CEA's 2009 Education Research Review

Canadian Education Association
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CEA'S 2009 EDUCATION RESEARCH REVIEW

Published by the Canadian Education Association (CEA)
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introduction

This is the second annual year-end review of education research that has been featured on the CEA website and in the *Bulletin*, our monthly newsletter. It summarizes, by theme, notable reports, briefs and studies, identifying trends and highlighting areas of consensus, tension, and discrepancy. Hyperlinks to all cited works are in gray. Also included are recommendations to related articles from *Education Canada*, CEA's flagship magazine. We trust you will find it useful for your work, and encourage you to share it with colleagues.

list of abbreviations and acronyms

CCL	Canadian Council on Learning
CMEC	Council of Ministers of Education, Canada
ECEC	Early Childhood Education and Care
ICT	Information and communications technology
NIEER	National Institute for Early Education Research
OECD	Organisation for Economic Co-operation and Development
PISA	Program for International Student Assessment
SAT	Scholastic Assessment Test
SEN	Special Educational Needs
YITS	Canadian Youth in Transition Survey

aboriginal education

Aboriginal Education received modest attention in 2009. In School Experiences of Off-Reserve First Nations Children Aged 6 to 14, Statistics Canada found that about 70% of off-reserve First Nations children aged 6 to 14, were reported by their parents to be doing well in school. This figure mirrors findings in the general Canadian population. Findings suggest that girls were more likely than boys to be reported doing well in school, and that younger children were more likely than older children to be reported doing well in school. The report also examines learning disabilities, out-of-school activities, and Aboriginal language skills.

At the provincial level, a report funded by the Canadian Council on Learning (CCL) focused on ways to integrate more Indigenous Knowledge in B.C. schools. Power of Place (PoP): Integrating St'át'imc knowledge systems into Lillooet area K-12 school curricula and pedagogy (PDF), argued that B.C. schools devoid of St'át'imc learning resources should strategically integrate Indigenous Knowledge into the curriculum. Several B.C. schools, with predominantly Aboriginal student populations, were examined for their ability to incorporate St'át'imc knowledge and cultural activities. Despite the absence of St'át'imc Knowledge Systems, local Elders were willing to work with teachers, while educational stakeholders endorsed several integration strategies.

Related *Education Canada* reading:

Imaginative Education Engages Aboriginal Learners in Prince Rupert (PDF), by George Pearson (Theme 2009)

Trust Our Voices: Transforming a Rural Community Through Digital Media (PDF), by Tim Murphy and Ryan Cracknell (Winter 2009)

accountability

According to the Organisation for Economic Co-operation and Development (OECD) Canada continues to perform well in cross-country comparisons. In Education Today: The OECD Perspective (PDF), the first of two reports on education systems of OECD member states, Canada is noted for being one of five countries where more than two-thirds of students meet or exceed an advanced reading literacy level. The report recommends that Canada strengthen its national policies on early childhood education and care. In Education Indicators in Canada: An International Perspective (PDF), the Canadian Education Statistics Council, a research partnership between the Council of Ministers of Education, Canada (CMEC) and Statistics Canada, examined the second OECD report, Education at a Glance 2009: OECD Indicators (PDF), and found several notable accomplishments. Eighty-seven percent of 25- to 64-year-olds in Canada completed high school compared with the OECD average of 70%. Results from the Program for International Student Assessment (PISA), an OECD-administered student knowledge survey, show that 15-year-olds in Canada performed well on student achievement when compared to their international counterparts. Despite the success, blemishes remained. Twenty percent of 15- to 19-year-olds Canadians were no longer enrolled in school, marginally more than the OECD average of 16%.

Complementing Canada's international success, a national survey (PDF) of Canadians by Harris/Decima found a majority of respondents believe that Canada's education system adequately prepares young people for work in the economy. Young people aged 18 to 34 felt most confident about the system, while workforce veterans aged 50+ felt least confident. A majority of respondents believe high schools and primary schools adequately equip young people with "the skills and abilities they need to be effective in the modern workplace." One contributing factor in academic achievement, argues CCL, is homework. In A Systematic Review of Literature Examining the Impact of Homework on Academic Achievement (PDF), findings suggest "homework which engages students in active learning (rather than rote repetition) increases achievement." Moreover, students who receive more homework perform better than students who receive less. The report, however, argues that teachers should remain judicious when assigning homework.

