Adapted computers, no luxury but necessity

All children love to play. It's their nature! Playing is fun, and you learn from it. You train your memory and skills, but also – for instance – how to interact with your friends. So playing is very important for children and it happens automatically!
But what if you can't play, because you can't use your hands or because you are in a wheelchair? Then it doesn't speak for itself. And yet... these children want to play as well! These children must be able to play, because it is just as important for their development!

A computer can play a big part in this. With a computer you can make a puzzle without holding the pieces, play 'Memory' together without turning the cards, draw a picture without holding pencils. With a computer you can read without turning pages and even play football!

In education the computer plays an increasingly big part. There is a wide range of educational software on the market. For children with reading and writing difficulties, this is THE solution. Moreover, the computer is a very patient teacher! Endless repeating, endless correction... never too much effort for the electronic teacher!

The computer can take many tasks off your hands. For instance, you don't have to walk to the mailbox to send or receive mail. You don't have to go out to make contact with others because chatting is a very quick and easy way to make contact with many people at once. Without leaving your home!

In general people can start working with a computer right away. Sometimes adaptations are necessary, like a larger keyboard or a special mouse. This way, despite a handicap, working becomes possible, as does learning and playing!

During the last few years the use and adaptations of the computer have experienced a mushroom growth. Expectations are that this development will continue. As regards child rehabilitation the computer is increasingly going to play a part in the development and rehabilitation of children with multiple handicaps. In the fields of education, recreation and personal development the computer can serve as a "prothesis" in the performance of activities.

As per 1 August 1998 the outlines of WEC (Expertise Centres Act) have been enacted within special education in the Netherlands. One of the ideas of this policy is that by the year 2002 schools for physically handicapped children in the Netherlands should have developed an expertise on subjects specific to their target groups.
Recommendations for the use and adaptations of computers for children with physical and multiple handicaps has become one of those expertises to be developed.

Theories and models
In practice we are often faced with a mass of information and experiences. We master them by categorising them on the basis of similar characteristics. In this way we form a picture of reality.
Teachers are supposed to have an overall picture of the situation and to reason, predict and control the developments.

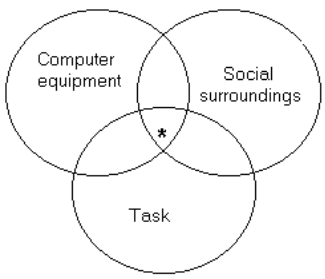
Model of process for advising on the use and adaptations of computers
When listing the ideas which have already been developed about the use and adaptations of computers for handicapped people it appeared that everyone has his/her own way of working.
Opinions about following an advisory track differ.
Some prefer trying out (*the trial and error method*), some prefer a thorough analysis. As there are several solutions to a problem and computer aided technology is developing rapidly we decided to give no answers as to the *content* of the solutions to problems.
The preferred option is the unification of the *form* of the advisory track.
There appeared to be a need for a structured way of working which encompassed the advisory track of the use and adaptations of computers from beginning to end. This has been expressed in a model of process. With the help of this model we can make the way of working more uniform and systematic. The model of process allows the consultant to keep thinking himself. It is not a protocol which needs to be observed. In this way the members of the advisory group keep participating actively in the process which is to result in a solution.

A model of process is a simplified graphic and schematic representation which demonstrates how a process of change may develop according to a certain planning. The content of the solution is not considered. It is a form of methodic acting which systematically produces a solution by following different steps.
It appears that in practice one tends to reach for a rapid solution. But when this solution does not bring relief, we have to retrace our steps. It appears to be difficult to work according to plan and to stick carefully to the sequence, but it is worthwhile. Therefore the conscious use of a model of process is important.

Bain Assistive Technology System (BATS)

"Assistive Technology", an interdisciplinary approach" (Bain, Leger 1997) describes a step-by-step programme which is based on a model, the Bain Assistive Technology System (BATS). This model, schematically consisting of three overlapping circles, provides structure when organising data, which are relevant to the use of computers. It departs from the idea that all components need attention in order to produce a successful recommendation.
The model consists of four components: the task the client wishes to perform, the computer equipment (hardware) he/she uses, the client's social environment, and the client him/herself who is the central component. All components overlap to make clear that there is interaction while at the same time they constitute a unity. Leaving out one of the components will produce a less favourable outcome and may have as a result that the computer aided technology is not being used.

