



TPACK in the Age of Context and Artificial Intelligence: Punya Mishra on the “Wicked Problem” of AI and Why Algorithms Can’t Replace Context

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**CRITICAL SCHOLARLY
CONVERSATIONS**



ABSTRACT

This scholarly dialogue engages Professor Punya Mishra, co-developer of the Technological Pedagogical Content Knowledge (TPACK) framework, to examine the shifting landscape of teacher expertise in the era of Generative Artificial Intelligence (GenAI). As AI agents increasingly simulate pedagogical roles and generate educational materials, the conversation probes the resilience and necessary evolution of the TPACK model. Mishra argues that rather than diminishing the need for human expertise, the rise of AI makes deep Content Knowledge (CK) more vital than ever to verify and curate the output of algorithmic tools, which he characterizes as “smart drunk interns”; highly capable but fundamentally unreliable. The dialogue highlights the critical importance of Contextual Knowledge (XK) within the framework, emphasizing that the human understanding of specific students and local settings remains a domain where teachers hold a distinct advantage over de-contextualized algorithms. Furthermore, Mishra introduces the concept of “pride in work” as a crucial pedagogical strategy to foster student agency and creativity, serving as a counterbalance to the risks of automated mediocrity and plagiarism. Looking toward the future, the interview offers a critical vision, warning against the potential devaluation of “practical wisdom” and the widening of equity gaps. In all, Mishra suggests that the “Future-PACK” for educators must extend beyond technical skills to include a quasi-political understanding of the complex societal and ethical systems that shape the educational landscape.

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KEYWORDS:

TPACK Framework; Generative AI; Teacher Knowledge; Contextual Knowledge (XK); Artificial Intelligence in Education; Teacher Agency; Teacher Professional Development; Design Thinking; Digital Transformation; Educational Technology

TO CITE THIS ARTICLE:

Mishra, P., & Bozkurt, A. (2026). TPACK in the Age of Context and Artificial Intelligence: Punya Mishra on the “Wicked Problem” of AI and Why Algorithms Can’t Replace Context. *Open Praxis*, 18(2), pp. 398–407. DOI: <https://doi.org/10.55982/openpraxis.18.2.1093>

INTRODUCTION

Teaching is widely recognized as a complex, ill-structured discipline that requires educators to navigate dynamic classroom environments and apply specialized structures of knowledge across varying contexts (Koehler & Mishra, 2009). For decades, the integration of technology into this mix was often hampered by a “technocentric” approach; one that viewed technology as a set of isolated skills to be mastered independent of subject matter or instructional method (Bozkurt, 2020). This reductionist view failed to account for the *protean, unstable, and opaque* nature of modern digital technologies, which, unlike the transparent stability of a pencil or chalkboard, present fundamental challenges to educators (Koehler & Mishra, 2009; Mishra & Koehler, 2006).

To address this disconnect, the Technological Pedagogical Content Knowledge (TPACK) framework was introduced as a conceptual lens to capture the essential qualities of teacher knowledge required for thoughtful technology integration. Building upon Shulman’s (1986) formulation of Pedagogical Content Knowledge (PCK), TPACK argues that effective teaching with technology is not merely about adding technical skills to existing practice (Koehler & Mishra, 2005). Rather, it requires a nuanced understanding of the complex relationships between technology, content, and pedagogy (Mishra & Koehler, 2006).

At its core, the framework identifies three primary forms of knowledge: Content Knowledge (CK), the subject matter to be learned; Pedagogical Knowledge (PK), the methods and processes of teaching; and Technological Knowledge (TK), the understanding of standard and advanced technologies. However, the framework’s true power lies in the intersections of these domains. It highlights that true expertise emerges from the transactional relationships between them, such as Technological Pedagogical Knowledge (TPK), knowing how teaching changes when specific technologies are used, and Technological Content Knowledge (TCK), understanding how technology creates new representations of content (Koehler et al., 2013).

