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Elio Palermo, Principal
St. Barbara Elementary School

Introduction

How do you improve and accelerate the educational learning process for an entire School Board? How do you meet all 1,300 expectations that the Ontario Ministry of Education expects from its School Board in a timely and cost effective manner?

Is it possible to implement an IT solution on a limited budget without altering the educational process of the future?

The answer is yes, it's possible.

How? With a dedicated and committed staff, like Elio Palermo, Principal at St. Barbara Elementary School in Scarborough, Ontario and Joe Di Fonzo, Senior Coordinator of Technical Services of the Toronto Catholic District School Board (TCDSB), whose vision helped improve the educational process.

What else? A reliable IT solution partner such as Metafore is vital in providing the ongoing IT expertise and support to help transform the vision into reality.

Challenges

Improving the IT resources in schools is critical in aiding students to accelerate the learning capabilities such as numeracy and literacy - crucial elements to ensuring tomorrow's future. The major challenges are finding an IT solution that is sustainable, efficient, flexible, cost effective and, above all, capable of delivering a standardized IT solution across the entire school board. We're talking about implementing an IT solution to a large population of about 90,000 students, 10,000 teachers and an administrative staff working in 170 elementary schools and 30 secondary schools.

Phase 1

The solution: a mobile lab pilot project

The mobile lab pilot project originated mainly because of technological constraints. Elio Palermo came up with the concept and met with Joe Di Fonzo to further discuss the feasibility of setting up a mobile lab as a learning tool. Elio Palermo's initiative was inline with the objectives of the TCDSB.



The HP thin client Mini Netbook (5101) is an excellent learning tool for the students and a flexible, cost effective solution for the school. “The operating cost of connecting a single wired computer is about \$500, while the operating costs of connecting 30 HP thin clients to a wireless network, is about \$1,000 in total. The students are much more focused on their assignments and execute them with great enthusiasm. The mobile lab has aided our students to become more engaged and excited about doing their assignments whether it is individually or within a group.”

Metafore: the IT solution partner of choice

Metafore immediately agreed to offer its IT knowledge and support in paving the way for this pilot project to take form. By working with Metafore and its vendor partners, HP and Citrix, Joe Di Fonzo and his IT team spent several months designing and testing an IT solution for a mobile lab. “As a solution, we wanted more than just a computer” said Joe Di Fonzo. “We wanted to provide students with a learning tool that is accessible, flexible, durable, efficient and inexpensive. The pilot project took several months of research and development before implementation could begin at St. Barbara Elementary School.”

Implementation of the Pilot Project at St. Barbara Elementary School

After reviewing Metafore’s solution and having conducted a strategic proof of concept, the TCDSB was ready to test this pilot project in a school environment. St. Barbara Elementary was the school of choice since it allowed for different types of inputs: a mobile lab with thin clients, computer classrooms with four regular desktops and a computer lab in the Library. Running the thin client pilot in a school alongside the existing regular computers permits collecting information and gives the ability to compare variables from the same single environment.

Mobile lab: HP thin clients, wireless networking and Citrix application

Metafore implemented the mobile lab at the beginning of 2010 which consisted of 30 HP thin client Mini Netbooks (5101) featuring a 6-cell battery, courtesy of HP. These HP thin clients are stored in a mobile cart with a wireless access point and this is where the HP thin clients are recharged when not in use. Secondly, a wireless network infrastructure was set up and the Citrix XenApp application solution was utilized to serve virtual desktops located on a central server at the TCDSB head office. “Metafore in collaboration with HP helped develop a solution that fully met our objectives and exceeded our expectations,” said Joe Di Fonzo.

Results

Lower operating costs - The use of the HP thin clients and setting up a wireless network greatly reduces the operating costs of computer equipment. The implementation of a wireless infrastructure and 30 HP thin clients represent a fraction of what it would cost for a wired connection. “The operating cost of connecting a single wired computer is about \$500, while the operating costs of connecting 30 HP thin clients to a wireless network, is about \$1,000 in total,” says Elio Palermo. “The cost-effectiveness of having a wireless lab is much more beneficial economically than a wired network and clearly makes more sense.”

