growing obsolescence of traditional schooling. When students use AI to complete routine assignments, bypass mechanical exercises, or generate acceptable performances with minimal intellectual engagement, the problem is not simply that they have access to a powerful tool. The problem is that schools continue to value and reward work that has become increasingly automatable. AI did not create this obsolescence. It revealed it. What appears to be a technological threat is, in important respects, a challenge to an educational model still organized around routine production, standardized performance, and narrow proxies for learning (Tyack & Tobin, 1994; Zhao, 2024; Zhao, 2025b).

If this diagnosis is correct, then the central question is not whether AI is good or bad for education. That question is too superficial to be analytically useful. The more important question is whether schools are willing to undertake transformational change at a historical moment when much of what they still ask students to do can now be done by intelligent machines. Addressing this challenge will require more than tighter regulation, more cautious implementation, or better guidance on tool use. It will require a more fundamental reconsideration of curriculum, pedagogy, learning environments, and assessment (Zhong & Zhao, 2025).

Yet transformational change in schooling is extraordinarily difficult. Traditional reform strategies, especially those seeking large-scale, top-down change across whole systems, have repeatedly failed to produce deep and lasting transformation. They often generate compliance, symbolic adjustment, or temporary enthusiasm, but rarely alter the underlying logic of schooling. If the age of AI demands not merely improvement but a new educational paradigm, then it also demands a different theory of change. In this article, I argue that such a theory must begin not with the expectation that the entire system will move at once, but with a courageous minority willing to create meaningful alternatives in the spaces they can actually control. Systemic transformation, I suggest, does not begin when everyone is ready. It begins when some are willing to build a future that the system has not yet authorized. This article contributes to current debates on AI and education by reframing the issue as one of educational obsolescence and by proposing a new theory of change centered on the courageous minority.

Evidence of Risk of Technology and AI

There is growing concern that technology can do harm to students. Horvath (2026) has argued in the U.S. Senate that children's cognitive development in many domains has "stalled" and in some areas "reversed," alongside declines in literacy, numeracy, attention, and higher-order reasoning, and in public discussion surrounding that testimony he sharpened the warning by insisting that, in schools, the problem is not solved by changing the type of screen because screen-based technologies themselves can still undermine learning when they displace forms of teaching and interaction better aligned with human cognition.

Related concerns have been raised by others from different angles. Wolf (2018, 2025) argued that digital reading cultures can weaken the conditions for deep reading by eroding sustained attention, inference, reflection, and critical analysis. Haidt (2023) similarly contended that screen-saturated school environments undermine attention, relationships, and belonging, thereby weakening the social and cognitive foundations of learning. Twenge and Campbell (2018) added population-level evidence that heavier screen exposure is associated with lower psychological well-being among children and adolescents, including less curiosity, lower self-control, greater distractibility, and more difficulty finishing tasks. These scholars do not make identical claims, nor do they rely on the same evidence, but they converge on a common warning: increasingly screen-based forms of schooling may be reshaping attention, reading, well-being, and development in ways that should make educators cautious before assuming that more digital mediation necessarily produces better learning.

Recent evidence has raised serious concerns about AI's effects on students. Burns and Winthrop (2026) argued that AI poses substantial risks to student agency, deep learning, and emotional well-being if adopted uncritically, and framed the central educational task as helping students prosper, prepare, and be protected in an AI world rather than merely introducing new tools. Stanford Accelerator for Learning (2026) likewise concluded that the causal evidence on AI's effects remains thin in important areas, especially around

emotional and social development, even as adoption has accelerated rapidly. Pew found that 12% of teens report using AI chatbots for emotional support or advice (Pew Research Center, 2026).

There is also growing concern about cognitive dependence and diminished independent performance. Stanford HAI (2026) reported that recent research suggests students may perform better while AI is available but lose the advantage when the tool is removed, and that some students begin to view the AI as more creative than themselves. A particularly influential recent study strengthens this concern. In *Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task*, Kosmyna et al. (2025) compared essay writing across groups using a large language model, a search engine, or no external tool. They found that participants in the large language model (LLM) condition showed lower neural connectivity during writing, weaker recall of what they had written, and a reduced sense of authorship over their essays relative to those writing without AI assistance, suggesting that convenience in AI-assisted writing may come with cognitive costs when learners offload too much of the composing process to the tool (Kosmyna et al., 2025).

