



The essential skill:

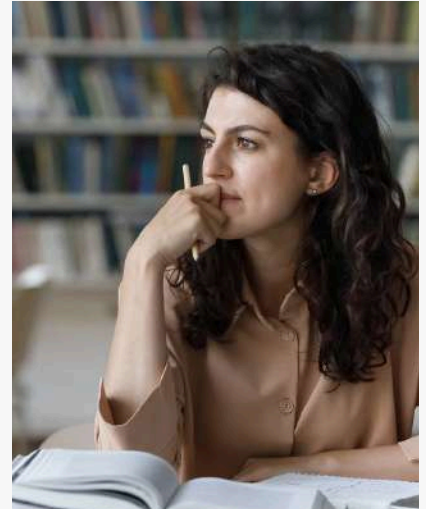
Higher-order thinking in a world with AI

by

Swivl

With employers projecting that 44% of workers' skills will be disrupted in the next five years, and cognitive abilities rising as the fastest-growing skill requirement (World Economic Forum, 2023), the development of higher-order thinking skills has never been more critical.

In an era where artificial intelligence can instantly access vast knowledge and perform complex calculations, the true differentiator for students who are college, career, and life-ready lies not in memorization or basic computation but in higher-order thinking skills.



This white paper explores why developing these critical capabilities is more crucial than ever and how Swivl is pioneering solutions to support educators and students in this essential journey.

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[The world] is at the cusp of using AI for probably the biggest positive transformation education has ever seen.

Sal Khan | Founder, Khan Academy
How AI could save (not destroy) education, 2023

The AI revolution in education

As artificial intelligence continues to advance at an unprecedented pace, the landscape of education is undergoing a fundamental shift. AI can now handle many basic cognitive tasks that were once exclusively human domains. It can process and analyze large amounts of information, recall historical facts and dates, solve mathematical calculations, create basic content and reports, identify patterns, and interpret data. And it can do all of these things, and more, within seconds.

This technological revolution demands a new approach to education—one that prioritizes higher-order thinking skills that AI cannot readily replicate. Skills like:

Facilitating collaborative problem-solving

Decision making with incomplete information

Identifying underlying assumptions and biases

Building consensus among stakeholders

Evaluating information validity and reliability

Students who develop these higher-order thinking skills will be equipped to direct these powerful AI tools, identify novel opportunities, and solve complex problems that machines cannot address alone. Being college, career, and life ready means having the cognitive flexibility to navigate uncertainty, the discernment to evaluate complex information, and the creative capacity to innovate – skills that remain uniquely human even as AI capabilities expand.

The critical thinking crisis and a solution

Recent research has highlighted a significant challenge in education: the limited availability of valid and reliable standardized measurement tools to directly assess K-12 students' critical thinking skills (Çeviker Ay, Ş., & Orhan, A., 2023). This gap has made it difficult for educators to effectively track and develop these crucial skills in their students. While educators universally acknowledge the importance of critical thinking, the lack of practical measurement tools has left many feeling like they're teaching these skills in the dark, unable to quantify progress or identify areas needing attention.

This fundamental challenge drove Swivl to create solutions that address these needs. Rather than adding to educators' already full plates, our AI-powered solutions seamlessly integrate into existing workflows, automatically analyzing student reflections, and identifying patterns in thinking, problem-solving approaches, and cognitive development. These tools provide real-time insights into students' critical thinking progress, allowing teachers to make data-driven decisions about instruction while reducing their workload.

Teachers no longer have to choose between covering content and developing critical thinking – Swivl tools do both simultaneously.

Through automated assessment and tracking, educators can now identify students' cognitive growth patterns, adjust instruction accordingly, and demonstrate measurable progress in critical thinking development.

This systematic approach ensures that **higher-order thinking skills are not solely taught but truly mastered**, all while making teachers' jobs more manageable, not more complicated.

According to the World Economic Forum's *The Future of Jobs Report*,

among workplace competencies, advanced cognitive abilities have become more crucial than analytical, creative, and technological skills.

Swivl's vision for education

In a world increasingly shaped by artificial intelligence, Swivl envisions classrooms where students don't just absorb information—they masterfully navigate complexity with confidence and curiosity. We're building toward a future where every student approaches challenges not with anxiety or hesitation, but with a systematic methodology and the resilience to persist through uncertainty.

This vision goes beyond traditional academic achievement; it's about nurturing minds that can adapt, innovate, and thrive in an ever-evolving landscape.

In these classrooms, students naturally develop a sophisticated analytical mindset, instinctively approaching problems with questions that drive deeper understanding and effective solutions:

HOW

CAN I BREAK THIS COMPLEX PROBLEM INTO MANAGEABLE COMPONENTS?

WHAT

PATTERNS OR PRINCIPLES FROM MY EXISTING KNOWLEDGE COULD APPLY HERE?

WHAT

UNCONVENTIONAL APPROACHES MIGHT LEAD TO INNOVATIVE SOLUTIONS?"

HOW

CAN I VERIFY THE RELIABILITY AND RELEVANCE OF MY INFORMATION SOURCES?"

