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Journal of Exceptional People

Content

Introduction

Dear readers,

You have again in your hands our next issue of the Journal of Exceptional People, which contains several overviewed essays, scientific papers and reviews. All these contributions are related to the problems of exceptional people, ie. people any way deviate from the mainstream society.

The first article from the Nigerian authors (Nanjwan, Plange) refers to the economic development of African countries, creating a business environment and related changes that are reflected in the lives of people with special educational needs. Next article by Slovak authors Prečuchová, Štefanovičová refers to interdisciplinary approaches applied to people with learning disabilities and behavioral disorders in Slovakia.

Russian author (Antropov) discusses new approaches to acquisition of matematics to students with mental development disorder and the following contributions of Czech authors are related to the research, which was focused on the issue of the establishment of partnerships between people with hearing impairment (Švecová) and problems of people with visual disabilities (Majerová) – Mental mapping of space in an individual with visual disability.

Last post by Slovak authors (Lištiaková, Lucká) deals with the "evaluation tool in early childhood intervention – Pilot study in Slovakia in multisensory therapeutic environments".

The fifth issue of our magazine is finished with two reviews of the Czech and Nigerian authors, they characterize and recommend selected publications with special educational theme (Fink, Ewa).

Editorial Board of the Journal of Exceptional People has regrouped its forces recently and strengthened the place of editor and executive editors. The position

of Editor in Chief is occupied by professor Libuse Ludíková and Jan Chrastina and Pavel Svoboda became Executive Editors.

Other minor changes were also made in the editorial board. We believe that these innovations will increase the competitiveness of our magazine and it can be even more visible in the media space.

Pavel Svoboda, Jan Chrastina

Acquisition of entrepreneurial skills for economic growth and development for persons with special needs

(overview essay)

Nanjwan, Josephine Dasel, Plang Janet Punyit

Abstract: The paper discussed that economic development and growth are made possible by different groups of entrepreneurs including persons with special needs. Persons with special needs are individual who deviate in the negative direction from the large majority of the members of the society in either physical appearance physical function, intellectual functioning and behavior. The paper also discussed that they should be encouraged on how to maximize their potentials through entrepreneurial skills training through various stages such as: Referral, assessment, placements and follow up. This is necessary to ensure that the persons with special needs matched well with the job. Entrepreneurship for a person with special needs can be through vocational training and rehabilitation services. Generally in Nigeria, persons with special needs are very much disadvantaged in job market and employment opportunities. Entrepreneurship training and development is most welcome for the special people as this will prepare them for self employment as well as enhancing the positive self esteem of the individual, fostering movement towards independent and self actualization etc. The paper concluded that special persons must learn to be independence, hard working and willing to accept responsibilities and should have an exceptional strong desire to achieve success. It was recommended among others that job opportunity should be created on the open labour market for persons with special needs. Government should support vocational training centers and sheltered workshops run by NGOs

Key words: Entrepreneurs, persons with special needs, self employment, self esteem, self actualization

1 Introduction

Economic development and growth are made possible by different groups of entrepreneurs such as government, individuals and groups of individuals including persons with special needs. You can become an entrepreneur when you set to exploit any opportunities in an economy to the benefits of people around you.

People have different ways of setting up businesses that are needed to keep their economy going. Specifically it could be the opening of private schools, workshops of different types, setting of suppermarkets and shops of different types etc.

Who are persons with special needs
Individual With Disabilities Education Act (IDEA) (2006) expressed that persons with special needs includes: children with mental retardation, hearing impairments, speech and language impairments, visual impairments, seriously emotionally disturbed, orthopedic impairments, autism, traumatic brain injury, other health impairments or specific learning disabilities.

It focuses on those who deviate in the negative direction from the large majority of the members of the society in any of the following areas:
1. Physical appearance
2. Physical function
3. Intellectual functioning and behavior

Obi (2004) advised that persons with special needs should be encouraged to use every bit of their existing senses to maximize their capabilities. They should be taught how to maximize their potentials through using of specialized tools and materials. Entrepreneurial skills training can help them to take pride in those things they can do well. For example, it has been observed that whereever they are employed they are more dedicated to their jobs on the basis that nothing draws their attention than their jobs.