Academic integrity concerns are equally salient. Pew Research Center (2026) found that 59% of U.S. teens think students at their school use AI chatbots to cheat at least somewhat often. The 2025 Higher Education Policy Institute Student Generative AI Survey reported that 92% of students had used AI in some form and 88% had used generative AI in assessment contexts, with common uses including explaining concepts, summarizing articles, and suggesting ideas for research and writing (Freeman, 2025; Pew Research Center, 2026).

The Real Problem: Outdated Schooling

These developments should not be understood as unexpected disruptions to a fundamentally sound system. They are symptoms of a deeper mismatch. Much of schooling still teaches and rewards forms of work that generative AI can now perform competently: summarizing texts, generating explanations, producing essays, organizing arguments, and answering standard questions. The problem, then, is not simply that students have found a shortcut in AI. It is that the destination itself has become obsolete. If schools continue to define achievement in terms of outputs that AI can readily generate, student reliance on AI becomes structurally predictable. Freeman (2025) showed that some of the most common student uses of AI involve explaining concepts, summarizing readings, and improving the quality of academic work—activities that map closely onto the tasks schools still assign and reward.

The same logic applies to assessment. If schools continue to assess students through essays, take-home assignments, generic problem responses, and polished academic production detached from process, then they are still assessing what AI can do. Freeman (2025) found that 59% of students believed assessment had already changed “a lot” in response to generative AI, which itself indicates that inherited formats are losing credibility. UNESCO (2025) also suggested that AI is disrupting traditional assessment and forcing systems to reconsider what is worth measuring, with greater emphasis on higher-order thinking, creativity, and ethical reasoning rather than outputs AI can produce with relative ease.

Schools are therefore becoming obsolete not because knowledge has ceased to matter, but because too much of what they currently teach and assess is precisely what AI is becoming increasingly good at doing. What students most need in the age of AI lies elsewhere: judgment, ethical reasoning, problem finding, collaboration, interpretation, and the development of distinctive human strengths and purposes (UNESCO, 2025; Zhao, 2024).

From this perspective, widespread “cheating” with AI is equally predictable. It is not merely a matter of declining character. It is the foreseeable outcome of an educational system that continues to reward routinized, externally defined performances while treating those performances as evidence of learning. When students are asked to produce work that AI can generate quickly and convincingly, many will use AI not only because it is available, but because the task itself no longer appears educationally meaningful (Freeman, 2025; Pew Research Center, 2026).

The problem extends beyond student use of AI. AI is also being used by schools in ways that reinforce, rather than disrupt, the controlling logic of traditional schooling. It is increasingly being used in schools not simply to support learning, but to monitor, manage, and control students in ways that extend the long-standing logic of behavioral regulation in schooling. A recent systematic review of 104 studies found that AI applications in classroom management are used extensively for attendance tracking, behavior monitoring, and the assessment of student engagement and attention, while ethical concerns such as privacy, data security, and bias receive far less attention (Fütterer et al., 2025). UNESCO has similarly warned that AI systems may use facial recognition and related technologies to track students’ attention, emotional engagement, and classroom behavior, turning facial expressions, bodily movements, and other forms of participation into data for machine judgment (UNESCO, 2024). At the same time, AI is increasingly being used to automate instructional and assessment decisions. The U.S. Department of Education, Office of Educational Technology (2023) noted that AI is now embedded in educational systems not only to recognize patterns but also to automate actions and decisions about instruction and other educational processes. OECD (2023) likewise observed that AI-powered systems can track learner progress, diagnose needs, and generate personalized pathways through content. Although these practices are often framed as innovation, efficiency, or personalization, they may in fact represent a more technologically sophisticated version of the teaching machine: Students are continuously observed, measured, classified, and then directed along predetermined pathways designed by others. In this sense, AI risks reinforcing rather than transforming traditional schooling, deepening its emphasis on compliance, surveillance, and externally controlled performance instead of agency, judgment, and self-directed learning (OECD, 2023; U.S. Department of Education, Office of Educational Technology, 2023).

Restrictive reactions may also be counterproductive. Fu et al. (2026) found widespread policy confusion, “AI shame,” and routine noncompliance, with students often navigating AI use through peer cultures rather than official guidance. Freeman (2025) similarly showed that widespread AI use coexists with uncertainty and fear of accusation. When policy is rooted more in suspicion than in redesign, AI use does not disappear; it becomes less discussable and invisible (Freeman, 2025; Fu et al., 2026).

