Science of Early Child Development

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

What is the *Science of Early Child Development* (SECD)?

SECD is an online teaching and learning tool that presents groundbreaking research related to ECD in an accessible, interactive format - like a multimedia textbook.

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

SECD is…

A media-rich ‘live’ curriculum that can be easily updated as new research emerges.

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

A resource that can be used in a variety of ways in any community or sector interested in child & population development to create a common and current knowledge base.

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

Developed in Canada and first released in 2006, the *Science of Early Child Development* team has recently produced two new versions:

1. *Science of ECD, 3rd Edition*

2. *Science of ECD, International Edition*

Partners

- Red River College, MB
- George Brown College, ON
- Atkinson Centre, OISE/UT
- Consultative Group for Early Childhood Care and Development (CG-ECCD)
  - International Edition

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

SECD is informed by the following questions:

What is the new framework for studying child development?

Why is it important for those who work with children & families to understand science related to young children?

How do everyday experiences affect biological pathways with long-term outcomes on health, learning & behaviour?

Does what we do when children are little really affect the long-term health and well-being of the population?

How can we narrow the gap between research and practice?

Why was SECD developed?

- Need for current, accessible material for educators and family support practitioners (new science on brain development)
- Canadian and International version
- Updated regularly

Knowledge transfer

Researchers enthusiastic about narrowing the gap between research and practice – the overarching goal of the project.

College programs in a good position to take on this work with partners ensuring academic integrity.

It's about the science and *practice* of ECD

Findings from neurobiology set the stage for the importance of nurturing and opportunities to explore - and underscore the importance of investing in ECD

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

Content

5 modules:

- Developmental Health
- Brain Development
- Ecology of Childhood
- Coping and Competence
- Communicating and Learning

Each module is a combination of readings, videos, links to websites, case histories, audio clips and interactive activities such as games.

Video clips of researchers and experts act as the 'voice' of the teacher, while images of children, parents and caregivers illustrate messages & link concepts to real life.

Each module had 3 sections:

1. Overview of the topic e.g. Brain Development
2. Research related to the topic
3. Links to Practice

Module 1: Developmental Health

Examples

Developmental Health

Fraser Mustard, Founder of the Canadian Institute for Advanced Research and the Council ECD, explains the importance of investing in early childhood in terms of long term benefits for whole societies.

DH3_Mustard

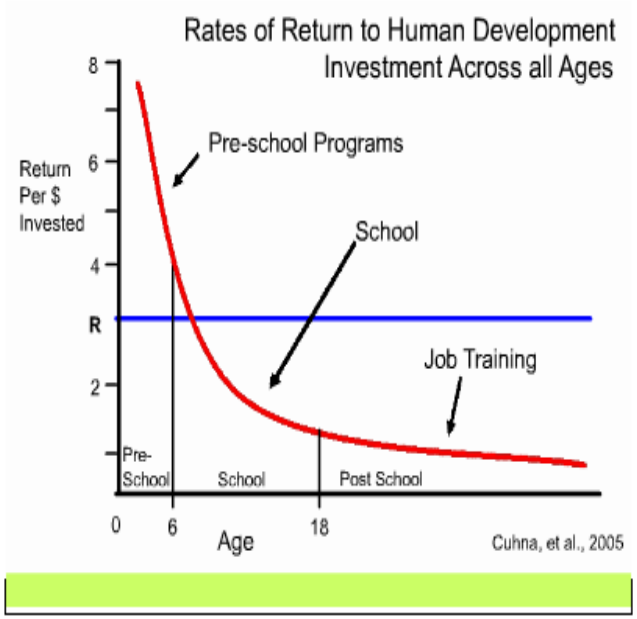
Developmental Health

Table of Contents

3.3.B. The economic rationale

Economic evidence provides a powerful argument for investing in early childhood.

James Heckman, a Nobel prize-winner in economics, and his colleague Flavio Cunha show us that investments in early childhood programs are justified by the returns provided to society as a whole. They demonstrate that early childhood provides an unequalled period for the development of human capital. Each stage of life underpins the next. Investment in the foundation stage of early childhood provides a higher rate of return than investments later in life.



Listen to Fraser Mustard discuss why investing in early child development is the best way to support healthy and competent populations.

View >> (1:23)

Module 2:
Brain Development

Examples

Brain Development

Table of Contents

1. Early brain development

How are children's brains developing during the early years?

How do children learn, acquire language and become social beings?

Why is it important for those working with young children to understand some of the new brain research?

Neuroscience uncovers some of the answers to these questions. The human brain - a complex three pound organ - is at the centre of human development. Our earliest experiences of childhood influence early brain development and reach long into adulthood. At the same time, our brains remain open to environmental influence as long as we are alive.

The brain orchestrates physical, social, emotional, linguistic and cognitive development. It determines personalities, emotions, language, attention, memory, and thinking are based in the brain. Brains govern how we learn, interpret incoming information, behave and the workings of our immune and hormone systems that influence physical and emotional health. Our brains make us who we are.

