



**Beit Issie Shapiro**  
Changing the lives of people with disabilities  
On the Willie & Celia Trump Campus

## **The IPAD Revolution**

Written by: Noa Nitzan, Occupational Therapist, Technology Consulting Center

April 2015

**For most people, technology makes things easier. For people with disabilities, it makes things doable.**

In recent decades, the world is seeing an accelerated technological revolution. This revolution has already had a far-reaching impact on the quality of life of people with disabilities, and in the future its impact will no doubt only grow.

In parallel with this technological development, many countries are undergoing a social-ideological revolution, whereby societies are moving towards the inclusion of people with disabilities in many areas of community life. Values of integration, inclusion and accessibility are being affirmed by law, policy and practice in the field, leading to significant professional breakthroughs in the treatments of people with disabilities.

The growth of knowledge due to the accelerated technological advancements on one hand, and the development of enlightened social attitudes towards people with disabilities on the other, make a host of new ways to advance the quality of life of people with disabilities – children and adults – available to professionals.

### **The UN Convention on the Rights of Persons with Disabilities**

The International Convention on the Rights of Persons with Disabilities was adopted by the UN General Assembly in 2006. Israel ratified the convention in September 2012. The convention was intended to guarantee equality of rights to people with disabilities throughout the world, and at its core are the principles of participation and inclusion, respect of difference, equality of

opportunity, accessibility and more. The convention affirms that people with disabilities must be enabled to fully enjoy all human rights and freedoms, that it is vital to make the physical, social, economic and cultural environments accessible in all spheres of life, e.g., health, education, information and communication.

The convention specifically notes the contribution of technology to people with disabilities and the state's obligation to advance such technologies. Article 4 (1g) addresses the State's commitment "To undertake or promote research and development of, and to promote the availability and use of new technologies, including information and communications technologies, mobility aids, devices and assistive technologies, suitable for persons with disabilities..." Article 9 (2h) deals with accessibility and notes that "the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.."

The iPad is a normative technological tool and its adaptation to the use of people with disabilities advances their participation in community life, enables them to better utilize opportunities in various spheres of life and therefore advances equality of rights.

### **Social Participation as a Central Factor in the Quality of Life of Children with Disabilities**

The main model that guides health professionals today is the ICF model (International Disability and Health Classification of Functioning) published in 2001 by the World Health Organization (WHO, 2001). ICF emphasizes the importance of a person – child or adult – taking part in the fabric of community life as a significant parameter in evaluating the client and in determining intervention goals. Rather than focusing on the person's limitations, as was the case in the past, the model emphasizes abilities, guiding professionals to find ways to enable people to participate in their social environment by providing tools and creating an adapted environment.

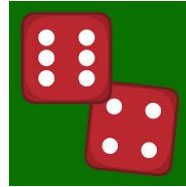
There are many different tablets on the market with different operating systems. A few years ago, Beit Issie Shapiro chose to use the iPad because its features were best suited to the children attending our frameworks.

### **The iPad as a tool that enables and advances participation**

The iPad enables participation and advances a sense of belonging and social integration - firstly, because it is such a popular and normative device. In addition, it can be used to aid various activities and enable the user participate. A striking example is the use of the iPad for augmentative and alternative communication (AAC), detailed below. Another example is using iPads to help children who struggle with reading and writing. It can be used for

typing, photographing the class blackboard, to vocalize texts and more. The iPad helps people with disabilities to get organized and offers people with vision impairments aids such as a magnifying glass, a vocalizing application and more. In addition, the iPad includes game accessories – applications that can take the place of actual dice or the Hanukah dreidel and many others.

Dice on the  
iPad screen



### Advantages to Using the iPad

- **Normative and popular:** For the first time we have an aid device with a “normal” appearance and use. This makes it easier for families to purchase an iPad and get to know it, and in addition encourages them to use it. This feature is very important for the users, children and adults, who enjoy “feeling like everybody else.”
- **Mobility:** the device is relatively light and convenient to carry from place to place and thus can be used in many environments for a range of purposes.
- **Immediate and significant feedback:** every touch of the iPad screen triggers a reaction and therefore enables people with disabilities to use it. In this way it strengthens their sense of ability and raises their motivation to use it.
- **Accessibility:** the iPad has inbuilt accessibility features and is easy to operate.
- **High quality:** the device has high standards, such as a high resolution display that makes it very suitable for people with disabilities.
- **Large selection of applications:** applications relevant for many different uses can be easily and quickly downloaded to a single device. We mapped the available applications and found several excellent applications for education and special education that exist only in the Apple store.