National and provincial accountability reports offered micro-level examinations on language, literacy, and provincial strategy. At the beginning of the year CMEC released the Pan-Canadian Interim Report on Official Languages in Education 2005–2006 / 2006–2007. The report describes the achievement of outcomes for second-language education and minority-language education, and provides an overview of federal and provincial/territorial investments for the period.

In June, the Ontario Education Quality and Accountability Office released Ontario Student Achievement: EQAO's Provincial Report on the Results of the 2008–2009 Ontario Secondary School Literacy Test (PDF) summarizing outcomes from the province-wide test. Results suggest reading and writing levels remained consistent with previous years. Online communication (websites, email, and chat messages) was the most frequently reported form of engagement by both sexes, while more females than

males engaged in extracurricular reading and writing. In the same month People for Education argued that Ontario's education system lags behind its national and international counterparts and needs to get "caught up to the reality of the 21st century." Designed to shed light on system-wide shortcomings, the Annual Report on Ontario's Public Schools (PDF) focuses on fourteen areas including: enrolment, class size, health and physical education, the arts, and special education. The authors argue that forward-thinking vision is necessary to turn schools into "centres of change, innovation and equity."

Related *Education Canada* reading:

Raising the Bar: A Data-driven Discussion on Grade Inflation (PDF), by Robert Laurie (Fall 2009)

civic engagement and citizenship

Language and history were at the forefront of citizenry-related research. In Youth Bilingualism in Canada, Statistics Canada drew on data from the Canadian Youth in Transition Survey (YITS), a longitudinal survey administered by Statistics Canada and Human Resources and Skills Development Canada, and examined bilingualism among youth in Canada. Findings suggest that "enhanced second-language schooling has a longer-term impact on (self-reported) bilingualism. And more years of second-language exposure leads to higher rates of bilingualism."

Despite the strong linguistic influence of schools, the Dominion Institute expressed concern in The Canadian History Report Card: Curriculum Analysis of High Schools in Canada about the shortcomings of provincial and territorial history curriculums. The report found that provincial and territorial governments "are failing students when it comes to educating them about the story of Canada." Four provinces and one territory failed the evaluation, and none earned an *A*. Quebec earned the highest mark (*B*+) and was applauded for its ability to link history and citizenship.

Related *Education Canada* reading:

The Rights Way to Educate Children (PDF), by Katherine Covell (Winter 2009)

Student Ownership of Education: Practicing Democracy in Schools (PDF), by Jonathan Scott (Spring 2009)

early childhood education and care

Early childhood education and care (ECEC) remained widely discussed in 2009. In addition to OECD recommendations for Canada to strengthen its ECEC policies, several national organizations continued to advocate for greater ECEC programs across the country. The Childcare Resource and Research Unit reported in Early Childhood Education and Care in Canada 2008 that full-day kindergarten is now offered by six provinces, while ECEC curriculum frameworks exist in five. The rate of workforce participation for mothers with their youngest child between 3-5 years old grew to 77%. A snapshot of Aboriginal ECEC reveals continued federal support for existing programs, while Francophone ECEC in minority environments remains a "major goal" in promoting linguistic diversity. From an economic perspective, a Literature Review of Socioeconomic Effects and Net Benefits (PDF) by the Child Care Human Resources Sector Council found that for every dollar invested in ECEC there is a benefit of more than two dollars for children and mothers. Moreover, literature reviewed on Quebec's ECEC program found lower fees increased mothers' labour force participation. U.S. researchers at the National Institute for Early Education Research (NIEER) drew similar conclusions about the economic benefits of ECEC. In NIEER's Federal Early Childhood Policy Guide for the First 100 Days (PDF), it was argued that "immediate changes in federal early care and education policy must be part of an effective plan to help get the economy back on track."

In Ontario, full-day kindergarten was proposed to the Premier in, With Our Best Future in Mind: Implementing Early Learning in Ontario (PDF). The report by Charles E. Pascal, Special Advisor for Early Learning, proposes full-day kindergarten to commence in September 2010 with province-wide availability in three years. To further academic success among children, the report also recommends year-round extended-day programs for children aged 6 to 12, and higher quality programs for younger children. The final recommendation, enhanced parental leave, aims to strengthen parent-child relations and decrease costly infant care needs.

