



# WHITE PAPER

**ARTIFICIAL INTELLIGENCE IN  
HIGHER EDUCATION**

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# ABOUT US

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## WE BELIEVE ARTIFICIAL INTELLIGENCE CAN MAKE SIGNIFICANT POSITIVE IMPACT ON EDUCATION

In today's rapidly evolving educational landscape, the integration of AI is no longer a luxury but a necessity. However, AI's impact will depend on how it is leveraged. Even though AI is helping many, studies are already showing some negative impacts. QiMeta, a pioneer in AI-driven educational solutions, is dedicated to addressing critical challenges in higher education. Our innovative platform enhances learning experiences, improves efficiency, and prepares students for the competitive workforce, making it a transformative tool for learning.

### Key Issues

- **Increasing college graduates in STEM is a national priority:** The United States is falling behind in STEM in comparison to its economic competitors. Percentage of undergraduate in STEM worldwide:  
*US - 9.5% China - 26% India - 29.2%*
- **Dramatic lack of diversity in STEM graduates:** Underrepresented minorities represent 25.9 % of students graduating with a STEM degree, yet they represent 35.9 % population whereas women STEM graduates represent 32.4% yet women represent 50.8% population.
- **Workplace Readiness and Skill Development:** The World Economic Forum predicts that by 2025, 50% of all employees will need reskilling due to technological advancements and changing job requirements.



### Key Benefits and Outcomes

- **Enhanced Personalized Learning:** QiMeta's AI-driven platform significantly enhances the learning experience by enabling active learning and critical thinking, tailored to individual student needs.
- **Improved Student Satisfaction:** QiMeta platform provides a more engaging educational experience, addressing individual student needs and preferences.
- **Increased Efficiency:** QiMeta minimizes distraction and improves reading focus to make learning faster and easier for students. It enhances self-learning, allowing educators to focus more on directing student interactions and assisting those requiring most help.
- **Workplace Readiness:** QiMeta helps students gain skills and certification required for the modern workforce by integrating practical, real-time, contextual help into the learning process.
- **Works with existing approved curriculum:** QiMeta is easily scalable and can be integrated seamlessly into existing approved curriculum and systems.

The QiMeta platform overcomes the trap of dependence on AI for answer. It leverages AI to enhance learning and critical thinking for students, improve efficiency for educators, and ensure that graduates are prepared to meet the demands of the modern workforce.

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# THE PROBLEM

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**The United States is facing a critical challenge in maintaining its competitive edge in STEM education**, as evidenced by recent statistics. According to the 2018 Program for International Student Assessment (PISA) results, U.S. students ranked 18th in science and 37th in mathematics, whereas students from China ranked 1st in both subjects. This significant difference in performance indicates that students in countries like China receive more rigorous and effective STEM education. Additionally, the Trends in International Mathematics and Science Study (TIMSS) results from 2019 show that U.S. students continue to lag behind their peers from East Asian countries in both math and science at the fourth and eighth-grade levels. These disparities highlight the need for improvements in the U.S. STEM education system to ensure that American students can compete on a global scale.

Further illustrating the issue is the disparity in the number of STEM graduates. A study by Georgetown University shows that in 2019, China produced approximately 4.7 million STEM graduates, and India produced 2.6 million, compared to only 568,000 in the United States. This stark difference underscores a significant gap in the production of skilled STEM professionals, which is crucial for driving innovation and sustaining economic growth.



The lower percentage of STEM graduates in the U.S. raises concerns about the country's future ability to maintain a competitive workforce in high-tech industries. These statistics underscore the urgent need for the U.S. to enhance its STEM education and increase the number of graduates in these fields to remain competitive internationally.

Falling behind in STEM education poses significant challenges for the United States, with far-reaching implications for its economy, national security, and global leadership. A robust STEM workforce is critical for driving innovation, technological advancements, and economic growth. As industries increasingly rely on advanced technologies, a shortage of skilled STEM professionals could hinder the country's ability to remain at the forefront of innovation.

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**The dramatic lack of diversity among STEM graduates, particularly the underrepresentation of females, remains a pressing issue in the United States**, underscored by recent statistics.

