



## Comparison of Universal Service Obligation (USO) Solutions

### X Touch and Intel Devices

The Department of Basic Education (DBE) in collaboration with the Department of Telecommunications and Postal Services (DTPS) requested SchoolNet to compare two solutions being rolled out as part of the Universal Service Obligations (USO). The USO is an ICASA-led initiative where telecommunications operators in South Africa provide ICT infrastructure solutions to at least 300 schools per year until their licenses are renewed for the next period of time.

SchoolNet visited two public schools in the Western Cape, suggested by the e-learning coordinator for the Western Cape Department of Education. These schools were among the first to receive the USO solutions in the Western Cape. They are situated in the Metro North (Bellville) and Metro South (Mitchell's Plain) respectively.

Two site visits and telephonic interviews were conducted with the selected schools. The main difference in each of the sponsored solutions was the selected device, the XTouch tablet at School B and the Intel Tablet at School A.

### Background to the Schools



**School A** is situated in Mitchells Plain, which is one of South Africa's largest townships largely characterised by high rates of gangsterism and substance abuse. Their computer teacher was on hand to answer interview questions. The school has a dedicated computer room that is well secured. The devices were delivered to the school at the end of 2015, and he had attended initial training conducted by the district e-learning coordinator. More focused

teacher development was to be provided a couple of months later as part of the Intel Master training on the integration of Intel tablets in the classroom.

**School B** is situated in Elsie's River; like Mitchells Plain, this is in the heart of poverty, with high rates of pregnancies, drug abuse, and gangsterism. The school had been built next to the Catholic Church and was over 80 years old. The computer room not only had a reinforced steel door with several padlocks but the windows had also had to



be bricked up, and the security door hinges reinforced. The principal was interviewed during the first school visit. He had been at the school for over 30 years and had even been a pupil there himself. Unfortunately, he was not the person who received the devices. On the day of the first site visit, the teacher who had received the equipment was attending an athletics event but was on hand to answer questions during the second site visit.

### Comparison of ICT Solutions at each school

	School A (Intel Tablet)	School B (X touch)
Charging Trolley	1 x Trolley	1 x Trolley
Teacher & Admin Computers (2+1) +24 learner devices	27 devices	27 devices
Printers (1 + 1)	Admin & Classroom printer delivered	Admin & Classroom printer delivered
Operating System	Android	Android
Interactive Whiteboard	Delivered (installed in Staff room)	Delivered
Projector	Delivered	Delivered
Office Suite	WPS loaded	None loaded
PDF Reader	Yes	Yes
Screen Cover	Yes	Yes
Device Cover	No cover needed-Ruggedised with 70 cm drop resistance	Yes
Processor	Dual Core Intel Atom, 1.2GHz	Dual core Cortex A7, 1.3 GHz
RAM Memory	1 GB	1 GB
Built-in Memory Capacity	16 GB	8 GB
Battery Life	6600 mAh	4400 mAh
Display	10.1" 272.9X174.4X13.2mm	10" 243 x 164 x 10mm
System I/O	Micro USB, micro SD, HDMI, audio	Micro USB, audio
Peripherals	Snap on magnification lens (30 x magnification) , stylus, temperature gauge	N/A
Apps for Education	Artrage, Balance 3D, browser, calculator, calendar, camera, Chrome, Clock, download, e-learning, email, File manager, Foxit PDF, Flash Player Settings, Gallery, Gmail, Google Settings, Google	Calculator, calendar, camera, Clean Master, Clock, Downloads, emails, ES File Explorer, Facebook, File Manager, Flash Player Settings, Fly browser, Gmail Google, Google Settings, Hangouts, Incloud,

	Plus, Google Earth, Lab camera, Letter School, Local, McAfee Security, Media camera, Kinematics, Microscope, Memory, Movie Studio, Music, NewHearSpell, Notes Mobile, OneDraw, People, Play Music, Play Store, Plumber, Search, Settings, Sound Recorder, Sparkvue, Stylus Mobile, Maps, Talk, Tetris, Theft Deterrent, Wood block, Word Search, Word Space, WPS Office Explore, YouTube MathQuiz Pro	Instore, maps, movie studio, play music, Play Store, Settings, sound recorder, UHD player, user manual, voice search, WhatsApp, YouTube
Use of the tablets for Teaching	School is using the devices but would like more training on integration for teaching and learning and classroom management	School has never used tablets since they were delivered in December 2015