Possible Solution: Transformational Changes

If schools want to remain relevant in the age of AI, they must change. The challenge is not simply to control AI or remove devices. It is to redefine what learning is for and how learning should happen in the age of AI. If schooling itself does not change, AI offers very little and brings more risk than benefits in schools (Zhao, 2025b). When machines can generate routine outputs, the value of education shifts toward what machines do not do in the same way: unique greatness, judgment, problem finding, moral evaluation, interpretation, imagination, distinctive purpose, and contribution to others (Zhao, 2025a).

The danger of failing to change education is not merely educational; it is also economic and social. Major international organizations increasingly warn that AI is restructuring work,

transforming tasks, and elevating the importance of capabilities that conventional schooling has too often marginalized. The World Economic Forum (2025) projected that by 2030 global labor-market shifts will create 170 million jobs while displacing 92 million, with rising demand for analytical thinking, resilience, flexibility, leadership, creative thinking, curiosity, and lifelong learning. The International Labour Organization (2025a, 2025b) likewise reported that one in four workers globally is employed in occupations with some exposure to generative AI and emphasizes that the likely impact is not only job loss but substantial task transformation, especially in clerical and other cognitively routine work. The OECD (2025) similarly argued that sustaining growth and social progress increasingly depends on whether societies enable people to develop and use broad-based capabilities, including adaptive problem solving, in rapidly changing technological and social conditions. The International Monetary Fund (IMF) has further warned that AI is likely to transform employment and inequality unevenly, complementing some forms of higher-skill work while displacing or degrading more routine labor, with outcomes depending heavily on institutions, policy, and workers' capacity to adapt (Cerutti et al., 2025; Georgieva, 2024). Thus, if schools continue to prepare students primarily for routine, standardized performance, they risk becoming not only educationally obsolete but economically shortsighted and socially irresponsible.

Relevance requires more than adding AI literacy to the existing curriculum. It requires rethinking the educational paradigm that defines what learning is and how it should happen and be organized (Zhao, 2025a; Zhao & Zhong, 2025). In the new paradigm, personalized learning must mean more than varying pace through the same content. It must help students discover and develop distinctive strengths and directions in a world where uniformity is less valuable than differentiated human contribution. Problem-based learning must mean more than completing teacher-assigned projects; it must also involve identifying worthwhile problems and creating responses that matter beyond school. Human interdependence must become more central because the economy and society will increasingly reward people who can work with others, contribute different strengths, and create value collaboratively rather than simply outperform peers on one common scale (Zhao & Zhong, 2025). Assessment must change accordingly. If schools continue to assess what AI can already do well, they will continue to prepare students for a world that is disappearing. A more relevant assessment would focus on judgment, process, revision, explanation, ethical decision-making, collaboration, and the significance of the problems students choose to pursue.

Why Schools Are So Difficult to Change: The Peace Treaty

Yet the need for change does not make change easy. Tyack and Tobin's (1994) account of the "grammar of schooling" explains why age grading, subject divisions, schedules, and familiar structures persist despite repeated reform efforts. Sarason (1990) likewise argued that reform predictably fails because reformers underestimate institutional realities. Coburn (2003) later showed that lasting reform requires not merely spread, but depth, sustainability, and a shift in ownership.

One way to understand this persistence is to see schools as a kind of peace treaty. Schools do not endure simply because everyone believes they are educationally effective. They endure because they provide a workable compromise among groups with different interests, expectations, and fears. Parents want recognizable signs of success and fairness. Governments want systems that are visible, comparable, and governable. Universities want familiar credentials for selection. Communities want order, continuity, and legitimacy. Teachers and school leaders must work within these pressures while still educating actual students. The existing structure of schooling—grades, age grouping, subject divisions, schedules, tests, transcripts, and rankings—functions as a settlement that

allows these competing interests to coexist. In that sense, the stability of schooling comes not only from habit but from its political usefulness as a peace treaty (Tyack & Tobin, 1994).

This perspective also helps explain the enduring appeal of system-level reform. If the problem appears systemic, then it is natural to hope for large-scale policy solutions. But reform research suggests that schools do not simply implement change as written. They reinterpret it, adapt it, and often domesticate it. Reform that reaches many sites is not necessarily deep or durable unless local actors actually take ownership of it (Coburn, 2003).

There is also a paradox here. On the one hand, meaningful policy change can matter because accountability rules, assessment systems, and institutional incentives shape what schools believe they can do. On the other hand, system-wide reform can easily become another form of one-size-fits-all education. Educational change too often remains trapped in the logic of uniformity even when it speaks in the language of innovation or personalization (Zhao, 2025a).