According to the National Science Foundation's Science and Engineering Indicators 2022, women earned about 35% of bachelor's degrees in STEM fields. This figure varies significantly by specific disciplines, with women constituting only 21% of engineering graduates and 19% of computer science graduates. Despite efforts to promote diversity in STEM education and careers, such as increased advocacy and outreach programs, these percentages indicate persistent barriers that hinder women's full participation and advancement in these fields. The underrepresentation of women in STEM not only limits the talent pool but also diminishes the diversity of perspectives needed for innovative problem-solving and technological advancement. Addressing these disparities through targeted interventions is essential to harnessing the full potential of all individuals and ensuring the future competitiveness of the U.S. in STEM fields

**The paradox of generative AI:** Artificial intelligence can make task easier, but it can also lead to dependence on AI for answer, deteriorating students' abilities to solve problems.

Research led by Wharton professor Hamsa Bastani, along with her colleagues, indicates that while generative AI can enhance student performance during practice, it may impede long-term learning. In an experiment involving nearly 1,000 high school math students in Turkey, those who used AI tools initially showed improved results but faced difficulties once AI support was withdrawn.

It is critical that AI is introduced properly to enable students to engage their critical thinking but leverage AI when requiring essential support. Otherwise, AI can be very counterproductive in education.

“If we use it sort of lazily and ... completely trust the machine learning model, then that's when we could be in trouble.”— Hamsa Bastani, Wharton professor of operations, information and decisions

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**Workforce development in the United States is challenged by the alarming landscape of literacy.** According to the National Center for Education Statistics, 54% of adults in the U.S. read below a 6th-grade level.

This statistic is not just a number but a stark reminder of the silent crisis affecting millions of Americans. These individuals struggle with everyday tasks such as reading instructions, understanding healthcare information, and even voting, which hinders their ability to fully participate in society. It prevents workers from adapting their skills to the changing technological landscape and job requirements.

The economic repercussions of these literacy and education challenges are profound. The United Nations Conference on Trade and Development (UNCTAD) estimates that low literacy rates cost the U.S. economy up to \$2.2 trillion annually [3]. This staggering figure reflects lost earnings, lower productivity, and increased healthcare and social welfare costs. Individuals with low literacy skills are more likely to be unemployed or underemployed, perpetuating a cycle of poverty and economic disparity.

Workforce readiness for individuals is a survival need; it is a need for individuals to stay out of the poverty cycle. Workforce readiness is about having the necessary skills to be productive in this evolving technological world, including literacy, healthcare knowledge, proficiency with computers, ability to do basic math and critically analyze content. According to the Organization for Economic Cooperation and Development “the millennials in our workforce  tied for last  on tests of mathematics and problem solving among the millennials in the workforces of all the industrial countries tested. Thirty countries now  outperform the United States in mathematics  at the high school level. Many are ahead in science, too. We now have the worst-educated workforce in the industrialized world. Because our workers are among the most highly paid in the world, that makes a lot of Americans uncompetitive in the global economy. And uncompetitive against increasingly smart machines. It is a formula for a grim future”.

As industries increasingly rely on advanced technologies, it is imperative for the US to increase its STEM professionals and strengthen workforce readiness to remain at the forefront of innovation and compete on the global scale.

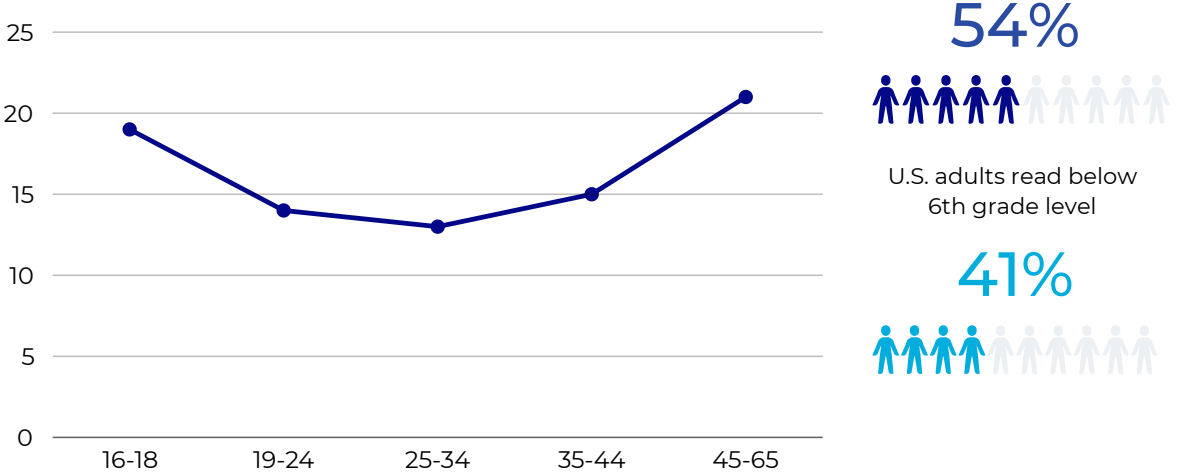
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The societal impact of low literacy is equally concerning. It contributes to a cycle of poverty and social exclusion, impeding economic growth and increasing public expenditure on social services. The National Commission on Adult Literacy reported that improving adult literacy could increase national productivity and reduce poverty, potentially saving billions in healthcare costs, social services, and the criminal justice system [6]. Addressing low literacy is crucial for fostering a more inclusive and prosperous society.

