

Is it possible to empower adults through numeracy teaching?

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All over the world politicians talk about lifelong or ‘lifewide’ learning and they set special programs to make sure that adults have the possibility to participate in education. All over the Western world Numeracy teaching has been a part of this educational program. The politicians and part of the educational system have a very limited goal for numeracy teaching. In the community of ALM, numeracy teaching is not just seen as a means to reach and maintain the welfare society but in fact as a means to empower adults. In this article, I shall introduce two different models and understandings of numeracy teaching which I have found by reading all the proceedings from earlier ALM conferences, and I shall raise the question: is it possible to empower adults through numeracy teaching?

Two stories about adults and mathematics

The field of adults and mathematics is characterised as having great heterogeneity (FitzSimons et al, 1996) and according to Wedege (2001) this is due to the lack of a “grand narrative” and the great complexity of the subject area as a research domain.

Perhaps the field lacks a “grand narrative” but reading through all the conference papers from the ALM conferences plus several books written by members of ALM, I shall argue that at least two “grand stories” about adults and mathematics live and are told in the research community of ALM (Johansen, 2006). The two stories appeared to me when I tried to fit my readings into a specific curriculum development model (Hiim and Hippe, 1997). I chose to use this model as a frame to categorise my readings even though it was made to help the teachers prepare for their lessons. Out of my categorising two different models appeared. I have chosen to name them “The school subject curriculum model” and “The ethno curriculum model”. The first story based on “The school subject curriculum model” is often told as a bogey - a story about what “we” do not want, or as a model for adult independent learning where adults alone and independently perhaps at home, learn school mathematics. The other story based on “The ethno curriculum model” is presented as “an ideal model” – what “we” really want.

The school subject curriculum model

Figure 1 represents “The school subject curriculum model”. And I will shortly go through each theme of the model.

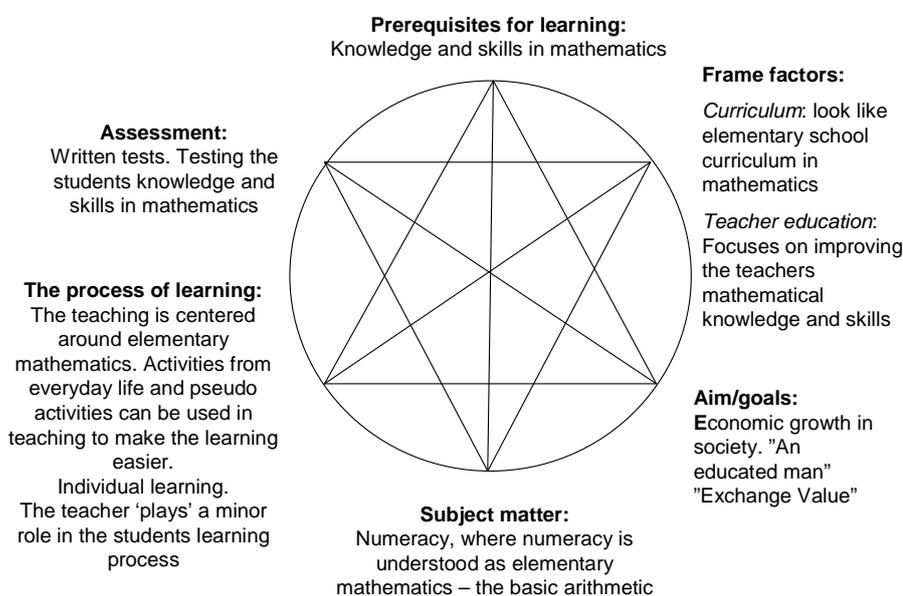


Figure 1: “The school subject curriculum model”

The focus and starting point, in the school subject curriculum model for teaching adults numeracy, is the lack of formal and basic skills in mathematics of adults. The goal of teaching numeracy is to equip the adults with testable basic mathematical skills. The curriculum is developed to make it look like the curriculum in mathematics from elementary school. The professional development of the teachers is centred on improving the teacher’s mathematical skills or, if that already is advanced, improving their competence in teaching adults. The teaching of numeracy focuses on elementary mathematics. It is possible for the teacher to bring in activities or “look a like activities” from everyday life of adults to ease the learning of mathematics. The teaching can be organised differently according to individual as well as group work, it is however always the elements of school mathematics which structure the teaching. The teacher himself plays a minor role in the learning process of the participants – and as I have mentioned earlier it is a model where it is possible for the participant to learn mathematics all by her/himself. Written tests are the preferred means to test the participants’ prerequisites, the progression of the participant’s mathematical skills as well as the end results of the numeracy course. The aim is economic growth in society through equipping adults with formal and basic mathematical skills that have “exchange value” (Coben, 2002) and therefore open the doors to the labour market and further education.

