Teachers Speak: Technology in the Classroom

ORION'S NEXUS K-12 TEACHER SURVEY RESULTS

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PURPOSE OF STUDY

As Ontario's "Backbone of Innovation," ORION's high-speed fibre optic network connects 37 of Ontario's 72 school boards and plays an instrumental role in supporting the necessary connectivity and infrastructure required to empower blended learning lessons.

The ORION Nexus K-12 survey directly engaged Ontario-based kindergarten to twelfth-grade (K-12) teachers on how connectivity impacts blended learning in their classrooms. The Ontario Ministry of Education defines blended learning as a teaching pedagogy that uses digital learning tools (hardware and software applications) within a classroom setting where students are face-to-face with each other and their teacher. Digital learning tools require the classroom to be online at any given moment of the lesson.

Through this online survey, ORION's purpose was to study teachers' experiences of their classroom's connectivity and gather the teachers' recommendations on how to improve their use and access to connectivity. This survey emerged as part of ORION's strategy initiative, the Nexus Project. In this particular portion of the program, ORION endeavored to further understand how connectivity can be improved, in order to better support the future work of teachers. This is an important sector, as it represents 25 per cent of our network traffic, and is key to the future of the knowledge economy in Ontario. As opposed to engaging with network administrators and IT personnel, this survey aimed at gathering connectivity experiences directly from the end user.

The survey was launched on July 1, 2014, stimulating discussion by asking some preliminary questions during a Twitter discussion at an event for ORION's K-12 community. It was open to all K-12 teachers in Ontario public school boards across Ontario. Distributed through social media and professional learning networks, respondents were asked open- and closed-ended questions within three sections:

Section 1: Blended learning in the classroom today

Section 2: What is getting in the way of blended learning?

Section 3: Tomorrow's classroom today

The survey was live for 107 days and received 235 responses from teachers representing a wide cross-section of Ontario's school boards. This report summarizes and analyzes the responses from each survey section, identifies key trends, and concludes with a summary of the recommendations.

SECTION 1: BLENDED LEARNING IN THE CLASSROOM TODAY

Most of the teachers indicated that their classrooms use multiple hardware products at any given time.

Top 5 hardware products used in the classroom	Respondents who use the hardware (%)*
Apple iPads	69%
SMART Boards	60%
Desktops, laptops and tablets	43%
Projectors	25%
A broad selection of students' personal mobile devices	18%

* Totals exceed 100% since respondents could make multiple selections

A very small percentage of teachers also identified the use of Promethean Boards, Elmo Document, Cameras, Apple TV and CD players.

Commonly used software applications:

- Adobe

- Air Server

- Blogs (WordPress/Weebly/Easy Blog Jr/EDU Blogs)

- ClassFlow

- Desire2Learn

- Desmos

- Duolingo

- Edmodo

- Educreations

- Explain Everything

- GAFE (Google Apps For Education)

- iDoceo

- IXL Math

- Math Apps

- Microsoft Office Suite (with Publisher)

- Movie Maker and iMovie

- Notability

- PicCollage

- Prezi

- SMART NoteBook

- Socrative

- Text to speech and speech to text apps

Contextual factors in digital technology in the classroom

Most of the teachers expressed a heavy reliance on digital tools for their teaching and were using blended learning approaches on a daily basis. However, two important contextual notes emerged:

1. **Understanding the goal before the solution is supplied:** the teaching pedagogy should always guide the types of blended learning solutions used. Teachers did not want to feel pressured into using one type of technology over another. Instead, teachers wanted to clearly understand how a particular digital technology facilities the learning process – for example, geography lessons benefit from Google Earth. The call was for teachers to be consulted more and for them to get involved in the information and communications technology (ICT) decisions being made for their classrooms. Teachers did not want to incorporate digital technology into the classroom just for the sake of it. The majority of teachers also felt that all subjects would benefit from a blended learning approach.

2. **Supplying teachers with training beyond basic usage**: teachers need to understand the social impact of connectivity on "connected technologies" in the classroom. The connectivity ultimately dictates how students can engage with information in different formats. Many teachers felt that they did not know enough

about the implications of using one software versus another, of how the various software might work together, or of speed and access differences.

Implications of technology in the classroom

Technology used in the classroom was described as supporting deeper, richer learning in environments that were relevant to the current, lived realities of the students. Many emphasized the instant nature of online technologies. Teachers could lead students in their learning and not simply provide them with ready-made answers. Teachers could enable students to engage in more group work through technology and thus free up more of their time for students who needed individual assistance. The responses suggested that, as a result of these technologies, subject curricula were in constant flux and evolving with students' increasing participation in their own with regional and international partners. These developing trends present challenges and opportunities that we can meet—if we think forward and plan ahead now.

SECTION 2: WHAT IS GETTING IN THE WAY OF BLENDED LEARNING?

