EARLY DEVELOPMENT INSTRUMENT

Interpretation Toolkit

T A B L E
OF
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WHY DO THE EARLY YEARS MATTER?

Research is increasingly discovering what happens in early childhood plays a big role in lifelong health, well-being, and learning. Brain development happens quickly in the early years of life. By the time a child enters kindergarten more brain connections will have been made than between kindergarten and adulthood. Positive experiences during this time can help the brain develop in healthy ways. Negative experiences are harmful to brain development and can have lasting impacts. As early childhood lays the foundation for the future, it is very important that we do everything we can to support healthy development.
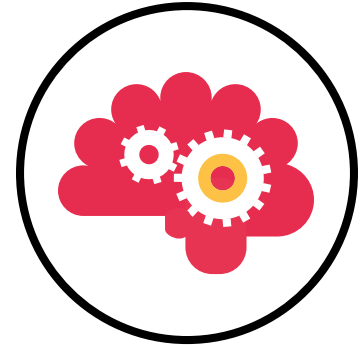
By using the Early Development Instrument (EDI) to collect information on children's strengths and weaknesses we can understand where children need the most help. Research using the EDI has found that children identified as being vulnerable in kindergarten are more likely to have problems in grade 3, 6, and even high school. We cannot assume children with difficulties early on will simply grow out of their problems. There is a real risk their difficulties early on in school will predict difficulties later in life, both in school and beyond.

Thankfully, many common problems faced by children are preventable, or can at least be improved, with the help of early recognition and management. Providing help early on is likely to be more effective and less costly than providing help later in life. That's because the brain is developing rapidly at this age, which provides a unique opportunity to make the biggest positive impact. By identifying and addressing areas of need during the early years we can increase the chances of children reaching their greatest potential.

> All kinds of problems show up in children that could have been prevented with a little more resources, a bit more access to good quality child care, or a playground.
>
> Dr. Magdalena Janus

> The challenge in Canada is to make sure all kids have a full participation in life and that the things I value for my kids are available to all Canadian kids.
>
> Dr. David (Dan) Offord

The EDI measures children's ability to meet age-appropriate developmental expectations across five domains:

Physical Health & Well-Being

Physical readiness for school day
Physical independence
Gross and fine motor skills

Social Competence

Overall social competence
Responsibility and respect
Approaches to learning
Readiness to explore new things

Emotional Maturity

Prosocial and helping behaviour
Anxious and fearful behaviour
Aggressive behaviour
Hyperactivity and inattentive behaviour

Language & Cognitive Development

Basic literacy
Interest in literacy/numeracy and memory
Advanced literacy
Basic numeracy

Communication Skills and General Knowledge

Each domain, except for Communication Skills and General Knowledge, is divided into smaller subdomains. These represent more specific skills and behaviours and can be used to further explore children's strengths and weaknesses.
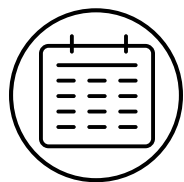

103-item questionnaire

asking teachers about observable skills and behaviours of their students.

Kindergarten teachers complete

an EDI questionnaire on each of their students.

Completed in February and March

so teachers have enough time to know their students well and ensure EDI results are comparable across implementations.

Although EDIs are completed on individual students, the results are always reported on at a group level. Some examples of how students are grouped include: by school, school board or district, community/neighbourhood, municipality, province/territory, or country.

EDI DOMAINS & QUESTIONS

Physical Health & Well-Being

Qa2 Over or underdressed for school-related activities
Qa3 Too tired/sick to do school work
Qa4 Late
Qa5 Hungry
Qa6 Is independent in washroom activities most of the time
Qa7 Shows an established hand preference (right vs left of vice versa)
Qa8 Is well coordinated (moves without running into things or tripping over things)
Qc58 Sucks a thumb/finger
Qa9 Proficiency at holding pens, crayons or brush
Qa10 Ability to manipulate objects
Qa11 Ability to climb stairs
Qa12 Level of energy throughout the school day
Qa13 Overall physical development

Social Competence

Qc5 Follows rules and instructions
Qc6 Respects the property of others
Qc7 Demonstrates self-control
Qc9 Demonstrates respect for adults
Qc10 Demonstrates respect for other children
Qc11 Accepts responsibility for actions
Qc16 Takes care of school materials
Qc27 Shows tolerance to someone who made a mistake (e.g. when a child gives a wrong answer to question posed by the teacher)
Qc12 Listens attentively
Qc13 Follows direction
Qc14 Completes work on time
Qc15 Works independently
Qc17 Works neatly and carefully
Qc22 Is able to solve day-to-day problems by him/herself
Qc23 Is able to follow one-step instructions
Qc24 is able to follow class routines without reminders
Qc25 Is able to adjust to changes in routines
Qc1 Overall social/emotional development
Qc2 Ability to get along with peers
Qc3 Plays and works cooperatively with other children at the level appropriate for his/her age
Qc4 Is able to play with various children
Qc8 Shows self-confidence
Qc19 Is eager to play with a new toy
Qc20 Is eager to play a new game
Qc21 Is eager to play with/read a new book
Qc18 Is curious about the world