The peace treaty perspective also clarifies a subtler problem: The absence of system-level change can become an excuse for not changing at all. It has been found that principals cited many district, state, and federal barriers to innovation and school improvement, but only about 31% of those barriers were actually “real”; the rest were “imagined,” meaning they could often be worked around, waived, or reinterpreted (Miller et al., 2014).

It is important to distinguish between two different kinds of change. One is improvement change, which seeks to make the current theory and practices of schooling more efficient, effective, or manageable without altering their basic assumptions. Improvement change may raise test scores, refine instruction, strengthen accountability, integrate technology more smoothly, or make existing routines work better. The other is transformational change, which seeks to move beyond the current theory and practices of schooling in order to create a new educational paradigm. Transformational change does not only ask how to improve the existing system; it asks whether the underlying purposes, structures, and assumptions of that system remain valid.

Much current reform still operates as an improvement change: it tries to use AI to improve curriculum and instruction, personalize delivery within the same curriculum, or strengthen conventional assessment. But if the deeper problem is that schools still teach and assess what AI can already do, then improvement is not enough. What is needed is transformational change that redefines what is worth learning, how learning should be organized, and what kinds of human capabilities education should cultivate.

But transformational change is extraordinarily difficult. That difficulty helps explain why, over hundreds of years, the basic assumptions of schooling—the grammar of schooling—have remained largely intact despite countless waves of reform intended to improve schools. Many reforms have changed techniques, tools, and management practices, but left untouched the deeper logic of standardization, age grading, subject division, ranking, and externally defined success (Tyack & Tobin, 1994; Zhao, 2025a). In this sense, improvement change has been common, but transformational change has been rare precisely because it threatens the foundations on which conventional schooling has long rested. But it is transformational change that we need today. In other words, only transformational changes can possibly make schooling relevant in the age of AI.

Change Without Changing the Whole School: The Courageous Minority

Traditional approaches to educational change have often assumed that meaningful reform must occur at scale, through policies, programs, or mandates designed to change everyone at once. This logic typically seeks coherence, uniformity, and broad implementation: one framework for all schools, one reform agenda for all teachers, and one new set of expectations for all students.

Such approaches are understandable because education systems are large and publicly accountable, and policymakers naturally want solutions that appear comprehensive and equitable. Yet this approach has not worked well. Research on school reform repeatedly shows that large-scale change is often diluted in implementation, reinterpreted locally, or absorbed into the existing grammar of schooling rather than transforming it (Coburn, 2003; Sarason, 1990; Tyack & Tobin, 1994). Efforts to change everyone at once also tend to trigger resistance because they threaten too many interests simultaneously and often reproduce another version of one-size-fits-all schooling. As a result, traditional reform frequently changes rhetoric, rules, or surface practices without altering the deeper assumptions, structures, and relationships that sustain conventional schooling (Zhao, 2025a).

A better approach to changing schools in the age of AI is to rely on the courageous minority in schools. A relatively small but committed group of teachers, students, school leaders, and community partners can redesign learning in the spaces they actually control. Most schools have a small number of individuals who are unhappy with the existing educational experiences and want to make transformational changes. They may not have much power over the entire school or the system, but they can make big changes in their own controllable spaces. Those spaces may include classrooms, advisories, exhibitions, portfolios, capstones, interdisciplinary initiatives, and community partnerships.

The courageous minority approach to change has also become essential for a number of reasons. First, change must happen without breaking the peace treaty. If schools are sustained by a settlement among competing interests, then change that threatens too many interests at once will predictably provoke resistance. The courageous minority works because it creates change in ways that do not excessively disrupt all parties at once. It does not begin by abolishing the whole structure. It begins by carving out protected spaces within it.

A second reason is urgency. Students are in classrooms today. They are already living in a world shaped by AI, already navigating obsolete assignments, and already facing assessment systems that reward what machines can do. Even if systems could change rapidly, they would not change rapidly enough for the students currently moving through schools (Watterston & Zhao, 2024).

A third reason is that system-wide reform can easily become another form of one-size-fits-all education. Large-scale reforms often reproduce the very standardization they claim to replace. The courageous minority offers a different logic: not universal compliance with one reform, but locally meaningful transformation that respects context, difference, and variation in readiness.

