Education

Intel® Skills for Innovation (Intel® SFI) Case Study

Developing Future-Ready Learners for the AI Era: Beijing No. 80 High School in Practice

Executive Summary

Recognized by the Ministry of Education as an AI education base for primary and secondary schools, Beijing No. 80 High School partnered with Lenovo and Intel to explore a systematic approach to AI literacy education. By establishing an AI laboratory that combines teaching with hands-on practice, the school introduced the Intel® Skills for Innovation (Intel® SFI) framework into curriculum design and classroom implementation, transforming AI into learning experiences students can see, use, and understand. In doing so, the school has gradually developed an implementation pathway for AI literacy education at the secondary level. This practice provides a practical reference not only for what to teach, but also for how to teach AI in meaningful ways.

Education Vision of Beijing No. 80 High School

The goal of AI education is not early mastery of a single tool, but helping students understand AI, recognize the boundaries of technology, and learn to work with AI. Through a systematic curriculum and authentic learning experiences, the school aims to cultivate independent thinking, judgment, and creativity for a rapidly changing world.

"At this pivotal moment, as technology continues to evolve and AI advances at an unprecedented pace, our school will continue to expand learning opportunities in AI, respond to students' individual needs in science and technology education, and help every child grow and thrive."

Ren Weidong
Principal
Beijing No. 80 High School

Artificial intelligence is reshaping how knowledge is accessed, how problems are solved, and how learners are prepared for the future. As generative AI, foundation models, and agent-based technologies move into real-world use, K–12 education is entering a period of profound transformation.

Challenge

The challenge was not whether AI education mattered, but how to implement it effectively. At the secondary level, AI content has long been absent from established curricula and learning has often remained limited to introductions or short-term experiences, making it difficult for students to build a systematic understanding. At the same time, AI instruction places new demands on teachers' knowledge and instructional approaches, and traditional lecture-based classrooms are not well suited to learning centered on understanding, application, and inquiry. Conventional devices have also struggled to support sustained, practice-oriented AI learning. These challenges have left many schools experimenting with AI in the classroom, without a sustainable path forward.

Solution

With support from Lenovo and Intel, Beijing No. 80 High School introduced the Intel® Skills for Innovation (Intel® SFI) framework and embedded AI learning into its existing curriculum rather than treating it as a stand-alone subject. The school integrated Intel® SFI Starter Pack activities into daily instruction and adopted project-based, practice-oriented approaches to help students engage with AI through real-world tasks and understand its core concepts and applications. It also supported teachers through systematic training and demonstration lessons, while using Lenovo Zhaoyang AI PCs powered by Intel® Core™ Ultra processors to create a stable environment for classroom AI practice, turning AI into a learning tool that supports student's thinking and exploration.

Results

Through the sustained implementation of its AI literacy curriculum and classroom practice assisted by the adoption of Intel SFI framework, Beijing No. 80 High School has gradually developed a model for AI teaching at the secondary level. Teachers now place greater emphasis on practice and inquiry, while students engage with AI tools in authentic projects and strengthen their understanding, initiative, and problem-solving ability through learning by doing. As a result, AI is becoming part of everyday learning rather than remaining only an abstract concept in the classroom.

Figure 1. Students in the AI laboratory use Lenovo Zhaoyang AI PCs powered by Intel® Core™ Ultra processors for AI literacy classroom practice.

Empowering Students to Explore, Understand, and Apply AI in Real Classroom Settings

At Beijing No. 80 High School, AI has been systematically integrated into the curriculum as AI literacy learning for a broad student population, moving beyond extracurricular activities and competition training into everyday classroom learning.

Classroom instruction is designed around the Intel® SFI framework. Teachers organize learning around real problems and authentic learning situations, integrating AI-related tools into teaching so that students encounter and use AI through hands-on classroom activity. AI therefore becomes part of learning rather than a topic taught separately.

The AI laboratory provides a stable practice environment for this approach. In class, students use Lenovo Zhaoyang AI PCs powered by Intel® Core™ Ultra processors for activities such as modeling, generation, simulation, and visual analysis, enabling multiple rounds of practice within a single class period.

"We use AI PCs not only in daily teaching to strengthen students' learning, but also in AI practice activities and competitions. The CAD modeling, real-time simulation, code generation, and debugging required for robot design can all run quickly on Lenovo Zhaoyang AI PCs powered by Intel® Core™ Ultra processors. The NPU in the Intel® Core™ Ultra processor can process robot motion-planning algorithms in parallel, reducing path-optimization time from seconds to milliseconds. This greatly improves students' efficiency and has helped them achieve excellent results in competitions."

Zhang Peng
Teacher at Beijing No. 80 High School

AI Literacy Classroom Practice with Intel® SFI: Enabled by Intel® Core™ Ultra Processors and Lenovo Zhaoyang AI PCs

In classroom implementation, AI is used not only by students to complete learning tasks, but also by teachers in lesson preparation and classroom design. With generative AI tools available on AI PCs, teachers can design lessons, prepare instructional materials, and build interactive activities more efficiently, making AI part of everyday teaching practice rather than an occasional experiment.