When asked to rate their classrooms' access to the internet, the teachers responded:

Access to the Internet	% Response
Excellent	22.5%
Good	45.0%
Average	20.9%
Poor	11.6%

When asked whether they had control over the types of devices students were using, teachers responded:

Control over types of devices used	% Response
Yes	59.7%
No	40.3%

When asked whether they knew about the online training resources available to them, they responded:

Aware of online training resources	% Response
Yes	24.8%
No	75.2%

The trend in responses demonstrated a number of related issues. While the lack of digital tools and poor connectivity were obvious barriers to blended learning, the teachers cited examples from their classrooms to explain what deters their use of blended learning pedagogies or makes it ineffective in their classroom.

Limited resources

Access to digital tools (devices and software applications) are heavily influenced by the school's socio-economic contexts. In one instance, one iPad was shared by an entire school. Such limitations ultimately reduce access to connectivity, if that is even available to begin with. Teachers also explained that their blended learning efforts can place some students at a disadvantage if similar technological tools and connectivity are not found in their homes; such students often find it difficult to keep up with developments in the classroom and are left behind. Interestingly,

some teachers explained that with limited educational resources available to teachers themselves, as well as limited time in which to strategically plan their use of technology, there was a sense that some teachers were now "competing" with each other for resources. The competition and equity elements are further exacerbated when some students, but not all, can afford their own personal devices and connect to local area networks.

Technology that does not work

Teachers remarked on the presence of outdated technologies in their classrooms which, in some cases, could not even connect to local networks or did so at extremely low speeds. One teacher explained having to consider bringing storage devices, such as a SeaGate, into the classroom in order to allow students to view rich media content. In fact, some teachers explained they were unable to run more than one application on a machine. Given such technology limitations, teachers felt dissuaded from utilizing blended learning pedagogies as it increased the amount of their work without improving learning outcomes.

Teachers are under-consulted

Many decisions about technology in the classroom were reported to be made at the board level with limited to no involvement of the teachers. For example, in some classrooms, teachers were unable to access YouTube because of a board decision that deemed the application non-educational. Teachers felt that technology was often introduced into the classroom merely to "jazz it up." Instead, teachers suggested that technology could be used more beneficially if they were involved in the decision-making process and could explain how they intended to use the technology to enrich their students' learning. Teachers also feared that boards were spending money on technology without accounting for the students' age and the applications that are most suited to their learning.

Insufficient teacher training

Teachers did not understand the social impact (for example, on student privacy and security) of using "connected technologies" in the classroom. Many teachers felt that they did not know enough about the implications of using one software versus another, of how the various software might work together, or of speed and access differences.

SECTION 3: TOMORROW'S CLASSROOM TODAY

When asked to provide recommendations to the previously discussed challenges, the teachers were quick to refer to a variety of applications (for example, an app to make grading easier) that would help them teach through a blended learning approach.

The majority of teachers also expressed an urgent need to improve connectivity. Not only was there a call for more reliable connectivity, but also more widespread connectivity within their schools beyond the computer labs. This way, students could more equally partake in the benefits of blended learning. Some teachers also expressed concern over limited connectivity resources to schools in remote communities.

Teachers, importantly, also tempered the recommendation for improved connectivity with an understanding of how funding impacts the development of blended learning infrastructure and were hopeful to see a reduction in connectivity costs and increased funding.

Amongst the many recommendations that were made to improve the outcomes of blended learning, the following are the most prominent recommendations related to ORION's network and cloud services:

1	**While classrooms certainly require more and upgraded devices, teachers want to focus on efficient, reliable access to learning resources.**
2	**Consider ways to simplify implementations of blended learning, such as using one-stop portals with single sign-on for all applications.**
3	**Teachers require enhanced and readily available tech support to ensure that classrooms are fully operational and that technologies are being used to their highest capacities.**
4	**Consider partnerships with additional education technology providers to provide more options for schools to use in blended learning.**

ORION'S NEXT STEPS

Following a careful review of the responses, ORION has awarded one teacher respondent with 30 UbiSlate tablets and online collaborative community software for their classroom. We will work closely with the teacher to understand how connectivity enhances the use of the devices and web-based education applications to impact learning outcomes. This process will allow ORION to practically demonstrate the role of connectivity in the classroom and advance our understanding of the needs of teachers in Ontario.

The information in this report, in conjunction with other key materials and reports from this sector (such as the government's vision document, "Achieving Excellence" and "Manifesto for 21st Century Learning" by the Ontario Association of School Board Officials) will serve as one of the building blocks for ORION's strategy. The data will lay part of the foundation of ORION's overall strategy initiative, the Nexus Project.

There are already some clearly defined areas for ORION to consider:

1	**In order to alleviate financial obstacles to sufficient student connectivity across Ontario, provide cost-effective, first-mile to the ORION network for all schools.**
2	**Assist local school boards in better allocating connectivity resources during peak usage in order to manage increased users on the network.**
3	**Collaborate with providers to ensure students have access to the high quality content they need to support the 21st Century learning required by citizens of a strong knowledge economy.**
4	**Ensure that teachers have access to applications that provide services that support blended learning.**

THERE'S MORE AVAILABLE

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