Brilliant brains: neuroscience evidence for holistic understandings of reading development in multilingual settings

Languages in Europe Children reading in a multilingual environment **IBBY European Regional Conference** Bologna Bookfair 4<sup>th</sup> April 2019

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**Todays presentation** 

### Young children as linguistic geniuses

## What do babies bring with them at birth?

## So what does this mean for biliteracy learning?

#### Young children as linguistic geniuses (Korney Chukovsky)

From generic sounds and babble - to speech, often in more than one language.

Informal teaching settings of home and community

## With formal learning in school

many bright young children struggle to learn what's expected of them: learning new languages <u>and</u> learning to read and write.

Language policies, views about learning, teaching methods...

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? Are we giving young children what they need to learn well?
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#### Systemic failure

- South Africa last out of 50 countries in the Progress in International Reading Literacy Study 2016 (PIRLS) which included nearly 320,000 children globally.
- No improvement since 2011 despite many initiatives

#### Language policy in practice

- All gaze up at English from the start
- Indigenous languages used (at best) until Grade 3.
- Grade 4 English

Low or no understanding between all

Rote learning

Resources inadequate in Indigenous Languages, especially books

## Many children are let down by harsh educational opportunities...



- Decode rather than read
- Copy rather than compose
- Restrict thinking to answering low level questions
- Striving to give their adults what they want...

LISTENING AND SPEAKING					• D
ADE R GRADE 1					th
<ul> <li>Listens to stories and acts these out</li> <li>Listens to and responds to simple questions</li> <li>Listens to and repeats rhythmic patterns, and copies correctly</li> <li>Listens to and recalls simple word</li> <li>sequences in order (e.g. big, beg, bag)</li> <li>Names and points to parts of the body</li> <li>Sings simple songs and does action rhymes</li> <li>Talks about pictures in posters, theme charts, books etc.</li> <li>Matches and sorts things according to shape, colour etc</li> <li>Participates in discussions and asks questions</li> <li>Listens to stories and expresses feelings about the story</li> <li>Listens to stories and expresses feelings about the story</li> <li>Listens to instructions and announcements and responds appropriately</li> <li>Listens without interrupting, taking turns speak and asking questions for clarifica</li> <li>Listens, enjoys and responds to picture and word puzzles, riddles and jokes</li> <li>Talks about pictures in posters, theme charts, books etc.</li> <li>Matches and sorts things according to shape, colour etc</li> <li>Participates in discussions and asks questions</li> <li>Uses terms such as sentence, capital letter, full stop</li> </ul>	Listen Repeat Answer correctly Stay quiet	Listen Repeat Answer correctly Stay quiet Stay quiet	Listen Repeat Answer correctly Stay quiet	Listen Repeat Answer correctiv Stav quiet	Listen Repeat Repeat Answer correctiv Stav quiet

#### PHUNICS

#### **GRADE R**

- velops phonemic awareness in the FAL ough rhymes and songs (e.g. 'We're ng to the zoo, zoo, zoo; You can come too, too.')
- th the teacher's help identifies some ming words in a song or rhyme
- aments oral sentences into individual rds by clapping on each word

Books, posters

#### **GRADE 1**

- Develops phonemic awareness in the FAL through rhymes and songs (e.g. 'The cat in a hat, His name is Pat')
- Identifies some rhyming words
- Recognises initial sounds in familiar words (e.g. 'z' in 'zoo')
- Segments oral sentences into individual words by clapping on each word
- Claps out the syllables in familiar words
- Distinguishes the first sound (onset) from the remaining part of a syllable (rime) in simple words (e.g. c-at, m-at, f-at)
- Recognises plurals ('s' and 'es') aurally