Emotional Maturity

Qc28 Will try to help someone who has been hurt
Qc29 Volunteers to help clear up a mess someone else has made
Qc30 If there is a quarrel or dispute will try to stop it
Qc31 Offers to help other children who have difficulty with a task
Qc32 Comforts a child who is crying or upset
Qc33 Spontaneously helps to pick up objects which another child has dropped
Qc34 Will invite bystanders to join in a game
Qc35 Helps other children who are feeling sick
Qc42 Can't sit still, is restless
Qc43 Is distractible, has trouble sticking to any activity
Qc44 Fidgets
Qc47 Is impulsive, acts without thinking
Qc48 Has difficulty awaiting turn in games or groups

Emotional Maturity

Qc49 Cannot settle to anything for more than a few moments
Qc50 Is inattentive
Qc36 Is upset when left by parent/guardian
Qc51 Seems to be unhappy,sad or depressed
Qc52 Appears fearful or anxious
Qc53 Appears worried
Qc54 Cries a lot
Qc55 Is nervous, high-strung, or tense
Qc56 Is incapable of making decisions
Qc57 Is shy
Qc37 Gets into physical fights
Qc38 Bullies or is mean to others
Qc39 Kicks, bites, hits other children or adults
Qc40 Takes things that do not belong to him/her
Qc41 Laughs at other children's discomfort
Qc45 Is disobedient
Qc46 Has temper tantrums

Language & Cognitive Development

Qb27 Is able to sort and classify objects by a common characteristic (e.g. shape,color,size)
Qb28 Is able to use one-to-one correspondence
Qb29 Is able to count to 20
Qb30 Is able to recognize 1-10
Qb31 Is able to say which number is bigger of the two
Qb32 Is able to recognize geometric shapes (triangle, circle, square)
Qb33 Understands simple time concepts (e.g. today, summer, bedtime)
Qb15 Is able to read simple words
Qb16 Is able to read complex words
Qb17 Is able to read simple sentences
Qb20 Is interested in writing voluntarily (and not only under the teacher's direction)
Qb22 Is able to write simple words
Qb23 Is able to write simple sentences
Qb9 Is generally interested in books (pictures and print)
Qb10 Is interested in reading (inquisitive/curious about the meaning of printed material)
Qb24 Is able to remember things easily
Qb25 Is interested in mathematics
Qb26 Is interested in games involving numbers
Qb8 Knows how to handle a book (e.g. turn a page)
Qb11 Is able to identify at least 10 letters of the alphabet
Qb12 Is able to attach sounds to letters
Qb13 Is showing awareness of rhyming words
Qb14 Is able to participate in group reading activities
Qb18 Is experimenting with writing tools
Qb19 Is aware of writing directions in English (left to right, top to bottom)
Qb21 Is able to write his/her name in English
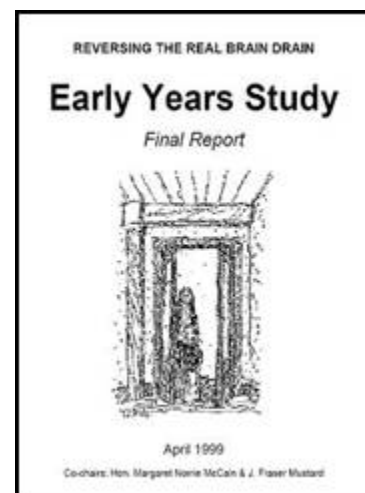
Communication Skills and General Knowledge

Qb1 Ability to use language effectively in English
Qb2 Ability to listen in English
Qb3 Ability to tell a story
Qb4 Ability to take part in imaginative play
Qb5 Ability to communicate own needs in a way understandable to adults and peers
Qb6 Ability to understand on first try what is being said to him/her
Qb7 Ability to articulate clearly, without sound substitution
Qc26 Answers questions showing knowledge about the world

HISTORY OF THE EDI

THE IDEA. In the late 1990s—thanks to the popularization of neuroscientific findings about early brain development—interest was building in understanding how Canadian children were doing. This interest was captured in the 1997 Federal Speech from the Throne, which committed to "measure and report on the readiness to learn of Canadian children".