### The iPad's Limitations

It is also important to acknowledge the iPad's limitations, including;

- **Screen size:** for some users the screen may be too small

- **Sunlight reflection**
- **Fragility:** the device is easy to damage
- **Sound system:** is not of high enough quality for some uses, including group work.

## Uses of the iPad

It is not enough to be familiar with the iPad and its features; we must determine the effective ways to use it (frequency, appropriate level of mediation, interaction with people nearby and more). It is important that professionals (e.g., occupational therapists or speech therapists) will be involved in the assimilation process of the iPad's use and provide focused guidance to the child or adult learning to use it, to teach individually appropriate methods of use. Technical guidance, such as recommending a type of device, suitable cover and applications, is very important but does not provide the whole picture. Central place must be given to teaching appropriate and effective use. In addition, the guidance should include the various uses by the user's different environments. Use of the device in a framework environment (educational, therapeutic, leisure, residential, etc.) is different than using it in the family environment, and the professionals must teach the person to use it appropriately in each environment, and support the assimilation process.

## Leisure and Play

The benefits that children and adults with disabilities can gain from the iPad are often conceived as limited to communication and education. But we found that the iPad is beneficial in other contexts as well. iPad games are usually viewed as a way to practice various skills (cognitive, language, motor, etc.), but in our view, iPad games are also a goal in themselves and not only a means. Play has a central role in children's development and being engaged during leisure time has an impact on the quality of life of children and adults of all ages. For this reason, it is so important to use the iPad to play games.

Many children with cognitive and/or complex motor disabilities display patterns of passive behavior and it is difficult to find games for them that will interest them and motivate them to actively play them. For many of these children, the iPad enables independent exploration and engagement that other aids or games fail to generate.

We have found through our field work that children with motor disabilities often experience a lot of frustration due to the gap between their relatively high cognitive abilities and their ability to execute. For some of these children, playing with an iPad enables age-appropriate activities, decreases their dependence on their environment and enables exploration activities that were

not achievable before. A child with a motor disability (due to CP, for instance) that limits hand functioning will probably not be able to build with play blocks, or pretend play with dolls and cars, as would a child with full hand functioning. However, these difficulties will not prevent him/her from using the iPad to play pretend games, puzzles, etc.

Children and adults with cognitive developmental disabilities oftentimes find playing difficult. The difficulty can be expressed in low playing levels, low initiation levels and difficulty to persevere. The iPad's characteristics (immediate visual and audio response, mobility, variety of applications and more) encourage use and exploration. We have seen in our field work children and adults, who showed no interest in other games, or whose level of play in regular games was low (repetitive and unidirectional play, for instance), being interested in playing with the iPad. This was sometimes expressed in them taking the initiative, and playing a game in a directional way (to achieve the goal, from beginning to end) and even explored and learned by themselves how to operate the device. There were cases in which they displayed skills that were hidden before, such as cognitive matching games and puzzles. In the therapeutic environment, we often want to transfer the skills learned through the iPad to ordinary play objects. For instance, after being exposed to and practicing pretend play on the iPad, the therapist will give the child dolls and games that relate to the virtual game.



**Pretend play application**



Story applications (or creating stories with open applications) are a wonderful, normative leisure activity, and are particularly helpful for users who can't read an actual book (due to a motor or cognitive disability).

#### Age appropriate games

Usually, as a child grows, so do the challenges of finding him suitable games. The iPad is a great solution for these children, since it is appropriate for all ages. Children or adults of all ages can play with it and feel they are just like everybody else.

When matching games to adult users, it is important to focus on age-appropriate games that take into account each person's interests. For instance, if a person has a difficulty in manipulating 3 dimensional objects, such as cards or pencils, card games or crossword applications can be used. Unfortunately, there isn't a large selection of adult appropriate games that are adapted for adults with cognitive developmental disabilities, and the challenge to match game applications to this population is particularly great. This population requires applications that on the one hand match their cognitive levels and abilities, but on the other hand are not "childish." In this way, the adult can play a game that is appropriate to his/her age but that is at a relatively low level. Because of the extreme shortage in such applications, we sometimes use "open" applications that allow for pictures, text and recordings to be imported, and in this way adapt the game for an adult. In addition, there is a range of applications that are based on real games, card games, crosswords, etc., which adults of various ages, who are unable to use the real objects, can enjoy.

## Communication

Even basic applications such as video chats (e.g., Skype) and sending texts or emails that we use daily to communicate, can be very significant for people with disabilities.

