

Numeracy skills in Reflect

Understanding training in Reflect

There has been a lot of discussion among Reflect practitioners about the notion of training, and various practitioners have challenged the use of the word.¹ Traditionally training is a top-down process, with the trainer giving the inputs, and the participants learning from the 'expert'. This is contradictory to the very ideas and principles of Reflect, in which valuing existing knowledge and experience is key. Therefore, Reflect has re-conceptualised training, emphasising the importance of both the trainer and participants learning and contributing to the overall learning environment, and emphasising that both are able to create new knowledge.

This tips for trainers section explains some of the key elements of numeracy as understood in Reflect, and indicates how training approaches are developed based on this understanding. It draws on the Action Aid publication *Communication and Power* (Archer and Newman, 2003), which is available online (see references and resources at the end of this article).

¹ Reflect is an approach to learning and social change, conceived by ActionAid and piloted in El Salvador, Uganda, and Bangladesh in 1993–95 (see also *PLA Notes 32* and *Participatory Learning and Action 50*). It fuses the theory of Paulo Freire, a Brazilian educator, with the methodologies of participatory rural appraisal (PRA). Reflect is now being used by over 350 organisations in more than 60 countries, and is continually being adapted and innovated. Creating a space where people feel comfortable to meet and discuss issues relevant to them and their lives is central to the approach.

Broadening understandings of 'numeracy'

Numeracy is sidelined in many traditional learning processes, and when it is introduced it is usually in the abstract, reduced to basic arithmetic. Facilitators (and trainers and coordinators) have frequently had negative experiences in their own mathematics learning, and this impacts on their ability and interest to work with the subject. As the Reflect approach to numeracy is so different from most school-based education, a large part of any training experience focuses on 'unlearning' numeracy definitions. Numeracy training focuses on 'unlearning' mathematics, and broadening the facilitators' conception of what mathematics is, and how it relates to everyday life.

In a Reflect process, numeracy is understood broadly: it is about solving problems, analysing issues, and expressing information clearly and concisely; and it is usually a mixture of written, oral, and mental methods. The idea of graphic construction and visual representation, which is so central to Reflect, is intrinsically mathematical. In fact many of the graphics, such as matrices, pie charts, bar charts, and calendars, use mathematics explicitly for analysis.

Work on numbers in Reflect includes a critical reading of existing 'texts' and the active construction of alternatives. Thus a key element of number work is to highlight and

strengthen the mathematical skills that participants already have, challenging traditional understandings of mathematics. Another important focus is on using these skills explicitly within a process of analysis, challenging the power of written mathematical texts and constructing alternatives.

The starting point for number work is to demystify mathematics and analyse the links between the uses of numeracy and the practice of power.

Approaches to numeracy training

- Mathematics in context

Numeracy must only be introduced in context. It should not be taught mechanically, but focus on real use. Work with numbers should only take place if it is relevant to the particular topic being discussed. Calculations should be used to solve real problems and contribute to a process of analysis.

- Previous knowledge

Participants should be supported in discovering, using, and strengthening the mathematical skills they already possess. This implies working with oral and mental mathematical processes. Problems encountered by adults joining a learning process are often due to formal written processes clashing with their mental way of calculating. Conversely, using participants' prior skills helps to build confidence as participants recognise their own power and knowledge, while simultaneously enhancing their skills and understanding.

- Challenging written mathematics

This does not mean that mathematics should never be written down, as it is crucially important for participants to be able to read and write numbers. But it is important to analyse and challenge the power of written

mathematics. It is only through taking part in this analysis that participants will be able to make informed decisions about what mathematical knowledge they need. The written process can be used to show how the same mathematical processes are employed in different contexts – crucial if they are to use mathematics to expand their opportunities.

- Calculators

Where appropriate, Reflect practitioners are encouraged to use calculators. This can be used to simplify the mathematical process, so that participants can focus on the underlying issues. Calculators are also useful for checking mental calculations, and illustrate how the same process can be used in different situations.

- Micro-macro links

Mathematics is a useful tool to enable people to bridge the gap between their own micro-level experiences and macro-level realities. By introducing external information – such as budgets, statistics, and prices – people will be able to place their reality in a wider context.

Dealing with previous experiences of mathematics

There are various methods that can be used to enable people to reflect on their understanding of, and relationship with, mathematics. To begin either of the two processes outlined below, participants need to spend some quiet time thinking about their very first experience of mathematics and any positive or negative experiences they have had with it since.

Using a mathematical tool

One way is to use a mathematical tool to enable people to illustrate how their

relationship with mathematics has developed over the course of their lives. The advantage of this method is that participants will realise they have the power and ability to construct mathematical texts, and to interpret those of others.

Following personal reflections on their experience with mathematics, each person can draw their own maths history in the form of a line graph. They could plot age along one axis and use the other to represent their knowledge or enjoyment of maths.

- Sharing experiences through graphs

After the individual graphs have been plotted these can be used to stimulate group discussion, focusing on why the graphs look the way they do. Group analysis of similarities and differences in the graphs might show that there are common ages where relationships with maths deteriorate or improve, or in other cases that specific events have affected individuals' feelings about the subject. This forms the basis for discussion on where the feelings about mathematics come from, and what impact these feelings have on our lives.

- Changing attitudes

Once the group have analysed and discussed their graphs, you may wish to encourage discussion on how the graphs, and the relationships they represent, can be changed, perhaps focusing on the reasons behind more positive experiences depicted in the graphs. It may be that mathematics needs to be redefined in order for more positive experiences to come to light. Or it may be that graphs can be redrawn focusing on the use of mathematics through a single aspect of people's lives, which could be their work inside or outside the house, market trading, or any other activity. Participants could also look at how we learn maths, and its relevance to our lives.

A powerful experience with mathematics

A different way to look at people's impressions of mathematics would be to ask them to choose one particularly strong memory they have of mathematics. This could be anything, from playing as a child to filling in an insurance claim form. Participants should then choose a 'creative' way of illustrating this experience – whether using a picture, a sketch, or a tableau. These illustrations should be used to generate discussion and debate on people's feelings towards, and understandings of, mathematics.

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REFERENCES AND RESOURCES

Archer D., and Cottingham, S. (1996) *REFLECT Mother Manual*. London: ActionAid.
 Phnyal, B., Archer D., and Cottingham, S. (1998) *PLA Notes 32: Participation, Literacy and Empowerment*: London: ILED.
 Archer D., and Newman, K. (2003) *Communication and Power*. London: ActionAid. The section on numeracy is available online at: <http://217.206.205.24/compower/pdfversion/cpnumbers/introtonumbers.pdf>
 More material is available online from the International Reflect Circle secretariat at www.reflect-action.org or email pamoja@infocom.co.ug