Classroom practice organized around the Intel® SFI framework connects AI with real problems across subjects. In engineering and design learning, students engage in concept development and digital modeling around real application scenarios; in science learning, AI supports analysis, modeling, and visualization. As these activities advance alongside curriculum goals, AI becomes a natural part of classroom learning.

With continued practice across subjects, students build a more coherent pathway for using AI. Classroom learning, hands-on practice, and innovation-related activities are connected, allowing students to use the same tools across different settings. In this process, the AI laboratory supports both classroom instruction and extracurricular practice.

Within this teaching model, technology remains in a supporting role. Lenovo Zhaoyang AI PCs powered by Intel® Core™ Ultra processors provide a stable platform for classroom and practice-based activities, reducing the complexity of classroom organization and device management for teachers. As AI continues to be used in teaching, students participate more frequently in hands-on work, presentation, and discussion, and AI is becoming an important part of both instruction and practical exploration.

"In response to national education priorities, Lenovo worked with Intel to design an 'AI Thinking Curriculum' for primary and secondary schools. To provide a strong computing foundation for this curriculum, Lenovo deployed an AI literacy training agent workstation jointly developed with Intel in the AI laboratory . Powered by 4th Gen Intel® Xeon® Scalable processors and Lenovo's agent-based learning platform for K–12 general education, a single unit installed in a classroom can readily support AI literacy learning for more than one hundred students at the same time, helping expand equitable access to AI education through robust computing power."

Lu Yuan
General Manager of AI Workstations, Government and Enterprise Business, Lenovo China

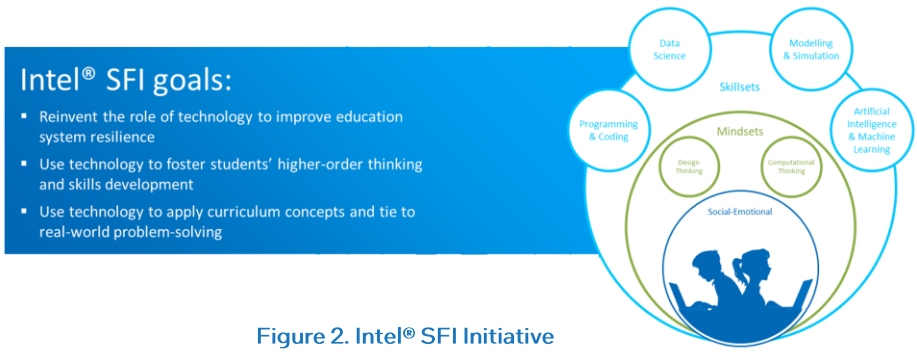

Figure 2. Intel® SFI Initiative

Designing from a Real Product: Rethinking the Laptop of the Future

In Beijing No. 80 High School's AI course, students begin not with abstract ideas, but with a real product and the question of how design responds to real needs. The Starter Pack lesson titled "The Laptop of the Future" is built around the concept behind Lenovo X1 Fold, helping students understand how design thinking shapes real products through its design process, aesthetics, and functional form.

This learning practice follows the design thinking pathway emphasized by Intel® SFI mindset. Starting from authentic use scenarios, students consider challenges users face in learning, creation, and mobile work, then move through problem definition, idea development, and expression. Design thinking is therefore embedded throughout the lesson rather than taught as a separate theory.

From Understanding Real Needs to Defining a Design Direction

At the beginning of the lesson, students discuss current laptop experiences, identify where traditional devices fall short, and consider how future technologies may reshape user needs. By analyzing real products such as Lenovo X1 Fold, they see how product form, including foldable form, and function respond to use scenarios.

With teacher guidance, assisted by the educator guide in Intel SFI Starter Pack, students turn observations into design questions, explore possibilities through collaboration and revision, and arrive at a clear design direction. In doing so, they learn that design begins with understanding user needs.

Turning Design Concepts into Visible Outcomes

As their design direction becomes clearer, students move into concept expression. Using Autodesk Fusion 360 on Lenovo Zhaoyang AI PCs, they create concept models of futuristic laptops and turn ideas into visual 3D forms. The modeling process helps them keep design choices aligned with the original problem.