## Illiteracy in America Across Age Groups



# OUR SOLUTIONS



To address the critical issues falling behind in STEM, and lack of diversity in STEM graduates, and improving workforce development, QiMeta offers a cutting-edge platform powered by artificial intelligence. This platform is designed to enhance learning experiences and make education more accessible and effective for all learners.

## **Overview of the QiMeta Platform and Its Functionalities**

The QiMeta platform is a comprehensive AI-driven solution that transforms how students and professionals engage with educational content. It is easy to deploy and integrate into the classroom experience. Leveraging advanced natural language processing and machine learning algorithms, it provides a highly interactive and personalized learning experience tailored to address the specific needs of users, making it a versatile tool for improving educational outcomes.

## **Highlighting Key Concepts and Terms**

One of the core features of the QiMeta platform is its ability to automatically highlight key concepts and terms within the context of a document. This feature helps users engage, identify, and focus on the most important parts of the text. By emphasizing critical information, QiMeta aids in comprehension and retention, making it easier and quicker for users to grasp complex subjects and improve efficiency.

## Interactive Chat with QiMeta for Discussions

A standout feature of the QiMeta platform is its interactive chat functionality. Users can engage in real-time discussions with the Ask QiMeta, asking questions and receiving immediate, contextually relevant responses. This interactive element simulates a tutoring experience, providing personalized assistance and clarifications on demand. The chat feature not only enhances efficiency but also encourages active learning and engagement, making the learning process more dynamic and interactive. QiMeta fosters curiosity among students by encouraging critical thinking instead of relying on chatbots that simply provide answers.

Students often shy away from asking questions due to high student to teacher ratios in order to not disturb the class. Our chatbot feature provides the privacy and time to ask questions if they were unable to in class. This built-in feature also streamlines the exploration process: rather than venturing to external resources to ask questions (ie. search engines, dictionaries, books), students can prompt the chatbot right there on the same page as the article.

QiMeta overcomes these critical barriers, allowing the students to engage with questions and remain an active reader.

## Workplace Readiness

The rapid advancement of artificial intelligence (AI) has engendered apprehension due to the uncertainties it poses, particularly concerning potential job displacement. Nevertheless, individuals who harness AI effectively will achieve greater efficiency and are less likely to face job loss. In the future, proficiency in AI will become essential for the workforce, comparable to the current necessity of Excel proficiency in many corporate roles. The implementation of QiMeta will equip students with familiarity in AI and enhance their readiness for the workplace.





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# UNIQUE VALUE PROPOSITION

WHAT QIMETA CAN BRING TO YOUR TABLE

## **AI-Enhanced Personalized Learning**

Highlights key concepts, provides summaries, and offers quick definitions, making learning engaging and effective. Provides real-time assistance and personalized guidance. Improves comprehension with contextual focused engagement.

## **Works with approved curriculum**

Leverages existing board approved content - no need for new material content. Integrates seamlessly with existing educational materials.

## **Broad Market Application**

Versatile for higher education, including colleges, business schools, and graduate programs. QiMeta offers a cohesive solution that supports various academic environments, expanding its reach and impact.

## **Personalized Engagement Metrics**

Measures user engagement and progress over time. Leverages data to help educators and employers target areas for improvement, driving better learning outcomes.



Join us in shaping the future of education and business with QiMeta. For further information and collaboration opportunities, please feel free to contact us!

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*We thank you for your continued support in our efforts to make learning more accessible.*

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