

**DAGADU**

**DJOKDJAKARTA**



**0,0 Kilometer**

# Key Question

- **Why do we teach mathematics to children 6 – 15 yr. ???**

*Mathematical  
Literacy*

*Numeracy*

*Melek  
Matematika*





# Introduction

- Former jobs
  - mathematics teacher, textbook author, teacher trainer, lecturer, journal editor
- Current job
  - (International) consultant on numeracy, mathematics and arithmetic, specialized in implementation projects
  - Researcher on numeracy
  - Designer of multimedia learning tools



# Fascination

- How do people cope with the quantitative aspects of the world around us?
  - What do they think?
  - How do they think?
  - What is basic numeracy acting and thinking?



Maes Parcio **BALACLA**

**TÂL**

Dydd Llun - Dydd Sul 08-00 - 18-00 Mo

hyd at ½ awr	50c/p
hyd at 1 awr	70c/p
hyd at 2 awr	£1-50
hyd at 4 awr	£2-50
dros 4 awr	£3-50

**COSB** £60-00 **P**

(os telir cyn pen 14 diwrnod) £30-00



# Goals of Mathematics Education

- Introduction to a deductive and abstract system
- System of tools  
(algebraic and arithmetic skills)
- Coping autonomously and adequately with the quantitative side of the world around us.



# Definition 1

- Numeracy is the ability to process, interpret and communicate numerical, quantitative, spatial, statistical, even mathematical, information, in ways that are appropriate for a variety of contexts, and that will enable a typical member of the culture or subculture to participate effectively in activities that they value.

*Evans J. (2000). Adults' Mathematical Thinking and Emotion.p.236*



# Definition 2

- Mathematical literacy is defined (in PISA) as:  
the capacity to identify, to understand and to engage in mathematics and make well-founded judgments about the role that mathematics plays, as needed for an individual's current and future private life, occupational life, social life with peers and relatives, and life as a constructive, concerned, and reflective citizen.

*OECD (1999). Measuring Student Knowledge and Skills: A new Framework for Assessment, p. 50*





# Definition 3

- The term numeracy as used here describes an aggregate of skills ,knowledge, beliefs, dispositions, habits of mind, communication capabilities, and problem solving skills that individuals need in order to autonomously engage and effectively manage numeracy situations that involve numbers, quantitative or quantifiable information, or visual or textual information, that is based on mathematical ideas or has embedded mathematical elements.

*Gal I. (ed.) (2000). Adult Numeracy Development (p.12)*



# Definition 4

- Mathematical Literacy provides learners with an awareness and understanding of the role that mathematics play in the modern world. Mathematical Literacy is a subject driven by life-related applications of mathematics. It enables learners to develop the ability and confidence to think numerically and spatially in order to interpret and critically analyse everyday situations and to solve problems.

*South Africa, Department of Education, 2003*



# Numeracy

- Work definition:  
“Numerical competency is the intertwined knowledge, skills and dispositions (attitudes) necessary to adequately and autonomously cope with the quantitative aspects of the world around us.”

$$\begin{array}{r} 180 \\ \underline{200 \times} \\ 36000 \end{array}$$

??????



From

To

4.....

799 /3310

3197

MTN MAFCOM M-TEL  
hello the future CELLULAR COMMUNICATION

**SPECIAL**

Number	Price	Status
N.3310	799.00	NEW
N.5210	899.00	DEMO OPEN
N.8210	899.00	DEMO OPEN
N.3410	649.00	DEMO OPEN
<del>S.A35/6</del>	<del>399.00</del>	<del>NEW OPEN</del>

MTN MAFCOM M-TEL  
hello the future CELLULAR COMMUNICATION

**SPECIAL**





**oren 1100 serie:**  
 rukslang van 8 meter.  
 s, gebogen 840mm lang.  
 360° draaibaar.  
 stekker.

	1100W	1100
bar	140 - 10	160 - 10
ltr/h	600	780
EC	60	60
kW	3,6	4,9
V/Hz	230 / 50	400 / 50
nk ltr.	4	4
mm	390x290x860	390x290x860
kg	29	29
	30210195	30210196
	1295,00	1495,00

**I HUIS BEL SNEL 0800-8188**

**DUTEC 75**



## What is the difference between Mathematical Literacy and plain Arithmetic or Basic Mathematics.


### *In arithmetic/mathematics*

- It is all about exercises.
- Answers are right or wrong.
- You understand exercises or you do not.
- It is all about notations and techniques.

### *In mathematical literacy:*

- It is about interpreting.  
(What is it all about?)
- It is about reasoning.  
(What should I do with this?)
- It is about a critical attitude.  
(Is it correct? Does it make sense?)
- It is about forming impressions and opinions.

## Adult Numeracy Concept Continuum of Development

PHASE 1	PHASE 2	PHASE 3
<b>Increasing levels of sophistication</b> 		
<b>FORMATIVE</b> (basic arithmetic skills)	<b>MATHEMATICAL</b> (mathematics in context of everyday life)	<b>INTEGRATIVE</b> (mathematics integrated with the cultural, social, personal, and emotional)

A continuum of development of the concept of numeracy showing increased level of sophistication from left to right (from Maguire & O'Donoghue, 2002)