Further touting ECEC's benefits, a study by the U.K. Department for Children, Schools and Families found that pre-school quality directly impacts a child's social and behavioural outcome at age 11. The study, Effective pre-school and primary education 3-11 project (EPPE 3-11): Influences on children's cognitive and social development in year 6 (PDF),

found that students who attended high quality pre-school outperformed peers who attended low quality pre-school in math and demonstrated better social behaviour. Children who attended low quality pre-schools fared the same as those who did not attend pre-school at all. Boys, disadvantaged children, and children with special needs, were the greatest beneficiaries of high quality pre-school. Supporting this research the U.S. National Scientific Council on the Developing Child released Mental Health Problems in Early Childhood Can Impair Learning and Behavior for Life (PDF), a working paper on how practitioners and policymakers should address mental health problems in early childhood. The paper calls for improved infrastructure for funding mental health services, appropriate professional training for ECEC providers, and coordinated therapeutic help through home- and centre-based services.

Related *Education Canada* reading:

Pre-schoolers Benefit from New Skills Assessments (PDF), by Doug Willms (Theme 2009)

inclusion and equity

In special education, the 'inclusive' versus 'separate' debate continued but tilted toward inclusion. A CCL article reviewed relevant literature in the debate for placement of children with special educational needs (SEN). The article, Does placement matter? Comparing the academic performance of students with special needs in inclusive and separate settings, found that despite claims that inclusive education is more advantageous, "the benefits of inclusion are not overwhelming." To support the academic education and social well-being of SEN students, schools should "ensure a range of services are available to support students with differing needs."

In contrast, Inclusion International, a Spanish-based advocacy group, released Better Education for All: When We Are Included Too (PDF), and argued that in "the past fifteen years, children and youth with intellectual and other disabilities, parents, educators and policy makers have demonstrated that inclusion works." The report touts the impact of New Brunswick's 2007 Guideline on the Accommodation of Students with Disabilities, and commends the province as "a positive model of system-wide implementation of inclusive education in Canada, and indeed for other countries for more than 20 years." Further, Inclusion of Children with Disabilities: The Early Childhood Imperative (PDF), a United Nations Educational, Scientific and Cultural Organization policy brief, argues that ECEC can be used to combat negative stigma that children with disabilities face in developing countries.

Other disadvantaged groups continue to be at the forefront of inclusion and equity discussions. Non-native English speakers were the focus of research by Futurelab, a U.K.-based research and policy centre. In their literature review, Assessment and Social Justice (PDF), current assessment methods are reviewed and discussions reveal how these methods can put some students at a disadvantage. The authors review alternative e-assessment solutions that could make assessment processes more equitable for students.

In an effort to create "an equitable and inclusive school climate", the Ontario Ministry of Education released the strategy document, Realizing the Promise of Diversity: Ontario's Equity and Inclusive Education Strategy (PDF). Together with school boards and schools, the Ministry's four-year strategy will focus on developing and implementing policies that "remove discriminatory barriers to student achievement, honour diversity, and affirm respect for all in [Ontario's] schools." Annual action items include: creating and releasing guidelines, working with stakeholders, reviewing existing policies, and developing progress reports.

Related *Education Canada* reading:

Fostering Social Acceptance in Inclusive Classrooms (PDF), by Judith Wiener (Fall 2009)

information and communications technology

Information and communications technology (ICT) received extensive coverage this year. Provincial, national, and international organizations covered different aspects of ICT theory and practice. From Canada, CCL noted in State of E-Learning in Canada (PDF), that e-learning in Canada is developing slower than anticipated, but stands to make gains if strategic action is taken. The report also found that "considerable effort" has been made to improve ICT in primary and secondary schools. Online courses continue to support students in rural and urban settings, with more than one-third of secondary school students participating in online courses. Praising the implementation of ICT in Ontario's schools, but also expressing concern, the Ontario Public School Boards' Association argued in their discussion paper, What If? Technology in the 21st Century Classroom (PDF)

that ICT use is growing, but "a comprehensive set of guidelines for all teachers" remains absent.

