



ASSISTED COMPUTER SOFTWARE IN PEDIATRIC CLINIC COMMUNICATION DISORDERSHABILITATION

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- Communication is one way of providing the people with a powerful means of influencing others and the environment.
- Our ability to communicate is truly important, as it is the only way to connect us to our world.

A child's brain is a magnificent engine for learning. A child learns to crawl, then walk, run and explore. A child learns to reason, to pay attention, to remember.

It is more dramatic in the way a child learns language, babies learn to speak by listening. And all of us all over the world help them by modulating our sounds of the quicksilver flow of speech in fundamentally the same way. Simply, when confronted with a baby, adults produce a signal that is raised about an octave in pitch and slows down very carefully and creates these swooping contours. It's not a job interview voice. It's a very distinct voice that's fetching to a baby. Why would every person on the planet do it if it's not important?

Language acquisition is the primary area of concern as the child grows and develops.

When the child have difficulties to develop his language and speech normally computers can help them with its variety of hardware and software to produce a lot of modification of the surrounding fields to help them to capture their lost part of language and speech development.

* Pediatric Communication Disorders.

Language Disorders

1) Delayed Language Development

in which the child can't follow the normal language development chart.



Speech Disorders

Introduction articulation disorders.

2) Stuttering: fluency disturbances.

3) Nasality: Resonance disorders.

4) Dyslalia: difficulties with sounds pronunciation.

Voice Disorders

Aphonia and Dysphonia: Absence or change of voice.

Delayed Language Development (DLN) is defined as the inability to exchange (understand or express) the thought, feeling at the expected age.

It also can be define as the child inability to follow the normal chart of language maturation (Kotby1980).

Language Behavior could be in the form of listening, speaking, reading & writing although it is primarily an aura/oral system.

*Children with lag behind their peers in language production and language comprehension, which contributes to learning and reading disabilities in school.

*There are lots of causes to can produce Delayed language development (DLN).

1-Sensory deprivation:

Hearing , visual & oral sensation (both superficial and propioceptive) with the level of attention & higher integration.

2-Mental retardation.

3-Minimal brain dysfunction such as in SLI, &hyperactive child with attention deficit ,which will be manifested with impaired concentration



level , auditory perception & slow development of spoken language, articulation errors, with reading& writing difficulties, with clumsy behavior.

4- Psychiatric Disorders (Childhood schizophrenia, autistic behavior& social deprivation).

5- Global developmental delay.

6- Psychological problem (imitating smaller brother , fighting ParentsEtc)

7- Social inadequacy (e.g.. working mother& foreigner servants.)

8- Brain Damage with motor Deficit.

Communication disorders can also affect students in the public schools.

It is expected when the children enter their two's and grow into three and four, they will have a remarkable number of ways to tell adults what they need. Even if the words don't all sound right, a normally developing child will make many efforts to communicate and will make his point effectively. Young children ask so many questions.

Children who don't ask questions or tell adults what they want may have a communication disorder. Children with SLI may not produce any words until they are nearly two years old. At age three, they may talk, but can't be understood. As they grow, they will struggle to learn new words, make conversation and sound coherent.

Today, research is underway to determine which children do not outgrow this pattern of delayed speech. By age 4 to 5 years, DLD could be a signpost of a lasting disability that persists throughout the school years. Early identification and intervention are considered best practices, in order to minimize possible academic risks.

This work is aiming

To discuss the importance of the computers and implementing IT contributions and technology as a diagnostic and therapeutic tool, to overcome communication disorders. And help individuals with special



needs and learning difficulties to communicate with the surrounding with better way.

Persons & Method:

This study done for progress results in all children with communication deficit used an easy group of different software with augmented auditory, visual, tactile, and animated pictures, to give communication disorders children chance for prolonged exposure to natural language and speech stimulation to develop their language speech and voice properly. And as well it will improve the reading and writing skills for the communicative handicapped child.

Children with communication disorders at different age from 2-10 years can use this program with different adjustable accessory.

Therapeutic plan depending on the use of computer software in serial programs level as follow:

- 1- Pictures Semantic groups software for DLD and Dyslexic patient.
- 2- Animated pictures for sentences & syntax.
- 3- Video-phonetic program for phonology disorders.
- 4- Complex animated pictures for pragmatics.
- 5- Visi-pitch programs could be used to improve voice and prosody of speech.
- 6- Nasometer is used for diagnosis and therapy for children having disturbance in nasalance of speech.
- 7- computerized speech laboratory to diagnose the defects in speech by the voice and speech analysis.
- 8- Nonverbal communication tools with different hard ware specification.

*Home practice with copy of the software for each patient will give to the parents.

*The child can receive individual therapy and group therapy for shorter period and more enjoyable sessions.

*Putting in mind that all facilities available in computers is used for each child according to his needs (i.e. full screen monitor at least 17" to 21" adjustable volume with high Pitch and slow rate speakers. Some children needed auditory feedback with some delay to overcome their delayed

auditory response which is the characteristic for undeveloped binaural hearing and stutterers.



*Language, speech and voice tests can be applied and reapplied in ease with the help of the computers before the appliance of the therapy, and during follow up compared with average score in clear accurate chart to facilitate the feedback with the multidisciplinary teamwork.

therapeutic plan can be discussed with the parents more easily with an easy home program which could be more intensive, as they can understand the expected target score for computer program software, and how they will share in its appliance.