Who is an entrepreneur
Etuk and Mbat (2010) described an entrepreneur as a person who organizes and manages business undertakings, assuming the risk for the sake of profit. An entrepreneur sees an opportunity, makes plan of starting the business, manages the business and receives the profits.

According to Solomon (2012) entrepreneurship is a process through which individuals or government either on their own or jointly exploited available economic opportunities without being scared by associated risks or inadequate resources under their control.

2 Training of special persons for entrepreneurship

The successful training of persons with special needs normally goes through various stages or processes:

1. Referral: this is the stage where the persons with special needs are referred by another person either relative or any other person.
2. Assessment: this has to do with gathering of information about persons with special needs. The information can be about strength and weakness.
3. Placements: persons with special needs should be helped to develop job seeking skills and how to complete application forms, make great impressions at interviews.
4. Follow up: This is necessary to ensure that the persons with special needs matched well with the job.

National Policy on Education (NPE) (2004) specified equal educational opportunity to all persons irrespective of their disabilities. Individuals with special needs irrespective of the type and degree of impairment need love, assistance and acceptance from their families and the society. Based on the challenges they faced in their lives, special entrepreneurship training will help them to put in their best in a way that they will not feel rejected and have low self-esteem.

Entrepreneurship for person with special needs can be through vocational training and rehabilitation services.

There is a need for persons with special needs to be given adequate exposure to special entrepreneurship training through vocational and rehabilitation services to enable them fit into the world of work. Rehabilitation is the restoration of persons with special needs to develop to the fullest physical, mental, social, vocational and economic usefulness (Obi, 2010).

3 Special entrepreneurial process

Special entrepreneurship involved the provision of vocational services which include: vocational guidance, vocational training and selective placement. They are designed to enable a person with special needs to secure and retain suitable job and employment.

Success of entrepreneur depends on a number of variables such as:

1. Attitude of persons with special needs to himself and others.
2. Attitude to life in general and to the impairment.
3. Attitude of friends and families towards him.
4. Attitude within the vocational training agencies, their policies and philosophies.
5. Attitudes of professionals towards him.

4 Development of entrepreneurship skills for persons with special needs

Gone are the days when people taught lower skills in the name of handicraft to special children. Those skills perhaps were useful to these children but today the situation is different. For instance, teaching basket weaving to these children today will be meaningless as fewer people today patronize raffia basket dealers. Special children need to acquire modern skills that will keep them in self employment and self esteem. These may include;

Food and snacks: fruit juice, rice milling, coconut processing, dairy and milk, animal feeds, groundnut oil, palm kernel oil, fish sausage, cool room, production of food flavor, fufu powder, fish drying, production of cassava starch, bread making, garri processing, ice water, palm kernel cracking etc.

Others skills may include: toilet soap making, starch making, sisal twine cord, fish net brushes, tooth picks, leather, ply wood, photo frame, wooden toys, ceramic tiles, concrete blocks, polythene bags, laundry and dry cleaning, plastic containers, sanitary wares, asbestos cement, red and building bricks, matches, shoes, bags, telephone repairs and other electrical appliances, mosquito coils, fish nets, dusters, pencil sharpeners, insecticides measuring tape, shampoo, cream, pomade, perfumes, hat and bits making, success cards, singing, hair dressing, knitting, tailoring, foot mat, sponge, fire wood, bill board designer, chalk production, carpentry, fashion and bakery.

5 Importance of entrepreneurship development for persons with special needs

Generally persons with special needs are very much disadvantaged in job market and employment opportunities. Many of them after graduation roam the street for years without any hope for a job. It is because most private and government employers feel the special people have nothing to offer in their job place. Special attention should be given to them in the field of health, social services and employment opportunities.

The idea of entrepreneurship training and development is most welcome for the special people as this will prepare them for self employment.
1. Enhancing the positive self esteem of the individual and his contribution to his community.
2. Fostering movement towards independent and self actualization.
3. Helping them to manage their affairs, participate in day-to-day life of the community.

4. Fulfillment of a range of social roles and making decisions that lead to self determination and maximization of physical or psychological dependence on others.
5. Helping them overcome their limitations and be gainfully employed to earn a living.
6. Special entrepreneur is essential because it provides the individuals with skills that will enhance his or her work.
7. Special entrepreneur provides persons with special needs the opportunity for adjustment for example by helping them to discover their aptitude, work habits as well as practical skills in the vocation of their choice.