**Software**

The Intel devices are built for education and come with a pre-installed software stack with Sparkvue, Artrage, MediaCam, Microscope, Motion Cam and Kinematics. The educational apps are tools to help teachers teach abstract concepts such as acceleration, motion, and temperature changes. The computer teachers at School A did feel that the Intel device should have more relevant apps for literacy and numeracy in the primary school, and he was able to download a library of useful apps for learners. Two URLs <http://www.thutong.doe.gov.za/> and <http://digitalclassroom.co.za/digitalclassroom/> were zero rated, and this provides additional content support for teachers.

Intel devices also include Mythware classroom management software which was installed during the initial training. Unfortunately, the learner software was not yet installed. The teacher felt that once fully installed this would be a great classroom management tool where teachers could monitor and manage how learners were working on their tablets and could act as a deterrent for misuse of the devices.

The XTouch device at School B had useful apps such as Docs to go, file explorer and others which are useful. However these were off-the-shelf apps which held no customisation for education. No additional content apps were available for Primary schools.

**Memory**

The XTouch device has 8GB capacity; 3 GB was used on pre-installed apps, and 5GB was available for users. The Intel device has a 16GB on-board capacity and has over 10 GB available for use by learners. Intel devices also have expandable memory with Micro-SD. This expandable memory is especially useful because schools are reliant on offline content and tools. In addition, the devices are shared with multiple users which in turn means that saving learners’ work in portfolios of evidence will create a burden without it.



**Hardware**

The Intel device has two additional attachments – a temperature gauge and a snap on magnifier. These attachments add an extra dimension to learning abstract concepts in Physical and Life Sciences by allowing

learners to experiment with and understand terms like velocity, cellular structure using resources in their environment.

The device also has a number of available ports which include the Micro SD, HDMI, Micro USB, and headphone jack and this creates an easier method for transfer of data between multiple devices and has a greater degree of choice for sharing across platforms.

The functionality of the touchscreen was cited as being good, and the tablet itself was reportedly easy to hold and use. The teacher at School A advised that the rear camera was 2MP, and a front camera (0.3 MP) was also available. The tablet size (10") was a good, and two learners sharing would work well. In larger classes this might pose a problem. It was also felt that the tablet was not well protected in that the screen did not have a cover, and the tablet was not in a pouch. The teacher had not been aware that the Intel tablet is a ruggedized device and, therefore, could be dropped from 70 cm without damage or breaking. School A is waiting for additional training so that the staff can maximise the use of tablets and help maximise the potential of the tablets in learners' hands.

The **10" X-Touch devices** were delivered to School B in December 2015. During the first visit in early February 2016, the principal was not able to describe the software nor the functionality; he was "sorry, never opened them". SchoolNet nonetheless was able to access the devices and reported that the X-Touch device had a smaller screen size in that it was thin and long as compared to the Intel device. The tablet had a rubber cover over it, and this made it easier to hold the device. The screen size though posed a challenge for learners sharing devices.

### **Battery Life**

The Intel device has a 6600 mAh which is a nine cell battery, whereas the XTouch has 4800 mAh battery. In essence, this means that the Intel device can be used for longer hours without requiring further charging. A 6600 mAh battery can last for 6 hours on wifi or play videos whereas the 4800mAh battery will last for at maximum 4 hours using wifi or videos. Longer battery life in devices ensures that schools don't have to lose teaching time with devices due to re-charging during the school day. This is an important consideration for many of our rural schools where electricity supply is sporadic.