FROM DIGITAL TRANSFORMATION TO CONTEXTUAL KNOWLEDGE (XK)

As the educational landscape has shifted from basic digitization to profound digital transformation, the TPACK framework has faced scrutiny regarding its treatment of context. Early iterations of the model acknowledged context with a dotted line surrounding the core knowledge domains, symbolizing the external factors influencing teaching (Mishra & Koehler, 2006). However, critics and evolving research have argued that this representation was insufficient for capturing the *situated* nature of teacher expertise (Petko et al., 2024; Petko et al., 2025).

In a significant theoretical upgrade, recent scholarship has reconceptualized this outer boundary not just as a passive container, but as a distinct domain of Contextual Knowledge (XK). This shift moves beyond viewing context as merely external influences to recognizing it as an explicit form of teacher knowledge, ranging from the micro-level awareness of student needs to the macro-level understanding of sociopolitical constraints (Mishra, 2019).

This dual nature of context, existing both as the environment in which knowledge is enacted and as a cognitive domain the teacher must possess, is critical for understanding why technology integration succeeds in one classroom but fails in another. It highlights that the “successful integration of technology relies not only on high levels of knowledge in each of these domains but also on combined considerations... that guide the pedagogical design” (Petko et al., 2025, p. 1).

THE GENERATIVE AI DISRUPTION

Today, the framework faces its most provocative challenge yet: the rise of Generative Artificial Intelligence (AI). Unlike previous waves of educational technology which required teachers to curate and present information, GenAI agents are capable of creating content, simulating pedagogical dialogue, and personalizing instruction autonomously (Artsin & Bozkurt, 2026). This accretion of capability forces a re-examination of the core TPACK components (Islam & Mishra, 2024; Mishra et al., 2024).

The influence of AI on Pedagogical Knowledge (PK) is particularly profound, as AI-powered tools begin to reshape the dynamic nature of teacher knowledge transformation. Furthermore, the introduction of AI necessitates a critical look at Technological Content Knowledge (TCK). If an AI can generate a historical essay or a mathematical proof, the teacher's role shifts from a primary source of content to a critical evaluator of "curriculum-shaped objects" generated by algorithms (Mishra et al., 2024).

As we stand at the precipice of this new era, the TPACK framework remains a vital, albeit evolving, map. It challenges us to move beyond technocratic rationality, the belief that technology alone can save education, and instead focus on developing teachers who possess the cognitive flexibility to weave together content, pedagogy, technology, and context into a coherent whole. The future of educational technology will not be defined by the sophistication of our tools, but by the "deep, flexible, pragmatic, and nuanced understanding" teachers bring to their use (Koehler et al., 2013, p. 16). To illuminate these urgent issues and explore the resilience of teacher knowledge in an age of algorithmic disruption, we present the following scholarly dialogue with Professor Punya Mishra.

A SCHOLARLY DIALOGUE WITH PUNYA MISHRA ON TPACK AND DIGITAL TRANSFORMATION AND AI

Professor Mishra, thank you for joining us for this dialogue. The TPACK framework has long served as the 'North Star' for integrating technology into education, emphasizing that teaching is a complex, situated activity requiring specialized knowledge. However, we now face a technological wave, GenAI, that doesn't just support instruction but can actively generate it. This shifts the ground beneath our feet. In this conversation, we want to explore the resilience of the TPACK model in the age of AI agents, the critical role of 'Contextual Knowledge' when algorithms drive learning, and your vision for the future of human creativity and teacher agency in a digital world.

The Evolving Role and Knowledge of the Teacher

Aras Bozkurt: The rise of GenAI is profoundly reshaping the role of the teacher, shifting it from an information provider to something more akin to a learning architect or a 'cyborg shepherd', guiding both students and AI. From your perspective, how does this shift impact the fundamental knowledge domains a teacher must possess? What new pedagogical skills (PK) and content-related understandings (CK) are becoming essential for educators who must now teach students with and about AI in a critical and ethical manner?

Punya Mishra: Let me start by clarifying what the TPACK framework fundamentally is: a framework of teacher knowledge. It builds on Shulman's Pedagogical Content Knowledge framework (1986), which argues that the knowledge teachers have is different from that of subject matter experts or general pedagogues. It's about understanding the deep relationship between how students understand the world, the misconceptions they might have, and the pedagogical strategies that work best for particular kinds of content. What Matt Koehler and I did (in a series of articles, most prominently Mishra & Koehler, 2006; and Koehler & Mishra, 2008) was argue that given the advent of new technologies, knowledge of technology becomes an integral component of this relationship.