U.K. and U.S. research reviewed several notable aspects of ICT, including digital literacy, mobile learning, technology application, and student achievement. In Futurelab's literature review, Digital participation, digital literacy, and school subjects (PDF), digital literacy is defined as the knowledge and understanding of how technology and media influence communication and learning. The review argues that young people must adequately understand the role of technology in society if they are to become active and productive citizens. Researchers at the Joan Ganz Cooney Center (U.S.) reviewed the opportunities and challenges of mobile learning in Pockets of Potential: Using Mobile Technologies to Promote Children's Learning (PDF). Some of the opportunities include: "anywhere, anytime" learning, reaching underserved children, improving 21st-century social interaction, creating learning environments, and enabling a personalized learning experience. Indeed, mobile learning was predicted to have a significant impact on learning-focused organizations according to the 2009 Horizon Report (PDF) by the New Media Consortium, an international advocacy consortium, and the EDUCAUSE Learning Initiative (U.S.). In addition to mobile devices the following technologies are predicted to have an impact: cloud computing, geo-everything, the personal web, semantic-aware applications, and smart objects. ICT scepticism is not without foundation, however. Researchers at Duke University (U.S.) found that a decline in reading and mathematics achievement was associated with children in Grades 5 to 8 gaining access to Internet-enabled home computers. Their research in Scaling the Digital Divide: Home Computer Technology and Student Achievement (PDF), concluded that universal access to home computers with high-speed Internet would likely broaden rather than narrow current achievement gaps.

A number of organizations examined the benefits of technology-based student engagement and assessment techniques. In Game Changer: Investing in Digital Play to Advance Children's Learning and Health (PDF), a policy brief by the Joan Ganz Cooney Center, it is claimed that "digital games show significant potential to promote children's growth and healthy development." Moreover, the brief argues that digital games can teach content, skills, creation of artefacts, and systems of thinking. Along a similar vein, Futurelab published a case study of their Fountaneers project, a primary school project that allowed teachers and students to work collaboratively on a programmable water fountain. The case study, Fountaineers: Exploring the impact of a whole-school co-design project (PDF), argues that the project uncovered a "reservoir of untapped potential" between teachers and students. The ability to work as co-learners and co-researchers increased engagement and motivation in learning. The report recommends that curriculum perspectives are widened, co-design is given greater consideration, and outdoor spaces are given consideration as learning environments. Assessment relics, such as fill-in-the-bubble tests, were targeted by Education Sector (U.S.) and the European-based Argunaut Project. Education Sector argued that more advanced technology-enabled assessment practises should be implemented in today's schools. The report, Beyond the Bubble: Technology and the Future of Student Assessment (PDF), argues that advanced techniques that can evaluate complex skills, such as hypothesis development, should be incorporated when assessing students. Complementing this, European and Israeli researchers have developed a system to enhance classroom interaction by using online discussion tools. The project, Argunaut: An Intelligent Guide to Support Productive Online Dialogue, provides the moderator of an online discussion with quantitative and qualitative data on participants' comments. The system evaluates how frequently participants are commenting, and also assesses the kinds of comments being made. These data are then 'mapped' into graphical representations for the moderator, so that he/she can better direct the conversation.

Related *Education Canada* reading:

Produits multimédias : médiation ou médiatisation? (PDF), by François Mangenot (Winter 2009)

Comprendre le concept de force : investigation collective et deux types d'usages des TIC (PDF), by Thérèse Laferrière and Marion Barfurth (Summer 2009)

literacy

Literacy issues were addressed by national, U.S., and U.K. organizations. Much of the Canadian research focused on literacy rates among minorities and early literacy. In the literature review Key Factors to Support Literacy Success in School-Aged Populations: A Literature Review (PDF), CMEC and Statistics Canada provide a detailed picture of Canada's research-based efforts in reading development and instruction. Noted research gaps include limited assessment tools for minority-language students, and minimal research on kindergarten programs. The authors conclude that "a strategic, targeted, and coordinated research agenda" is needed to address shortcomings. Expressing similar concern about minority-language students, CCL argues in Minority Francophone Education in Canada, that literacy rates must be addressed in order to ameliorate socioeconomic and educational

challenges faced by minority Francophones. The article cites a number of reasons for lower literacy rates, including disparities in educational attainment between minority Francophones and majority Anglophones. CCL stresses that parents, schools, and communities must make a greater effort to engage children in French-language learning. According to a subsequent CCL article, Effective literacy strategies for immigrant students, immigrant students face a number of literacy challenges. Citing results from PISA, 15-year-old students in Canada outperform their immigrant peers in reading. CCL recommends a four-pronged strategy to assist struggling newcomers: collaborative reading, systematic phonics and guided reading, multimedia-assisted reading, and structured writing. CCL argues that the proposed strategy has also proven effective in aiding students with low socioeconomic status.