### **Teacher Training & Preparedness for ICT integration**

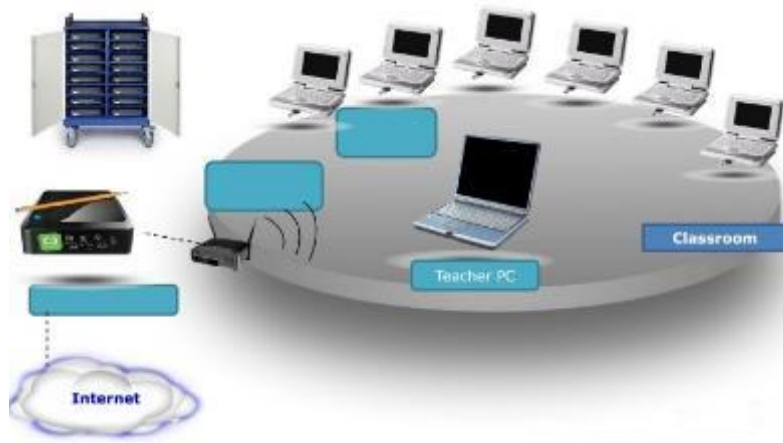
In School A, the district coordinator offered some initial training on the functionality of the device. The computer teacher further explained that training on how to switch on the device is "not the training we need". He "wanted to leave a workshop with ideas for his lessons and how teachers were going to be using tablets and software for teaching."

The computer teacher at School B had received an orientation from the "MTN guy" who provided some quick tips but none of the training that would help her integrate the use of the devices into classroom activities.

Intel Master training is being provided to Provincial Education officials responsible for training, and this would be focussed on the Intel's Introduction to Tablets in the Classroom, which is a SACE-endorsed customised for education course that earns all teachers 15 continuing teacher professional development points. This however has not yet been cascaded to schools where the solutions have been implemented.

## Diagrams of Solutions

The charging trolley with router, teacher laptop, and learners devices is a comprehensive solution. Educational apps and tools need to be pre-installed for primary or secondary schools as needed. Both



Intel and the Xtouch designs provide a comprehensive setup for a successful solution. The difference in use for teaching and learning is therefore not in the setup of the physical devices or the hardware, as both are geared for positive change. The difference clearly is in teacher professional development to ensure teachers bridge the gap between the mere use of the

devices and how to use them for effective, purposeful classroom activities.

## Observations and Considerations



Schools are very eager and grateful

to receive resources that will help teachers and learners become global citizens. However, our responsibility does not end when equipment is delivered to schools. These school visits have shown that the USO obligations are met. However there are shortfalls in the implementation of the current solutions. The success indicators will only be realized with continuous teacher professional development and tablets in the hands of learners.

Future implementation of USO solutions must include the following:

**Educational Apps for schools** –curriculum-aligned apps that build on the numeracy and literacy skills for primary schools, content specific apps for secondary schools well as a range of diagnostic, formative and summative assessment must also be considered. Educational tools available as apps for teaching abstract concepts such as graphs in mathematics and motion in Physical sciences are an advantage.

**Specifications of the device** – on-board memory and external storage is an important factor for educational purposes most especially where connectivity is not stable. This means that all apps or educational materials need to be saved onto the device for use by learners. Processing speed, camera specs, and sound quality are also a consideration as this will ensure that learners are able to create high-quality pieces of work that depict their understanding of content.

Teacher Professional Development (TPD) - Further training of teachers for integration of the provided solution into the classroom will ensure educational impact over time. TPD courses that provide technological, pedagogical and content knowledge ensure successful integration of ICTs for teaching and learning. Furthermore, courses that are aligned to national frameworks and showcase practical ideas for how pre-installed apps could be integrated into classroom activities would be a great advantage.

The Intel tablets and XTouch devices were compared head to head, and the Intel device comes with pre-installed apps (such as Microscope, Motion Cam, and Kinematics) and the magnifier and temperature gauge. These make it possible for contextualized and relevant examples from learners' home environments for study during Life Sciences and Physical Sciences. The specifications of both devices were mostly the same except the glaring difference of double on-board memory capacity as well as a range of ports for external storage on the Intel device. In addition the battery life of the Intel device gives a differential of 1500 mAh when compared to the XTouch device. The Intel tablet also ensures that teachers have access to a customised SACE-endorsed course which focusses on the use of the pre-installed Educational apps which forms part of the National Institute for Curriculum and Professional Development (NICPD) initiative.

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