Nwafor (2007) also explained that entrepreneurship aimed at reduction of poverty, promotion and acceleration in economic development and growth through the following ways:
1. Acquisition of skills and job creation
2. Increasing output of goods and services.
3. Enhancing technological innovation.
4. Enhancing level of capital income
5. Enhancing the standard of living.
6. Increasing the level of government revenue through taxation.

6 Conclusion

It can be concluded that for entrepreneur to be successful, families, communities must recognized and accept that persons with special needs have the same right as other human beings to be trained, earn a living and be accepted and fully integrated in their communities.

A person who has the need to build and create something new must posses a strong need for control, independence and ability to simplify complex problems. He must be a hard working person who is willing to accept responsibilities. An entrepreneur should have an exceptional strong desire to achieve success.

7 Recommendations

In order to enhance entrepreneurship to persons with special needs Obi (2010) recommended that:
1. Job opportunity should be created on the open labour market for persons with special needs.
2. Government should support the establishment of various types of sheltered employments for those to whom access to open employment is not practicable.

3. Government should support vocational training centers and sheltered workshops run by NGOs.
4. Establish and develop small scale industry and other types of production workshops for the disabled in accordance with the competencies of individual with special needs.
5. International organization should be involved in disseminating information to people in developing countries like Nigeria about training of persons with special needs to develop their maximum capacities.

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Interdisciplinary approach to the care of children with mental disabilities and behavioral disorders

(overview essay)

Andrea Prečuchová Štefanovičová

Abstract: *The issue of behavioral disorders of intact children and their upward trend are well known. The discussion about behavioral disorders of children with mental disabilities is less common. Their cause is not a mental disability as such, but it is a separate disorder and therefore we can talk about multiple disabilities. Children with such disabilities need interdisciplinary and special approach, which can help to alleviate and eliminate consequences of disorders. This report is focused on some actual problems of care for children with mental disabilities and behavioral disordes. Here are some characteristics of children with mental disability and some opportunities for further development in order to enhancing scientific knowledge in this area. Our aim is also to present our views on the issue.*

Key words: *Children with mental disability, behavioral disordes, multiple disability, interdisciplinary approach, teamwork*

1 Introduction

At present days there is an increasingly talking where main topics are behavioral disorders as well as problematic behavior of children of all ages. It is very important to remember that even children with intellectual disabilities are children like any others and therefore this phenomenon exists among them too. The behavioral disorder is very often considered as a symptom of mental disability which is not always true. At this case, we can talk about multiple disabilities.

2 A child with mental disabilities and behavioral disorders

In the case of individuals with developmental disabilities and simultaneously with behavioral problems, we can actually talk about the so-called multiple disabilities. As reported Vasek (2006), multiple disabilities at relatively large simplification can sum up into three groups which are symptomatology related:

1. mental disability in combination with other disabilities – this group represents largest group with multiple disabilities,
2. blindly – deafness – is the most severe form of multiple disability,
3. behavioral disorders in combination with another disability or interference.

By Vašek (2006, p. 37–38) "multiple disability (GPC) can be operationally defined as a multifactorial, multicausal and multisymptomatic contingent phenomenon that is the result of collaboration participating disability or impairment. Their interaction and overlapping set up so called 'Synergistic effect', that is new quality of disability which is different from the sum of present disability and disruption."

This phenomenon greatly determines individual functioning of individual compensatory mechanisms. In simplified form, these relations can be expressed as follows:

$$\text{GPC} = f(\text{P1, P2, … Pn, Sye, Km})$$

It follows that the multiple disability (GPC) is a function of interaction participating disability or disturbance (P1, P2, ……… Pn), synergy effect (Sye) and compensatory mechanisms (Km).

In the context of behavioral problems at individuals with intellectual disabilities should be noted some common disorders that are manifested by behavioral problems.

Emerson (2008) mentioned a summary of knowledge concerning some of the factors which influence the development of problem behaviors of people with intellectual disabilities:

Gender – generally there is more likely in men and boys to start behaving troublesome than at girls and women.