With GenAI, something surprising has emerged: *content knowledge has become even more important than before*. This may seem counterintuitive, but the stochastic, hallucinatory nature of these technologies means they can go off track in very subtle and nuanced ways. Unless you have deep knowledge of your field, you won't be able to catch these errors. I experience this constantly. When GenAI helps me draft something, the output might be right, but it's not quite right. It gets nuances wrong in ways that only someone who has thought deeply about these topics can detect. Novice teachers (and learners) are at a significant handicap here because they don't have the judgment to evaluate GenAI outputs critically.

This technology is what I call a "smart drunk intern," it's both incredibly capable and deeply unreliable. It can do things we couldn't do before: translation across languages, generating multiple analogies, creating simulations. But it's an untrustworthy partner that can lead you astray. As a dialogic partner for brainstorming, it's powerful. But getting content knowledge wrong; that's mission critical, because that's your goal as a teacher. You want students to learn science, math, music, or whatever your discipline may be.

In terms of pedagogical skills, teachers now face something unprecedented: a “social other” in the classroom that spouts things with extreme confidence but can occasionally be profoundly misguided. This is a strange beast in a classroom context, we’ve never had an almost psychologically real being that has the potential to undermine the educator’s authority. Teachers need to develop new skills for managing this presence, including helping students become critical evaluators of GenAI outputs.

I need to push back on one aspect of your question, though, the word “must” when you say teachers must teach with and about AI. I would caveat that significantly. If I’m teaching algebra or balancing chemical equations, I don’t necessarily need to be teaching about GenAI in that context. The goal is for students to understand the deeper underlying content. However, I do think that in certain fields, particularly writing and, most definitely, technology education, addressing GenAI becomes almost essential. The question of voice, of caring, of pride in one’s work becomes more foregrounded.

That word “pride” is crucial here. In how few contexts in school do we ask students to do things they would feel proud of? Pride has become a lens for me in thinking about GenAI adoption. If you take pride in your work, you will automatically be skeptical and critical of GenAI outputs, not rejecting them outright, but carefully evaluating and refining them. This applies to teachers as much as students. And in some ways is one possible answer to the issue of plagiarism that has bedeviled all conversations about GenAI in education, ever since ChatGPT erupted into our social and cultural lives.

There’s another dimension to teaching that GenAI cannot replicate: the *performative and design aspects of crafting learning experiences*. When a teacher designs an activity, they work with broad contours—imagining how it will unfold, what students will struggle with, how to sequence the parts. They test ideas, reject what won’t work, refine based on intuition built from years of classroom experience. This is the artistry of teaching: understanding not just what content to cover or which pedagogy to use, but how to orchestrate an experience that works for these particular students in this particular moment. GenAI can suggest components, but it cannot replicate the design sensibility and situational judgment that make teaching a craft.

Finally, regarding contextual knowledge, teachers need to understand that the sociology of the classroom has changed. From a distributed expertise perspective, GenAI becomes another piece of that puzzle, a *smart drunk intern* with all the strengths and weaknesses that come with that. This falls under contextual knowledge: understanding the new context within which learning happens. The addition of contextual knowledge (XK) to the TPACK framework came from recognizing that the original Venn diagram representation was semantically incomplete—spaces should define knowledge domains, not dotted lines around them labeled “contexts.” By reframing context as contextual knowledge, we can now think productively about what teachers need to know about their specific situations: whether students have tablets versus limited computer lab time, whether cell phones are banned, what state standards apply, what school policies constrain or enable certain practices. These are all elements of contextual knowledge that fundamentally shape how technology, pedagogy, and content can come together in practice.

The TPACK Framework in the Age of Generative AI

Aras Bozkurt: The TPACK framework brilliantly illustrates the interplay between technology, pedagogy, and content. GenAI—a technology that can create content (C), generate lesson plans (P), and act as the technology (T) itself—seems to blur these distinct domains. How does the emergence of AI challenge or extend the TPACK framework? For instance, when an AI can generate a Socratic dialogue (TPK) or explain a scientific concept using a novel analogy it creates (TCK), do we need a redefinition of the intersections, or perhaps even a new component in the model to account for this agentic technology?”

