Mobile classrooms modernise student learning

Computers on Wheels (COWs) enable ICT based learning at a lower cost than computer labs.

OVERVIEW
Empowering students with information technology has been a core goal of the Beaconhouse-Newlands school in Lahore, Pakistan since it opened in 2011. But with resources tight, it took a purpose-built Intel mobile solution to deliver ICT to the school’s teachers and students, where and how it was needed – without breaking the bank.

CHALLENGES

- **Empower students for self-directed learning and collaboration.** New teaching approaches focus less on traditional teaching, and more on empowering students to work together to identify and follow new lines of investigation wherever they lead.

- **Integrate ICT into everyday teaching and learning.** Ready access to information is a crucial part of 21st century education, but delivering it in the classroom requires ICT capable of easily getting students online at every point throughout their school day.

- **Make the most cost-effective use of ICT.** Schools must use limited financial resources to bring ICT to students as cost-effectively as possible. Many have invested in computer labs, but they are expensive to set up and run, and difficult to integrate into everyday learning.

SOLUTIONS

- **Encourage teacher transformation.** Successful introduction of technology into learning environments requires teachers to get access to the tools and support needed, both during the transition and in the long term. Empowered teachers can identify and act upon new ways to enhance their teaching methods with ICT solutions.

- **Bring the technology to the students.** Mobile computing has freed schools from the need to dedicate rooms, desktops, funding and support staff to keep lab computers running. Instead, a mobile Computers on Wheels (COWs) setup has helped Beaconhouse-Newlands give students access to Intel classmate PC (CMPC) without the burden of maintaining computer labs.

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The Beaconhouse-Newlands campus of Beaconhouse School was founded in 2011 with the goal of providing a modern, student-centered learning environment built around ready information access and enabled through the use of appropriate ICT solutions.

The school has over 1000 students who have benefited from its close ties with United Kingdom-affiliated Newlands School, and who pursue an extensive curriculum built around self-directed learning and modern eLearning access. Students also have the chance to experience UK education by attending a session at Newlands School.

Use of ICT in the classroom is seen as a core element of the school's strategy. Students are encouraged to use ICT to support their structured (and unstructured) learning. This strategy of blended learning helps prepare students for a world where students will use technology in every part of their daily lives.

Talking about the scope of the project, Phillips Charles Straw, Principal Beaconhouse-Newlands says: “I see the opportunity to use blended learning as an opportunity to integrate a range of technologies and strategies naturally into the learning process. Learning in this environment needs to be in a mixture of genres with the decisions made around what is best for the student, group of students or class in the context of the learning step being taken. One key question is how technology can assist in the context of achieving mastery of one step, and moving naturally to the next step.”

**The Mobile Computer Lab**

A core goal for Beaconhouse-Newlands was to ensure that all of its students, from the youngest to oldest, would be able to get ready access to ICT enhanced learning. However, the school wanted to introduce valuable learning technologies without spending too much on its infrastructure. This goal encouraged it to look into alternatives to traditional computer labs.

Not only are computer labs expensive to set up, but experience at other schools has shown teachers find it hard to integrate them into classroom lessons. Students cannot access lab computers during class time: they must travel to the labs for any project requiring computer access. And, because their use must be carefully scheduled to avoid conflicts, experience had shown that students’ access to the labs was limited in practice.

“If you want to teach ICT skills, a computer lab is fine,” Straw explained. “But if you want to teach ICT integrated into your curriculum, it is not. Reviews have shown that teachers often have to book the labs so far in advance that by the time they were available, students had moved on to something else. Labs often sit empty and idle, even when they are booked out.”

These limitations are no longer acceptable in a mobile learning world. Furthermore, they contradicted the goals of the Beaconhouse-Newlands learning method, which is based around the idea that students should have access to appropriate and relevant ICT resources at every point in their learning journey.

Instead of relying on bringing the students to the computers, Intel Technology Partner - Viper Technology (Pvt.) Ltd. suggested that the school bring the computers to the students. This was possible with Computers on Wheels (COWs), self-contained mobile technology carts that include everything necessary to get an entire classroom of students online.

Each COW is a wheeled cart providing storage space and chargers for up to 30 Intel classmate PC; a full-featured teacher laptop including management and classroom administration software; a WiFi base station for connecting the laptops; and a built-in uninterruptible power supply (UPS) that can power the COW for six hours and charge all student laptops in the event of a power failure.