Age – it seems that the overall extension of problem behavior in a childhood increases with the age and finally reaching a peak in the age group 15–34 years. After that it fades. When comparing the age structure of the total population of people with intellectual disabilities it is evident that the behavioral problems encountered in particular in the group 15–24 years and when comparing the estimated age structure of the population of people with severe mental disabilities, it seems that the wider prevalence is maintained or does not drop until late middle years.

Specific syndromes and disorders – in relation to specific syndromes associated with intellectual disabilities, there has been an increased incidence of certain specific forms of problem behavior.

A specific syndrome includes:

– The incidence of self-destructive behaviors, namely biting into his hands and lips, all people who have Lesch–Nyhan syndrome (Lesch–Nyhan syndrome – an inherited metabolic disorder, which ranks among the disorders of purine metabolism in humans);
– Very high incidence of self-destructive writing after the hands of people with Rett syndrome (Rett syndrome – a neurological disorder that occurs almost exclusively in girls, regardless of their race or nationality, the main feature is apraxia, dyspraxia);
– Higher than expected incidence of various forms of self-destructive behaviors with Cornelia de Lange syndrome (syndrome Cornelia de Lange – a genetic disorder that is visible since the neonatal period, is manifested by specific features in the face and in most cases the presence of mental retardation) and Riley – DAY syndrome (Riley – DAY syndrome – inherited disorder that affects the development and function of nerves throughout the body) and the fragile X syndrome (fragile X syndrome – an inherited genetic disorder caused by a mutation in a gene called FMR1, which lies on the long arm of the X chromosome);
– Greater than expected incidence of hyperkinesis, attention deficit disorders and stereotypes in fragile X syndrome;
– Greater than expected incidence self – harm in people with autistic spectrum disorders;
– High incidence of problem behavior in Prader–Willi syndrome (Prader–Willi syndrome – a condition that affects both genders, this syndrome is a collection of several diseases and their combination, and is the most common genetic cause of obesity);
– The occurrence of problem behavior was recorded in people with epilepsy, and in general, and in relation to specific forms of epilepsy.

Degree of deterioration of intellect – the incidence of aggression, property destruction, self-destructive behaviors and other forms of problem behavior related to the degree of impairment of intellect. It is also likely that we will observe multiple forms of problem behavior at people with more severe intellectual impairment.

Affections – in addition to intellectual disability, which is the emergence of problem behavior overriding impact, may be significant even further hearing and visual disabilities, speech or inability to specific difficulties of comprehension and expression, weaker social skills, a period of disturbed sleep problems and mental health. Especially self – harm is significantly more prevalent among people with severe intellectual disabilities who have significant mobility impairment.

Environment – the occurrence of problem behavior is also influenced by the constraints in terms of residence of the individual. However, it is difficult to interpret the

relationship between the environment and behavioral problems, as research findings may lead to the conclusion that such behavior leads to institutionalization and not vice versa.

In case of problem behavior in individuals with intellectual disabilities must be taken into account that even in the lives of these individuals experiencing severe stressful events with which they have a negative impact. By Ďurecová (In Čadilová et al., 2007) are common, for example:
– Insensitive separation from loved people;
– Loss of important links;
– Restriction or denial of basic human rights (such as the inability to prepare food or drinks for your needs, or leave the area);
– Lack of privacy;
– Download;
– Constant changes in living habits and conditions;
– Institutionalization;
– Lack of control over your life;
– Ambiguity and unpredictability of what is happening around;
– Chronic experience of failure, rejection, puerility;
– Negative interactions and conflicts with the social environment;
– Lack of friends;
– Negative self-concept;
– Traumatic experiences of abuse (a high percentage of people with mental retardation).

The author further states that in practice it is often found that the problematic behavior of the client is automatically treated as a natural feature of mental retardation. Therefore, in the search for explanations of the causes of aggressive or otherwise problematic behavior it is always important to consider whether there are not hidden:
– Somatic health problems of the client;
– Side effects of medication;
– Dysfunction, environment in which there is a deprivation of certain basic needs of the client;
– The inability of the client to communicate their needs in socially acceptable ways;
– A symptom of a particular mental disorder.