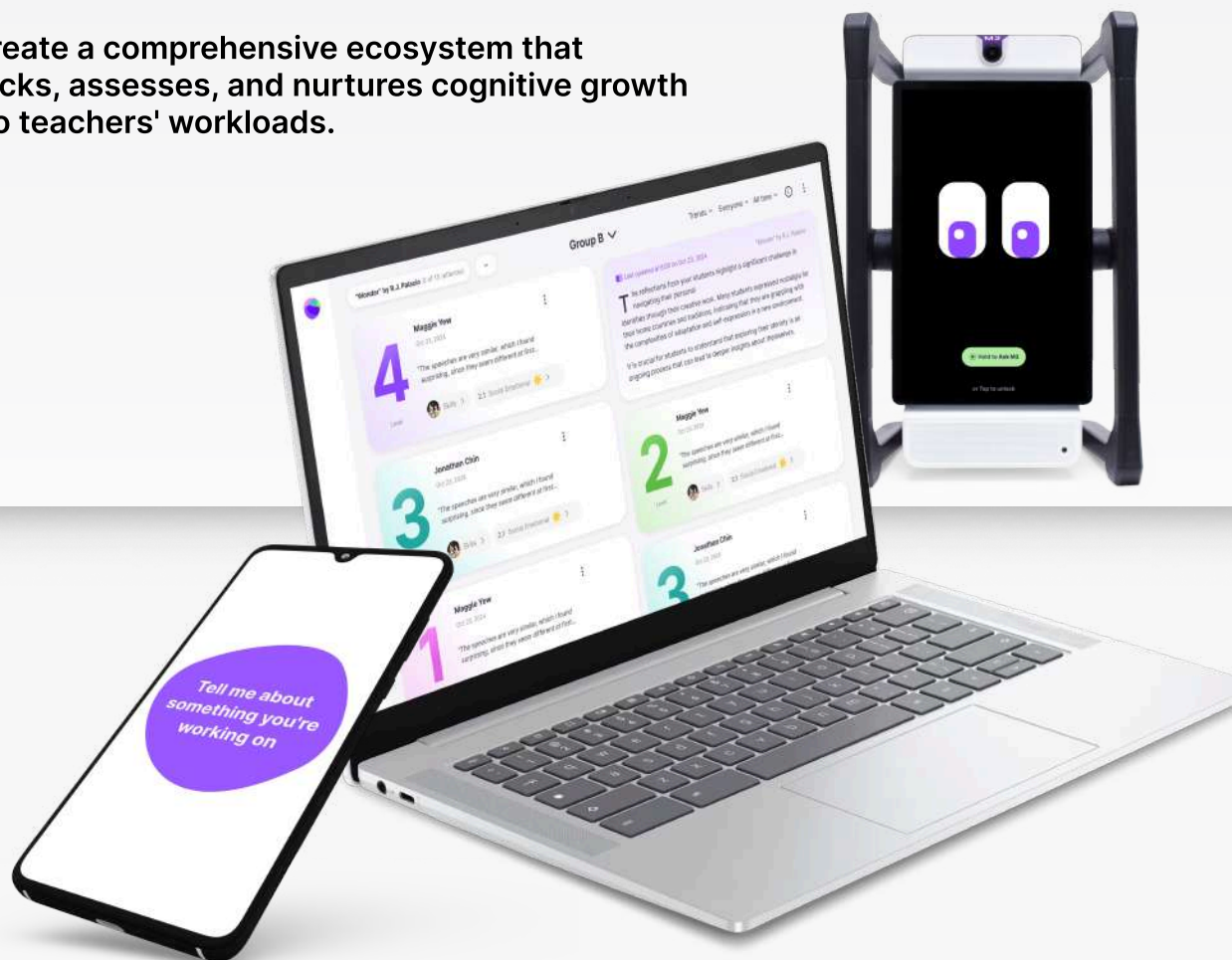
These questions represent more than just a problem-solving framework—they embody the kind of agile, analytical thinking that will define success in an AI-augmented world.

Swivl solutions

Where innovation meets implementation

Swivl's M2 and MirrorTalk solutions work in harmony to transform how schools develop and measure higher-order thinking skills. M2, our hardware solution, captures authentic classroom interactions, offers feedback on instruction, and engages every learner in the classroom while MirrorTalk, our AI-powered software platform, creates and analyzes the verbal reflections that provide insights into students' critical thinking development.

Together, they create a comprehensive ecosystem that automatically tracks, assesses, and nurtures cognitive growth without adding to teachers' workloads.



Conclusion

As AI continues to handle increasingly sophisticated routine tasks, the development of higher-order thinking skills becomes not just important, but critical for future success in college, careers, and life. Swivl is committed to providing educators and students with the tools they need to develop these essential capabilities, ensuring that the next generation is prepared not just to survive but to thrive in an AI-enabled world.



Student reflection isn't just about looking back; it's a powerful tool for moving forward! When students communicate their reflections, they deepen understanding, improve critical thinking, and take ownership of their learning journey. M2d it w and MirrorTalk facilitate this.

Dr. Darcel Hogans | Atlanta Public Schools

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For more information about how Swivl can help your students develop essential critical thinking skills, contact us.

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