In 1999, Fraser Mustard and Margaret McCain published the "Early Years Study", a comprehensive review of evidence and practical recommendations on how to use the new knowledge about brain development to benefit all children.

One of the study's recommendations was to introduce a 'readiness to learn' measure for children entering school that could help communities know how well their children are doing.

REVERSING THE REAL BRAIN DRAIN

Early Years Study

Final Report

April 1999

Co-chairs: Hon. Margaret Norrie McCain & J. Fraser Mustard

THE DESIGN. A checklist to be completed by kindergarten teachers was created based on instruments used in the National Longitudinal Survey of Children and Youth (NLSCY), enriched with newer concepts relevant to readiness for school and developmental health. Kindergarten was chosen because it is the first organized educational step accessible to all children in which close to 90% of eligible children participate.

Using reports, and not direct assessment, increased the feasibility of acquiring data difficult to collect through a direct test, such as social and emotional development. Relying on teachers allowed for population-level collection. Data on a whole population of 5-year-olds provided the opportunity to uncover patterns and differences that could otherwise be undetectable.

THE INSTRUMENT. The tool is called the Early Development Instrument: A Population-based Measure for Communities, (EDI for short). Developing its items involved consultations with educators, in collaboration with the Early Years Action Group, and the Parenting and Literacy Centres.

Preliminary versions were validated at several sites in Ontario. In the 1998-1999 school year, the instrument was implemented in all kindergarten classes in the Metro Toronto and North York sections of the Toronto District School Board, as well as in several other communities across the country. The final version was established in 2000, based on data from over 16,000 students collected in the spring of 1999. In 2002, the EDI core items were revised by modifying answer options to several items.

THE OUTCOME. A partnership with Human Resources Development Canada continued through the federally-funded Understanding the Early Years Initiative (UEY). In 2000, the EDI was implemented in five communities across the country (each in a different province), along with the NLSCY on a representative sample, and a community mapping study. These, together with the EDI results, provided rich information about the state of a children's healthy development in a each community.

During this time the EDI kept growing. A partnership was established with another set of five communities in Ontario, with several others approaching the Offord Centre directly for implementation. The total number of communities that participated in the 1999-2000 school year was 18, with approximately 45,000 students in total.

These implementations helped the EDI become better known across the country. Since its inception, the EDI data have been collected on over a million children in Canada, with data collection in many provinces and territories on a regular basis.
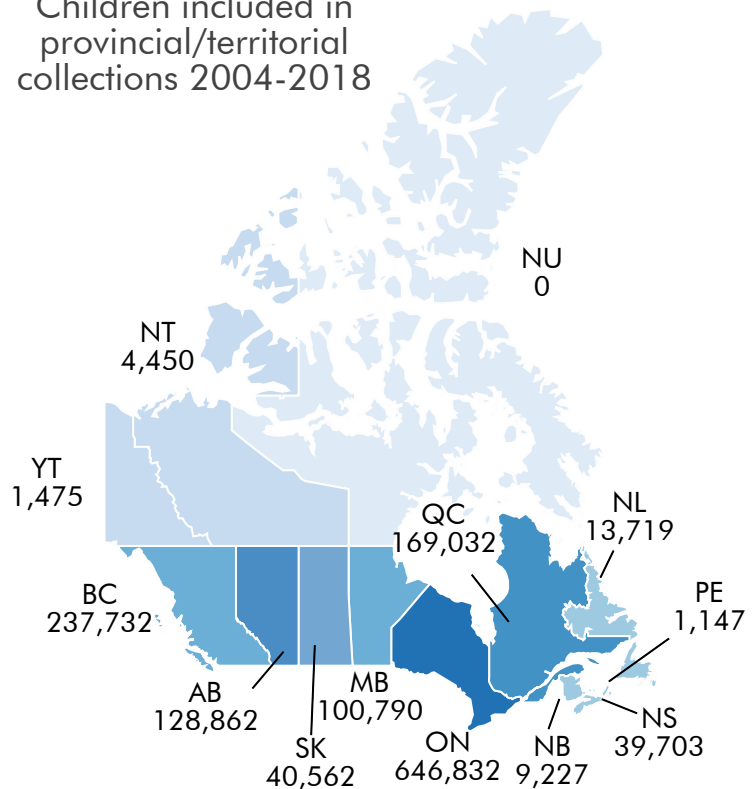
WHERE HAS THE EDI BEEN COLLECTED?

The EDI started in Canada and has been implemented in every province and territory.