Finally, small changes can lead to large transformation. Zhao and Zhong (2024) argued that education should be understood as a complex ecological system composed of interdependent elements operating at multiple scales. Drawing on panarchy theory, they emphasized that influence does not move only from the top down; smaller-scale processes can affect larger-scale dynamics through cross-scale linkages. Processes at one level can influence the behavior of other levels and, over time, reshape the wider system (Zhao & Zhong, 2024).

Change should not be dismissed merely because it begins small. Large systems are often highly resilient, and that resilience makes them resistant to direct transformation. Smaller subsystems, however, are often more capable of experimentation, variation, and adaptive response. From a panarchy perspective, educational transformation is therefore unlikely to begin through total system replacement. It is more likely to emerge in relatively small, semi-protected spaces where new patterns of practice can develop, stabilize, and eventually influence wider structures through cross-scale interaction (Zhao & Zhong, 2024).

This ecological view also clarifies why placing the courageous minority in a school within a school matters. Its significance is not only pragmatic or political. It is also systemic. A protected internal space allows willing teachers, students, and leaders to operate under different assumptions

about curriculum, pedagogy, autonomy, and assessment without requiring the whole institution to change immediately. The value of such a space lies in its ability to generate viable alternatives that the larger system can later notice, learn from, absorb, or respond to. In this sense, the school within a school is not merely a compromise. It is an ecological strategy for transformation (Zhao & Zhong, 2024).

The courageous minority, then, should not be understood merely as a temporary workaround until “real” reform arrives. It is part of the mechanism by which real reform becomes possible. A small group of educators and students who create viable forms of personalized, problem-centered, autonomy-supporting learning may influence the broader system not by direct conquest, but by ecological effect. Their work can demonstrate feasibility, create new norms, attract allies, and shift what others perceive as possible. In this way, small protected changes may become the seeds of larger transformation (Zhao & Zhong, 2024).

Implications

This new approach to change has significant implications for everyone involved in schooling. For school leaders, the task is less to impose one grand reform on everyone at once than to create and protect spaces in which more relevant forms of learning can emerge. Leaders must identify where experimentation is possible, buffer it from premature standardization, and give legitimacy to work that may not yet look like conventional schooling (Grissom et al., 2021; Leithwood et al., 2004). In practice, this may mean creating a school-within-a-school pathway, protecting a grade level or interdisciplinary team to pilot new learning designs, allocating common planning time for inquiry-based work, or allowing selected teachers to use portfolios, exhibitions, and oral defenses alongside or in place of conventional tests. It may also mean publicly supporting teachers when parents or colleagues question why students are spending time interviewing community members, building prototypes, or revising long-term projects instead of completing more familiar worksheets and test-preparation tasks. Leadership in this sense is not simply managerial. It is ecological and political: leaders create the conditions under which new forms of education by the courageous minority can survive long enough to demonstrate their value.

For teachers, the implication is not diminished importance but transformed importance. Teachers matter less as distributors of information or producers of routine instructional materials, and more as designers of meaningful learning, cultivators of judgment, and mentors of student growth. Research on rigorous project-based learning suggests that intellectually demanding, authentic project designs can produce stronger learning outcomes than traditional instruction when tied to core disciplinary ideas. This means, for example, that a teacher might replace a standard persuasive essay with a project in which students identify a local issue, gather data, interview stakeholders, draft multiple proposals, receive critique, and present recommendations to a real audience. A mathematics teacher might ask students to analyze actual transportation patterns around the school and propose safer traffic flow solutions rather than simply solving decontextualized rate problems. A language arts teacher might organize a community oral history project in which students learn interviewing, transcription, interpretation, and narrative writing while preserving local memory. In each case, the teacher’s role shifts from assigning uniform tasks to designing experiences in which students must use knowledge purposefully, make decisions, revise ideas, and create value for others.

For students, the implication is that schools should increasingly invite them to become active authors of learning rather than passive completers of assignments. Research on student voice and agency suggests that meaningful participation in decision-making can strengthen agency when it is substantive rather than tokenistic (Moore et al., 2022). This means students should

have more opportunities to choose topics, frame questions, determine methods, and shape the final form of their work. For instance, instead of every student completing the same science fair project, students might identify issues they notice in their own lives or communities—air quality, food waste, loneliness among older adults, accessibility of public spaces—and decide how best to investigate them. Schools should also make more time available for students to explore interests, revise work, and collaborate across differences. In such settings, students are not merely being given “choice” within a predesigned assignment; they are being asked to take responsibility for identifying worthwhile directions, contributing different strengths, and working with others toward meaningful outcomes. This also helps shift success from individual competition toward human interdependence, where students learn that one person may excel at research, another at visual communication, another at organizing teams, and another at building community relationships.