Mobility – You can’t get greater mobility than a mobile lab! With the mobile lab, there is no need to move to another classroom. The mobile cart is in the classroom and students use the HP thin clients as their learning tool. “This changes the whole paradigm” says Elio Palermo. “It’s not that you are actually taking the kids to go to a computer lab, you are actually taking the computer lab to the kids so they can put it in front of themselves on their desks. So you are saying to them that we are using these computers as a tool to help with language, math, and geography. They can collect and gather information on the Internet. They can do all sorts of things for a day or half a day. Previously they only had 40 minutes in the computer class. The programs are on HP thin clients, so everything they need to do their assignments more effectively is on the HP thin client”.

Efficiency and performance – One extremely important factor for the HP thin client was the energy efficiency of the battery. We opted for the 6-cell batteries that took in consideration the following elements: performance, intensity and use of the applications, energy savings



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and the amount of energy consumed per unit. 6 cell battery type are optimal as they allow HP thin clients to be used all day without having to be recharged. This maximizes the utilization for students and really acts as a learning tool. "It's interesting to know that netbooks are quite powerful especially in a school environment; with a good web browser and a good wireless connection, you're on your way" said Joe Di Fonzo.

Flexibility – Implementing a wireless network infrastructure in each classroom and each office provides great flexibility. The establishment and development of an extensible and flexible infrastructure is ideal because it helps support future changes when needed while minimizing the impact of the system's existing functionalities. This new environment has been designed to facilitate desktop management and make it more flexible.

Security and suppleness - Centralization, optimization and virtualization have been possible thanks to Citrix. This is a solution that provides greater scalability with minimal storage capacity expansion and increased security of data that enables cost reduction, growth, facilitating tighter integration with the entire IT infrastructure. "Being able to remotely access servers and storage systems located at the head office of the board is a great advantage," said Joe Di Fonzo. "The solution not only allows remote access to a single point for managing access control, but also allows for a better security application, data protection and compliance management, while avoiding paying for additional server procurement costs, as well as reduced support and maintenance requirements of internal IT staff".

The results have exceeded our expectations

Lower operating cost and the flexibility of a mobile lab with a wireless connection makes it the perfect educational IT solution for both the students and teachers at St. Barbara Elementary School.

IT Outcome

- Improvement of resources for learning technology
- Use of lower cost HP Mini thin client computers
- Improved networking capacity
- Improved mobility and flexibility
- Reduced internal IT support and maintenance

Qualitative observations - On the qualitative side, we have already noticed impressive results that go beyond the expectations of the school board. The following observations alone prove the pilot's success:

- Optimal behavioral development in students
- Increase of positive interactional exchanges amongst students
- Increased attention span: students are more focused and less distracted
- High level of respect for the technology hardware
- Promotes initiative and proactiveness in students: instead of passively waiting for instructions, HP thin clients are used as tools to encourage action and initiative
- Increased sense of curiosity, interest, creativity and resourcefulness
- Allows to become familiar with today's technologies

“The expression on the students faces speaks for itself” says Elio Palermo. “From my observation, the students are much more focused on their assignments and execute them with great enthusiasm. The mobile lab has aided our students to become more engaged and excited about doing their assignments whether it is individually or within a group.”

Phase 2

Empirical results - Quantitative and empirical results will be accessible only at the end of the school year where data collection and compilation will be available and will corroborate the success of this pilot project and demonstrate numeracy and literacy improvements.

Being a visionary goes a long way

The primary mission of the TCDSB is to educate students to their full potential. Throughout the process, the school board never lost sight of its mission and vision and therefore developed and implemented an adequate, fast and inexpensive technological infrastructure. The success of this pilot project is mainly attributed to Metafore and its team of experts. “Without Metafore’s IT expertise, this pilot project wouldn’t have seen the light of day,” said Joe Di Fonzo. “Metafore’s IT solution and collaboration was a key element throughout this pilot project. Metafore has responded to the unique needs of the school board in developing the solution. We also greatly appreciate HP for all its support and hardware”.



HP, a long lasting partner and supporter for innovation, played a vital role in the realization of the mobile lab pilot project by providing the HP thin client Mini Netbooks (5101).

About Metafore

Metafore has been delivering IT solutions to private and public sector organizations of every size for more than 25 years. With a team of more than 1000 associates, operations throughout Canada, and access to a network of certified technical resources from coast to coast, Metafore is one of Canada’s leading information technology solution providers. Metafore designs, supplies, installs and supports IT infrastructure solutions that contribute to improved productivity, operational efficiency, and overall business performance. For more information, please visit www.metafore.ca.

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