The description of the model indicates that the components may switch places if the result of this should be that the model fits in better with the situation. The model of process to be developed involves a list of requirements for e.g. computer equipment, software, assistance and location. In order to get there we need data about the client, the tasks the client wishes to perform and his/her social environment.



* User

Phases of the model of process
Each model of process consists of several phases. The description of the phases is specific to a certain model of process. In the development of the model of process for advising on the use and aids of computers we looked for the description of the specific phases and their sequence.
The multidisciplinary composition of the advisory group is vital. This enables us to analyse the problem from different professional lines of thought and to arrive at a solution step-by-step and purposively in cooperation with the person who asks for help.

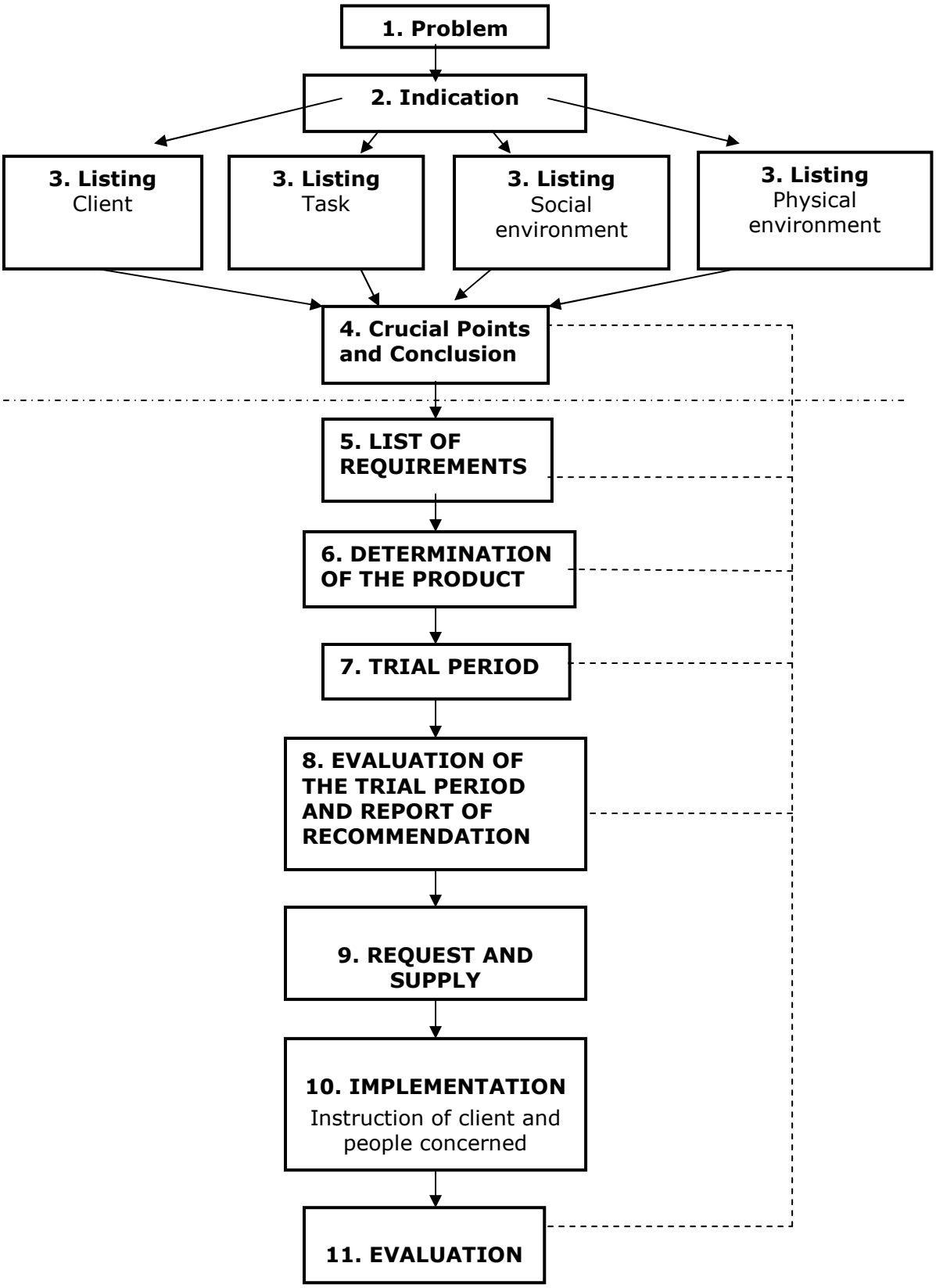
By using a model one can work systematically and survey the process.
A recommendation for the use and adaptations of computers by means of a protocol and thus finding a solution is not advisable. It is a way of thinking, which demands that we abandon the rapid solution. As each situation needs a tailor-made solution and the technical aids market is changing rapidly, it is desirable to emphasize a list of requirements,
which the solution should meet.

