



”Languaging” mathematics

When you are expressing your mathematical thinking by speaking aloud or writing, then we could say you are “languaging” mathematics. It is important that you (pupil, student) use your own words and expressions when you are explaining your process of the solution to the problem. There are at least three reasons for it:

1) **Growth of a learner’s own understanding**

When you are speaking aloud (or writing) your thoughts you have to first make the process clear to yourself and after that you are able to explain it to your companions. Spoken language is thought language. Speaking activates thinking and it is obvious that a learner increases his/her understanding about his/her issue by speaking aloud. By teaching you can learn! (*Docendo discimus* (latin proverb))

2) **Social factor**

When you are expressing your mathematical thinking to other listeners (pupils, a teacher), they are able to learn how you have understood a problem and what kind of solution process you have. On the other hand the listeners reflect their own thinking to yours and perhaps they change their opinion and at the same time their mathematical thinking develops.

3) **Pedagogical factor**

When a pupil is speaking aloud in his/her own words it is easy for a teacher to observe how the pupil has attached new concepts into his/her knowledge structure. After hearing the pupil, the teacher guides them by new arrangements of teaching if necessary. (e.g. Joutsenlahti 2003; 2005, Pimm 1987, Lee 2006)

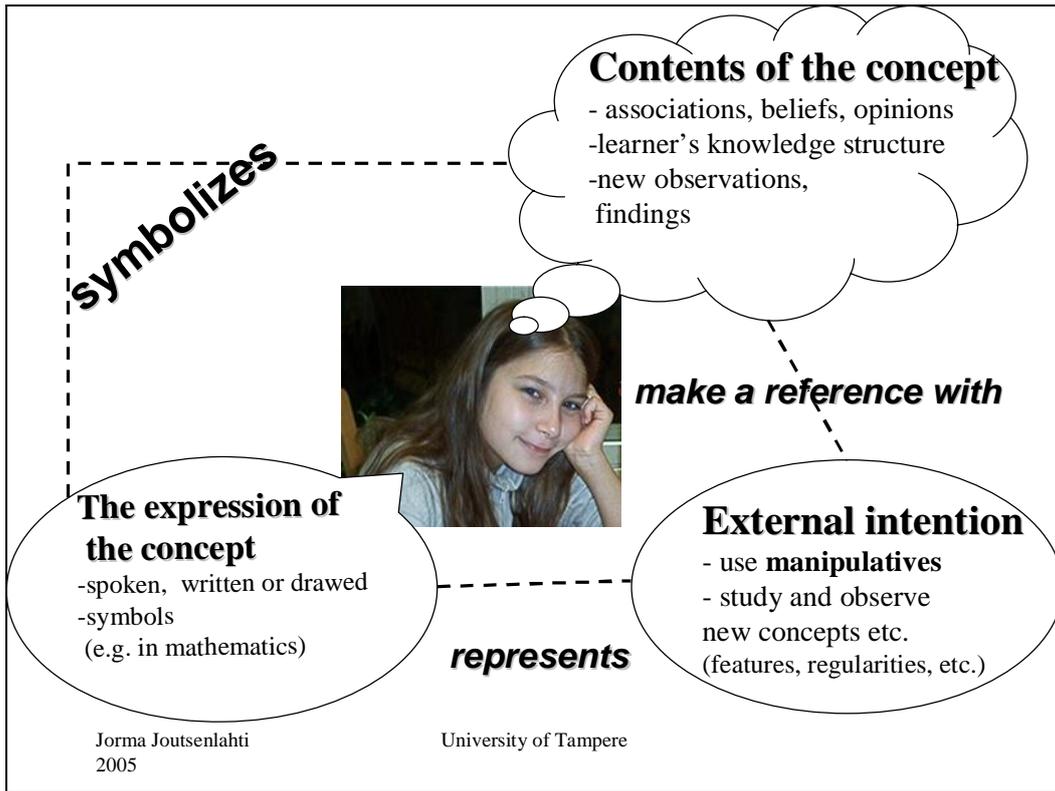


Fig. 1. The learner's construction process of a mathematical concept and her "linguaging" of mathematical thinking.

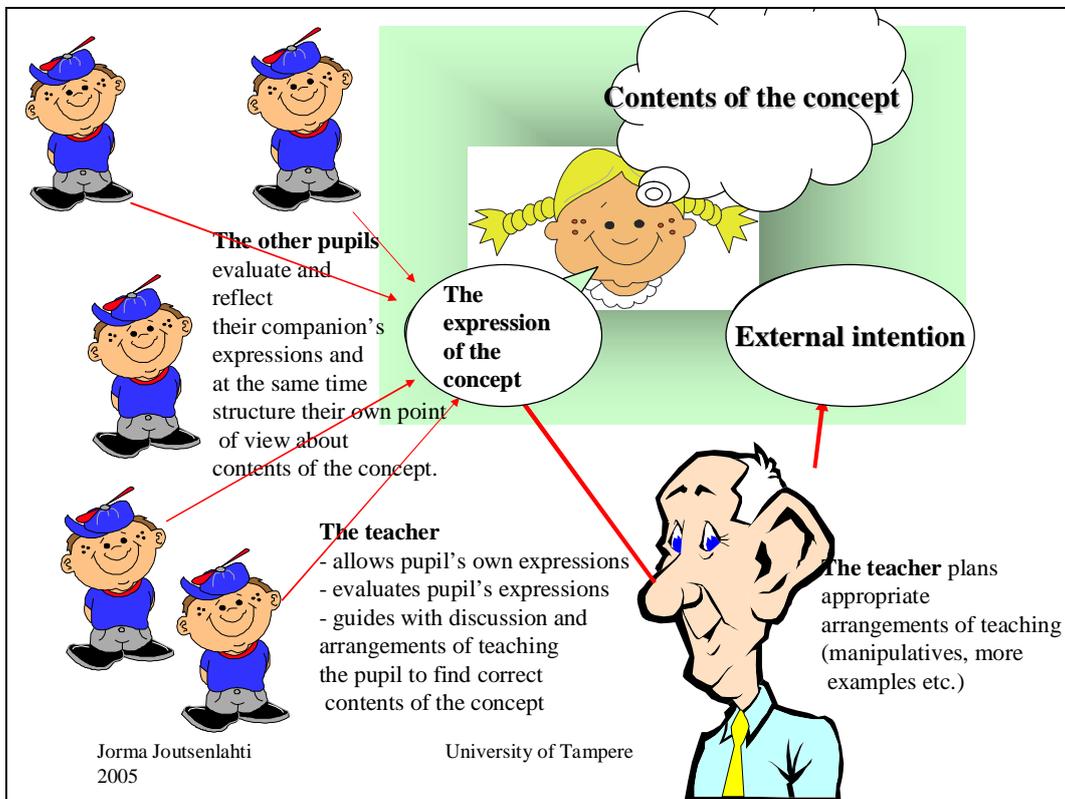


Fig. 2. "Linguaging" mathematical thinking in a classroom.