Punya Mishra: This is a critical question, and I want to point you to a paragraph in our original (Mishra & Koehler, 2006) paper that I’m particularly proud of. We were explicit that the distinctions we make between technological knowledge, pedagogical knowledge, and content knowledge are somewhat artificial, in other words, they serve an analytic function, and the reality is definitely fuzzier. If you’re a musician, what’s the line between knowing music and

knowing the tools you create music with? If you're an astronomer, where's the boundary between your knowledge of astronomy and your ability to interpret data from the Hubble Space Telescope? Tools and knowledge have always been deeply intertwined.

Thus, the TPACK framework is an analytic framework that helps us see the phenomenon of teaching through these three interlocking circles (and the outer circle of contextual knowledge). We were always aware that this is a move that helps us analytically for research and teacher professional development, while keeping in mind that these distinctions are much more fuzzy in practice. What GenAI has done, as it does in many domains, is push that fuzziness in our face. It's no longer something we can ignore.

When GenAI creates what I call "curriculum-shaped objects" (something with all the right headings and words that look like curriculum but may miss crucial nuances), it reveals the limitations of surface similarity. These outputs lack the lived expertise, the practical wisdom that educators have who work in actual classrooms with actual people. This makes the teacher's role shift toward being more of a curator, teaching at a meta-level about how to evaluate content rather than just generating content. You can ask GenAI to write an essay about history, but how do you know if it's a good essay?

I spoke at a journalism conference recently, and when asked about the biggest change in their careers, I said: "You're going to spend 95% of your time verifying." There will be so much slop out there that authenticity becomes critically important. Teachers have a vital role in helping students understand authenticity: which sources to trust, what are productive, critical ways of thinking about this issue of trust. GenAI has no connection to truth; it will say whatever emerges from its statistical patterns, and it is our responsibility to learn how to critically deal with its outputs.

Now, regarding whether we need new components in the framework, I need to address something that frustrates me considerably. Many people have added circles to the TPACK framework (ethics, equity, you name it). The problem isn't that these elements aren't important; it's that people don't understand what Venn diagrams are. Venn diagrams with circles can only meaningfully represent three overlapping sets—that's just geometry. A fourth set is possible, but it requires ellipses rather than circles to capture all the intersections properly, which sacrifices the threefold symmetry that makes the three-circle Venn so visually intuitive and communicatively powerful. Beyond four, the visual complexity becomes unmanageable. If you want to bring in additional elements, you might need a different visual representation altogether, perhaps a tetrahedron where content, pedagogy, and technology sit at three corners and your new element (say, ethics) sits at the fourth.

This is actually the same semantic issue that led us to shift from "contexts" (represented as a dotted line) to "contextual knowledge" (represented as another circle). The original representation suggested, without saying so explicitly, that context was somehow different from the other knowledge domains, sitting outside them. But teachers need knowledge of their contexts just as much as they need knowledge of content, pedagogy, and technology. Making the outer circle represent contextual knowledge made the framework semantically consistent since all the spaces now represent knowledge domains. However, this also highlights the limitation of adding further elements. We need to be thoughtful about how we represent things visually. I say this not because I think the TPACK framework is sacrosanct, but more to urge people to be intentional in the design choices we make.

Finally, I don't think the framework fundamentally changes with AI. What changes is what goes into those circles—the kind of knowledge required gets redefined. From a distributed expertise perspective, GenAI becomes another piece of distributed expertise in the classroom. To understand what this means: there have been discussions about distributed versions of TPACK in multi-teacher classrooms or team-teaching contexts—spaces where one educator might excel in language arts while another's strength is mathematics, creating complementary expertise across the team. In this framework, GenAI becomes another element of that distributed expertise, contributing its particular strengths (rapid generation, translation, pattern matching) while lacking others (judgment, contextual wisdom, relational understanding). Understanding GenAI as distributed expertise, rather than as a replacement for teacher knowledge, helps us see more clearly both what it offers and what it cannot do. That is a form of technological knowledge.

