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Developing Numeracy in the Context of Low-Income Countries: The Role of Evidence Base Practice

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TEACHING NUMERACY IN PRE-SCHOOL AND EARLY GRADES IN LOW-INCOME COUNTRIES

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Questions discussed here

1. How can we understand numeracy to meet the demands of a wide variety of contexts?
2. What is the nature of evidence that exists about its teaching and what are its limitations?
3. What have we learnt about teaching for numeracy?
4. Who is responsible for developing numeracy in low-income countries?

How do we understand numeracy?

- Is it achievement on a test?
- Different terms: “quantitative literacy”, “mathematical literacy”, “critical numeracy”, “mathemacy” and “numeracy”.
- Jablonka (2003) asserted that it is not possible to have a specific understanding of numeracy without promoting certain social practices relating to policy, teaching and assessment.
- Numeracy as acquisition vs numeracy as participation

Multidimensional Model

I. CONTENT OF NUMERACY

- **Knowledge/Skills/Procedures:** **Understanding** and use of the **language**, concepts, and **skills**, as they relate to counting, locating, measuring, designing, playing, and explaining in a variety of contexts. This refers to the use of the objects of mathematics, its operations and their properties to solve problems in different contexts. **Not only number!**
- **Dispositions:** The confidence and disposition to choose and use mathematical understandings wherever required. Willingness to take risks and persevere in approaching new mathematics and new contexts.

II. CONTEXT OF NUMERACY

- **School:** Dealing with formal concepts and procedures of mathematics curriculum and other school subjects required to succeed in school and pursue higher education.
- **Social life:** Ability to select and apply the appropriate mathematical tools for sense-making in a given context and understanding how the context impacts on the mathematics. Contexts related to school and every day and work life, public and social issues, and an awareness of mathematics connected to history and culture.

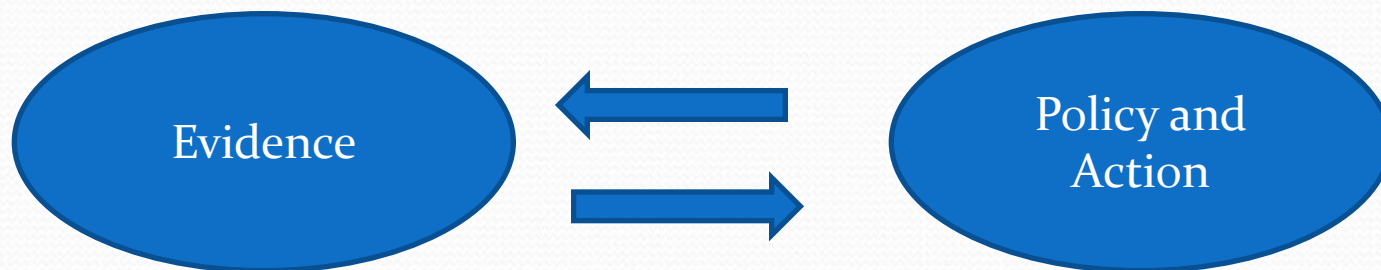
III. AIM OF NUMERACY

- **Understand:** Ability to raise questions about the social world and use the numeracy ability to answer them to increase knowledge about the world.
- **Reform:** Using numeracy to develop the ability to envisage and evaluate alternative means of living in the world at personal and social levels.
- **Cultural Identity:** Identify how different contexts relate in their numeracy demands and processes and relate mathematics to its cultural and historical roots.

Nature of Evidence

- Very limited evidence from low-income (and in non English speaking) countries
- Western theory points to contextualised nature of knowledge and that school cannot solve all the problems of society (Bourdieu)
- However, in our conceptualisation of the research, we asserted that “We ... strongly believe that the agenda Education for All can't wait until more research is done of developing numeracy in all contexts affected. Action needs to be taken now. What we are seeking here in this review are at least some guidelines that may result in informed action rather than concrete and proven research results that guarantee success”.

- We aimed at comprehensive review from different countries and different contexts of disadvantaged that are prevalent in low-income countries (poverty, indigenous communities, language minorities)
- Iterative process of evidence based practice



Teaching to learn/develop numeracy...

1. Teaching and teachers can make a difference
2. Start early (but its never too late)
3. Start with the background (but envisage a foreground)
4. A holistic approach for numeracy Education (whole community, whole system whole school and whole child approach)
5. Access to and use of resources is important (but it is not a panacea)
6. Start with real context and experiences (but widen context)
7. Student active participation (not only recitation and memorisation)
8. “One size does not fit all” (Meaney et al., 2013) (consider needs of particular backgrounds: poverty, indigeniety, language minorities, and girls)

Who is responsible?

Going beyond the scope of the report

- Acknowledge problems of developing numeracy in low-income countries
- Responsible = Response Able
- Who is able to response? Local governments, NGOs, high-income countries, International organisations, professional organisations and conferences, and you?

Comments and questions