Council for Intellectual Disability – Council for the mentally handicapped (2011) also highlights the problematic behavior means that something in human life is wrong. In this context, we can talk about different causes. Some of them are health problems – an individual may be sick or in pain, or a mental health problem. It is therefore important that the physician monitors, and identifies all health problems

that may be causing the problem behavior. Behavior of individuals with intellectual disabilities is a problem if it causes a serious risk to themself or others, and such behavior can have many different causes.

For example, a person with intellectual disabilities:
– Wants something but cannot explain it.
– Is bored.
– Do not like something is happening.
– Feelings of instability of the changes taking place in his life.
– Mourn the loss of a loved one.
– Is in pain.
– Has mental disorder, for example. anxiety or depression.

Currently in Slovakia there are few studies that deal with the behavioral problems and mental illness in individuals with intellectual disabilities.

In the case of behavioral problems Betková (2012) claims that the extreme behavior that violates age appropriate social expectations, therefore, is more serious than occasional children's disobedience, sporadic excesses, milder forms of hyperactivity, emotional swings and so on. According to the authors conduct disorder sometimes linked to emotional disorders or maladjusting and have a wide variability forms. Sometimes it is only a little or not at all linked to specific events (eg in the classroom), games, communication or other interaction. This could be for example. of repeated aggression, restlessness and movement, children often have difficulty in the process of education, to acquire educational skills and it is difficult for them to organize adequate teaching strategies.

3 Hyperkinetic disorder and ADHD

Hyperkinetic disorders are common disorders occurring in childhood and adolescence. The International Classification of Diseases (ICD-10) distinguishes Disturbance of activity and attention and F90.0 Hyperkinetic conduct disorder – F90.1. The classification of the American Psychiatric Association (Diagnostic and Statistical Manual of Mental Disorders, DSM-IV) is a hyperkinetic disorder attention deficit disorder known as ADHD (Attention Deficit Hyperactivity Disorder). European Classification of Diseases ICD-10 requires that ADHD symptoms were present in all three areas (inattention, hyperactivity, impulsivity). The ICD-10 cannot be simultaneous diagnosis of anxiety disorders and mood disorders and their presence exclusion criterion for attention deficit hyperactivity disorder. Classification of the American Psychiatric Diagnostic and Statistical Manual IV. textual revisions (DSM-IV-TR) in ADHD symptoms present and accepts only one symptom area and allows you to

simultaneously diagnose anxiety disorders and mood disorders. DSM-IV-TR, as opposed to the ICD-10 does not define a specific sub-type of behavior disorders on the basis of ADHD, but distinguishes three subtypes: a) with predominance of attention deficit disorders (experienced in 20–30%), b) with a prevalence of hyperactivity – impulsivity (experienced in less than 15%), c) the combined subtype (experienced in 50–75%). According to the DSM-IV-TR may be determined by multiple co-morbid ADHD disorder, which is not possible in the classification ICD-10th In DSM-IVTR blurs the hierarchy disorders. Non-etiological concept of mental illness can sometimes lead to confusion over the nature of disorders such as blurs the distinction between ADHD and a primary or secondary hyperkinetic syndrome. (Šuba, 2009, Tichá, 2008)

3.1 Hypoactivity

A hypoactive child speaks less; is passive, less mobile. Such children are slow, clumsy, speaking little can, last a long time idle. They act as, obedient, but sometimes give the impression of a child with severe disabilities than they actually have. (Betková, 2012)

3.2 Aggression

Aggressiveness according Betková (2012) is any intentional conduct, the motive is open or symbolic form to cause someone or something injustice, harm or pain. In kindergarten disputes arise most often on toys, be it verbal altercation, but which can result in serious attacks such as beatings, shoving, etc. Sugden (2006, cited under Theiner, 2007) recognizes the following five kinds of aggression:

1. impulsive aggression is related to an inability to resist the impulse impelling or temptation, leading to a rapid, unplanned response to internal or external stimuli.
2. Affective aggression is based on affective instability, which means overreaction to negative or frustrating stimuli. Affective aggression often takes place rapidly and appears as impulsive, but differs from previous sharp change in emotional state.
3. Anxiety aggression is associated with anxiety and excessive arousal (hyperarousal). Anxiety is an emotional response to threatening stimuli. However, if excessive, leads to overstimulation and if it exceeds the individual tolerance it can run to misdirected aggression against himself or others, and this aggressive act leads to relief. Typical for children with post-traumatic stress disorder (PTSD) in autism spectrum disorders, neurodevelopmental disorders and mental retardation.