Please visit our website for a list of collections by year.

https://edi.offordcentre.com/about/history-of-the-edi/

Children included in provincial/territorial collections 2004-2018

NU
0

NT
4,450

YT
1,475

QC
169,032

NL
13,719

BC
237,732

PE
1,147

AB
128,862

MB
100,790

SK
40,562

ON
646,832

NB
9,227

NS
39,703

INTERNATIONAL COLLECTIONS

The EDI has been implemented in over 30 countries. These implementations range in size from small research projects, like in Brazil, to large, national implementations, like in Australia.
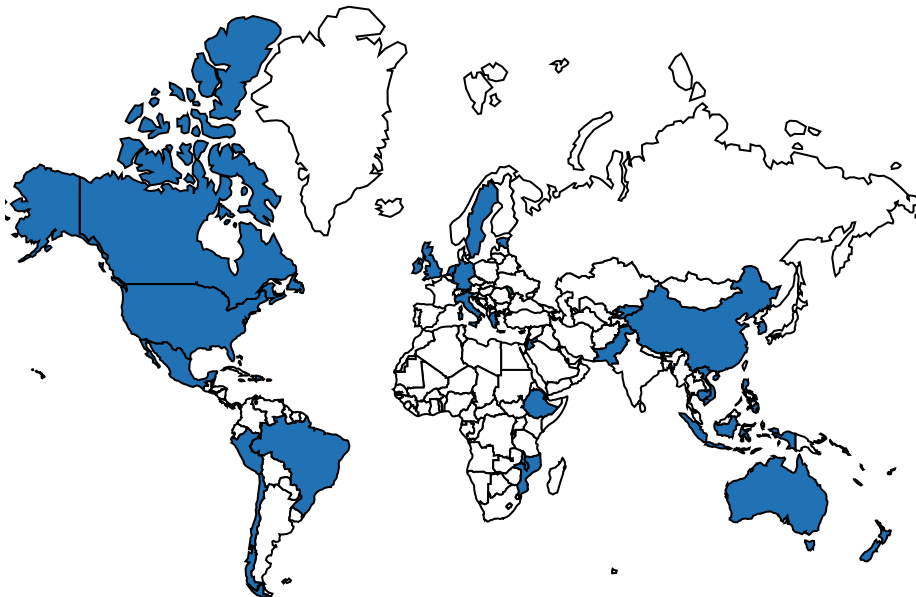
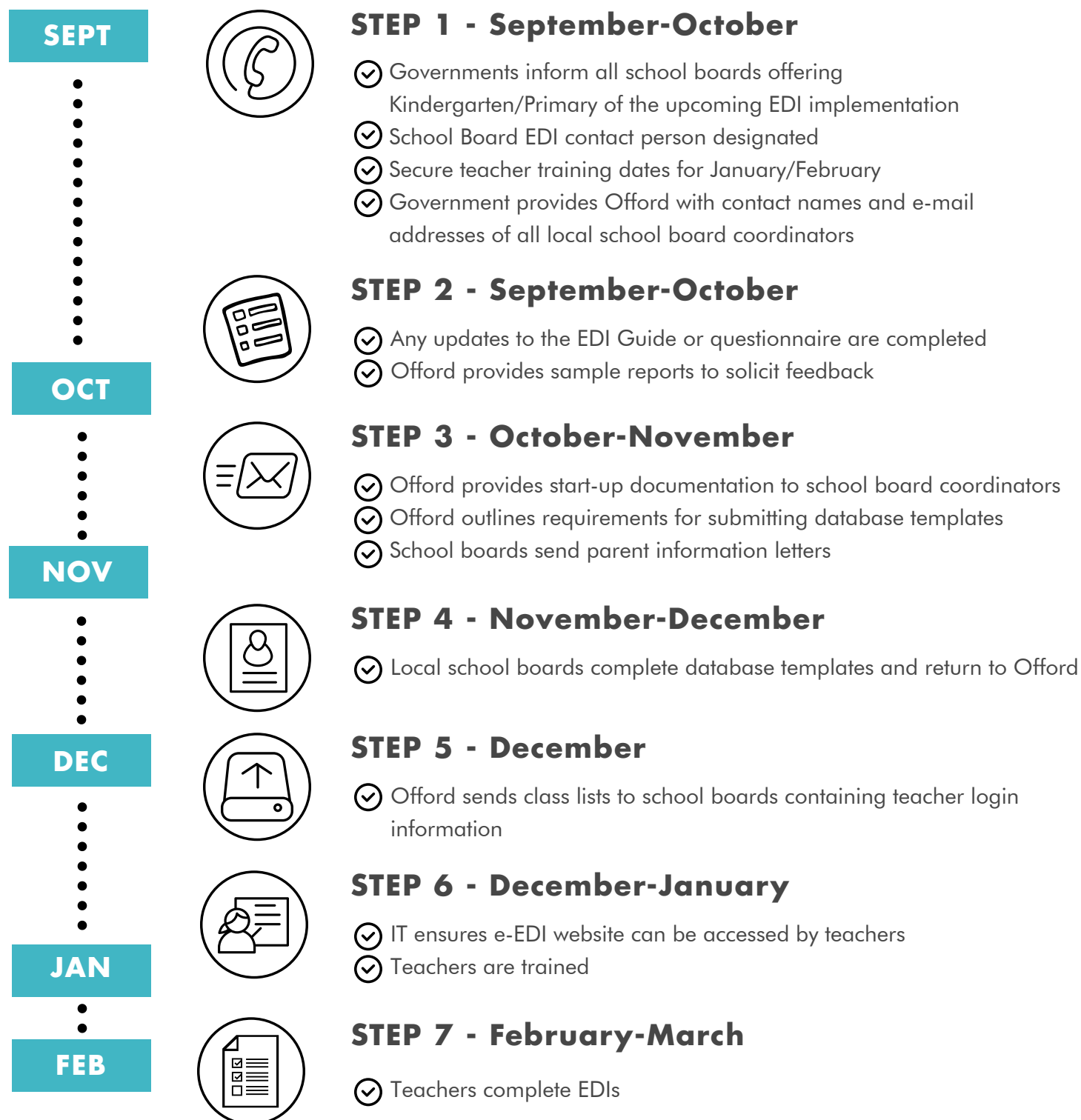The EDI has been adapted into different languages and successfully validated in many countries.