### **We address three aspects related to communication:**

**Augmentative Alternative Communication (AAC)** – designated AAC applications are a wonderful tool for children and adults with communication difficulties, in particular difficulties in speech and language. AAC applications enable children and adults to communicate through boards with icons or written words. The applications include a speech feature so the message can be heard by touching the picture/icon/written word (the choice between a picture, icon or written word depends on the user's communication level). It is possible to enter several icons in accordance with the user's ability and to create dynamic boards (where touching an icon can bring up a different board).



**Interaction** – playing with an iPad is a normative and popular tool for integration in the community. Many parents report of improved play between the child and his/her siblings, and between the child and other children. This is true for all ages.

**Using an iPad encourages interaction**

An iPad can also be isolating. Since it is important to encourage social interaction and create conditions that promote the use of various social skills, professionals should consider how to create such environments. This can be accomplished through multi-user games, or using one iPad for a group of users. We have observed the iPad leading to social use in situations that we haven't observed when users engaged in different games.

**Sharing experiences** – the iPad enabled children and adults with various disabilities to convey messages to their family members and other people through pictures, videos and designated album applications (where texts and recordings can be uploaded). In this way, they are sharing their experiences with others and expressing their emotions. Using the camera and the applications is very easy and results are immediate. Thus the child can share with his/her family the experiences he/she had at school, and share with classmates and staff the experiences he/she has had with his/her family or in the community. An adult living at a residential facility or who is employed or spending time outside his/her home, can share his/her experiences with family members or friends who are not with him/her at that time.

## Learning

In many frameworks, and especially in kindergartens and at schools, the iPad is used to convey educational content through designated applications (for instance, applications that teach arithmetic and English).



Applications for learning letters and arithmetic

There are also “open” educational applications that enable the teacher to design the lesson on the iPad so it is interactive and interesting. These materials can be sent to parents’ and other staff members’ computers.

Using the iPad for educational purposes enables making the subject matter accessible to the users by adapting the content and ways it is taught to the user. This can be done for individuals or groups. A teacher can use an iPad as a tool to teach or for exercises to review the taught material. It is important to relate to how the iPad is used during the lesson and to select the appropriate method (using several iPads at the same time, dividing into

groups, using a TV screen, etc.). Some applications can be used instead of exercise sheets for students who cannot use conventional sheets.

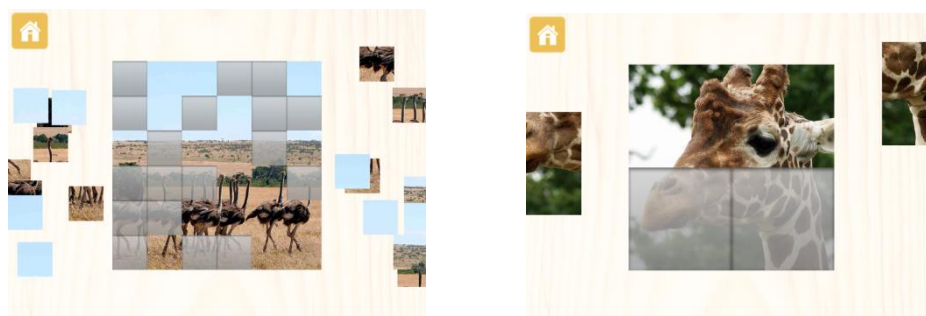
With the iPad, the teacher can design sessions and lessons, organize a visual agenda and document attendance of those who came that day to the kindergarten/class. The iPad's camera and album applications are very useful in helping the children or adults process the experiences they had at various activities such as a trip, party or other events.

### Practicing skills

There are iPad applications that enable the user to practice various skills such as memory, hand-eye coordination, language and daily activities (ADL). These applications can be used during a lesson, individually, in a group setting and of course, during leisure time. We can take advantage of the fact that many children and adults have a higher motivation to use the iPad than other tools, in order to promote the practice of various skills. As noted above, open applications can be used to import and integrate content that is appropriate to the users.

Following are a few examples of skills that can be practiced with the iPad:

- Cognitive skills: children and adults who do not demonstrate an interest in or who are unable to play “real” cognitive games such as matching games or puzzles, may show motivation to play these games on the iPad. Many applications exist today of such games at different levels. It is important to carefully match the game's level and features to each user.

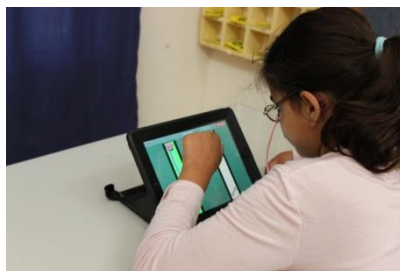


**Puzzles: different levels of difficulty can be selected**

There are many applications for exercising memory skills, sorting and logic.

