INTERNATIONAL AI EDUCATION POLICY
COMPARATIVE ANALYSIS OF COUNTRY FRAMEWORKS

Artificial Intelligence (AI) is rapidly transforming industries, and many countries are acknowledging the importance of incorporating AI into education systems to prepare future generations. The global landscape of AI education policies is diverse and reflects various national priorities and strategies.
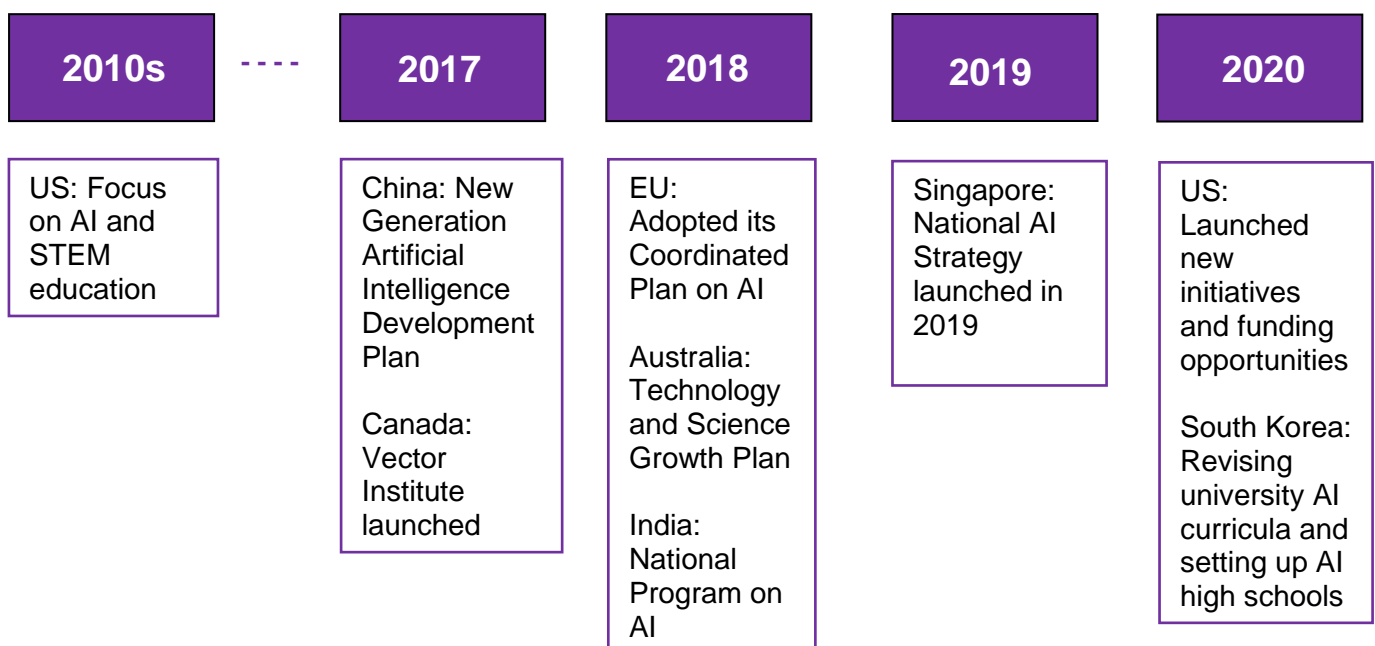
In the United States, the focus on AI and STEM education has been emphasized with various initiatives throughout the 2010s. China, recognizing the technological importance, launched its "New Generation Artificial Intelligence Development Plan" in 2017, followed by specific educational policies targeting AI literacy in schools.

The European Union adopted its Coordinated Plan on AI in 2018, with member states like France and the UK initiating national strategies to boost AI competencies. The United Arab Emirates announced its forward-looking "UAE Artificial Intelligence Strategy 2031" in 2017, highlighting the nation's ambition to become a global leader in AI.