The ethno curriculum model

The focus and starting point in “The ethno curriculum model” is that adults are already in possession of math-containing knowledge and competencies before they enter the numeracy course even though they may not be aware of their own competencies; even though they may think that “math is what I can not do”. In “The ethno curriculum model” numeracy is understood as “not less than math but more” and the focus is not on school mathematics.

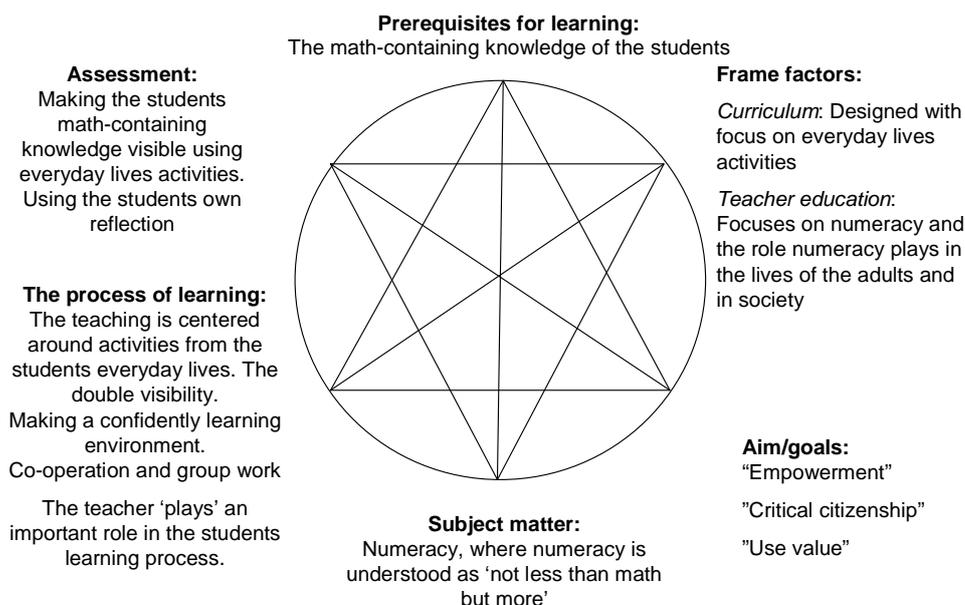


Figure 2: “The ethno curriculum model”

The aim of teaching numeracy to adults is to empower the adults and equip them with knowledge and skills that have “use value” (Coben, 2002) for them. The learning process of the participants and therefore the teaching has to be planned in such a way that the math-containing skills and knowledge of the participants’ are made visible as well as the math-containing part of the participants’ everyday activities are made visible. A way to do so is to bring everyday activities into the classroom and let the activities determine which mathematical skills and knowledge the adults will meet and work with in that lesson or alternatively to bring the participants and the teacher into everyday life performing everyday activities. In the curriculum the subject matter can/shall be described as a range of activities from everyday life instead of the elements of school mathematics.

If the participants are to be tested before they enter the numeracy course new types of testing material must be developed. It is a good idea to use everyday activities to test the math-containing skills and knowledge of the participants instead of written math tests. The professional development of the numeracy teachers focuses on numeracy in adults’ everyday and working life – the teachers have to learn to open their “numeracy eyes” to see numeracy and math-containing skills and knowledge in normal everyday

activities as well as realize which math-containing skills and knowledge the participants possess. The teacher plays an important role in the participants' learning process especially in the way he/she is responsible of creating a confident learning environment.

Comparing the two “grand stories” about adults and mathematics, it appears that they possess a lot of different ideas and understandings of, for example what numeracy is, what is good practice in adult numeracy, what is the role of the teacher, what is good professional development, how to test adult numeracy etc. and there are different ideas of goals of numeracy teaching. In the school subject curriculum model, economic growth is the goal whereas in the ethno curriculum model empowerment is the goal; in the same way exchange value versus use value are different goals of numeracy teaching in the two stories. Setting up these kinds of enormous or beautiful aims for an often very short numeracy course is something which is seen in almost all countries however, they are rarely contested. In the rest of this article I dare to challenge the concept of *Empowerment* as a result of adult numeracy teaching in a Western country.

Empowerment and education

According to Gal (1999:12) empowerment is a multi-faced construct that has gained the attention of professionals and researchers in several fields.

A key assumption underlying the notion of empowerment is that people have the potential to cope well with many life challenges but have found themselves in a position of (relative) powerlessness over their life course due to situational, social, organizational, or other circumstances and barriers. Another assumption is that the process of becoming more empowered involves the acquisition of essential skills and knowledge, but just as much the acquisition of self-perceptions and a sense of self-efficacy.