4. Aggressiveness of cognitive disorganization occurs in psychosis, which is impaired perception and judgment. Particularly important is the paranoia that is often trigger of aggressive behavior.
5. Predatory aggression is also referred as cold-blooded or planned. Typically occurs in behavioral disorders.

3.3 Children's disobedience

As reported Betková (2012) when it comes to child disobedience conscious or unconscious sometimes a failure to comply with instructions, orders or prohibitions of parents, teachers, educators, disregard repeated calls for obedience, enforce their own, often educationally undesirable intentions.

Cause rebellious behavior may be (Fisher, 1986, cited under Betková, 2012):
– Incorrect education (vagueness, rigor inconsistency)
– Other harmful influence of the environment (bad pattern, arguments);
– Inborn inclination (inability to adapt)
– Pathological condition (encephalopathic personality disorder, psychopathy).

Most often the child resists around the third year and puberty. The improper upbringing may change physiological rebelliousness in permanent feature of man. Children can grow into rebelliousness affective disorders. (Betková, 2012)

3.4 Oppositional Defiant Disorder

This disorder occurs in children of preschool age. They present strongly defiant, disobedient and provocative behavior and at the same time serious antisocial and aggressive acts do not appear. It is not excluded that it is a type of behavioral disorder that is different from all others in quantity but not in quality.

The basic feature is (according to ICD 10) negativistic, hostile, defiant, provocative and disruptive behavior, which is clearly beyond the scope of normal behavior for a child of the same age and socio-cultural background, and which does not seriously degrade the rights of others.

Present rebelliousness against mature, non-compliance is a psychological torment others. Furthermore, the present irritability – these kids are easy to get angry, because they have a low frustration tolerance. For their mistakes they often blame others. Their defiance has a significant component of provocative, leading to frequent confrontations.

Together with the described symptoms is a disorder characterized by violations of the rights of others, violation of laws, brutality, tyranny and destruction of property.

If these behaviors later in life arise, this is an evolution towards other behavioral deficits. (Theiner, 2007)

4 Overview of some interdisciplinary approaches

For the care of children with any kind of disability, respectively multiple disability, it is extremely important interdisciplinary approach and teamwork. Nowadays, an ever greater effort to enforce such treatment programs that meet these criteria.

Interdisciplinary approach in our view can be understood by team members work independently, meet informally to discuss matters before the actual diagnosis, report writing, or discuss before develop a plan for the child. Parent is considered a collaborator. (Pagliano, 2001)

In the following section of this paper we present some therapeutic interdisciplinary approach applicable in practice when working with children with developmental disabilities and behavioral disorders.

4.1 Program and methodology Hand–Brain ©

Program Hand–Brain © is a new author's methodology by authors A. G. Smolianinov and A. Vančová.

Vančová (2010, S. 158) defines that the methodology is "built on the basis of an interdisciplinary team approach and cooperation, and use complex new, innovative and relatively highly efficient and specific neuropsychophysical, neuropsychoeducational interventions, corrections and therapies. The methodology integrates rehabilitation, correction, stimulation, therapeutic, educational and counseling practices."

Program Background and Methodology Hand–Brain © pursuant Vančová (2010, p. 158) comprises:

– N. Bernštejn theory of evolutionary stages of building movements and physical development sphere,
– Knowledge of human biomechanics,
– Innovative approaches to neuropsychology and neurophysiology with a focus on early and pre-school age,
– Modern approaches of psychophysiology, psychology of learning and applied psychology with an emphasis on feedback theory,
– Adding selected parts of neurotherapy and neurofeedback,
– Holistic application, holistic approach to the notion of the phenomenon of man with disabilities,
– Current special pedagogical theory and educational rehabilitation of communication theory,

- Interdisciplinary approach and team cooperation,
- Us age complex neuropsychophysical, incentive, corrective, educational and counseling practices,
- Attempt to restore anomalous development of a disabled child (individual) within the framework of the existing evolutionary regularities.