So, in that manner, the framework itself remains useful for what it needs to do. The advent of GenAI complicates each of the elements, certainly, but the basic structure holds. It's important to remember that TPACK was never meant to capture everything about teaching. Teaching and learning are too complex to capture in a venn-diagram. But that's okay—it's one lens among many. It is a relatively abstract representation of a complex domain, which, I believe, is its strength. But like every representation it simplifies in order to communicate. The point is not that TPACK is the answer to every educational conundrum. It would be naive to make such a claim. But it is a framework that lets us interrogate teacher knowledge in productive ways, it helps us think of teacher education and teacher professional development in intentional ways.

Fostering Creativity with GenAI through a TPACK Lens

Aras Bozkurt: Beyond its core components, your work has often emphasized creativity and design thinking. GenAI tools offer immense creative potential but also risk homogenizing student work through predictable outputs. How can educators use the principles of TPACK to design learning experiences that leverage AI to foster genuine creativity and critical aesthetic judgment, rather than stifle it? What does creative 'Technological Pedagogical Content Knowledge' look like when your co-creator is an algorithm?"

Punya Mishra: I need to clarify something fundamental. *The TPACK framework is completely neutral with respect to the goals of education.* If your goal is for students to do well on tests about rote memorization, TPACK will suggest flashcards and spaced repetition. If your goal is for students to become better writers, flashcards are a terrible idea, but TPACK won't tell you that one goal is better than another. That's a broader question we need to answer as a society, through standards and decisions that individual teachers make about what they care about. What I am trying to say is that TPACK, at its heart, isn't about telling educators what should matter; it's about helping them see what kinds of knowledge are at play when they teach. The values that guide those choices (ethical, creative, or civic) come from us, not from the framework itself.

Creativity is a good example to make this point. The TPACK framework doesn't tell you to prioritize creativity. That has to be a value that you bring to it. But once you've decided it matters, TPACK helps you think through how to pursue it.

I should also add that there are two ways creativity can play out in educational contexts, and it's important to distinguish between them. The first is creativity on the part of the educator, how they approach their work, design experiences, and bring their whole selves into teaching. The second is when creativity becomes a goal for students, helping them become more creative thinkers and makers. These can align, but they are fundamentally different things and making this distinction matters.

Let me address teacher creativity first. Personally, creativity is huge for me as a teacher, though I recognize this is separate from the framework itself. My overarching goal when working with teachers is that I want them to be agentic in their practice, to own that space. Owning that space often means being creative, bringing their whole self into it, not just following prescribed approaches. This comes from two perspectives. First, many of our pedagogical approaches have become stale. By giving students new ways of approaching content and ideas, we make them more agentic and engaged. Second, there's evidence that creative approaches help develop teachers who are more engaged and avoid rote mechanical approaches.

The TPACK framework can support teacher creativity by asking: Let's hold two elements constant, what can we change in the third? We used to run "TPACK games" where you'd pick two things at random—teach 5th grade math using paper airplanes, for example, and figure out the pedagogical approach that would make it work. This forces us to think differently, creatively. Similarly, if you start from the technology itself rather than from subject matter or pedagogy, interesting things can happen. If you say, "I have this thing called a wiki where everybody can co-edit," you start thinking of new pedagogical approaches and new ways of thinking about content. With GenAI, asking "How does it change how I think about content and pedagogy?" becomes a generative question.

Regarding student creativity (the second dimension), this has to be a goal you bring to the framework beforehand. You have to decide that you want your students to be creative. The framework itself doesn't mandate creativity, or any other pedagogical goal for that matter. It is quite goal-neutral. But once you've decided creativity is your goal, TPACK helps you think through how to align your knowledge of technology, pedagogy, and content to support that aim.

Finally, regarding your question about co-creating with “an algorithm,” I would push back a bit on that terminology. GenAI isn’t algorithm-driven in the traditional sense; algorithms produce the same result with the same input. These LLMs are stochastic systems, and there is some inherent variability in their outputs. And this can be both good and bad. As long as you know you’re working with a smart drunk intern that’s biased, sycophantic, and unreliable, it can be powerful. You can ask for five analogies using popular media to explain entropy, and it will generate interesting options, but it will be your filter, your judgment, that determines the value and impact.