Canada, a powerhouse in AI research, founded the Vector Institute in 2017, focusing on collaboration between academia and industry. Australia's "Technology and Science Growth Plan" in 2018 also showcased a commitment to advancing technological education.

India initiated its National Program on AI in 2018 and has begun incorporating AI into school curriculums since around 2019. Singapore's National AI Strategy, launched in 2019, reflects its dedication to building a digitally ready community.

These policies demonstrate a global recognition of the importance of AI in education. While different nations approach AI education with varying emphases, there is a common understanding that fostering AI literacy is essential for future economic competitiveness. Ensuring that educational curricula keep pace with technological advancements will be vital in preparing the workforce for the AI-driven future. The collaboration between governments, educational institutions, and industries will be key to the effective implementation of these policies.

2010s	2017	2018	2019	2020
US: Focus on AI and STEM education	China: New Generation Artificial Intelligence Development Plan Canada: Vector Institute launched	EU: Adopted its Coordinated Plan on AI Australia: Technology and Science Growth Plan India: National Program on AI	Singapore: National AI Strategy launched in 2019	US: Launched new initiatives and funding opportunities South Korea: Revising university AI curricula and setting up AI high schools

Country-by-Country Initiatives to Implement Top-Level Design in AI Education

UNITED STATES

■ 2015: President Obama signed the "Every Student Succeeds Act," initiating a top-down movement in computer science education in the United States.

- 2016: In the State of the Union address, President Obama announced a new plan for "Computer Science for All," aiming to promote computer instruction in classrooms. The U.S. Department of Education planned to allocate $4 billion in funding to states over the next three years.

- 2016: The United States mandated high school graduation requirements to include computer programming credits.

- 2016: The Computer Science Teachers Association (CSTA) in the United States introduced the "K-12 Computer Science Framework," explicitly defining the concept of "computational thinking."

UK AND EUROPE

- 2014: The United Kingdom's Department of Education implemented a new computer science curriculum, stipulating that child "start learning to write simple computer programs and store and retrieve data at the age of 5, and study computer programming languages and solve computer problems from ages 11 to 14."

- As of October 2014: Eleven European countries, including Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Greece, Ireland, Italy, Lithuania, Poland, and Portugal, integrated programming into the curriculum for primary and secondary school students.

JAPAN AND SOUTH KOREA

- 2016: South Korea incorporated programming into the educational curriculum and planned to implement programming education for grades one through nine by 2020.

- 2017: The Ministry of Education, Culture, Sports, Science, and Technology in Japan released new guidelines stating that by 2020, elementary schools must ensure students have opportunities to experience computer programming, and by 2021, junior high schools must provide content on computer programming.

SINGAPORE AND AUSTRALIA

- 2017: Singapore included programming examinations in its primary and secondary school assessments.

- 2016: Australia formally introduced programming education into the national compulsory curriculum.

Conducting Diverse and Enriching Science Popularization Activities/Projects

Various countries have initiated science popularization activities and projects focusing on programming and artificial intelligence. In the UK, initiatives include coding competitions and free development boards for students. The U.S. has launched the "Hour of Code," promoting computer interest globally. Japan offers introductory programming experiences, while Singapore's government sponsors a Robot Design Program. In China, the emphasis is on AI and robotics competitions, aimed at enhancing practical skills and innovation in youth. These initiatives reflect a global commitment to nurturing computational thinking and technological literacy, recognizing the importance of these skills for future generations.

	Time	Initiators	Event Name	Content
UK	February, 2014	Former Chancellor of the Exchequer Osborne and Justice Minister Gove	The Year of Coding	Introduction of programming education through the establishment of a ping-pong game competition themed around
	August. 2016	BBC	Micro: bit	Every 7th-grade student is provided with a free micro: bit development board for programming learning, supplemented by extensive online and offline project tutorials and activities. the Moshi Monsters.
US	Since 2013	U.S. non-profit organization Code.org	Hour of Code	Introducing elementary and middle school students to basic computer programming using engaging mathematical methods. Objective: Cultivating children's interest in computers from a young age. Impact: Since 2014, the "Hour of Code" has become a global event, attracting millions of participants worldwide.
JAPAN	Since 2014	Nippon Telegraph and Telephone Corporation	Introductory Programming Public Welfare Activity	A 3-day coding experience for elementary school students recruited widely from society during summer vacation, with activities in introductory programming, coding challenges, and robot programming.
SINGAPORE	Since 2014	Singapore Government	Robot Design Program	Cultivating computational thinking and basic programming skills in elementary and middle school students through engaging games. Cultivating computational thinking and basic programming skills in elementary and middle school students through engaging games.