Genes and experience work together. Genes set the parameters for the basic structures of the developing brain. Experiences and genes interact to establish neural circuits and shape the brain's architecture.

Adults who understand something about brain development can make a big difference in children's growth, learning and development.

Fiona Stanley explains how our new understanding of early brain development helps us see how all the everyday nurturing of babies and small children, the loving interactions that make up the moments of childhood work together to benefit children and society. An understanding of early child development is critical to national well-being.

View >> (3:18)

Fraser Mustard explains why understanding early brain development helps to understand how to set up experiences for young children that are optimal for their development.

View >> (1:22)

Brain Development

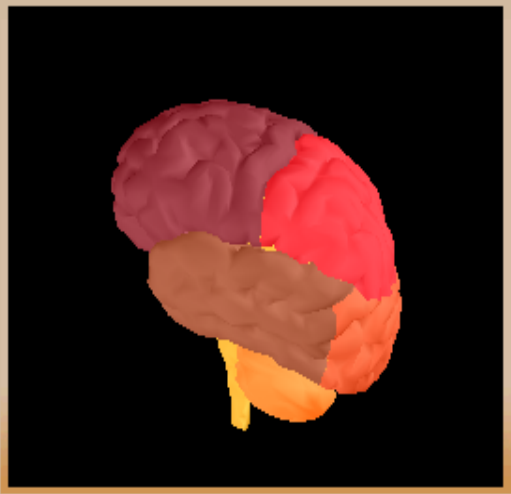
Fiona Stanley explains why people involved in ECD should have some understanding of early brain development.

BD1_Stanley1.mp4

THE SECRET LIFE OF THE BRAIN

3-D Brain Anatomy

Take a three-dimensional tour of the brain.



The brain is an incredible collection of lobes, ventricles, and systems, all working together to enable you to function. Use this interactive feature to explore some of the major areas of your brain.

You can navigate this model in several ways: Use buttons at the bottom left to rotate and zoom the model in 3D. Click on any part of the model itself for more information. Use the pop-up menus at the lower right to explore by brain area or brain function.

Zoom+
Zoom-
Reset
Help

360° Rotate

Learn about

(rollover a brain part)

explore the brain

By Area

By Function

http://courses.scienceofecd.com - Brain Functions - Microsoft Internet Explorer

BRAIN FUNCTIONS

Frontal Lobe	Temporal Lobe
Occipital Lobe	Parietal Lobe
Brain Stem	Cerebellum

sensory

vision & reading

thought & consciousness

balance & body movements

respiration, body temperature, heart rate,

hearing & memory

Done

Internet

Module 3:
The Ecology of Childhood

Examples

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

Table of Contents

1.1.B. Early childhood settings

There are many variations on the types of early child development programs for young children. Depending on the community and cultural context, programming for children can be modelled on different approaches such as, centre-based programs, home day care, workplace – formal and non-formal - ecd programs, mobile crèches, etc.

The types of programs offered to children will depend on the communities in which they are serving, the goals of the program, the partners working to offer the program (parents, community, government and non-governmental partners) as well as the cost.

> *"The menu of possible ECCD strategies and models and variants of models is extensive and rich. There is no one right way to create a program." (Evans, 2000, p.107)*

Early Childhood Counts: A Programming Guide on Early Childhood Care for Development (2000) by J. Evans is a publication of the World Bank that offers extensive information on early child development programs and programming from around the world. It is a valuable resource for those involved in developing and providing early child development supports and services for children. The many different approaches/models are summarized in the following reading.

Read >> Programming Strategies

Reflect

- What early child development programs are operating in your community?
- What is the main focus for these programs i.e. delivering a service to children? support and education for caregivers? etc.
- Is there an area of ECD programming that you would like to see in your community?

The Ecology of Childhood

2.3.A. The effects of physical punishment

Joan Durrant researches attitudes towards physical punishment and societies which have banned the physical punishment of children. She begins by explaining why some parents spank their children.

View >> (2:36)

Durrant goes on to explain the effects of physical punishment on children.

View >> (3:40)

Durrant makes the point that child abuse is on a continuum with spanking – it's physical punishment that has gone out of control.

View >> (2:00)

Reflect

- Do you agree with Durrant's views?
- How does your experience growing up shape your views on physical punishment?

Yet, many people still believe that punishing children does lead to positive changes in children's behaviour. In the next clip, Rose Odoyo, Chief Executive Officer of The African Network for the Prevention and Protection against Child Abuse and Neglect – Kenya Chapter (ANPPCAN), briefly describes the findings from research on corporal punishment in schools.

View >> (2:51)

Ecology of Childhood

Joan Durrant researches attitudes towards physical punishment and societies which have banned the physical punishment of children. She explains the effects of physical punishment on children.

