



## Introduction

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**Since 2001 I worked in ICT-projects at Bartiméus Education for the VI to enable braille students to profit just as much from using computers as sighted students. One problem proved difficult to solve: in (digital) learning materials images played an increasingly important role. It proved impossible to describe everything sufficiently concise and precise. So I explored the possibilities of tactile images. They were used scantily in The Netherlands and only for maps, plans and diagrams, that were generally drawn by hand.**

The material that was used was 'swell paper', where a chemical coating makes raise everything that is drawn in black when heated. Thus lines and areas become tangible. There are different qualities of swell paper, but in general it has these disadvantages:

1. Swell paper is only suitable for simple raised line drawings
2. It takes much time to design a (good) tactile image, even with a computer
3. There is no Dutch Braille font
4. Braille usually is difficult to read because of the velvety quality of swell paper
5. Swell paper is not cheap
6. It takes some practicing to get good 'baking results'
7. It runs
8. Problems when the printer gets too hot, or some ink doesn't dry on swell paper

Probably these disadvantages contributed to the unpopularity of tactile images. Moreover students often didn't understand the images. On the one hand this was because the images often were not well designed, on the other hand because the students had never learnt to read them properly. But this experience fostered the opinion of teachers that tactile images were of little use. A final cause was that teachers often didn't know how to use tactile images, namely: **as an (inter)active support for their explanation.**

75 % Of the Braille students in The Netherlands were integrated in mainstream schools. Because of the lack of tactile images, they got much less explanation and exercise compared to sighted class mates. This asked for a solution.

(By now this situation has much improved. Dedicon Educational, the national production center of learning materials for the VI, produces well readable tactile images on swell paper, thanks to new guide lines that guarantee good tactile perceptibility. On the images letters in grey ink that doesn't swell accompany the braille for teachers and classmates who don't know braille. The use of tactile images increases steadily, though still mostly for diagrams and other schematic illustrations).

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