The adapted versions include demographic information and all the "core" items, unless any of them are clearly not applicable for cultural or language reasons.

IMPLEMENTATION PROCESS

Teachers typically complete the EDI in February and March, yet the planning that goes into implementing the EDI begins much earlier. By the time the school year starts in September both the Offord Centre and its project partners have started a process ensuring once teachers sit down to fill out the EDI everything runs smoothly.

The following timeline is a general overview of what goes into an EDI implementation. Milestone dates may differ internationally based on when the school year begins and ends.

SEPT

STEP 1 - September-October

- ⊘ Governments inform all school boards offering Kindergarten/Primary of the upcoming EDI implementation
- ⊘ School Board EDI contact person designated
- ⊘ Secure teacher training dates for January/February
- ⊘ Government provides Offord with contact names and e-mail addresses of all local school board coordinators

STEP 2 - September-October

- ⊘ Any updates to the EDI Guide or questionnaire are completed
- ⊘ Offord provides sample reports to solicit feedback

OCT

STEP 3 - October-November

- ⊘ Offord provides start-up documentation to school board coordinators
- ⊘ Offord outlines requirements for submitting database templates
- ⊘ School boards send parent information letters

NOV

STEP 4 - November-December

- ⊘ Local school boards complete database templates and return to Offord

DEC

STEP 5 - December

- ⊘ Offord sends class lists to school boards containing teacher login information

STEP 6 - December-January

- ⊘ IT ensures e-EDI website can be accessed by teachers
- ⊘ Teachers are trained

JAN

STEP 7 - February-March

- ⊘ Teachers complete EDIs

FEB

EDI SCORES

Children receive a score on each domain of their development. Children's scores are then averaged and reported on at a group level.

There is no total score on the EDI. The five EDI domains are not cumulative and explore different concepts. It is not uncommon that a child has difficulties in one area, but not others. Using a total score would mask these difficulties.
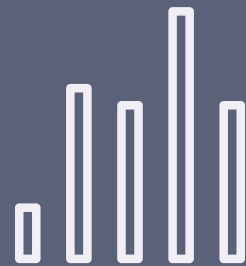
DISTRIBUTION OF EDI SCORES

Scores from the baseline collection of EDI data have been used to create cut-off scores that divide children's scores from all subsequent collections into three categories.

At Risk
Scores between the bottom 10-25% of baseline scores

Vulnerable
Scores below the bottom 10% of baseline scores

On Track
Scores above the bottom 25% of baseline scores

A site's baseline collection is its first full implementation. It can be collected over one or multiple years.

The baseline is the collection used as a comparison for all future collections.

Comparing collections to the baseline allows us to determine whether children's developmental outcomes are getting better or worse.

VULNERABILITY

Children whose EDI scores on any domain fall below the lowest 10% of scores from the baseline collection are referred to as vulnerable on that domain.

Setting the lowest 10% of scores as the cut-off captures children who are struggling, but not only those who are doing so visibly to have already been identified as needing help.

Research shows that without support, these children are more likely to experience poorer outcomes later in life: academically, emotionally, and in their relationships with peers.

Approximately the bottom 10% of scores from a site's baseline collection set the vulnerability cut-off

Data collection across Canada shows that 25% or more of kindergarten children are vulnerable in at least one area of development.

