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Supporting Autistic Children With Verbal Apraxia Through Optimised For All Mobile Platforms (Android, IOS, Windows Mobile) Autism Friendly Educational Application

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***Abstract*— One of the most outstanding educators and psychologists, Lew S. Vygotski, in his reflections on play and its meaning believes that when talking about play, one should focus on two aspects, namely: it is necessary to consider the genesis and what role plays in development. Vygotski therefore believes that an answer should be found to the question: "Is play the most important activity of a child in this period of development, or is it simply a dominant activity? " He believes that from the point of view of development in the preschool period, play is not the dominant form of activity, but it is its most important path.**

***Keywords*— Autistic Children, Verbal Apraxia, Mobile Platforms, Android, IOS, Windows Mobile, Educational Application**

I. THE ROLE OF PLAY PEDAGOGY

One of the most outstanding educators and psychologists, Lew S. Vygotski, in his reflections on play and its meaning believes that when talking about play, one should focus on two aspects, namely: it is necessary to consider the genesis and what role plays in development. Vygotski therefore believes that an answer should be found to the question: "Is play the most important activity of a child in this period of development, or is it simply a dominant activity? " He believes that from the point of view of development in the preschool period, play is not the dominant form of activity, but it is its most important path.

By defining the framework for the meaning of play, Vygotsky negates the definition of play using the pleasure quality it gives to the child. He believes that this understanding of "fun" is inappropriate for two reasons: the first is the fact that we encounter many child-bearing activities definitely more fun than having fun. The child is satisfied through playing with one's needs, without noticing the motives or the uniqueness of motives activities, we will not be able to understand play. Preschool not directly realized desires arise in the child, which is the reason, in other words, the main reason for the emergence of various games, but you can observed in children in the early period of childhood a certain tendency to quick release and fulfil your desires. Vygotsky is of the opinion that by observing the emotional side of the child, it can be concluded that it is unsatisfied children's desires release "ways of vicarious gratification." In a child over the age of three, a certain contradiction appears, namely there are many needs that are not met immediately during this period, or desires that do not pass, and on the other hand tend to their immediate satisfaction. We are dealing here with gaining new experiences that form the basis for further development.

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over the age of three, a certain contradiction appears, namely there are many needs that are not met immediately during this period, or desires that do not pass, and on the other hand tend to their immediate satisfaction. We are dealing here with Vygotsky, with play treated as imaginative, it is “illusory realization of unrealized desires. " (L. S. Wygotski, quoted work, p. 67. 19 Ibid., P. 67. 20 Ibid., P. 68.)

II. GUIDELINES WHO AND AMERICAN PAEDIATRICIAN ASSOCIATION ABOUT USING ELECTRONICS BY CHILDREN

The guidelines of the American Academy of Paediatrics

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are that children under the age of two should not have contact with television, computer games, computers, tablets or smartphones, while for children aged 2 - 6 years, the time spent in front of the screen should not exceed a maximum of 20 minutes a day.

WHO has published new recommendations for the healthy upbringing of children up to 5 years of age. WHO, like the American Academy of Paediatrics, is of the opinion that until the age of 2 children should not look at the screen, while after the age of 2 this time cannot exceed one hour a day. Why this discrepancy? Well, I think from the observation of children, how they like to use screens.

III. AUTISM AND VERBAL APRAXIA

Childs' apraxia of speech is an uncommon disorder in which the child has considerable difficulty initiating and making the precise movements needed for articulation, even though he or she has no physical contraindications for speaking.

The toddler does not have any muscle damage, abnormalities in muscle tone or the lack of strength of these muscles, which determine a very sophisticated and specific cycle of movements of the tongue, lips, jaw and palate, necessary to create intelligible speech.

Speech apraxia is sometimes called verbal apraxia or developmental apraxia of speech. Regardless of the name, the most important concept is the word "praxia", in other words movement planning. This inability to plan deliberate movements of the articulation apparatus prevents the child from speaking. A child with speech apraxia wants and tries to speak, but does not know how to do it.