My main concern is the underlying assumption that GenAI technologies are all-knowing and always correct. I hear stories about people treating GenAI as an infallible buddy, and that’s dangerous. But it is an amazing technology and can be used in highly creative ways. And not all creativity has to be big-C creativity. Many of the uses of GenAI (or other technologies) are examples of small-c creativity. Most uses of technology are relatively mundane, not attempts at high art. Similarly, most GenAI uses will be relatively mundane but fun and creative nonetheless.

These technologies are complicated. When working with GenAI as a creative partner, think of it like collaborating with a human colleague: academic integrity rules apply. Just as you wouldn’t claim a colleague’s ideas as entirely your own, you can’t claim GenAI output as your own. You can collaborate with it, brainstorm with it, use it to generate possibilities, but at the end of the day, you are responsible for what you produce, and the final responsibility is always yours. You cannot say the GenAI came up with a bad lesson plan. You chose to use it. That’s on you. If you take pride in your work, you will automatically be skeptical and critical of GenAI outputs, not rejecting them outright but carefully refining them.

Future Vision for Teacher Expertise and ‘Future-PACK’

Aras Bozkurt: Looking at the future of education, what is your vision for the evolution of teacher expertise? As AI potentially handles more routine tasks of instruction and content delivery, what becomes the core, irreplaceable value and knowledge of the human teacher? If the TPACK framework describes what educators need to know today, what might a ‘Future-PACK’ framework look like for a teacher in the next decade, and what would you argue is its most important component?

Punya Mishra: I need to be honest... My future vision is actually quite pessimistic for several reasons. The constraints that education faces globally, combined with the tremendous hype around this technology, and the language around “we’re going to GenAI all our schools” and “this is the greatest tutor ever”—this inevitability rhetoric is so strong that it will actually undermine teacher education. Anywhere we have teacher shortages, this will make things worse, forcing us to lean more heavily into GenAI as a supposed solution.

There are massive equity issues here. People with resources will have humans plus AI, while people without resources will just have GenAI with vague human supervision. We will abdicate our judgment to these systems. Broader social issues around GenAI slop, authenticity, truth, and trust—which are critical to democratic functioning—will worsen. Classrooms are petri dishes where students learn to work with each other, rub shoulders, disagree, and have their rough edges intellectually sanded out. These are crucial crucibles for democracy.

I worry deeply about this as we lean into one-on-one models of teaching and learning. Most studies of personalized learning systems show that 95% of students don’t use them. The 5% who do use them perform better, sure—but that’s not a solution, it’s a failure. I see the devaluation of teacher expertise coming because we have a harder time measuring practical wisdom. How do you measure lived experience? We don’t know how to do it, so it gets devalued.

All of this exists within a broader social environment that’s already highly polarized. Look at the politics around what we can teach, what history should be taught. There’s a wonderful book called *Prejudice and Pride* by an Indian academic who examines history textbooks in India and Pakistan. We were one geographical region until 75 years ago, yet the way we represent our histories is radically different, tracing lineages back a thousand years to make essentialist claims about national identity. These technologies will only make these problems worse.

That said, here’s what I think teachers need for the future, drawing from my personal journey: I started with my dissertation, creating software, focused on representations of knowledge and one-on-one interactions. Later work led to the TPACK framework, viewing teachers as

orchestrators within classroom spaces. Then Melissa Warr and I co-developed the Five Spaces of Design (Warr et al., 2020; Warr et al., 2023), looking at broader ecosystems of schools and classrooms. Now, I see that we must think about the even bigger context within which education exists.

If teachers are to be useful going forward, they need that bigger lens. They need to understand the society their students are entering—a society that is transforming rapidly. This requires almost a quasi-political stance. However, curricula for teacher education are determined by standards that are, by their very nature, conservative. There's a tension here I don't know how to resolve.

Teachers need to develop judgment about when and how to use these tools, understanding both their power and their profound limitations. They need to cultivate in themselves and their students a sense of pride in work—creating things worth being proud of, not just completing assignments. They need to be curators and evaluators, teaching at a meta-level about how to assess the authenticity and quality of content in a world increasingly filled with convincing but potentially misleading outputs.