- Hand functioning – there are designated applications for practicing hand movements such as pointing, hand-eye coordination, sketching lines, writing letters and numbers on a screen, drawing and painting. These may be used prior to using the “real” items – paper and writing tools.





- Language enrichment – many iPad applications combine verbal information that usually refers to a picture on the iPad screen. Through these two mediums – verbal and visual – the user understands the connection between a word or a sentence and their meaning. Many children with developmental difficulties receive less exposure to objects in their environment due to motor or cognitive impairment, and so they may miss the semantic information related to them. The iPad contains visual representations of most of the environments the children are exposed to, and thus, with the swipe of a finger, even children with developmental disabilities become exposed to a large amount of verbal information that previously had been less accessible for them. Story applications are also helpful in this regard.
- Visual skills – the device's strong visual stimulation can be very significant for children and adults with vision difficulties, as a tool for exercising vision skills such as gaze focus and following an object with the eyes.



**Strong visual stimulations**

Compared with other shining objects (e.g., a flashlight), iPads enable more effective visual exercises, since a visual and sometimes auditory reaction is created through the user's touch. There are applications designed to help people with visual impairments to practice reading; for this purpose it is recommended to use the iPad in a dark room or a multi-sensory room (Snoezelen).

Everyday skills – there are designated applications for practicing everyday skills. Children and adults with disabilities often have difficulties in independently carrying out everyday activities. These applications include pictures and videos demonstrating the activities' various stages, in sequential order. Some applications enable to input pictures and videos “starring” the user him/herself, and it is possible to use open applications and adapt the sequence of actions to the user’s level of ability. In our field work, we see the effectiveness in using video modeling, and when possible, we recommend preparing the sequences with the person him/herself, including the recordings.

### Motivational Factor (e.g., promoting motor exercises)

Where the goal is motor exercises and the user avoids performing them due to difficulty, the pleasure and interest aroused by the iPad can be used as a motivational factor, and sometimes even as a distraction; for instance, to



encourage walking with a walker or standing in a stander, both of which are sometimes very difficult tasks for children and adults.

### Advisory Center on Technology

The Advisory Center

on Technology was established based on the understanding that technological solutions must be developed for the various needs of children and adults with disabilities and their families. Beit Issie Shapiro has accumulated a great deal of experience in this field.

The first people to initiate the use of iPads at Beit Issie Shapiro were professionals who believed that the children attending the organization’s educational-therapeutic frameworks could improve their functioning by using the device.

At the same time, several parents turned to staff members with the request that they explore how the device can be used to their children’s advantage. From the very first experimentations, we learned that the iPad is a useful and very effective tool for people with disabilities, and that it can be a solution to some of the difficulties and challenges we face in different areas such as communication, play and learning.

These experiences made it clear that it is important to deepen and broaden the use of this device in a deliberate and professional way, while making sure

to document and collect data in order to develop a knowledge base and work models.

In the next stage, we carried out two tasks in parallel:

- a. Surveyed work done in this field in Israel and overseas and mapped the existing applications and devices.
- b. We continued to enrich our experience in this field through our work with Beit Issie Shapiro's children, and expanded the use of the iPad to additional frameworks. We documented our experience and what we have learned and formulated a work model that is now being disseminated to professionals and families in Israel and overseas.

The work model focuses on incorporating the use of iPads in educational frameworks while relating to various issues (professional and technical) that arise within several central aspects:

- Assigning staff members to various positions related to the process of incorporating iPad use.
- Finding an effective and appropriate way to train the staff and support them.
- Finding an effective and appropriate way to train parents and other family members and support them.
- Formulating professional-based rules (e.g., when the device should and shouldn't be used).
- Formulating regulations regarding device maintenance (e.g., charging the device and taking care of it).
- Formulating regulations vis-à-vis parents.

### **To Summarize ...**

Technology develops quickly and continuously. The iPad led to significant changes in the lives of people with disabilities: it helps in removing obstacles and difficulties and enables them to participate in diverse life situations. It seems that the fact that the iPad is a normative tool that was not originally built for the use of people with disabilities is connected to its great success among this population. As a normative tool, the iPad facilitates social integration, since it is available and simple to operate, easy for the users to acquire and use, both technically and psychologically.

The experience we have accumulated showed that the iPad has many advantages in motivating children and adults with various disabilities to play and to learn, and that it enables various methods of communication. As we have emphasized, it is important to develop the many possibilities the iPad offers for play, and in addition to approach play as a goal in itself and not only as a means to practicing skills.

As any tool, it has downsides as well as advantages (such as excessive and unwise use). This is why technical guidance is not enough, but proper guidance must be provided regarding how to appropriately and productively use it. It is important to also continue and develop our knowledge in this field and underpin findings from the field with research.