

SCALING IN ELEMENTARY SCHOOL: UNDERSTANDING AND LEARNING THROUGH A WEB-BASED ‘SCALING WORKSHOP’

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A classroom study I did with 11 year olds indicate that many of the students know where scaling is used in everyday life (for instance, in maps and when building small models). They lacked, however, a more formal knowledge.

In a project developing a web-based learning program www.matemania.no, a ‘scaling workshop’ was developed. We (the developers) wanted this to give the students the possibility to do experiments and give them some experience with scaling, using objects they know well - their bedroom and their own height.

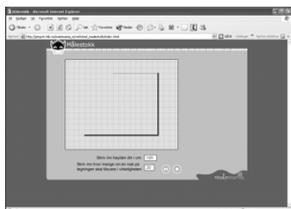


Fig 1

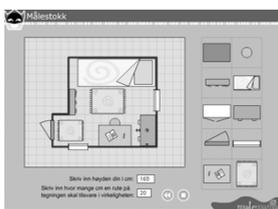


Fig 2

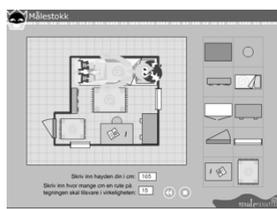


Fig 3

Fig 1: The student has to write her/his height, in this case 165 cm. He/she must decide how many cm one side in one square is in the real world, in this case 20cm. Now the student can draw the walls of his/her own bedroom.

Fig 2: The furniture will appear and the student can pull them into the room, place them, stretch them to the right size and rotate them if necessary.

Fig 3: When finished, they can click a button and a boy will glide into the bed in right scale. If the student has made a mistake with the scale of the furniture, the boy will be too big or too small for his bed. (The scale in fig 3 is not the same as in fig 1 and 2.)

Topics for further studies could be to find ways in which this program can help the students in their understanding of scaling, and study whether limitations of the program (e.g., the fact that one side in the square is not necessarily one cm on the screen) cause obstacles in learning scale. I will do a classroom-study on these issues during spring 2004 and hope to be able to present some results at PME28.

References:

Dörfler, W. (1993) Computer use and the Views of Mind. In C. Keitel & K. Ruthven (eds.) *Learning from Computers: Mathematics Education and Technology* (pp. 159-186). Springer.