Executive Brief

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Classroom to Cloud: Remote Learning Gets a New Lesson Plan

Countries around the world want better education for their students—whether in primary, secondary, or higher education—but there is a challenge: a lack of teachers. According to UNESCO, the world needs almost 69 million new teachers by 2030 to provide all children with basic education.

Across the U.S., educational institutions are grappling with a big need for teachers—especially in math, science, and foreign languages. And China requires significantly more teachers, especially in rural areas.

In many countries, universities also face teacher shortages, as local, state, and national governments struggle with budget shortfalls. Specific high-demand study areas like computer science and nursing see critical shortages. As a result, universities increasingly use technology to deliver online courses, or even entire degree programs.

69M

New teachers will be needed worldwide by 2030

Even when there are enough teachers, quality and innovation can vary. A teacher in one part of a country might have a particularly successful approach to a topic but no clear way for schools in other areas to leverage that work.

Educational technology (EdTech) offers tremendous opportunities for schools to bring high-quality instruction to more students even with the limitation on the number of trained and talented teachers. That shouldn't be a surprise. Distance and remote learning have become popular at all levels of education. Yet technology limitations have stymied the ability for learning institutions to provide quality video lessons, study aids, and other materials to students.

Too often video in the classroom is treated in practice as little more than static and one-directional communications from teachers to students. Doing so creates barriers that prevent full engagement with remote locations. When students are bored by what they perceive as tedious instruction, they tune out and don't learn.

Lights, Cameras, Teach

Advanced interactive learning systems enhance classrooms to expand the reach of great teachers and experts—creating an engaging learning experience. At the same time, they lower the cost of providing education by leveraging, through technology, the power of great teaching. **Figure 1** details some of the key benefits.

The J&W IPC iLearn Interactive Remote Class Solution addresses the challenges of delivering high-quality digital learning experiences. Powered by Intel®, the system offers beneficial, online education with an end-to-end interactive video solution—from edge to cloud.

"If you have an excellent teacher, the impact that teacher can have isn't restricted to just one classroom. It can be spread out to many classrooms," remarked Roy Ouyang, Sales Manager at J&W IPC.

The J&W IPC iLearn Interactive Remote Class Solution takes a scalable approach to EdTech. An institution can equip classrooms with fully interactive whiteboards. Using edge processing and cloud storage, the iLearn solution turns high-quality teaching into an experience no longer restricted by the physical presence of a skilled and talented teacher.

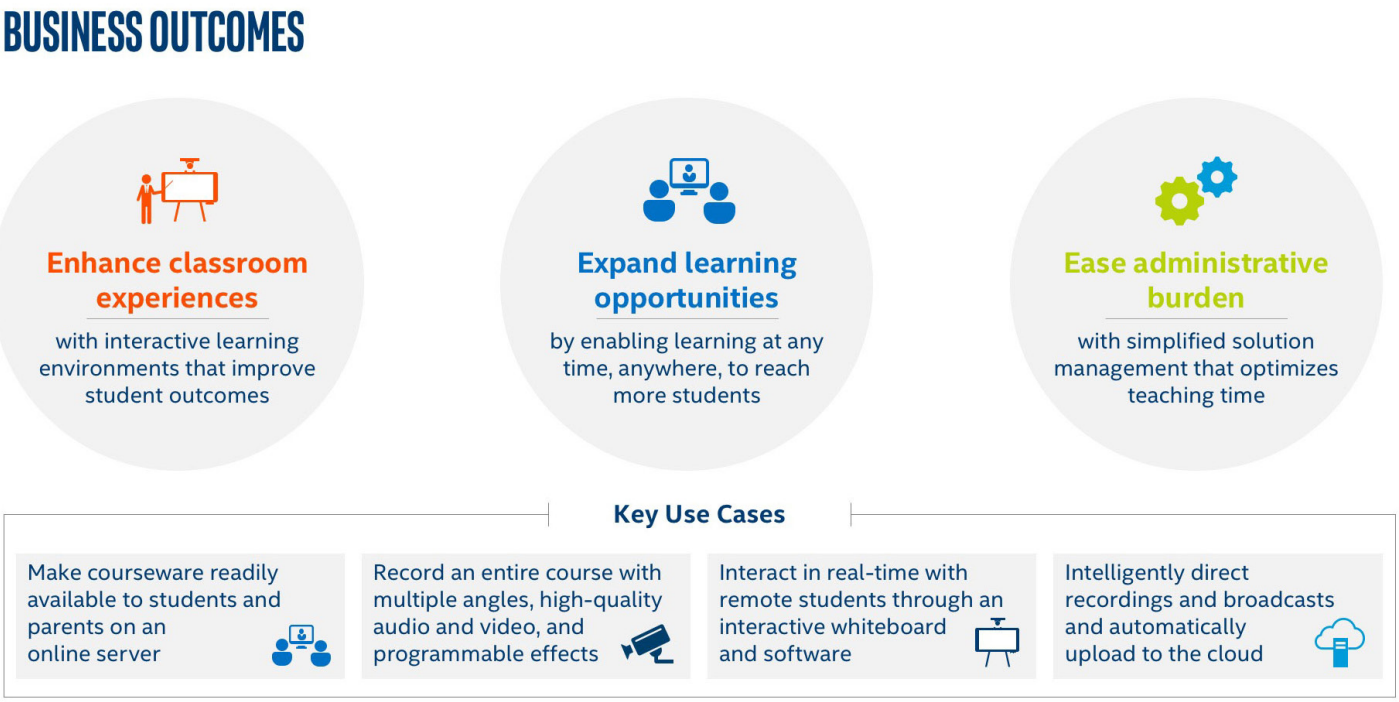

Figure 1. Advanced interactive video can enhance classroom and remote instruction. (Source: Intel®)

If a remote school doesn't have enough teachers, children can still gain access to high-quality instruction through e-learning. They and their parents can also review lessons at home for better outcomes.