Figure 3. Poster Design concept for Lenovo X1 Fold

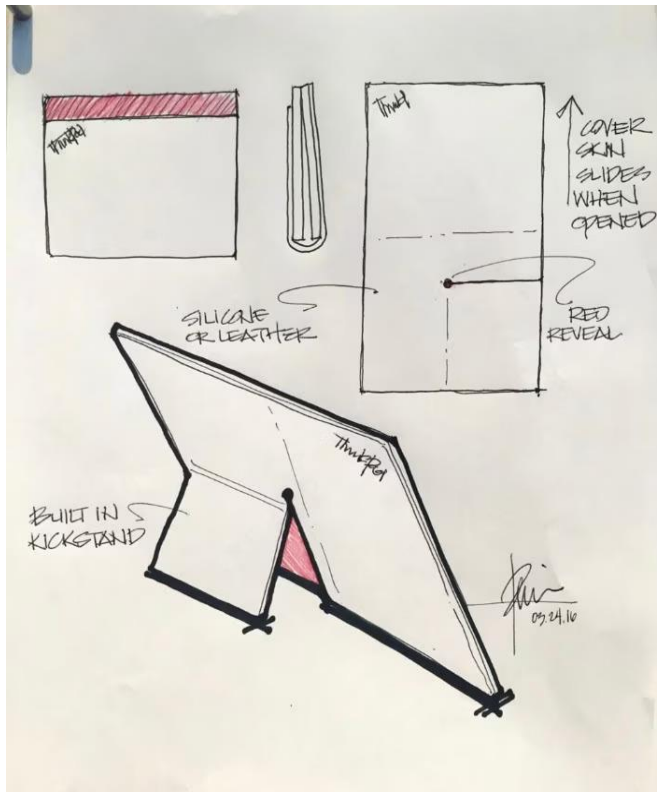

Figure 4. Product concept for Lenovo X1 Fold

Refining Design Thinking through Presentation and Feedback

To communicate their ideas clearly, students create digital posters presenting the design concepts and features of their laptops. These posters show the final models and explain how each design responds to problems identified earlier in the lesson. Through gallery walks and other presentation formats, students receive feedback and refine their solutions.

This stage turns individual creations into work that others can understand and discuss, while showing students that design is an iterative, transferable way of learning.

Using Design Thinking to Support Continued Learning

Through "The Laptop of the Future," students experience the process from identifying a real problem to developing ideas, expressing a prototype, and presenting their work. This reflects a core principle of Intel® SFI: using real-world tasks and hands-on practice to help students analyze problems, express ideas, and improve solutions.

A real product provides the reference point, design thinking gives structure to learning, and technology supports practice. Together, these elements give design-based learning in AI literacy education a clear pathway and visible outcomes.

Exploring a Real Scientific Challenge: Accelerating Cancer Research

In the AI learning theme, students explore Intel SFI Starter Pack created in collaboration with Lenovo titled "Accelerating Cancer Research," students are introduced to a scientific context that is both authentic and socially meaningful. The goal is not to reach a medical conclusion, but to explore how scientists use computation and AI when research subjects are too complex to understand through direct observation.

By examining changes at the molecular and cellular levels, students begin to recognize that modern life science research often depends on data, models, and visualization, and that understanding the research process is as important as understanding the final conclusion.

Figure 5. In a life science learning context, students use visualization and computational tools to explore protein structures and cellular features, deepening their understanding of the complexity of cancer research.

From Understanding the Problem to Exploring a Research Pathway

Learning begins with the scientific problem itself. Students consider common challenges in cancer research, including biological processes that are complex, subtle, and difficult to observe directly. Through this, they begin to understand why traditional observation alone cannot support deeper inquiry.

Students then use digital, computational, and visualization approaches to explore protein structures and cellular features. Abstract concepts become visible and discussable, helping students focus on scientific phenomena and build understanding through continued observation and revision.

AI as a Tool for Scientific Understanding

In this learning context, AI is introduced naturally as a tool to support students' understanding of complex scientific problems. Through analysis and visualization tools, students can observe relationships among different structures and explore how changes in variables may affect outcomes, leading to a more intuitive understanding of the logic of life science research.

In the classroom, students use Lenovo AI PCs for these exploratory activities, and Intel® Core™ Ultra processors provide stable performance for data processing and model visualization. Technology is not the focus of learning itself; rather, it helps students concentrate on the scientific problem so that inquiry can proceed effectively.

Using Computational Thinking to Structure Scientific Inquiry

Although the learning context comes from life science, the classroom approach is structured around the computational thinking pathway emphasized by Intel® SFI. Students begin by decomposing a complex scientific problem into smaller, more manageable questions. They then use observation, data collection, analysis, and discussion to identify patterns, clarify relationships, and refine the focus of inquiry.

The learning activities encourage students to formulate hypotheses, test ideas, organize evidence, and reflect on how different tools support scientific reasoning. Through this process, students come to understand that scientific research is not a linear procedure, but an iterative process of testing, revising, and improving explanations based on evidence. Here, computational thinking serves as an important framework for structuring scientific inquiry, helping students move from complex biological phenomena to clearer questions, systematic investigation, and deeper understanding.

From Classroom Inquiry to the Development of Scientific Literacy

Through the "Accelerating Cancer Research" Starter Pack, students engage with the basic approaches of modern life science research. They come to recognize that AI and computational tools play an important role in scientific research, but always serve the understanding of scientific problems rather than replacing the judgment of researchers.