Although both vulnerability and mean summary statistics are appropriate, the Offord Centre usually reports on the percentage of children vulnerable because it is easier to interpret.

The percentage of children vulnerable on one or more domains is used as a measure of overall vulnerability. Higher vulnerability indicates that a greater percentage of children are struggling.

High vulnerability, or vulnerability that is increasing, is bad.

Low vulnerability, or vulnerability that is decreasing, is good.

INTERPRETING RESULTS

A site's vulnerability results are shown alongside a comparison group to add context to the results.

This comparison group is often a current provincial/territorial collection, a baseline provincial/territorial collection, or a national normative collection.
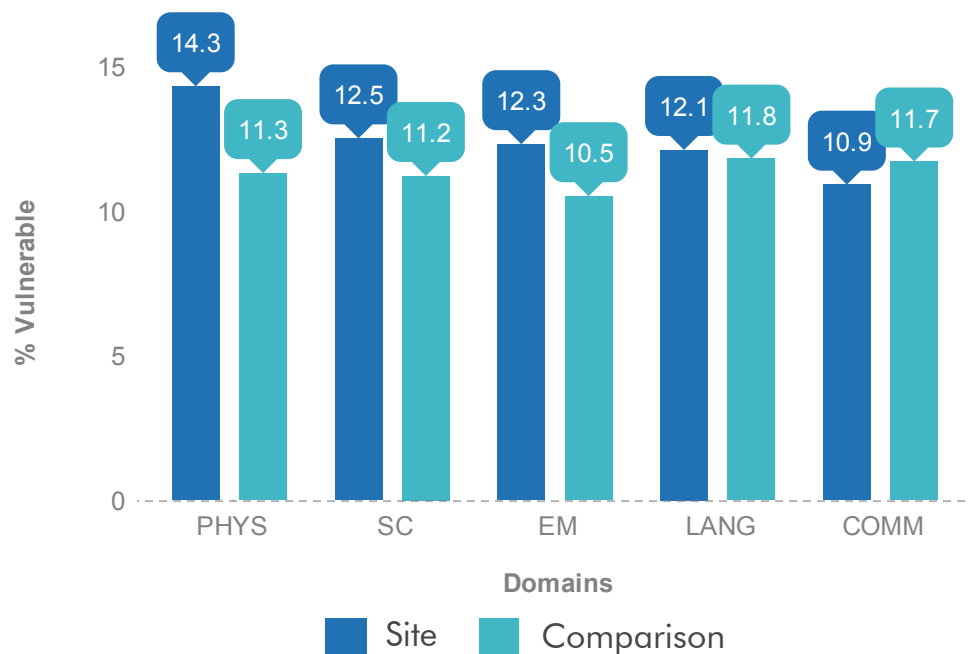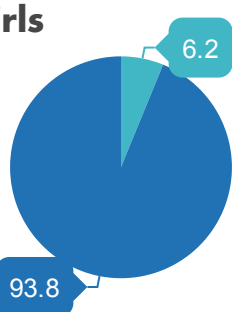

Comparing a site's results to a larger collection allows stakeholders to see whether the results mirror the larger trend.

Boys

10.6

89.4

Girls

6.2

93.8
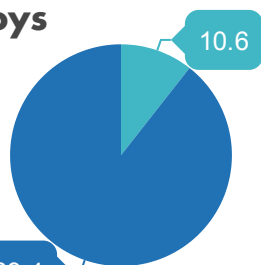
Vulnerable

Not vulnerable

Although understanding overall vulnerability for a site is important, it does not tell the whole story.

Comparing children based on certain demographics is an effective way of understanding how contextual factors in a site may be influencing EDI vulnerability rates.

Some factors which have been shown to influence EDI vulnerability include sex, age, language-learner status, and socioeconomic status.

CHANGE OVER TIME

When exploring trends in children's development over time, what we want to know is whether children are doing better, worse, or about the same as in the past. Although the vulnerability rate for an area may have changed over time, we want to know whether or not that change is large enough to be meaningful. A meaningful changes means we are confident that it is real, rather than a result of uncertainty due to sampling or measurement issues.

The Human Early Learning Partnership at the University of British Columbia developed a method to help communities and stakeholders better understand change in EDI vulnerability rates over time. The method calculates a threshold to determine whether the change in EDI vulnerability rate is large enough to be considered statistically meaningful. The threshold is based on the number of children in each site, so the same percent change in vulnerability rate may be statistically meaningful for one site but not another. The fewer children in a site, the larger a change needs to be in order to be considered meaningful. The figure below offers an example of meaningful change for a small and large site.