In a National Strategy for Early Literacy (PDF) the Canadian Language and Literacy Research Network proposed a national strategy aimed at improving literacy rates through ECEC. The report reviewed systemic barriers that have hindered literacy rates among children, including limited access to ECEC programs, libraries, and other resources. Citing the socioeconomic benefits of higher literacy rates, the report recommends more initiatives for early learning, improved teaching strategies, greater community involvement, and increased public awareness and resource sharing. Researchers at the U.S. National Institute for Literacy further supported early literacy initiatives in Developing Early Literacy: Report of the National Early Literacy Panel (PDF). Based on the meta-analyses of approximately 500 research articles, the report found that "conventional reading and writing skills that are developed in the years from birth to age 5 have a clear and consistently strong relationship with later conventional literacy skills." In addition, several other precursor literacy skills, such as alphabet knowledge and phonological awareness, were closely related to later literacy development.

An independent U.K. report by Sir Jim Rose, an education consultant, argued that early identification of students with dyslexia is essential to addressing their learning needs. The report, Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties (PDF) further argues that early identification must be complemented by effective intervention and teaching. The report advocates teachers undertake specialized training, districts provide adequate monitoring techniques, intervention programs be strengthened, and parents remain informed of children's literacy needs.

post-secondary education and youth transitions

Research from Canada focused on Ontario's apprenticeship program, while American researchers examined the impact of single-sex schools, and Finish researchers examined burnout rates among girls.

In Apprenticeship Training in Ontario: Literature Review and Options for Further Research (PDF), the Higher Education Quality Council of Ontario uses existing literature to provide an overview of the apprenticeship system in Ontario, Canada, and abroad. The paper identifies potential challenges that face apprentices and employers, and also examines future research projects designed to assess the apprenticeship system.

American researchers at the University of California, Los Angeles (U.S.) found that graduates from all-girls schools were more academically inclined than co-educational graduates. The report, Women Graduates of Single-Sex and Coeducational High Schools: Differences in their Characteristics and the Transition to College (PDF), analyzes data from the Freshman Survey, an annual survey administered to first-year university students. Graduates from all-girls schools displayed greater academic engagement, higher SAT scores, greater interest in graduate school, higher academic self-confidence, higher confidence in math ability and computer skills, and greater political engagement.

Research from the University of Jyväskylä (Finland) shows that the transitional phase between primary and secondary school can be a turbulent time for academically inclined girls. In The role of educational track in adolescents' school burnout: A longitudinal study, students transitioning from primary to secondary school in academic streams were more likely to experience burnout (exhaustion, cynicism, and feelings of inadequacy) than those in general streams. Overall, weaker performing students experienced greater burnout than higher performing students, and girls were more likely to experience burnout than boys. Findings suggest that educational environment is more important than the actual transition in shaping students' perceptions.

Related *Education Canada* reading:

Debunking Myths: The B.C. Student Transitions Project (PDF), by Devron Gaber and Joanne Heslop (Winter 2009)

school safety

Canadian researchers addressed school safety through studies on peer victimization and youth crime prevention. In the article The Effects of Peer Victimization and Physical Aggression on Changes in Internalizing From First to Third Grade (PDF), it was found that depressed or anxious first graders risked being bullied in the third grade. Children were asked to report experiences of victimization, while parents and teachers were asked to rate the child's problems and social competence. The authors concluded that "raising awareness of the risks for peer abuse for sad/anxious and aggressive children is essential."

In Kids, Crime and Care: Youth Justice Experiences and Outcomes (PDF), the Representative for Children and Youth found that youth in government care are at a higher risk of being involved with the justice system. The report drew on data from more than 50,000 children (age 11) over a 10-year period. To minimize this risk, the authors recommend that by September 2009 every school in B.C. should "assign a single staff person to oversee education planning, monitoring and attainments of the children in care that attend their school."