The COW includes built-in internet access, which is routed to the student laptops via WiFi. This allows students to get online immediately in any location around the school. And, because the Intel classmate PC are both rugged and spill-resistant, they can be used in busy classroom settings without fear of being damaged if they are dropped or have drinks spilled on them.

“The Intel classmate PC is a comprehensive platform that you can bring to the classroom to empower both teachers and students,” Straw said. “Delivered directly to students as Classroom on Wheels, it is helping define our learning environment – and doing so more cost-effectively than computer labs. Even if a COW is in use 70 to 80 percent of the day, it is a much better expenditure than a computer lab that is sitting idle most of the time.”

Equipment costs are not the only benefit that COWs provide. They also
reduce the need for physical space, air conditioning, technical support staff, and other necessary expenses in running a computer lab. This has helped them replace the computer-lab scenario, which was in favour during the 1980s and 1990s but has fallen out of favour as laptops became cheaper, wireless networks more common and devices of all sorts easier to manage.

The great differences in administration costs show how much more cost-effective a solution the COW option provides. A typical school might be able to afford one or two computer labs before the growing costs become too great to manage.

Beaconhouse-Newlands has already set up six COWs and soon plans to increase this to ten – providing a strong student:computer ratio at a fraction of the cost of a comparable computer lab.

ICT enhanced learning

By bringing computing technology to the classroom where it is most beneficial, the school has empowered teachers and students to integrate ICT into their everyday teaching and learning.

“The dynamics between teacher and student are much more effective,” said Amber Mustafa, Head Primary/Middle at Beaconhouse-Newlands.

“Our classrooms now have a new dimension. Our students are deeply interested and engaged, with creativity and a new thirst for knowledge.” Changing from a traditional model of chalkboard-based instruction, to a model that is entirely student centered, has been a major change for the school – and its teachers and students. Students were previously expected to only follow the teacher’s instructions, but they are now encouraged to use the ICT resources and tools at hand to explore and prove their own hypotheses; to dive deeper into the topic they are interested in; and, above all, to generate and acquire new knowledge.

Ready access to learning technologies "has helped me to achieve my aims better," said grade 3 teacher Lubaba Sibtain. “Students look forward to the lessons and the parents are happy to see their children using the technology.”

Blending ICT into the school's curriculum has helped the school meet many of its secondary strategic objectives. These include reducing the dropout rate, preventing school absenteeism, and keeping the children interested in learning throughout their time at the school. Children now see school as a place with the tools to help them develop their potential as deeply engaged learners for life.

Dramatically changing a school's curriculum is never easy, but access to reliable and available ICT learning tools has ensured the school did not waste time and resources on conventional computer-lab setups. Instead, administrators have been able to focus on related strategic issues, such as staff development and expansion of the school curriculum. Teachers are actively encouraged to integrate the COW solution into their classroom teaching, with technical support from Viper Technology and strategic support from school administrators.

“The main challenge for us was the transition from teacher-centered learning to student-centered learning,” said Straw. “The Computers on Wheels solution has supported this transition by providing a complete one-to-one solution that makes learning fun and teaching efficient.”

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Launched in 1995 with an aim to establish the Information Technology industry in Pakistan, offering a range of infrastructure and system integration solutions that caters to the ever growing needs of the customers. Over the period of 15 years, Viper Technology has come a long way and to date has implemented more than 450 Computers on Wheels (COWs) solutions in public and private sector schools. Viper Technology - believes that education is the fuel that drives economic growth and social progress. Effective teaching and one-to-one learning is the key to successful, collaborative and personalized learning which in turn creates better students, a prosperous nation, secure society, and more engaged global citizens.

Solution Summary:
Mobile learning at Beaconhouse-Newlands

- Intel classmate PC (CMPC) for student classrooms
- Bundled with WiFi, UPS and a full-featured teacher laptop – into mobile Computers on Wheels (COWs)
- Professional development for teachers
- Better technology access enables student-directed education
- Prepares students for the 21st century workplace
- Naturally blends technology into the learning process
- Fosters and inculcates collaboration and technology skills among students
- Optimizes capital and operational expenditure
- Flexibility and mobility allows learning at own pace

Contact your Intel representative to put together an education plan for adopting COWs in your country. For more information about Intel education programs, visit: www.intel.com/education or www.intel.com/worldahead

Computers On Wheels
The computer moves with the student instead of the student moving to the computer

Robust Student Laptop
Built-in UPS system having backup of 6 hours and capability to charge all student laptops

Wireless internet access and a WiFi network
Teacher Laptop

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