When or how do adults, who want to join a numeracy course, feel powerlessness? A lot of adults feel the lack of power over mathematics – “mathematics is what I can not do”. Perhaps they experience the lack of power over their job situation as well, they can be unemployed or unconnected to the labour market or they can experience that their competences are a barrier to changing jobs. Many researchers bring in the idea that innumerate adults lack power of their economic situation, and perhaps some adults feel that too. Many adults experience lack of power over decisions taken by the government and the local politicians, I feel that lack too, and I do not think that it has anything to do with my level of numeracy.

In the context of mathematics education Ernest (2002, p.249) has discussed empowerment.

Empowerment through mathematics necessitates a consideration of the development of the identity of learners and their potential through the development of mathematical and related capacities.

Ernest (2002) finds it useful to distinguish between three different domains of empowerment concerning mathematics and its use. Ernest distinguishes between: Mathematical empowerment –gaining power over the language, skills and practices using and applying mathematics; Social empowerment – gaining the ability to use mathematics to better one’s life chances in study and work and to participate more fully in society through critical mathematical citizenship; Epistemological empowerment – gaining a growth of confidence not only in using mathematics, but also a personal sense of power over the creation and validation of knowledge.

The aim of empowering learners as epistemological agents is a radical and summative one, as it brings together and integrates all three of the different types of empowerment discussed above. Only when all of these powers are developed will they feel they are entitled to be confident in applying mathematical reasoning, judging the correctness of such applications themselves, and critically appreciating (including rejecting, in some cases) the applications and uses of mathematics by others, across all types of contexts, in school and society. Thus epistemological empowerment is the culmination of all the other types of empowerment discussed here (Ernest, 2002, p.258).

Trying to understand this idea of empowerment raises the question: “Is numeracy teaching a way to facilitate empowerment?”

I wonder...

First of all, I wonder what kind of empowerment we are talking about when we set up empowerment as an aim and a goal for numeracy teaching. Is it the radical epistemological empowerment Ernest introduces above, which brings together all three domains of empowerment i.e. mathematical, societal and epistemological, or is it something less, or nothing like that at all?

I wonder if it is possible to gain power over numeracy as long as it is defined in so “fluffy” terms. Reading through the conference papers from ALM conferences it appears that several authors have tried to catch and describe the concept of numeracy, and they have formulated different definitions of numeracy. Numeracy is, however, still a deeply contested and notoriously slippery concept (Coben, 2003). One definition is the one we meet in the school subject curriculum model where numeracy is understood as just basic mathematics. Another definition is the one we find in the ethno curriculum model where numeracy is understood as “not less than math but more”. An example of this kind of definition is formulated by Tout (1997, p.13):

We believe that numeracy is about making meaning in mathematics and being critical about maths. This view of numeracy is very different from numeracy just being about numbers, and it is a big step from numeracy or everyday maths that means doing some functional maths. It is about using mathematics in all its guises – space and shape, measurement, data and statistics, algebra, and of course number – to make sense of the real world, and using maths critically and being critical of maths itself. It acknowledges mathematics but more. It is why we don’t need to call it critical numeracy – being numerate is being critical.

This definition of numeracy provides the opportunity to reach the radical empowerment as a goal. However, I still wonder if numeracy teaching can change the identity of the learner? Can one be empowered without changing one's identity and self-conception?

Furthermore I wonder if math-containing skills and knowledge made visible through everyday activities in numeracy teaching will automatically make the adult more mathematically empowered.

Everyday activities are in the ethno curriculum model seen as the main means to make the participants' math-containing skills and knowledge visible. The reason for making the adults' abilities visible to themselves is to make them more confident with mathematics and make them understand that they are able - so to say. However, working with adults returning to school it appears that once adults have succeeded in using and applying a piece of mathematics, it becomes "non-mathematics" (Coben and Thumpston, 1995) and as Harris (1995) has realised that mathematical skills that caused the adult workers no problem in their working life were regarded as common sense – and it only became mathematics when the adult worker was not able to cope with it. So I ask the question if the adult will become mathematically empowered or will he/she automatically exchange the now visible abilities with "non-mathematics"?

I also wonder if it is possible to gain power over numeracy without first getting power over mathematics - that is mathematical empowerment as Ernest (2002) has named it. Is it possible to be "numeracy" empowered without gaining power over the mathematical language, signs and symbols?

I still wonder if it is possible to become socially empowered through numeracy teaching without first getting mathematically empowered and without some teaching in social science subjects. Is it possible to choose enough everyday life activities to become socially empowered and able to act as a critical citizen?

Finally, I can not stop wondering if I was correct in raising the question: Is it possible to empower adults through numeracy teaching?

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