SCHOOL 1

TIME 1

52 students

34% Vulnerability

TIME 2

63 students

26% Vulnerability

- Change in vulnerability from Time 1 to Time 2: -8%
- Threshold for meaningful change: 9.5
- NOT a meaningful change

SCHOOL 2

TIME 1

125 students

34% Vulnerability

TIME 2

144 students

26% Vulnerability

- Change in vulnerability from Time 1 to Time 2: -8%
- Threshold for meaningful change: 6.2
- A meaningful change

To calculate whether a change in your site is meaningful please visit http://bit.ly/2QuDqxY

CHILDREN WITH SPECIAL NEEDS

Under the definition of special needs is a broad range of disorders affecting behaviour, communication, as well as physical or intellectual development. Children with special needs often contend with multiple problems, which require tailor-made, flexible support. These children may also have above average abilities in certain areas, adding to the complexity of providing appropriate support to help them reach their optimal development.

General Definition

- Child has a diagnosis provided by medical or health practitioners.
- Child has special education needs.
- Does not include children who teachers only suspect have special needs.

* Exact definition of special needs varies by province/territory.

Because of the unique challenges associated with helping children with special needs, they are reported on separately so as not to lose the individuality of their results.

Pan-Canadian EDI data indicate approximately 3-4% of kindergarten children have some kind of special need.

A disproportionate amount of children with special needs are male.

70% 30%
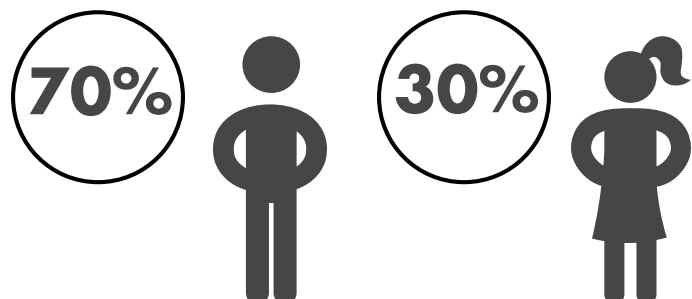
When conducting research with special needs populations it is important to consider the sample size, especially when analyzing by specific disorder.

In addition, we need to be cautious when comparing the special needs group at one site versus the larger population of children with special needs. The composition of the special needs group in each individual site may not be reflective of the province-wide or national group of children with special needs.

ENGLISH LANGUAGE LEARNERS

In most provinces/territories, children are identified as having the ELL/ESL/ALF/PANA (depending on the province and school board) status if they are not fluent enough in the language of instruction to easily follow the classroom educational activities.

Acronyms

- ELL - English language learner
- ESL - English as second language
- ALF - Actualisation linguistique en français
- PANA - Programme d'appui aux nouveaux arrivants

After controlling for socioeconomic status, children who are English/French language learners have similar EDI scores as their peers on all domains except for Communication Skills and General Knowledge, in which they score lower.

FRENCH IMMERSION

French Immersion teachers are asked to respond to the EDI questions based on their observations of the children's abilities in English. It would be unfair and inaccurate to measure the children's ability in French as for most students this is their first exposure to the language and assessing their abilities in French would put them at an unfair disadvantage.

A program in anglophone schools which introduces French language through immersion, however, the main language of the schools remains English.

Acquisition of a second language is strongly based on the success of the child's acquisition of their first language and many of the skill sets are interchangeable. The questions on the EDI reflect transferable skills and abilities. Therefore, if the child has mastered these skills in French they have most likely also achieved them in English as well.

NEXT STEPS

Getting back EDI results is exciting. But it can also be a lot of information to process and it can be hard to know what comes next. Here are some tips to help determine the next steps.
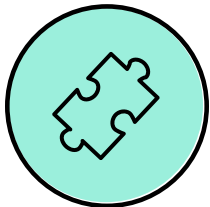
STEP #1: REVIEW REPORTS

- Review your reports with colleagues
- Consult EDI interpretation resources
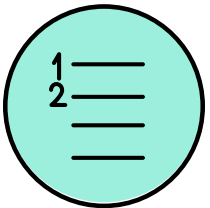- Ask questions

STEP #2: CELEBRATE SUCCESSES

- Look at % of children 'On Track'
- Are there any areas improving over time?