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READING AND VIEWING	
GRADE R	GRADE 1
<ul> <li>Emergent Reading Skills</li> <li>Recognises and points out common objects in pictures</li> <li>Arranges a set of pictures in such a way that they form a story</li> <li>Interprets pictures (e.g. makes up own story and 'reads' the pictures)</li> <li>Acts out parts of a story, song or rhyme</li> <li>Holds the book the right way up and turns pages correctly</li> <li>Pretends to read and adopts a 'reading' voice</li> <li>Recognises own name and names of some other children in the class</li> <li>Begins to 'read' high frequency words seen in the classroom and at school (e.g. door curboard)</li> </ul>	<ul> <li>Emergent Reading Skills</li> <li>Develops book handling skills (holding the book and turning pages correctly)</li> <li>Interprets pictures to make up own story i.e. 'reads' the pictures</li> <li>Reads logos, labels and other words from environmental print</li> <li>Recognises own name and names of peers</li> <li>Reads labels and captions in the classroom</li> <li>Develops basic concepts of print including: <ul> <li>Concept of a book;</li> <li>Concept of words and letters;</li> <li>Directionality: Start reading at front, end at back; read from left to right and top to bottom of a page</li> </ul> </li> </ul>
Shared Reading as a class with teacher • 'Reads' enlarged texts such as poems, Big	<ul> <li>Reads Big Books or other enlarged texts</li> <li>Uses pictures and the book cover to predict what the story is about</li> </ul>

• Discusses the story, identifying the main

### Children in multilingual environments

"develop complex language repertoires – although often not exactly the ones that are <u>expected</u> by the respective education systems". Often " monolingual language development is considered as the 'normal' prerequisite for learning"... teaching based on this.

Research shows how multilingualism influences language acquisition, development, and learning in general... so it's central to educational organizing, resourcing and teaching methods.

(Ingrid Gogolin 2018).

### What does the research say?

If babies have been exposed to two language in the womb, they begin to discriminate between these two languages from birth. (Byers-Heinlein, Burns & Werker, 2010)

Babies use the same learning mechanisms whether they learn one or more languages, without becoming confused.

(Werker, Byers-Heinlein & Fennell 2009)

Monolingual and bilingual babies use auditory and visual cues to discriminate between their languages.

(Weikum, Vouloumanos, Navarra, Soto-Faraco, Sebastian-Galles et al 2007)

By the time they are a year old, babies are well into a process of being increasingly sensitive to their native speech sounds and less and less sensitive to the sounds of a foreign language.

(Kuhl, Stevens, Hayashi, Deguchi, Kiritani et al 2006)

"...fluent bilinguals show some measure of activation of both languages and some interaction between them at all times, even in contexts that are entirely driven by only one of the languages."

(Bialistok et al. 2012: 241)

Children "...are simultaneously developing oral and reading proficiency in both their languages" (Reyes 2012:312)

...and transfer concepts they know about print between languages.

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(Saiegh-Haddad, E. & Geva, E 2010)
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## Languaging

...a fluid process of use (García 2009): children translanguage "to strengthen their multilingual identities through flexible pedagogical practices that champion the use of multiple languages to make sense of their experiences."

(Creese & Blackledge, 2010)

#### Babies learn to listen- speak

- Hear, see people listening and speaking (role models)
- express, communicate as they learn
- learn why they should listen and talk as they learns how
- have shared interaction with joint attention
- are included, heard, encouraged, praised
- make mistakes
- speak immaturely(babble)

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#### Babies learn to read

- Hear, see people read (role models)
- express, communicate as they learn
- learns why they should read and writes as they learn how
- have shared interactions with joint attention
- are included, heard, encouraged, praised
- make mistakes
- Read immaturely (pretend reading).

Oral language learning is the appropriate model for learning to read and write for ALL children – in any language or combination of languages

The same dynamics promote oral and written language learning as these are the dynamics that bring about all learning. (Kreeft Peyton & Staton 1993).

### Listen, speak, read, write...

- Hear, see people listening and speaking (role models)
- express, communicate as they learn
- <u>learn why they should listen and talk</u> <u>as they learns how</u>
- have shared interaction with joint attention
- are included, heard, encouraged, praised
- make mistakes
- speak immaturely(babble)

- Hear, see people read write (role models)
- express, communicate as they learn
- <u>learns why they should read and</u> <u>writes as they learn how</u>
- have shared interactions with joint attention
- are included, heard, encouraged, praised
- make mistakes
- Read write immaturely (pretend reading, emergent writing).

