

„TOM“ – ein neuer Weg

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Seit etwa zwei Jahren steht „TOM“^[1] zur Verfügung. Es ist ein Weg, die multimedialen Fähigkeiten, die heute Personalcomputer haben zu verbinden mit einer modernen Form der Behindertenpädagogik, die auch handelnde und aktionale Gesichtspunkte in die Förderung integriert. Besonders behinderte Kinder sind in diesen Bereichen des Wahrnehmens und Lernens oft retardiert und bedürfen der hochqualitativen Förderung.

Es ist im übrigen ein alter, wenn auch oft nicht richtiger Vorwurf, dass EDV-orientierte Förderung vor allem den kognitiven Bereich überstark trainiert. Die anderen Gesichtspunkte der Persönlichkeitsbildung werden vernachlässigt, so die Behauptung und das Ergebnis sei der emotionslose Computerzombie der mit rot geränderten Augen vor dem Gerät sitzt und unfähig ist, die Welt um sich noch wahrzunehmen. So, zumindest die Kritik in ihrer extremen Ausformung.

Es soll also ein Gegengewicht stattfinden. Es ist sicher richtig, dass die alleinige Form der softwaregesteuerten Förderung einseitig werden kann. Die Angst ist, gesamt gesehen, derzeit sicher noch unbegründet, weil es kaum Settings gibt, wo schon so intensiv der PC eingesetzt wird, dass diese Gefahr bestünde. Dennoch in „extremis“ könnte die Gefahr durchaus da sein.

Es gab zwar bisher schon – relativ aufwändige – Versuche auch den taktilen Bereich hereinzunehmen. Ein Beispiel, das vielen bekannt sein dürfte, ist „*Magic touch*“ – ein berührungsempfindlicher Monitor, der die Fingerbewegungen direkt am Bildschirm umsetzt. Eine große Erleichterung für viele behinderte Kinder, die die Maus – aus welchen Gründen immer – nicht bedienen konnten.

„TOM“ versucht nun auch die Kombination verschiedener Sinne. Ein sehr liebevoll gestaltetes Spielmaterial (Tiere, Fahrzeuge, Gemüse, Ost, etc.) verbunden mit interaktiver Herangehensweise machen es zu einem beliebten und sehr effizienten Instrumentarium für viele Bereiche des Förderns.

Das „*activity board*“ ist sozusagen die Drehscheibe, der Computer fordert auf, kontrolliert, lobt usw., was beinahe allen Kindern, die damit konfrontiert wurden, hohe Motivation, ja oft Entzücken auslöste.

Die Installation ist einfach gehalten, Probleme können leicht mit der Hotline gelöst werden. Die Software ist intuitiv steuerbar, was auch wichtig ist, denn seitenweises Handbuchwäl-

zen kann nicht der Sinn guter Programme sein. Die Akzeptanz ist auch bei LehrerInnen und TherapeutInnen sehr hoch, handelt es sich doch oft hier um ein Klientel, das meist große Computerskepsis mitbringt.

Die Einzelbereiche

- **Visuelle Differenzierung** besteht aus 2 Stufen, ein Objekt wird auf das board gelegt und wird benannt bzw. ein vom PC benanntes Objekt wird angefordert.

- **Auditive Wahrnehmung**, Geräusche hören und mit den Anweisungen vergleichen fördert die sicher die auditive Kompetenz.

- **Begriffsbildung** wird durch Auffordern, Objekte auf das board zu legen, trainiert.

- **Gedächtnstraining, Serialität**, Reihenbildungen, unterstützt durch Handlungsaktivitäten fördern die so wichtige Voraussetzung für z.B. Lesen.

- **Wörter und Silben**, phonemisches Zusammenlauten durch vielfältige Übungsvarianten.

- **Alphabet**, Training des Alphabets, aktional durch den PC unterstützt.

- **Analytischer Wortaufbau**, mit vorgefertigten Listen können Wörter phonemisch und analytisch bearbeitet werden.

- **Erlernen der Buchstaben**, eine Kombination multimedialer Vorgangsweisen ermöglicht das Erlernen der Buchstaben.

- **Erlernen der Zahlen**, Vormachen und Nachlegen numerischer Vorgaben bewirkt ein sanftes Hineinsteuern in den Zahlenerwerb

- **Bilden von Mengen**, Zeigen und Benennen der Zahlen.

- **Zuordnen von Mengen und Zahlen** ermöglicht Trainingseinheiten mit einer voreingestellten Anzahl.

Vielfache Benutzereingaben ermöglichen ein multivariantes Szenarium, das sehr bald selbst-erklärend sich darstellt.

Insgesamt ist „TOM“ ein großartiges Werkzeug für alle, die Vertrauen in computerorientierte Förderung haben. Das Programm wird ständig erweitert, so ist z.B. sogar für blinde Kinder ein Satz Braillebuchstaben erhältlich.

Der doch etwas empfindlich hohe Preis mag ein Wermutstropfen sein, rechtfertigt aber das, was man hier geboten bekommt.

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1. General introduction

What is this Tom? First of all I think, it is important to mention, that Tom is a completely new invention developed and designed by pedagogues and engineers in Salzburg. Tom is distributed by Platus Learning Systems, a firm which has specialized on the distribution of EDP-based learning systems for disabled children and adolescents and for early learning with infants.

Tom is simply a combination of traditional toys, such as wooden objects, and high technology, namely computers. In order to give the computer a third dimension, we made it possible for conventional desktop or laptop computers to recognize wooden objects like vehicles, animals and even abstract figures.

It is evident, that especially children learn much more easily or rather efficiently by touching and playing.

There are plenty of conventional computer programs which are good solutions to work on an acoustic and visual level. But there is not a single program which supports the, as mentioned, important tactile level.

