Bridging between traditional and new numeracy practices:

A report of a numeracy pilot project for women in Senegal

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ALM 25: Boundaries and Bridges:
adults learning mathematics
in a fractured world

Senegal

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Content

- Some traditional numeracy practices
- The numeracy pilot project
  - brief description
  - how traditional practices were included
  - how new practices were taught
- The value of including traditional practices in a numeracy programme

growing rice

Language of education
French
Literacy rate for women
33% (UNESCO 2013)
(literacy programmes often in local languages)

1. Research: Traditional numeracy practices

1.1. Numbers in one of the local languages

1	yanur
2	síruba
3	sífaajir
4	sibaagir
5	futok
5+1	futok n'yanur
5+2	futok n'síruba
5+3	futok n'sífaajir
5+4	futok n'sibaagir

10	guñen (lit. 'hands')
15	guñen gaat (lit. 'hands foot')
20	gafaakan (lit. 'the end [of a] person')
70= 20 3+10	gafan gúfaajir n'guñen
100	eceme
1000	éwuli

1. Research: Traditional numeracy practices

1.1. Numbers in the context of money

a different arithmetic system, using the same number words but with a different value

5 francs CFA = 1 ékori, written as K 1
100 F CFA = K 20

1. Research: Traditional numeracy practices

1.2. Mental calculation skills

Techniques:

- memory
- doubling and doubling again instead of multiplying by 4
- using near numbers and adjusting
- splitting into tens and units and multiplying those separately
- using multiples of 5
- …

1. Research: Traditional numeracy practices

1.3. „Tontine“

- money saving scheme
- organised by groups of women

1.4. Traditional measurements of length, capacity, weight

- length: based on body parts
- weight/capacity: with baskets, containers

1.5. Use of concrete objects

- mango leaf
- piles of pebbles, …

2. The numeracy pilot project

Partners

Language associations

- Pëpántar Manjáku (Manjak language),
- AMOJ (Joola-Fonyi language)
- Sempe Kaloon (Karon language)

SIL Senegal

Goal

- to encourage women to practice their reading and writing skills and to improve their acuity in numeracy in order to be better equipped to manage their income-generating activities and family finances
- development of hard and soft skills

2. The numeracy pilot project

Preparations (2012-2015)

- technical vocabulary in the 3 languages
- scripted teacher guide and learner‘s manual – translated

Classes (2015-2017)

6 classes (2 per group) over 2 years

2. The numeracy pilot project

Basic assumption

All cultures have the necessary tools, linguistically as well as cognitively, to meet their members‘ needs.
(D‘Ambrosio 2001)

- building onto traditional knowledge/practices
- bridging to new numeracy practices

2. The numeracy pilot project

2. 1. How were traditional practices included? How were new practices taught?

Use of the 1st language (L1) in teaching and learning

- orally: learning new content, participating in discussions, presenting one‘s strategy, practising problem solving skills
- learning numbers
- difference of numbers in monetary/non-monetary contexts
- reading exercises, proverbs, riddles
- writing income expenditure lists or written calculations

2. The numeracy pilot project

2. 1. How were traditional practices included?
How were new practices taught?

Mental calculation skills

- sharing and explaining one‘s strategy
- learning new strategies

2. The numeracy pilot project

2. 1. How were traditional practices included?
How were new practices taught?

Measuring length and capacity

- discussion of traditional measurements, differences between traditional and international measurements
- introduction of international measurements (scales/ measuring rods; conversions)

2. The numeracy pilot project

2. 1. How were traditional practices included?
How were new practices taught?

Tontine
each class organised a tontine
cashbox, income-expenditure list

Work in pairs/groups
half the time to be used for exercises

2. The numeracy pilot project

2. 1. How were new practices taught?

The concept of units, tens, hundreds

using concrete objects/written symbols:
(unit=peanut; tens=packet of peanuts; hundreds=calebasse)

Written operations and calculator

After each written operation, using a calculator was taught

2. The numeracy pilot project

2. 1. How were new practices taught?

Other financial management tools

cashbox; income-expenditure lists; calculating profit

Awareness raising

- ongoing
- e.g. putting money aside to buy new produce
- also about financial institutions, bank accounts

Soft skills

- ongoing
- problem solving, reasoning, explaining strategies

2. The numeracy pilot project

Quantitative results

beginning: 126 participants
end: 110 participants
attendance rate: 86%

Evaluation at the beginning and after years 1 and 2:
women helped each other ☹
beginning: 34% correct answers
end of year 2: 53% correct answers

2. The numeracy pilot project

Qualitative results: Comments from participants

- less mistakes when giving change:
  "… Now the children can't trick us anymore."
- a fish vendor: With the calculator, it is easy. Even when there are many clients, she can calculate correctly.
- understanding the difference between profit and the money one needs to put away to buy new produce. BUT: poverty!
- can help their children better with maths homework

The value of including traditional practices in a numeracy programme

- respecting culture and roots (D'Ambrosio, 2001; Vella, 2002)
- building onto prior knowledge
- enhancing self-confidence
- providing more strategies to choose from
- using a language learners know well (for number words and as language of instruction)
- learning and practising higher thinking skills (in one's language)
- strengthening existing structures (women's groups)

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