Babies and young children are negotiating

# great complexity

P How do they do this?

listening speaking reading writing signing braille translating interpreting

## Language Separate Underlying Proficiency

First Language Ability Corrections Ability Common Underlying Proficiency



#### (Jim Cummins)

#### What do babies bring with them at birth?

Understand and act on the implications of brain research for education...

#### Biology underlies human behaviour (including culture)



## All human brains share some evolutionary endowed functions

These operate at great speed without our conscious awareness.

(For details, see Ellis & Solms 2018, Demasio 2006, Hawkins & Blakeslee 2007, Panksepp 1998)

## **Our brains**

1) are highly plastic and easily shaped by environmental factors and experience.

2) use experience to compare things and situations

3) have a set of several primary emotional systems at birth

4) seek and recognise patterns and make predictions

## 1: Brains are plastic, easily shaped

Connections in our brains change all the time in the environment - this allows learning



So our brains adapt to their environments

# Thousands of connections – what's used strengthen, what's not used, dies out.









### 2: Brains use experience

- Brains compare things and situations
- Everything new is examined in the light of our past experience and rules of behaviour
- We are all learning all the time from experience







#### 3. Brains have a set of primary emotions

They change activity in our brains and are remembered in our bodies

They guide brain development and strongly influence our actions



## Thinking doesn't work without this emotional guidance

Every memory has an emotional tag that shapes our reaction to things and events











#### These stay with us from infancy to adulthood





# We all have these 3 'affective systems' which guide learning:

#### 1. The need to seek and make meaning



## 2. the need to belong (identity)

mother-child bond, and extending out to others

"Emotions are at the very heart of language development" (Greenspan & Shanker).


### 3. <u>the need to play - to imagine, pretend, explore,</u> problem solve



### Pretend: what if this = that Symbols: symbolic behaviour





## 4: Brains seek and recognise patterns and make predictions

Our brains continuously:

- filter information and select, throwing away huge amounts
- fill in information with only partial knowledge
- Search for, recognise and classify patterns
- predict what is likely to happen

#### A sub-conscious prediction process

Prediction is not just one of the things your brain does. It is the primary function of the neocortex and the foundation of intelligence. The cortex is an organ of prediction. If we want to understand what intelligence is, what creativity is, how our brain works...we must understand the nature of these predictions...

(Jeff Hawkins 2004)

"...there is a basic ability to identify patterns in our environment and name them, plus an emotional predisposition that motivates us to learn a language in order to communicate our needs and desires..." (Ellis & Solms 2018:156)

## All perception proceeds in the same contextual 'holistic' way (seeing, hearing, reading)

because they are all based in the same cognitive mechanism, applied in different domains:

in advance predicting what ought to be perceived, and then adjusting those predictions on the basis of incoming data















#### 1,4,9,5,8,0,7,4,0,2,3,8,4,7,5,9,1

#### 1,2,3,4,5,6,7,8,9,10,11,12,13

# azpjloemtpbz

## multilingualism

```
Nkosi sik---- iA----a
```

```
M--y --d a li-tl- l--b
```

```
Al—ett-, g-nti--e al—ett-,
Al-ett-, j- t- pl-mer--.
```

Yu cn red this evn thgh it is not wrttn crrctly

And ---- though words --- missing

W--?

#### Context from the start for understanding

I sat on the river bank

I took out money from the bank

We need the whole experience to learn the parts

When we (try to) read, we use experience and 3 kinds of knowledge

**MEANING** : our knowledge and experience (of stories and other texts)

**LANGUAGE AND GRAMMAR** : knowledge and experience of patterns in oral and written language

**LETTER SOUNDS AND PRINT**: relationships between sounds and symbols to read particular words - phonics

大头大头 下雨不愁 你有雨伞 我有大头

Big head, big head When it rains, I'm not scared You have an umbrella But I have a big head.

#### KAK? Y BAC COBAKH HET?!

2.

;0

29

28

.6

Как? У вас собаки нет?! Кто же будит вас чуть свет?! Кто выводит вас гулять, Учит хвостиком вилять, Лечит вам радикулит, Если скучно – веселит?!

Нет собаки – вот те раз! Может быть, собака вас Где-то очень, очень ждёт – Час, и два, и день, и год, Или даже много лет... А у вас собаки нет!