Some specialists believe that the cause lies in brain disorders, some say that studies do not confirm it. When the brains of the children with apraxic speech were scanned, they looked quite normal. Another theory points to disruptions in communication between the brain and muscles, hence difficulties in directing or coordinating movements. Some occupational therapists suggest that children who, from birth, were inactive and not mobile enough in childhood, for various reasons, did not develop the necessary plans for movement. This also applies to specific and precise articulation movements

Speech apraxia often accompanies other childhood disorders, such as autism, Down's syndrome, and cerebral palsy. In addition, it can be the result of a stroke, infection, or traumatic brain injury; appear as a symptom of a genetic disease, metabolic syndrome or constitute an independent deficit. I have heard that speech apraxia is genetically, autosomal dominant.

IV. OUR IDEA OF SUPPORTING AUTISTIC CHILDREN WITH VERBAL APRAXIA THROUGH OPTIMISED FOR ALL MOBILE PLATFORMS (ANDROID, IOS, WINDOWS MOBILE) AUTISM FRIENDLY EDUCATIONAL APPLICATION.

I work as a music therapist and therapist with autistic children. It often happens that a parent comes with a child who does not say anything, begins to open up after therapy and utters the first words. I conducted therapies for the boy and both his parents and doctors - mom and dad - were delighted with the effects of the therapy. My therapy is based on a broad understanding of the family as a whole and focusing on the child with the problem of verbal apraxia. A huge phenomenon for me was that virtually all of my autistic clients loved electronics and it was difficult for them to tear themselves away from tablets or smartphones that they kept somewhere in their sleeves and sometimes searched on my table.

Hence, in my head the idea was born that children with autism should easily and efficiently use electronics, it could create something that would be a bridge in communication between them and their environment even in childhood, I do not mean communicating with the use of electronics, but extracting speech from children, as I can do as a music therapist through music and songs, but here the child will operate the device under parental control at home? Because if they already uses tablets, let it have a deeper meaning than calming the child, but let it work based on the pedagogy of play, and I would even say: on the basis of a special pedagogy of play, meeting the needs of contemporary reality.

As a result, the program will be adapted to the preferences of each child, different graphics may be for girls and boys etc. One child may love dinosaurs and the other may be fascinated by SpongeBob, for example, each child has very different preferences, it can be anything he loves and treats as a reward. So it would be a double gratification to the little one. The first step will be to click the icons and connect the sound of the words, but then the child will have to repeat the words and the software will treat it like a passport to the next level. From simple to more complicated words. I know from experience that children with autism begin to speak, the process of speech development is slower, but it takes place with appropriate therapy. The software is not intended to replace therapy, but to use electronics wisely, supporting the speech outcomes possible for an autistic child with verbal apraxia. I give the voice to Mr. Oskar Narkowicz, who will describe the technical parameters of the program.

The system in question will be based on set of

applications. Each application targeting specific age group and/or level of childs' advancement.

Initially the application will be optimised for all mobile platforms: Android, IOS, Windows Mobile and will be available through all major mobile software providers: Play store, Apple store, etc. Will also be available for all current screen sizes, ranging from tablets and smartphones to smart IOS or Android TV sets.

The main idea behind each application will be implementation of incentives or motivation systems which, in conjunction with the core speech recognition functionality will provide the child with the age targeted, feature based set of words or sentences for the child to verbally repeat after the prompt from the application.

Each correct repetition will result in immediate gratification in the form of in-application currency which a child can spend to advance or buy additional features.

In the event of mispronunciation the child will be still provided with incentive for simply trying.

Such a system will ensure that children will be properly motivated through the course designed specifically for them.

Application will be reasonably customisable for each child. Customisation should be done by a parent/guardian or appointed psychologist and speech and language therapist working with the child to ensure sufficient level of commitment and to stay within outlined WHO guidelines.