Related *Education Canada* reading:

Making Schools Safer? The Unintended Consequences of Good Intentions (PDF), by Julian Tanner (Summer 2009)

How Safe are Our Teachers? (PDF), by Lynda Younghusband (Summer 2009)

La prévention de la violence et de l'échec scolaires (PDF), by Daniel Favre (Theme 2009)

social impacts and outcomes of education

Reports from national and international bodies addressed dropout rates, post-secondary aspirations, science knowledge among youth, and the promotion of physical activity. According to Cost Estimates of Dropping Out of High School in Canada by CCL, on an annual basis the Canadian government will spend more than $2,500 on employment insurance and $4,000 on social assistance for each high school dropout. Moreover, each high school dropout will earn less over the course of their life and face fewer years of good health. The report concludes, "that the failure to complete a high school education carries with it astounding economic costs to individuals and the state." The C.D. Howe Institute echoed similar concern in, Dropouts: The Achilles' Heel of Canada's High-School System (PDF), arguing that provincial school systems need to address the low education outcomes of francophone Quebecers and Aboriginals. Recommendations include: targeting children in at-risk communities, creating intervention programs, and improving access to early childhood education programs. Research from Measuring the Effectiveness of Student Aid, a Canadian research initiative by the Educational Policy Institute and the School for Policy Studies at Queen's University, revealed a gendered relationship between high school grades and university participation. The report, The University Gender Gap: The Role of High School Grades (PDF), drew on data from YITS, and attributed grade disparities to effort and aspiration. Males exerted less effort when in high school, while females were more likely to aspire for a university degree. The author calls for "remedial action" to address the gap, with particular attention to males enrolled in language courses. According to a report by CCL, matriculation can also be hindered by financial uncertainty. The report, Where did they go? Post-Secondary Experiences, Attitudes & Intentions of 2005/06 BC High School Graduates Who Did Not Pursue Public Post-Secondary Education in British Columbia by Fall 2007 (PDF), found low post-secondary transition rates in males, aboriginals, those from specific regions of the province, and those who did not pursue an academic path in high school.

Relative to international peers, Canadian students surveyed in OECD's PISA fared well above the OECD average in environmental science and geoscience. Canada placed third on the environmental science performance index, and fourth on the geoscience performance index. The report, Green at Fifteen? How 15-year-olds Perform in Environmental Science and Geoscience in PISA (PDF), also found that gender, migrant background, and socioeconomic status influenced student performance. Despite Canada's noteworthy performance, another OECD report, Top of the Class - High Performers in Science in PISA 2006 (PDF), argues that more should be done to encourage top science students to pursue science related careers, especially in advanced science. Canadian students fell short of the OECD average with approximately 35% of top science students placing below the average motivation level of lower performing peers.

According to School-Based Physical Activity Programs for Promoting Physical Activity and Fitness in Children and Adolescents Aged 6-18, by researchers at McMaster University in Hamilton, Ontario, school-based physical activity interventions have a positive impact on minimizing television watching, decreasing blood cholesterol, and increasing aerobic capacity. School-based interventions, however, are not effective in increasing the number of children who are active during leisure time, reducing body mass index, and lowering systolic and diastolic blood pressure.

glossary of terms

Statistics Canada | A member of the Industry Portfolio, produces statistics that help Canadians better understand their country—its population, resources, economy, society and culture. www.statcan.gc.ca

Canadian Council on Learning (CCL) | A research organization that provides information about effective approaches to learning for learners, educators, employers and policy-makers. www.ccl-cca.ca

Organisation for Economic Co-operation and Development (OECD) | An international organization where 30 countries, including Canada, work together to address the economic, social and governance challenges of globalisation as well as to exploit its opportunities. The Programme for International Student Assessment (PISA) is an OECD initiative. www.oecd.org

Council of Ministers of Education, Canada (CMEC) | An intergovernmental body that provides leadership in education at the pan-Canadian and international levels and contributes to the fulfilment of the constitutional responsibility for education conferred on provinces and territories. www.cmec.ca

Program for International Student Assessment (PISA) | Programme for International Student Assessment. A cyclical study of the reading, mathematics and scientific skills of 15-year-olds in participating countries. PISA is a project of the OECD. www.pisa.oecd.org

Canadian Youth in Transition Survey (YITS) | A longitudinal survey undertaken jointly by Statistics Canada and Human Resources and Skills Development Canada. This survey is designed to examine the major transitions in the lives of youth, particularly between education, training and work. http://ww.statcan.gc.ca/imdb-bmdi/4435-eng.htm

Futurelab | An independent U.K. research organization that is dedicated to transforming teaching and learning, through the use of innovative practice and technology. www.futurelab.org.uk

Joan Ganz Cooney Center | A U.S. research organization that aims to catalyze and support research, innovation and investment in digital media technologies to advance children's learning. www.joanganzcooneycenter.org

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