*The following abilities are subsumed under expressive language: semantics, syntax, phonology, morphology, and pragmatics. (*Semantics* refers to knowledge of word meanings. *Syntax* refers to the underlying structure of language and the rules that guide word order. *Phonology* referred to the sound system of a language. *Morphology* refers to the meaning units of language). Just as a phoneme refers to the smallest unit of sound, a morpheme refers to the smallest unit of meaning. For example, the word *boys* is composed of two morphemes, the meaning unit boy and the plural marker. *Pragmatics* refers to the social aspects of language and the varied use of language in different social contexts. A child with a pragmatic language disorder may fail to alter his or her delivery on the basis of the situation and the listener. As a result, he or she may speak to the school principal in the same tone and manner as to a peer on the playground (e.g., "Hey, man, what's happening?").

Results&discussion:

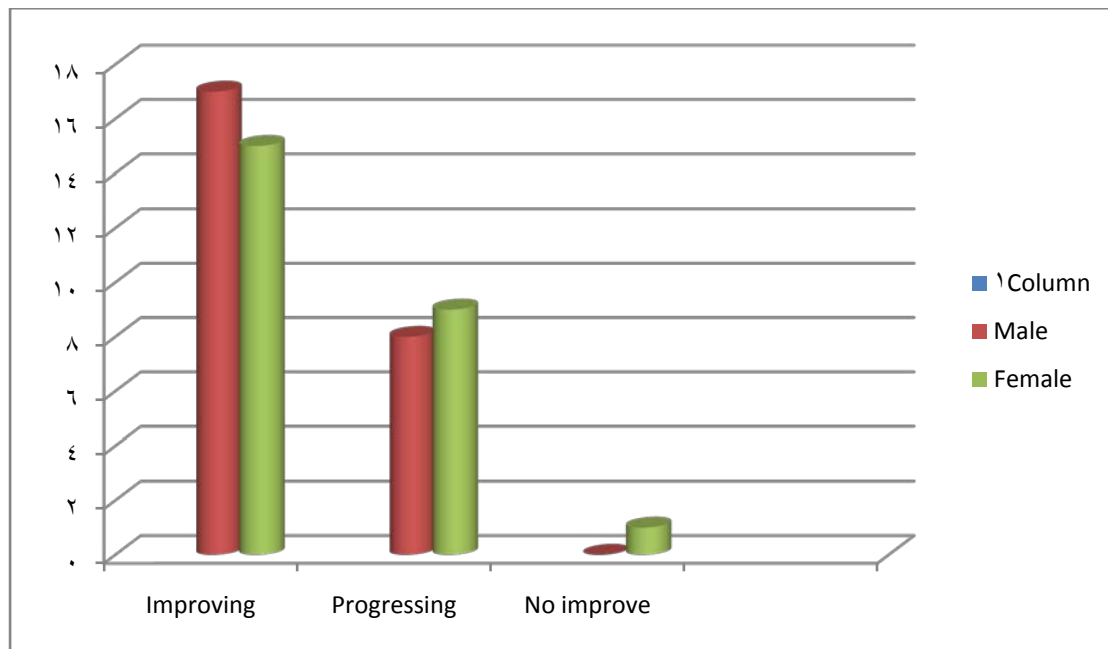
***73%** of the children attending the phoniatic clinic for different kind of communication disorders showing a lot of improvement at all levels within 4 months of therapeutic program.

***25%** of them improved in semantic with limited improvement in phonology & syntax as they need more time to acquire

This group were having some deficit in manual complex activity which appeared with appliance of therapy as they were not able to manipulate small toys and the mouse of the computers, and they needed occupational therapy which was achieving a goal to adjust the visual manual coordination, and improve the fine motor activity of the child. After more than 4 months of combined speech therapy with occupational therapy the children started to correct phonology.

***2%** did not show significant improvement as there was associated severe MR which was having severe motor physical disability.

* there is no apparent correlation between male & female progress.



Statistical chart Results for aided patients in pediatric communication disorders clinic.

Conclusions

1. Early intervention can begin during preschool age as early as 2-6 years of life, and could be very effective to overcome communicative disorders and avoid the incidence of learning disability.
2. Computerized speech therapy programs facilitate the job for the speech pathologist to reach good results in short duration.
3. Multisensory stimulation program is a very effective, potent therapeutic plan to be used with the child with fine motor skills defect,
4. The child fine motor and fine sensory skills should be evaluated as early as possible in cases of delayed language development to avoid more delay in other habilitation prospective.
5. Parents can secure an early conclusive diagnosis, but being proactive in the preschool years is often better with the software help.
6. Equipping a child for success at ages three and four with proper habilitation program with speech and occupational therapy will lead to positive experiences in kindergarten.
7. Preschool programs should consider special programs designed to enrich the language development of students with disabilities. This



classroom may include normally-developing children who will act unknowingly as models. The focus of class activities may be role-playing, sharing time, or hands-on lessons with new, interesting vocabulary.

This kind of preschool will encourage interaction between children, and will build rich layers of language experience. It may even include techniques from speech pathology with the proper computerized software that solicit from children the kinds of practice they need to build their language skills.

8. Encourage children to ask questions and to use multiple modalities for reinforcement (i.e., encourage them to use computers to read the information, say it aloud, and to try associate it with the visual image).
9. Several techniques, outlined in the section on visual imagery, can help students learn how to form mental pictures to treat the dyslexia and dysgraphia.
10. Activities, and materials can send home for enrichment the therapeutic program.

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