Perceptions of Information and Communications Technology Skills in Middle School Students Using Individual Laptops: Toward a Longitudinal Perspective

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UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS

Modern societies are increasingly based on information and knowledge.   2014

"They need to build workforces which have ICT skills to handle information and are reflective, creative and adept at problem-solving in order to generate knowledge".

E-SKILLS FOR JOBS IN EUROPE: MEASURING
PROGRESS AND MOVING AHEAD
FINAL REPORT

2012

"Today, like in almost all recent years except for the aftermath of the dotcom-bubble bursting, the demand for ICT workers is outstripping supply".

"In the EU, demand for e-skills, i.e. ICT professionals and practitioners, can be estimated at around 274,000 in 2012."

HIGHLIGHTS

We face a growing gap between the demand for, versus supply of, ICT talent and skills. Hiring requirements in Canada are expected to reach:

182,000 by 2019

5 occupations will be in strong demand.

- Information System Analysts & Consultants
- Computer Programmers & Interactive Media Developers `<html>`
- Computer & Information Systems Managers
- Software Engineers & Designers (CODE)
- Graphic Designers & Illustrators

The demand-supply imbalance will affect all provinces, and could reach over:

|	
76,300	Ontario
49,600	Quebec
20,900	British Columbia
17,300	Alberta
4,000	Manitoba
3,900	Saskatchewan
3,800	Newfoundland and Labrador
3,200	Nova Scotia
2,200	New Brunswick
1,500	Prince Edward Island

DIGITAL ADOPTION COMPASS
BOUSSOLE D'ADOPTION DU NUMERIQUE

ICTC·CTIC

"Canada faces a growing gap between the demand for and the supply of ICT talent and skills..."

2014

New-Brunswick, Canada
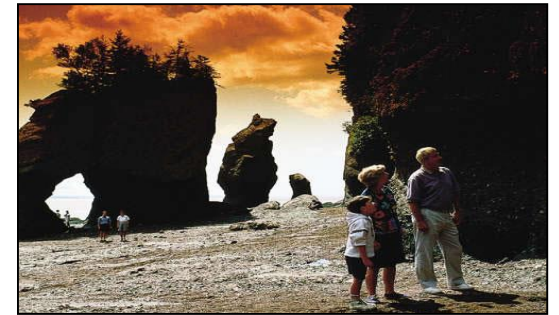
# A context of linguistic minority for francophones in NB

Limited resources in mother tongue:

- Human resources

- Pedagogical resources

- Material resources

- Financial resources

(*Gilbert, LeTouzé, Thériault, Landry*, 2004)

Overall goal of the CompeTICA project:
DELPHI to identify and measure the acquisition and transfer of digital skills...

Workplace

College

High School

Elementary School

Kindergarten

Home
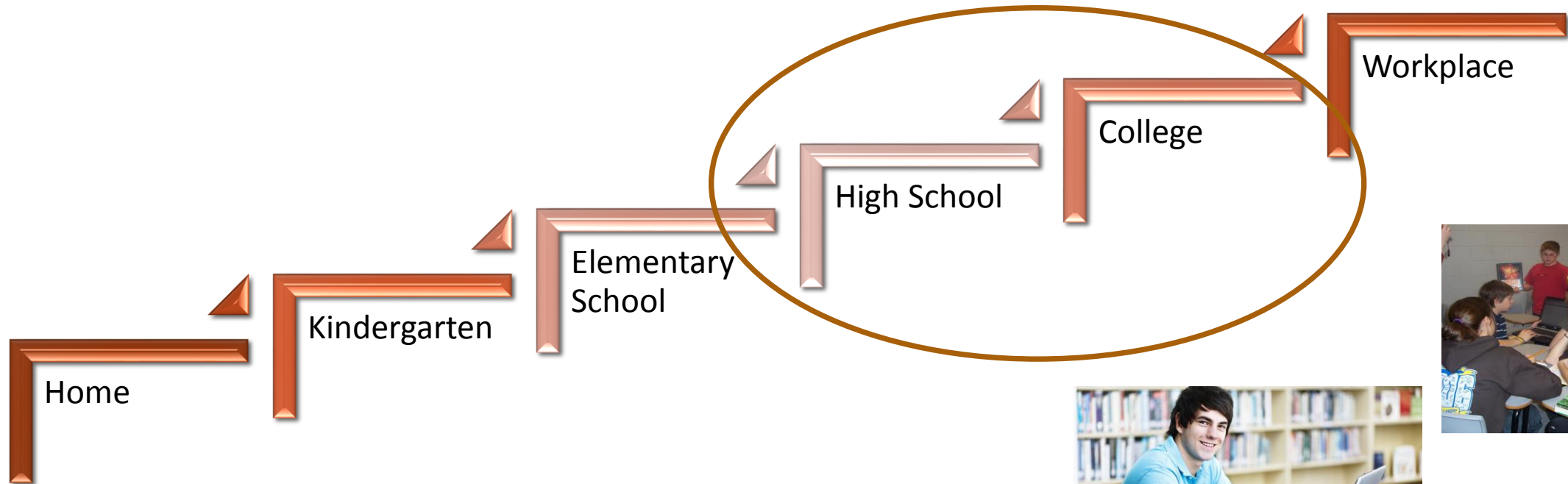
What we're looking to understand in the present study