## When we read in any language our brains use prediction:

"Regardless of the orthography, readers, like listeners, are preoccupied with comprehension. They predict meaning, syntactic structures, and the written language forms which expresses the language. These aspects of reading are universal and create the parameters in which the features of each writing system and language are used." (Goodman et al 1984: 24). Thando went to the shop.

He fell down and died.

Nomsa went hungry and cried.



#### Our hunger for meaningful patterns translates to a hunger for stories

The brave little Cat, New Africa Books

#### So what does this mean for biliteracy learning?

'Storyplay' for young children's biliteracy learning

Story reading, composing, writing and playing, creating story worlds

Think of play as story in action

(Vivian Gussin Paley, Tina Bruce, Vygotsky, Sara Stanley)

Bringing storybooks and literacy learning close together

### **Consciously prioritizing**

Home language and cultural practices – ALL families have important 'funds of knowledge' (Louis Moll, Elsa Auerbach, Victoria **Purcell-Gates**)





'Language carries culture, and culture carries, particularly through orature and literature, the entire body of values by which we come to perceive ourselves and our place in the world' (Wa Thiong'o, 1986: 16)

### 8 Storyplay steps

1. Choosing and preparing the story

> 2. Introducing and sharing the story

3. Thinking and talking about the story

> 4. Playing with the story

5 Shared reading and writing

> 6. Emergent reading, writing and drawing

7. Dictating, scribing and acting out stories

> 8. Taking the story home

#### **Story**play

Refilwe

Possible themes and topics

Taking care of babies

Bedtime and dreams

Wedding celebrations

Measurement (length)

Healthy eating

· Heritage

Ancestry and sangomas

(offerings and returns)

#### About the story

Title: Refilwe Author: Retold by Zukiswa Wanner Illustrations: Tamsin Hinrichsen Publisher: Jacana Media Available in English, Afrikaans, isiXhosa and isiZulu

This retelling of the fairy tale Rapunzel has a uniquely South African twist. It is the story of young Refilwe who is locked away in a cave by a witch. This version of the classic tale will have the children chanting, "Refilwe, Refilwe let down your locks, so I can climb the scraggy rocks!"

My family/People who care for us • What is special to us? Honesty and dishonesty

Promises

 Fruit and vegetables (growing vegetables)

Safety

My body

#### Ideas for activities

Here are some ideas for using Refilwe with young children aged four to six years. Choose the activities that best suit the particular ages and interests of the children in your class.

You could use the story and activity ideas to tie in with your weekly theme and/or as part of the children's afternoon free-play sessions to enhance their play and their literacy learning.

Introducing and sharing the story

Create an atmosphere of anticipation linked to the main theme of the story.

#### With guidelines for using books available in indigenous languages

**Open-ended** questions, to enable imaginative thinking.

Children to make connections with story and play the story



,	Seasons: hibernation in winter
•	Small animals
ł	Family
ŝ	Imagination
ł	Festivals and special occasions
ł	Poetry
1	Farming

and Sesotho

· Work and play Jobs people do Homes and houses Colours Seeds and growth

different criteria

Classifying (sorting) objects using

Ideas for activities

Here are some ideas for using Frederick with young children aged four to six years. Choose the activities that best suit the particular ages and interests of the children in your class.

You could use the story and activity ideas to tie in with your weekly theme and/or as part of the children's afternoon free-play sessions to enhance their play and their literacy learning.

#### Introducing and sharing the story

Create an atmosphere of anticipation linked to the main theme of the story. Stimulate the children's curiosity. Encourage thinking and imagining.



PRAESA



### Jafta in Xhosa

### Adult learns to bring the story alive

#### Three Friends and a Taxi







## What kind of environment and cultural identities are we valuing?



### Affordable quality?










Storyplay

### Who's languages are we using when, where?













Teachers and childrens stories, ideas and experiences

Constantly writing because it is something useful and important

## Valuing curiosity and interest





## Child agency

#### Adults as scribes and interactive role models





# Story fueling cycle for imaginative literacy







Own stories Compose Read-write

Story input Tell Read – write

Play. Explore. Practice Pretend

Pretend

Think Wonder Read-write













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