	Time	Initiators	Event Name	Content
CHINA	Since 2016	Chinese Artificial Intelligence Society	National Youth Robot and AI Innovation Competition	Aiming to cultivate students' ability to analyze and solve practical problems, discover and select future computer and robot innovation talents, and enhance the practical and innovative abilities of elementary and middle school students.
	Since 2016	Chinese Association for Youth and Children's Science and Technology Guidance & China Youth Science and Technology Center	National Youth Artificial Intelligence Science Popularization and Competition Activities	In line with the task requirements of the State Council's "New Generation Artificial Intelligence Development Plan," popularize and promote programming and intelligent design-related science knowledge and skills to the youth, improving their understanding and preliminary application ability of artificial intelligence.

Similarities of Global Education AI Policies

■ **Emphasis on Future Preparedness.** Almost all countries recognize the importance of AI in shaping future industries and economies. They acknowledge the need to equip the next generation with AI skills and knowledge.

■ **Involvement of Various Sectors.** Many of these policies and strategies involve collaboration between government, educational institutions, and industries. The shared goal is to create a cohesive system that bridges educational learning and real-world applications.

■ **Focus on Research and Innovation.** Several countries, such as the United States, Canada, and China, emphasize research and innovation within their policies, acknowledging the role of academia in propelling AI technology forward.

■ **Commitment to Global Competitiveness.** There is a common goal of ensuring national competitiveness on the global stage through AI education. Many policies underline the ambition to become leaders or stay competitive in the global AI landscape.

Differences Among Global Education AI Policies

■ **Target Audience and Scope.** While some countries like China are specifically targeting middle and elementary school education for AI literacy, others like Canada are focusing more on research and collaboration between academia and industry. The scope and target audience of these policies vary widely.

■ **Specific Strategies and Implementations.** The way in which AI education is integrated into the system varies between countries. For example, the UAE's strategy is part of a broader ambition for AI leadership by 2031, while France and the UK have more targeted national strategies focusing on AI competencies.

■ **Investment and Funding.** The level of investment, funding sources, and financial commitment can differ significantly. Some nations have allocated substantial funds to implement these policies, while others may rely

more on private or industry collaboration.

- **Cultural and Regional Nuances.** The cultural context and regional needs can lead to variations in AI education policies. For instance, India's National Program on AI includes considerations specific to its vast population and varied educational landscape.

Conclusion

The global AI education policies share common themes of future readiness, collaboration, innovation, and competitiveness. However, they differ in the nuances of target audiences, specific strategies, investment, and regional considerations. Understanding these similarities and differences is essential for any country looking to benchmark or develop its AI education policy, ensuring that it aligns with national needs and global trends.

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China: "New Generation AI Development Plan" (2017) focuses on AI education and integration.

EU: "Coordinated Plan on Artificial Intelligence" (2018) emphasizes collaboration between Member States and

industries.

Canada: "Pan-Canadian Artificial Intelligence Strategy" (2017) fosters collaboration between research institutions.

France: "AI for Humanity" (2018) aims to strengthen AI research.

South Korea: "Mid to Long-term Master Plan" (2016) emphasizes AI research and commercialization.

Japan: "Integrated Innovation Strategy" (2017) aims for global competitiveness in AI.

UK: "Industrial Strategy White Paper" (2017) includes AI and data as key areas for global leadership.

UAE: Broader strategy for AI leadership by 2031.

France & UK: More targeted strategies as per "AI for Humanity" (2018) and "Industrial Strategy White Paper"

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