Most critically, teachers need to maintain their core expertise in their disciplines while developing sophisticated understanding of how GenAI intersects with their practice. Content knowledge hasn't become less important—paradoxically, it's become more important because GenAI makes it easier to be confidently wrong at scale. The irreplaceable value of human teachers lies in their judgment, their practical wisdom, their understanding of individual students in specific contexts, and their ability to model critical thinking and authentic engagement with ideas.

A “Future-PACK” framework, if we must call it that, would need to account for this broader contextual awareness—not just the immediate classroom context, but the societal, political, and technological contexts within which education happens. But we need to be thoughtful about how we represent such complexity. Perhaps we need to move beyond frameworks altogether and toward more fluid, adaptive models of teacher knowledge that acknowledge the irreducible complexity of teaching in transforming societies.

CONCLUSION: THE HUMAN ELEMENT IN THE LOOP

This dialogue with Punya Mishra highlights a profound paradox of the AI age: as machines become smarter and more generative, the specific, nuanced, and contextual knowledge of the human teacher becomes *more*, not less, critical. Mishra dismantles the notion that AI can seamlessly replace the complex orchestration of teaching, framing GenAI instead as a “smart drunk intern,” a tool of distributed expertise that is incredibly capable yet fundamentally unreliable.

The conversation highlights that the TPACK framework remains robust precisely because it helps identify what AI *cannot* do. While AI can generate “curriculum-shaped objects” and simulate pedagogical moves, it lacks the deep Content Knowledge (CK) required to verify the nuances of truth in a landscape of hallucinations. Furthermore, AI lacks the Contextual Knowledge (XK) of the specific students in the room, the “sociology of the classroom”, which Mishra argues is essential for effective instruction.

Crucially, Mishra introduces the concept of pride as a pedagogical lens. In an era where plagiarism is easy and content is abundant, the role of the teacher shifts to fostering a sense of ownership and agency in students. Whether using AI for creativity or analysis, the human must remain the final filter, responsible for the output.

Ultimately, Mishra's vision serves as a sober, critical warning against technological solutionism. He paints a potentially pessimistic future where the “devaluation of teacher expertise” accelerates, and equity gaps widen between those who have access to human mentorship and those relegated to automated tutoring. The “Future-PACK” for educators, he argues, must therefore go beyond technical skills to include a “quasi-political” understanding of the societal systems they inhabit. The future of education depends not on the sophistication of our algorithms, but on the preservation of teacher agency, the cultivation of critical judgment, and a commitment to protecting the human connections that constitute the heart of learning.

This study was conducted collaboratively by both researchers, who are also listed as the sole authors of the work. As the research did not involve external participants and was based entirely on voluntary collaboration between the authors, no formal ethical approval was required. Participation in the study was based on mutual consent and voluntary involvement of the researchers.

ACKNOWLEDGEMENTS

Based on *Academic Integrity and Transparency in AI-assisted Research and Specification Framework* (Bozkurt, 2024), the authors of this paper acknowledge that the paper was proofread and edited with the assistance of Google's Gemini (Versions as of July 2025) and Anthropic's Claude (Versions as of January 2026), complementing the human editorial process. The human authors critically assessed and validated the content to maintain academic rigor. The authors also assessed and addressed potential biases inherent in the AI-generated content. The final version of the paper is the sole responsibility of the human authors.

FUNDING INFORMATION

This paper is funded by Anadolu University with grant number YTS-2024-2559 and YTS-2025-2776.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS (CRediT)

Punya Mishra: Conceptualization, writing—original draft preparation, writing—review and editing. Aras Bozkurt: Conceptualization, supervision, project administration, funding acquisition, writing—original draft preparation, writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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TO CITE THIS ARTICLE:

Mishra, P., & Bozkurt, A. (2026). TPACK in the Age of Context and Artificial Intelligence: Punya Mishra on the “Wicked Problem” of AI and Why Algorithms Can’t Replace Context. *Open Praxis*, 18(2), pp. 398–407. DOI: <https://doi.org/10.55982/openpraxis.18.2.1093>

Submitted: 14 December 2025

Accepted: 08 January 2026

Published: 02 June 2026

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