Smolianinov and Vančová (2011) point to the work of professionals who deal with biomechanics when writing. This difficult movement involved two ways of working muscle of the that must be made. This has two functions – static and dynamic. In implementing the proper movement of large muscle groups need to fix the position of the entire body in a sitting position, the muscles of the upper limb girdle and arm fixed position throughout the upper limb and form the support for dynamic function and the possibility of carrying out desired hand movements and individual fingers (grip) in mutual coordination. Accuracy and power of movements performed within the fine motor is directly related to the synergetic connections of the muscles with the muscles that make up the support for this movement.

It follows that no physiological involvement of muscles and tendons involved in the backbone of the hands of the forearm (as one of the life stages of infant gross motor skills) and follow each other physiological muscle synergies can be no proper development of fine motor hand with the evolution in terms of grip and thumb opposition fingers.

The authors draw attention to the program, a common problem in the development of fine motor skills of children with CNS damage, in which the biomechanical point of view to see inappropriate training grip, using unsuitable objects. Frequent repetition of the exercise then leads to the creation and consolidation of pathological automatism and pathological synergies, which are very difficult to remove. It is very important to follow the practice of large movement patterns, with security lock kinematic chain. Through the timely development of fine motor skills in children with impaired CNS can effectively stimulate further psychomotor development of children.

4.2 The Portage Model

The Portage Model of education was established as a part of the government program for the development of education for children with delayed development, respectively with disabilities in the United States, Wisconsin. The main idea The Portage Model of education, according to Shearer (1974) home tutorial, directly involving parents in the education of their children. The model is based on the following assumptions:

- Direct involvement of parents in the process leading to the motivation of parents to educate, knowledge and skills to understand the needs of their child,
- Learning takes place at home, so there is no problem of transforming their newly learned skill or behavior from the classroom environment to the home environment,
- Parent has constant contact with the child's behavior, which can lead to a more successful correction of behavior, learning objectives are built taking into account the typical habits of the family, its lifestyle peculiar culture, thus newly acquired behaviors and skills the child has acquired an important functionality for a given environment,
- It is likely that the behavior which has been harvested in a natural environment will be maintained in the long term,
- The involvement in education of the whole family, as a closer social environment, the target becomes easier achievable,
- Acquired knowledge and skills to help parents cope with the problems and at a later age.

The model is aimed at children from birth to six years who had been diagnosed lagging in development, with any type and degree of disability (mental, physical, hearing, visual), impaired communication skills, children with multiple disabilities and behavioral problems. The role of catchment centers (in our conditions could be a center – special educational counseling) is to ensure the availability of disseminating information about the program and search for parents of children with disabilities and delayed development, through collaboration with the pediatrician, neurologist, rehabilitation therapist or other health professional in the field.

The Portage Model consists of five main components:
1. individual educational program (implemented in the domestic environment and includes all development psychomotor development of the child),
2. assess the developmental profile of the child,
3. determine the model of teaching on the basis of the home environment,
4. curriculum with weekly targets,
5. weekly staff meetings to solve problems or diagnosed curricular adaptations.

As a methodological materials for teacher serves the Portage guide early education, which consists of two parts. The first is a set of more than 420 concepts for education and skills training for each area of development. The second part consists of a control record sheet for each sequential skills. The guidance serves as a starting point for planning a curriculum which a teacher individually adapted to the needs of a particular child. During home visits (weekly) teacher educates parents work with the

child for practicing specific skills. The role of the parent is to work with your child to practice their skills throughout the week and record observed changes in child behavior (Shearer, 1975).

The Portage Model of education for children with disabilities has recently become widespread (eg, Canada, Britain, Scandinavia, Japan) and successfully implemented as part of a comprehensive program of early intervention.

4.3 Program HYPO

HYPO is an exercise program for preschool and school age to enhance the visual and auditory memory, concentration of attention in a partial development of perceptual – cognitive functions. The author of the program is dr. Michalová.
– The program is designed for children with attention deficit disorder, deficit hyper- activity disorder, ADD (without hyperactivity or attention deficit disorder only),
– Suitable for children of preschool and school age 5–10 years,
– The focus of the program is in domestic work, working together for a parent with a child,
– Child completes the program for 12 weeks,
– Working at home 15–20 minutes a day,
– 1× per week control and instruction clinic,
– Use is suitable for children with below-average intellect.