EC2_Durrant2

Module 4:
Coping and competence

Examples

Module 5: Communicating and Learning

Examples

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

Table of Contents

1.1. Learning to communicate

Humans are prepared to communicate from the moment they are born. Janet Werker explains the remarkable spoken language skills of newborns:

View >> (2:46)

Interestingly, adults seem to also be prepared to speak in a certain way to infants. This is called motherese. Janet Werker describes it in the next clip:

View >> (0:59)

Infants are more responsive to higher pitched voices. Simple, clear enunciation is easier for children to understand. This makes motherese perfectly suited to their auditory preferences. It is also adapted to development. Adults modify their language interactions based on children's growing skill and even deaf parents use a form of motherese when signing to their babies (Berk, 2005). Interestingly, this accommodation on the part of adults is largely unconscious.

The following clip shows 12 month old Jakyri who is just learning to talk.

View >> (2:40)

Reflect

- Describe all the different ways in which Jakryi communicates in this clip.
- How does his father support his communication? How well does he understand what Jakyri is trying to say and what does this tell you about their relationship?

The following reading provides an overview of current research in language and literacy learning in the early years. It is part of a language and literacy kit recently developed by The Canadian Child Care Federation, in partnership with the Canadian Language and Literacy Research

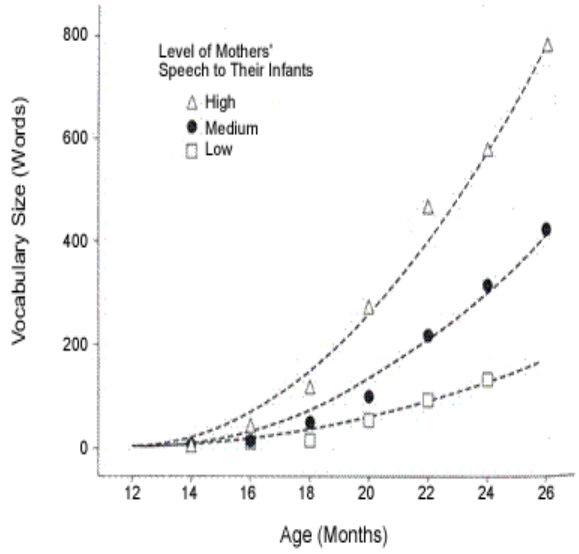
2.2.A. Talking with children

In *Meaningful Differences in the Everyday Experiences of Young American Children*, Betty Hart and Todd R. Risley present fascinating findings regarding children and their language development.

Read >> Summary of Hart & Risley's Study

Effects of Mothers' Speech on Infant Vocabulary

Source: Huttenlocher et al., 1991



Estimated Cumulative Difference in Language

Communicating and Learning

3.2. Literacy experiences are important

Language is the precursor of literacy. Children learn to talk naturally if they are exposed to language. The research indicates that quantity counts — children who hear more and richer language develop greater vocabularies and, in turn, have a better foundation for literacy.

Programs for children can offer many opportunities for children to interact with others as well as engage with materials and in activities that encourage literacy. The following clips of children, in early child development programs in East Africa, show various activities that promote language and literacy.

View >> (0:24)

View >> (1:16)

View >> (1:03)

Reflect

- What other activities can foster language and literacy in children's programs?
- In programs for children, how can language and literacy be promoted in the physical environment?

Materials that promote literacy can be simple and homemade yet they can have quite an impact on children's early literacy skills.

View >> (1:51)

Communicating and Learning

3.1. Young children learn best through play

The value of the importance of play in children's learning and overall development is not new. In fact, it is the foundation of most early child development programs. However, sometimes, in their zeal to make the most of the remarkable capacity for learning in early childhood, parents and practitioners try to structure learning and forget that most learning occurs informally, through open-ended, self-directed play.

Abdalla Mjaka, a lead trainer in the Zanzibar Madrasa Resource Centre describes the importance of play for young children.

View >> (0:49)

"Play reaches the habits most needed for intellectual growth." Bruno Bettelheim

View >> (0:50)

Reflect

- The video shows young children playing at water and sand areas outdoors. What do you think these children are learning during this self-directed play?
- How do the materials provided in these two areas foster their learning?

The following reading provides an excellent overview of the importance of play in early childhood.

Read >> Let the children play: Nature's answer to early learning.

Further Study

There is a whole industry aimed at parents' desire to provide the best environment for their children. The next article takes a critical look at this trend.

Read >> Science to Parents: 'Chill Out'

SECD can be used...

- In the classroom
- On a computer with internet access
- By individuals as a course 'text' or projected before a group
- Online course – stand alone course or for content in other courses
- As a training tool for any sector interested in ECD

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

- *Early Childhood Education, Red River College*
  Integrated throughout the 2 year ECE diploma program

- *Manitoba Child Care Program, Gov't of Manitoba*
  Child Care Assistant online course based on SECD – simplified version (RRC)

- *Early Childhood Education, George Brown College*
  Major content ECE Diploma Program

- *Institute of Child Study, University of Toronto*
  Content enriches graduate course in Infant Development

- New UT Humanities course in Human Development
  SECD basis for PBL format

RED RIVER COLLEGE
OF APPLIED ARTS, SCIENCE AND TECHNOLOGY

www.oise.utoronto.ca/atkinson

http://www.scienceofecd.com/

zeenat.janmohamed@utoronto.ca