For community partners, the implication is that schools must become more porous. Research on community schools and school–community partnerships suggests that well-implemented partnerships can improve attendance, school climate, belonging, and academic outcomes, especially when they are integrated into the core educational design rather than treated as add-ons (Maier et al., 2017; Swain et al., 2025). This means community partners should not be limited to guest speakers or field trip hosts. They can become co-designers of learning. A local clinic might work with students to develop multilingual health-information materials. A city planning office might provide real data for students to analyze neighborhood safety or walkability. A museum or historical society might collaborate on student-curated exhibits. A nonprofit organization might invite students to help investigate community needs and develop practical responses. These partnerships make student work more consequential because they provide authentic audiences, constraints, needs, and feedback that a school alone often cannot provide. In the age of AI, this matters even more: The easier it becomes for students to generate school-like products with digital tools, the more important it becomes for learning to be accountable to realities beyond school.

For policymakers and system leaders, the implication is not that large-scale policy no longer matters, but that it should shift from prescribing uniform solutions to creating conditions in which meaningful local transformation can emerge and spread. If system leaders continue to define success mainly through standardized testing, narrow accountability metrics, rigid compliance structures, and one-size-fits-all reform mandates, they will reinforce the very model of schooling that AI has made increasingly obsolete. Their role should instead be to remove unnecessary barriers, create flexibility for protected experimentation, legitimize alternative forms of assessment, and support schools in developing different pathways rather than forcing all schools into the same model of change. For example, state or district leaders can authorize pilot programs, allow schools to use portfolios, exhibitions, or performance assessments in place of some conventional measures, redesign accountability systems to value broader outcomes, and provide resources for networks of schools to learn from one another. They can also help by reducing the policy fear that drives AI use underground, replacing vague prohibition with clearer principles about ethical use, disclosure, judgment, and student development. In this sense, policymakers and system leaders should not try to engineer transformation entirely from the top down. Their more productive role is to create enabling conditions for courageous minorities to act, for small innovations to survive, and for promising local changes to influence the wider system over time.

These implications suggest that the change in the age of AI is not mainly about adding a new technology or enforcing new rules. It is about reorganizing relationships, time, tasks, and purposes so that learning becomes more personalized, more problem-centered, and more socially meaningful. Leaders protect the conditions for change, teachers design new forms of learning, students become active participants in shaping that learning, and community partners help connect

schoolwork to real human needs. However, it is important to note that students and community leaders can also initiate transformational changes. Although the courageous minority is never everyone at once, it can include students, educators, leaders, parents, and community members whose actions are inspired and protected (Zhao, 2025a).

Conclusion

Recent studies and policy movements have made it increasingly difficult to ignore the risks of AI and smart devices for student learning, cognition, integrity, and well-being. But these risks are not surprising. They are symptoms of a deeper educational problem. AI has exposed the obsolescence of a school model that still teaches and assesses too much routine, externally defined work—the very kinds of work AI now performs well. As long as schools continue to reward those performances, students will keep using AI in ways schools call cheating, and restrictive policies will continue to drive much of that use underground rather than eliminate it (Freeman, 2025; Fu et al., 2026).

If schools want to remain relevant, they must change. Yet schools are difficult to change because they are stabilized by enduring institutional forms and wider social expectations—and because they function as a peace treaty among stakeholders whose interests do not fully align. That is why meaningful transformation is unlikely to begin through whole-system reform. It is more likely to begin with a courageous minority willing to redesign learning in the spaces they actually control. In the age of AI, the future of education may depend less on whether schools adopt the newest tools than on whether enough courageous people are willing to make schooling worth doing again.

An Update

Since developing the courageous minority approach as a theory of change, we have begun putting it into action through a global network of about 20 schools from different countries. Educators are joining meetings from around the world—some late at night, early in the morning, or while fighting jet lag—to design small, protected experiments within their own schools. These efforts include learner agency days, capstone projects, AI-supported inquiry, student podcasts, classroom-based problem finding, innovation groups, and “schools within schools.” Together, they show that educational transformation does not have to wait for whole-system reform. It can begin with courageous minorities who act within their own zones of possibility and generate evidence for broader change.

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