An implementation across a school district in Zhejiang, China showed that schools can expand the reach of their teaching staff to help improve other, lower-resourced schools—enabling an interactive, digital learning environment.

"In the past, a government that needed a school had to build it," said Mr. Ouyang. "Now a region can create a school online." A school district, like the one in Zhejiang province, can bring additional experienced teaching to low-resource schools while lowering operational costs at the same time.

A university professor can bring in a guest lecturer from a remote location through interactive video. College students benefit from having access to a diverse curriculum plus the flexibility of fitting online courses into their busy schedule. Top universities are developing new sources of revenue by offering classes and lectures from subject experts around the world.

Create the Digital Classroom and Campus

The iLearn solution enables classroom recording, live broadcasting, and real-time remote communication, using Intel technology throughout the system. **(Figure 2)**

The system's components create an end-to-end video solution that can record classroom content and support interactive teaching through either live broadcasts or on-demand video delivery anywhere in the world, including remote classrooms or a device at a student's home.

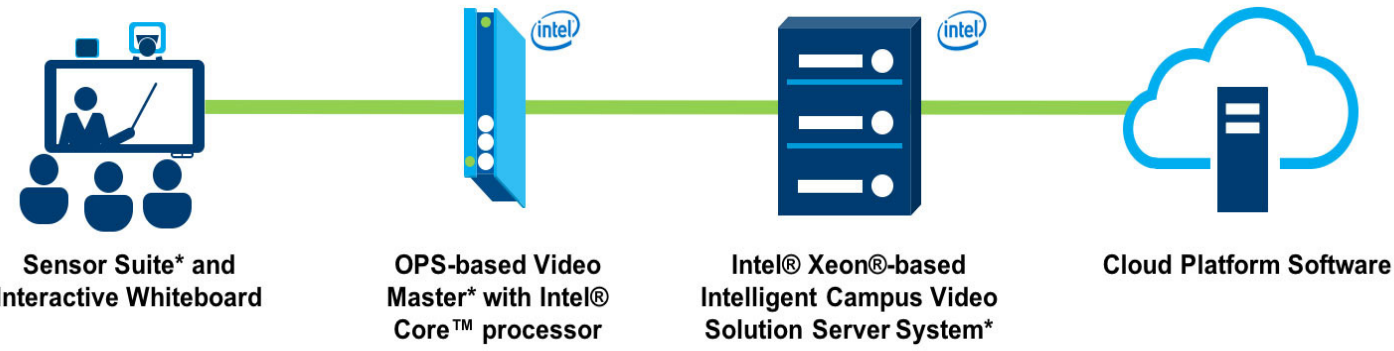

Figure 2. J&W IPC iLearn Interactive Remote Class Solution. (Source: Intel®)

A teacher can deliver a lesson using the Interactive Whiteboard and Sensor Suite. The Sensor Suite is a set of up to four cameras and microphones that can capture the teacher, a panoramic view of the classroom, and the students. The cameras can pan, tilt, and track a person to manage video capture without the need of individual operators, reducing staff requirements and saving money.

> **In the past, a government that needed a school had to build it. Now it can be created online.**

Substantial computational power enables the whiteboard's touchscreeninteractive and video features. It pre-processes data at the edge for low latency and streams e-learning videos and programs into the classroom. Video analytics help administrators to better understand how the systems are being used and what further work might be necessary.

Classrooms become educational recording studios and theaters that connect students to the best teaching, even when instructors are in other locations.

Store and Distribute the Lessons

To be fully useful, the classroom system must connect with the rest of the world. The Intelligent Campus Video Solution Server System is the next step.

Remote students may not operate on the same schedules as the instructors. A school or university might want to preserve a course and later offer it online to expand its reach and free up teaching staff.

The iLearn Intelligent Campus Video Solution Server operates as a compute, management, and storage server—performing edge video processing for low latency.

The system automatically uploads video to a cloud system, whether public or private. The cloud software uses web-based technologies to deliver educational materials anywhere, without the need for students to install and run special client software.

Low Administrative Burden

The combination of edge computing, cloud platform, and automation delivers important benefits to the school. The low-maintenance system reduces overhead costs and allows staff to maximize teaching time.

The system's architecture streamlines video recording and broadcast processes. Because the iLearn system employs an open platform, solution providers can also extend the system and customize it for specialized use cases.

> **New educational technologies connect more students with the best teaching.**

Schools also gain an additional benefit without extra investment. The presence of microphones and video in classrooms allows a school to monitor areas to improve physical security and help measure performance.

Finally, any university or school district will see significant financial benefits. Rather than building more facilities and hiring additional teachers, an educational institution can make better use of existing personnel and capital resources. The result is improved education reaching a wider group of students of any age without putting undue strain on budgets.

Learn more about the J&W IPC iLearn Interactive Remote Class Solution and other J&W IPC IoT solutions.