One can say that Tom is really a unique solution for children which suffer from all kinds of mental defects.

The idea behind this system Tom was developed in Salzburg in the school for disabled children by pedagogues, occupational therapists (Ergotherapeuten) and teachers for people with visual impairments.

In order to realize this project we consulted two engineers of a technical school in Salzburg who finally realized and developed a prototype. This prototype was eventually implicated for a patent.

2. Product introduction

Now, I would like to present to you our system Tom more in detail.

The TOM system is simply a combination of both the activity level (three-dimensional wooden objects) and the technical level (connecting this to the computer programme via the Activity-board).

The wooden objects and the Activity-board, which is a flat tableau, are equipped with electronic sensors. The Activity-board and the computer are connected via a conventional USB port. The board enables the computer to



recognize different objects and give the appropriate response to the actor.

The actor navigates in menu in order to select the appropriate learning session and specify the learning progress and the level of difficulty.

We have tried to the program a didactical structure. So it is possible to begin a certain learning session with concrete objects like animals, vehicles, fruits, vegetables and so on. According to the learning progress of the actor one can choose the next abstract level in order to learn colors, shapes, figures, sounds and so on. The third step provides the possibility to learn letters and numbers. Eventually it is possible for the actor to learn syllables and even words.

3. Tom has the following educational aims

Combination of technical and active levels

The child experiences three-dimensional by touching and handling a choice of 120 wooden objects (active level). The technical modification of the wooden objects with sensors enables work on a technical level with the computer and the adaptable programmes available.

Training the auditory, visual and tactile-sensory perception processing

The programs have great potential for improving auditory perception. Different sounds produced by placing the wooden objects on the ACTIVITY-board promote auditory discrimination. This is the basic need for learning to read.

Visual perception is stimulated by learning, naming and discriminating colors and shapes. The combination of the wooden objects in primary colors and the EDP training program make it possible to learn and stabilize perceptive skills. The ability to discriminate (especially figure and background) is essential for recognizing letters and learning to read and write.

Working with the three-dimensional objects and their various surfaces provides ideal training for tactile-sensory perception.

Promoting vocabulary development

At the beginning of each session of the training program, there is a spoken description over the loudspeakers of all the toys which appear in that section. In addition, all the toys chosen and introduced into the training game by the child are named, whether or not the choice is correct.

Touch encourages cognitive skills

Working with three-dimensional materials (wooden objects) generally promotes cognitive ability.

Auditory, visual and tactile discrimination; Sensory-motor training

The PC-training program requires the child to work in all these fields.

Senses, coordination and motor skills are trained simultaneously.

Increasing staying power and concentration

Great motivation due to wooden toys (action level) and working with the computer (technical level):

Due to the great variety of the tasks which are set and the interesting build-up of the programs, which have been well thought out by educationalists, the children are highly motivated and their concentration and staying power improve.

The learn and play system "TOM" stimulates the children's perceptive faculties through the most important sensory channels, that is seeing, hearing and touching, which are all in constant simultaneous use while going through the various training sessions.

4. Who is the target group of Tom

- CP or MCP Kinder (cerebral palsy or minimal CP)
- Children with development-delays
- Children with basal perception difficulties
- Children with mental and sensory impairments
- Children with visual impairment
- Children with fine motor difficulties
- Infants requiring early learning
- Children with the Down-Syndrome

Basically Tom can be applied for therapy with 3 year old children (pre-school) up to elderly people who suffer from a heart stroke and have to relearn letters and so on.

5. Function of the system

Now I would like to present to you how the program and its multiple functions are put into practice. The program itself is based on very simple handling, which means that professional instructions at the beginning are rather unnecessary. As we all know that we normally don't want to read masses user's manuals to get to work with certain things, we really tried to create a program that is based on very simple handling. The actor or rather instructor only navigates in this window. There is no other window coming up or closing during the session.

Sessions

In the very first step the instructor chooses the section according to the learning progress and the level of cognitive disability

One can choose between: cognition, letters and numbers.

The section cognition is then divided into:

- concept formation: The actor is able to learn certain objects like animals, vehicles...

- auditory cognition: There the actor is able to hear the sounds of certain objects.

- visual cognition: This section supports the visual distinction of certain objects.

- memory training seriality: The actor is able to train his memory and brain capacity

In the second section the actor is able to play with number. According to the training progress one can start with a simple study of the letter or build certain syllables or words.

The third section deals with numbers. Again one can start with the study of certain numbers or build quantities.

Important Notes

According to analyses of teachers for people with visual impairments, we have designed a black background in order to make it possible for the actor to distinguish the objects properly.

There are no graphics put into the program so that the actor is not irritated and can concentrate completely on the session.

Both the Activity-Board and the wooden toys are very sturdy which plays an important role for kids. Liquids can be wiped off very easily.

It is possible for the actor to navigate through the program without keyboard or mouse, simply by using these three objects.

According to the level of disability it is possible to start automatic sessions which make the actor independent.

The Austrian Ministry of Education has accepted Tom as official teaching aid.

6. Tom consists of

A specially manufactured case equipped with the following:

- All necessary toys (cars, balls etc.). These are made of high quality wood and comply with common safety standards and EU regulations.
- ACTIVITY-board, black plastic disc 25 cm diameter, connecting cable for USB interface, and no external power supply is required.
- „TOM“-Software, suitable for Windows 98 onwards (98, 2000, XP, NT), automatic installation.
- Extensive user's guide and installation instructions.
- The purchase of the learning system TOM includes a two-year-guarantee on all parts and an automatic receipt of software updates. In addition, the owner will automatically receive information of any new developments to expand the modules.

Literatur

- [1] PLATUS LEARNING SYSTEMS, Robinigstr. 35, A-5020 Salzburg, office@platus.at