REACTION TO: AT THE SHARP END OF EDUCATION FOR AN ETHICAL, EQUITABLE AND NUMERATE SOCIETY

Tine Wedege
Malmö University, Malmö, Sweden

ADULT NUMERACY

The international research forum Adults Learning Mathematics (ALM) was formed in 1994 and a new research field has been cultivated in the borderland between mathematics education and adult education. As a promoter and the first chair of the research forum, Diana Coben was and still is a key person in this field. That is also why I was happy to see her as a plenary speaker at the Sixth Mathematics Education and Society (MES) conference in Berlin and to have the possibility of reacting to her paper entitled “At the sharp end of education for an ethical, equitable and numerate society: Working in a safety-critical context – numeracy for nursing“.

It is obvious that the problem field of adults learning mathematics is situated within the domain of MES. In an overview presentation, at the 16th International conference on Adults Learning Mathematics in London last summer, I claimed that the key concept is numeracy and that the problem field is related to adults, mathematics and lifelong education in a societal context (Wedege, 2009). The concept of numeracy is contested among educational researchers and politicians (see for example Coben et al., 2003), but the idea of building bridges between mathematics and society is common in a long series of concept constructions. For the overview of the field in London, I had chosen three sub areas related to adults engaged in specific social practices and exactly the leading researchers in these areas were present at the MES conference: Marta Civil (parents), Gelsa Knijnik (landless peasants) and nurses (Diana Coben). The purpose of the research and development project lead by Coben is to create a benchmark for numeracy for nursing and I find that the real challenge here is to combine ALM principles taking the learner in focus with requirements for standards and assessment.

In any study of adult numeracy, two different lines of approach are possible and intertwined: a subjective approach starting with people's competences and subjective needs, and an general approach starting with societal and labour market qualification demands and/or with requirements from "school mathematics" (Wedege, 2000). The general approach is obviously to be found in international surveys on adult literacy and numeracy like OECD (2000, 2005) and in national surveys like Williams et al. (2003) with a focus on the poor numeracy in the population. As a representative of
the ALM spirit, Roseanne Benn published a book in 1997 entitled “Adults count too”. Her study also examines numeracy in society, but the approach is subjective, starting with the adults. She argued that mathematics is not a value-free construct, but is imbued with elitist notions which exclude and mystify. Similarly, she rejects the approach where any problem with mathematics is located within the learner rather than the system (Benn, 1997). In Coben’s definition of numeracy from 2000 it is obvious that her point of departure is an adult being competent in a societal context and not a competence or qualification pre-defined with reference to requirements from society or mathematics:

To be numerate means to be competent, confident, and comfortable with one's judgements on whether to use mathematics in a particular situation and if so, what mathematics to use, how to do it, what degree of accuracy is appropriate, and what the answer means in relation to the context. (After Coben et al., 2003, p. 10, emphasis in the original)

The focus in my reaction to Coben’s plenary is to challenge her reasons for establishing a benchmark in numeracy for nursing.

**NUMERACY IN A SAFETY-CRITICAL CONTEXT**

Coben presents nursing as a safety-critical context for numeracy. In adults’ working and everyday life, one can find many contexts and situations where poor numeracy may have serious implications for the safety of others: In a large Danish electronics factory producing aircraft components, I have observed an experienced semi-skilled worker in the department where blanks from a subcontractor are subjected to quality control. She demonstrates her consciousness about the work context being safety-critical by saying: “There is a difference between the consequence of a mistake in an airplane and a television set. It could be a matter of life and death.” (Wedege, 2002). In the first Swedish report on the problem field of adults and mathematics, the subtitle is precisely “a vital subject” (Gustafsson, 2004).

Numeracy is recognized as a key skill for professional practice in nursing and Hutton (1997) argued that poor numeracy can be life-threatening for the patient. Calculating fluid balance, drug dosages and intravenous drip rates are examples where numeracy is needed. Coben (2010) and her colleagues reformulate the problem as they see it and they state that “there is a growing literature revealing a lack of proficiency amongst both students and registered nurses” (p. 5). Moreover, they point to another problem that there is no recognized standard for numeracy for nursing and “without a benchmark assessment it is difficult to determine which skills require development or to ascertain when competence has been achieved (p. 8). Hence, they argue, a multiplicity of tests, processes and criteria, which may be neither reliable nor valid, are being developed and deployed in pre-registration nursing programmes throughout the UK.
If such judgements are to be made, and in my view they must be made in relation to work in safety-critical contexts, then it behoves us to ensure they are based on transparent and defensible criteria and open to democratic challenge and periodic review. (Coben, 2010, p.9, my emphasis)

I agree with Coben when she requires transparency and validity if testing of adults’ competences are to be made. However, she argues for the necessity of standards with reference to the “Skills for Life” national survey of adult numeracy in England:

… with respect to numeracy, a survey of adults in England found that 47 per cent of the sample (equivalent to 15 million people) were classified at Entry level 3 or below (the level expected of the average 11 year old) … (Williams et al. 2003, p. 19). (Coben, 2010 p.10)

But this particular national survey and the other international surveys mentioned above have been object of critical analysis by the members of ALM. Here Gillespie is for example summing up on the “Skills for Life” survey:

The findings confirm that for many, being ‘at a given level’ is not meaningful for the individual, as levels embody predetermined assumptions about progression and relative difficulty. (Gillespie, 2004, p. 1)

As mentioned above, Coben also argues by referring to the literature. It is unsurprising that the nursing literature shows that students and even experienced nurses make many errors on paper-and-pencil tests of drug calculations in a school context. However, in a qualitative study in the context of nursing, which is not among Coben’s references, there was not found any errors:

In our study on the ward [30 episodes], we found drug administration to be routine and error free. It was characterized by effective and flexible use of a range of proportional reasoning strategies … (Hoyles, Noss & Pozzi, 2001, p. 22, my parentheses).

Coben (2010) also refers to alarming headlines in the newspapers ”about lack of proficiency amongst both students and registered nurses”. We find also this kind of headings in the Nordic newspapers when they report results from the OECD surveys on adult literacy and numeracy. For example in Norway:

1,2 million Norwegians have problems with numbers

A new OECD survey (ALL) has shown that almost 40% of the adult population in Norway “have such bad understanding of numbers that they have problems tackling daily life.” (Dagbladet, 4 September, 2005)

In this article, which presented the poor results as an argument for offering numeracy courses to adults, there was a subsection, “Many people die”, presenting the fact that at least 10-15 deaths every year in Norway were caused by mistakes in the handling of drugs in nursing and caring service. However, if one goes to the report from the National Helse Supervision, which had provided this information it is evident that the
mistakes in medication are caused by system errors and not by nurses’ calculation errors (Helsetilsynet, 2002).

REFERENCES


