

Mathematizing  
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Good description of the environment for teaching math, but doesn't address the teaching itself

You have to love a book on education in this day and age that starts with a dedication to my creator. That shows a man who is religious, but also has not been cowed by the educational establishment. It establishes high expectations for the book before I even start to read it.

The first thing that impresses me is that the book employs a little bit of ed school lingo. The kind of thing that teachers will probably be familiar with, but parents may not be. One would hope that parents would be would make up a considerable percentage of the audience for this book. He employs Bloom's Taxonomy of levels of learning, a topic with which teachers will recall from their training but may be difficult for others.

The book is dedicated to the tools and environment for teaching mathematical concepts to children up through their elementary years. The notion seems to be that if you situate them properly, magic will happen. Sadly, it doesn't. He does not address the more interesting question of how to actually teach arithmetic. This includes such things as the algorithms for carrying as you add and borrowing as you subtract, the notion of changing signs and so forth, and rote memorization (they hate that in ed schools) for times tables and formulas.

I would recommend that this book be put through a Flesch Kincaid analysis for readability. The sad fact is that a significant percentage of today's teachers could not read the book. I think the message is good, but reality should dictate to be written in simpler words.

Returning to what the book addresses, the environment for teaching mathematical skills, there are many useful concepts. He reminds us of the water table. Kids playing with cups, sponges, and other things that hold water. The teacher explains simple concepts, such as that the cup is full, you have half a cup. Presumably as they get older they can do arithmetic with the cups. But it's a lot of fun for kids to play with water, has he notes.

Estimation plays a significant role. Children are asked to estimate which shows two groups is larger, which is two lines is longer, and so on. Then they measure to find out. The measure here was done with a tape... Actually, it seems like a piece of rope could determine whether one was longer than the other.

The first place we are introduced to is the Belmont Craig in early childhood center in Chicago. The teachers are Hispanic, and the preschoolers are present with their parents. It is a public school facility. Diversity is among the books major concerns. Rosales speaks about children's contexts kind children's cultural background, topics of interest, favorite learning areas in styles and other pertinent information. Missing from the discussion is a critical competent, ability. It is tacitly understood by teachers today that there is a spectrum of ability among students, but by convention they do not mention it.

There is a pretty impressive Lego construction of a model of a high-rise building by a five-year-old. Whether or not the five-year-old did it all by himself would be a question in my mind. It probably doesn't matter. Working with a parent, explaining things as they went, would be extremely valuable both for learning and for bonding.

Building the skyscraper is very important to developing a mathematical sense. If the children are simply given a description of the skyscraper, told about all of its parts, they will not internalize the math. On the other hand, if they have to count the stories, count how many Lego blocks it takes per story, keep track of Legos used of each size and antennas and stuff like that, it will really understand it.

The author cites fairly standard sources such as Piaget, John Dewey and Howard Gardner. He says that the MLP (Mathematizing the Learning Process) approach aligns with many of the key principles shared by progressive educators. These teachers believe the children learn best when learning is individualized, social, and within a real world context. The MLP approach is guided by the following principles and values

I will offer that the progressive educators had some valid insights. The idea of being ready when a child is ready to learn, and working with the individual child is extremely valuable. One problem is that this is extremely difficult to do within a school context. However, for a homeschooler this is exactly the situation that you have. One on one, and you go when the child is ready to go.

As a case in point, my 3 1/2-year-old loves to eat cherries off the tree as we go walking in the summer. This is a chance to count cherries cities eating, and ask if he wants to more, then how many will you have. Ask him how many he's eaten. The next steps may be to ask if he gets twice as many as he has now, how many will he have. That is beyond a 3 1/2-year-old, but is the kind of question that he will be ready for soon.

The important lesson is to tie mathematics into context with which the children are already familiar. Young children are not prepared to learn abstract concepts divorced from physical reality and concrete periods. The author advises that the teacher find the appropriate context for teaching each child and concept this seems unrealistic in the classroom context. It is, however, indisputably the right way to do it.

The author also emphasizes the importance of using the appropriate mathematical grammar to express what is being taught. The teacher should be familiar with them terms being taught in the language used to express them. Just as it is difficult to talk about spoken language without talking about parts of speech, it is difficult to talk about mathematical concepts without using the appropriate words such as the arithmetic operators, equivalency, greater than less than and so on.

The author stresses the importance of this literacy. One notes the reports from the field that a great many primary school teachers come to the classroom without this preparation. The ed schools generally do not teach the academic skills. They teach a little bit of how to teach, and a great deal of theory. The teachers should acquire the mastery of the academic subjects they teach one way or another, and it is important to emphasize because it is probably not a standard part of their preparation. Moreover, individuals talented in math have many career opportunities other than primary education.

The author advocates collaborative learning. Collaborative learning has written been in vogue for 20 years, since my grown children were in primary school. I used it when I was a substitute teacher. My impression is that it has to be very skillfully administered, otherwise the weak students simply slide along wall the stronger students do the work.

In the end, the book meets its stated objective of describing the environment in which mathematics can be taught. It would benefit by being written for a broader audience than professional educators. Whether it belongs here or in a companion volume, some book needs to explain how to teach mathematics in primary school! This need was apparent to me ten years ago when I took an ed school course in teaching mathematics from the wonderful Dr. Anna Graeber at the University of Maryland. I invite reader comments on this review; please tell me what you think works best.