STEP #3: ADD CONTEXT

- Explore local data
- Examine how local data may explain EDI results
- Example: Are demographics changing in an area? Are there more or fewer resources? (e.g., libraries, preschools)

STEP #4: PRIORITIZE

- Identify areas of greatest need
- Review domains and subdomains
- Reminder: Subdomains show the specific areas driving domain vulnerability
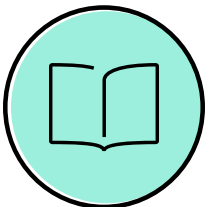
STEP #5: SEEK RESOURCES

- Take advantage of available resources to help inform your action plan (e.g., literature, early years sector)
- Consult with experts
- Explore what other communities are doing with results
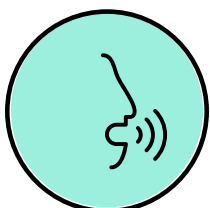
STEP #6: SHARE

- Share results with educators, early years sector, childcare centres, community agencies, etc

WORKING WITH EDI DATA

EDI datasets are large and can be intimidating. Before conducting any analyses it is important to have a clear research question in mind and create a plan. Knowing the specific variables you will need to use to answer your question will make it easier to navigate the datasets. Before you start, there are some general guidelines you need to know.

INCLUSION CRITERIA

Before running any analysis on EDI data you need to ensure you are only including children with valid EDIs. To be included in your analysis children must:

- Be in Senior Kindergarten/Primary ($jksk > 1$)
- Have not been identified as having Special Needs*
  ($SN = 0$)
- Have been in class for more than 1 month
  ($Status = 1$)
- Have a minimum number of items completed on their questionnaire
  ($Valid = 1$)

* Research on students with Special Needs uses the same inclusion criteria with the exception of $SN = 1$

VARIABLES THAT AFFECT EDI SCORES

A number of variables are known to influence EDI scores. If you are conducting analysis it is important to consider accounting for the following:

- Sex: girls tend to have higher scores than boys
- Age: older children tend to have higher scores than younger children
- EFSL: children whose first language is English/French tend to have higher scores in certain domains than children whose first language is not English/French
- SES: children from higher SES neighbourhoods tend to have higher scores than children from lower SES neighbourhoods

EFFECT SIZES

Due to the large number of children in the EDI dataset, there is a very good chance that comparisons between groups will be statistically significant. This does not necessarily mean that the differences are meaningful. It is important to calculate the effect size to determine the size of the difference.

VALIDITY AND RELIABILITY

The EDI has undergone extensive pilot testing to ensure its validity and reliability. It shows consistent results when compared with direct assessment results and parental reports. It has shown predictive and cross-cultural reliability.

For a list of publications on the EDI's reliability and validity please visit our website.

EDI data are most commonly used by educators, communities, and governments to report on the developmental health of populations. Research studies often use the EDI to compare the developmental health of groups and understand its relation to societal factors.

A full bibliography of publications using the EDI is available on our website.

RECOMMENDED READING

Development and psychometric properties of the Early Development Instrument (EDI): A measure of children's school readiness

Monitoring the development of all children: The Early Development Instrument

International research utilizing the Early Development Instrument (EDI) as a measure of early child development

Associations between the Early Development Instrument at age 5, and reading and numeracy skills at ages 8, 10 and 12: A prospective linked data study

Jurisdictional, socioeconomic and gender inequalities in child health and development: Analysis of a national census of 5-year-olds in Australia

Children's development in kindergarten: A multilevel, population-based analysis of ESL and gender effects on socioeconomic gradients

WANT TO LEARN MORE?

Our website has a number of resources available to help you better understand the EDI. Below are a selection of resources which may help you become more familiar with the EDI.

Frequently Asked Questions

The EDI website answers a number of frequently asked questions by:

- Parents
- Teachers
- Researchers

EDI Questionnaires and Guides

You can review the EDI questionnaire under the teacher resources section of the website. You can also consult the EDI guide to see how teachers are instructed to interpret questions. Select a province to view its specific guide/questionnaire.

EDI AND THE EARLY YEARS

A whiteboard video created to give a general overview of the EDI and highlight the importance of the early years of life.
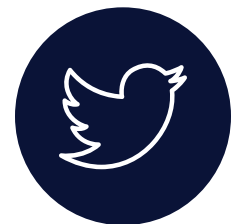
GET IN TOUCH WITH US

905-525-9140 x21474

edisrl@mcmaster.ca

edi.offordcentre.com

@EDI_OCCS

GLOSSARY

Developmental health: The full range of developmental outcomes, including physical and mental health, behavioural adjustment, literacy, mathematics achievement, and more.

On track: The total group of children with scores above the 25th percentile of the distribution.

At risk: The total group of children with scores between the 10th and 25th percentiles of the distribution.

Vulnerable: The total group of children with scores below the 10th percentile cut-off of the distribution.

Domains: Broad areas of development which include physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge.

Subdomains: Each of the five EDI domains is comprised of subdomains that measure a more specific area of development. There are 16 subdomains in total. Children are rated as 'meeting few/no developmental expectations', 'meeting some developmental expectations', and 'meeting all/almost all developmental expectations' on each subdomain.