How do students describe their ICT use and how do they perceive their digital competences while in middle school and later in life as adults?

Are digital literacy skills, acquired through a school curriculum designed around one-to-one laptop use, maintained through high school and later in adulthood?

Context leading to Method

2004

- Middle school students involved in a multiyear 1-1 laptop learning study.

- Individual semi-structured interviews with 16 of these students (randomely selected).

- Thematic content analysis, within-case and accross all cases.

2014

- College students and working adults (3/16 individuals from initial 2004 cohort).

- Individual semi-structured interviews, with results from 2004 report as secondary data.

- Using narrative analysis (Polkinghorne, 1995), we produced 3 longitudinal in-depth narratives.

Data collection: questions asked…

2004

Does using a laptop in school change the way you learn? Explain.

What impact does using a laptop in school have on the way you work in class?

What are your thoughts on the relevance of using a laptop in school?

What are your thoughts on ethical concerns around computer use in school?

2014

How did using a laptop in school affect the way you learn today? and your level of digital competency?

What impact did using a laptop in school have on the way you worked in class then and now?

What are your thoughts on the relevance of using a laptop in school then and now?

What are your thoughts on ethical concerns around computer use in school?

Describe yourself as a digital user today? What was the influence, if any, of using a laptop in school?

Results from 2004

Students demonstrated an **enhanced ability to create, edit, post** online documents and search for information on the Web, all the while developing **more autonomy in completing learning tasks**.

"With my laptop, I am more interested in undertaking a given task … I feel that I can do whatever my teacher asks."

Students **developed cognitive abilities** like using shortcuts with the keyboard as an alternative to using the mouse pad.

"I used a program to help my learn to type faster and I learned how to design webpages and 3D animations and how to share [information] on my blog."

Deeper Results: towards the longitudinal

Thematic content analysis of the 2014 interviews revealed similar themes to 2004… but data was much richer in detail and depth.

3 Personal narrative accounts of digital skill development were produced, the result of a process of "narrative analysis" (Polkinghorne, 1995), whereby we configured collected descriptions of events according to an evolutionary plot line from 2004 to 2014.

Three digital skills emerged, thought to have developed from earlier laptop use in school:
- **Technological resourcefulness**
- **Digital self-efficacy (empowerment)**
- **Open-mindedness towards technology**

Narratives: 3 longitudinal perspectives

TIME

Jean	Julien	Bernice
Motivated by prospect of laptops.	Excited to be part of laptop study.	Not as excited about computers.
Convenient and efficient technical tool for projects and research.	Made school work easier and more efficient.	Helped with school work, but I prefered pencil and paper.
Using laptops in school helped me develop digital skills faster and led to me to use them regularly today.	*My early exposure to computers helped me to become the proficient user I am at work today.*	*My experience with laptops in school was useful, but I don't use computers more today as a result.*
Early exposure to computers has helped me be a more confident digital user today, one who can adapt to a changing digital world.	*I would say that I am openminded and resourceful when it comes to computer use today thanks to that initial laptop experience in 2004.*	*I use computers today when it serves me, but I'm not interested in becoming any more proficient than I already am.*

What's next?

- We have since interviewed 5 more individuals from the 2004 laptop study…
  results are in line with those shared today. This study remains exploratory however.
  A more quantitative approach is recommended to better understand underlying factors
  of digital skill development over time.

- Our results show that not all young people are necessarily proficient or even interested
  in technologies. Not all youth should be painted with the same « Net Generation » brush.
  More studies are needed here…

Questions?

"We need technology in every classroom and in every student and teacher's hand, because it is the pen and paper of our time, and it is the lens through which we experience much of our world." – David Warlick

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