The listings
An important component of the model of process is the listing of the (im)possibilies of the client and his/her environment. When making listings to collect the necessary data it is important to apply a system. By choosing a system the listings as a whole will make easy reading and become more understandable, the result of which will be a better and easier use of the listings. Particularly the formulation of the questions, the information collected by means of the questions and the possibilities of the layout are important.
A great help is the questionnaire for parents and other people concerned, drawn up by a group of students of the Hogeschool van Amsterdam, (Procesmodel Computeradvisering, Cleton, Lelieveld, van der Tol, 1999).
When making the listings they opted for the use of as many closed questions as possible. These kinds of questions require less time for filling in and processing. In addition, the questions and answers take up less space, leaving the listing as compact as possible.
When choosing between closed, multiple choice and open questions they were aware of the phenomenom of the socially desirable answers. By this we mean that people tend to give answers, which make a good impression. A multiple-choice question is more likely to produce answers with a high than a low frequency. We can prevent this by an open formulation of the question.
The students were aware that open questions require enough space to explain the answers.
As the model of process and the listings are not exclusively intended for occupational therapists, specific occupational therapeutic concepts have been avoided. The forms for parents are written in comprehensible and ordinary Dutch.
The formulation of the questions in the listings, the application form and list of evaluation are based on the assumption that one question at a time is asked.
The design and layout of the list aim at an attractive and well-finished appearance. The result of this will be a careful filling in of the listing.

Once the adapted model is chosen, you need to help to install at the location where the computer will be used. Everybody involved with and supporting the use of the computer needs to receive instructions. It is very important, that the people at home, at school or in the living group understand how everything works. That way there is always someone around to help, when things freeze up or you just can’t remember how! It will prevent disappointments. Therefore you need to organize trainings for using computers with adaptations. Not only for the users with a disability, but also for those who will support the use of the computer.

The model of process consists of 11 phases, which should be followed, in order to arrive at a good recommendation and an optimal use of the computer aids. As the following diagram shows we can in some phases go back to an earlier phase, if necessary.

Model of process for computer advising



The place of Reed and Sanderson's systematics in the listing

As described in the above, the listing has been categorised according to BATS. The 'Model of Human Occupation" by Reed and Sanderson fits in wonderfully well with this. The five physical skills from the model by Reed and Sanderson fit into BATS' item "the client". By means of these five items all important data with respect to the client and relative to the use of a computer can be organised.

The "Model of Human Occupation" by Reed and Sanderson departs from the idea that the activities a person performs are determined to a large extent by the environment in which he operates.

When collecting information with respect to the client it is not only necessary to get information directly from the client, but also from the people in his immediate vicinity. This is especially true for multiple handicapped children, as these children are often dependant on physical and social environment factors. By getting data from the people most involved the child can be spared all sorts of tests and observations over and over again. The child will probably stay better motivated to deal with and work on the computer. During the listing it should be checked to what extent the use of the computer can be adapted to the child and to what extent the child is capable of adapting itself to the use of the computer.

Young people with a disability experience that via the computer there is much more to life with respect to playing, learning, working and making friends. Making this possible takes a lot of effort and dedication. The knowledge it takes is being spread out through the region teams. Furthermore the current refund system is not sufficient to make responsible and cost-efficient computer use possible. Also synchronization with computer use at school, at home or in the living group is still far from ideal.

All these matters is what keeps the people at Xidis very busy, working with other organizations as much as possible. Their most important motivation being:

Giving young people, in an enthusiastic and fun manner, the chance to bring out the best in themselves, thanks to the computer.