    HYPO program brings the following results:
– Acceleration of psychomotor speed,
– Calming curves attention,
– Improving of communication between parent and child,
– ability of regular work,
– Improving emotional attunement and access to work,
– Experience success and increase awareness self-worth,
– Elimination of time pressure
– Overall improvement in school work.

(Available online at: http://www.pedagogicka-poradna.cz/pedagogicke-programy/
pedagogicky-program-hypo.html, cit. 03. 08. 2014, 01:04)

4.4 Program KUPOZ

KUPOZ program is developing a program created by dr. Kuncová for school age children with a maximum penalty of 12 years. The program is designed for children with ADHD, but also children with slower psychomotor speed, neurotic difficulties, learning disabilities, it is also suitable for children with a marginal degree of mental retardation. The focus of the program is in domestic work, working together for a parent with a child under the guidance of an expert. The program lasts 15 weeks, working out daily 15–20 minutes, 1 to 14 days control. Work program can be run by psychologists or special educators in counseling or in a clinic with a valid certificate (after completing training). KUPOZ delivers similar results as HYPO program.

(Available online at: http://www.kuprog.cz/kupoz.htm, cit. 08. 03. 2014, 12:42)

4.5 Program KUMOT

Program KUMOT aims to practice and develop fine motor and graphomotorical skills.
– The program is designed for children 5–8 years,
– Suitable for children with ADHD, learning disabilities, children shy, socially inept or motor or other difficulties,
– In one group is 6–8 children,
– School and preschool children can be grouped into a common group,
– The entire program consists of 10 sessions, ongoing group 1× a week, 60 minutes each, parents are not participating in the group,
– After completion of the program psychologist/special educator meets with the parents of each child separately to evaluate the submissions and knowledge of the child, including educational conclusions,
– The program can be run by psychologists or special educators.

Results of the work with KUMOT:
– The ability to release, more open communication,
– Better control of impulses, releasing aggression,
– Improving of gross motor skills,
– The ability to express positive feelings, even non-verbal,
– Better control of speech organs,
– More enjoyable child.

(Available online at: http://www.kuprog.cz/kumot.htm, cit. 08 .03. 2014, 01:55)

4.6 School of attention (methodology development and correction of attention in children)

School of attention (methodology development and correction of attention in children) was created by Russian author N. M. Ptylajeva and T. V. Achutina. It is designed for children 5–7 years where at preschool observed or hyperactivity, impulsive act is observed or who are incoherent, or conversely weak, slow, low active, disorganized and scattered. The methodology of forming habits, planning and control is based on work with numeric array.

The aim to work with a number in a series of pre-primary education is to form and consolidate ideas about the amount of children, respectively, fix the relationship between the number and the number, teach a child to operate freely the number and in spirit while working with real objects. The methodology aims to shape and correct habits programming and control (Ptylajeva, Achutina, 2001, quoted in Tichá 2008). The methodology provides a wide range of tasks enabling individualizing approach to the prevention and correction of deficits of attention.

4.7 KUPREV (Precautionary individual program)

Program KUPREV is especially designed for children 4–8 years, according to the needs of the elderly.
– Is successfully used in children with dysphasia, autism, ADHD and other conditions,
– It can be used across the board, even for children with mental disabilities,
– The program provides child orientation in the world,
– Focus is on household chores, working parent with a child under the guidance of an expert,
– Is well usable for children of ethnically mixed marriages,
– The program can be run by psychologists or special educators.

    Results of the work with program KUPREV:
– Orientation reinforces a child by a person, place and time, gaining social orientation and information,
– Children who completed the program do not have adjustment problems after entering school,
– Prevention of socio – pathological phenomena,
– Improving communication between parent and child.

    (Available online at: http://www.kuprog.cz/kuprev.htm, cit. 03. 08. 2014, 02:08)

4.8 EEG biofeedback

EEG biofeedback is under Bužeková (2001, cited under Tichá, 2008) highly effective method to enhance the activation of the nervous system, particularly the training of attention, self-control, impulsivity and hyperactivity satisfaction, but also improve mental performance. EEG Biofeedback is a method that allows the speed control of electrical activity of the brain. The essence, according to Malá (2000) uses bio-feedback to self-regulation of brain activity.

4.9 Filial therapy

Filial therapy is under Štefančiaková (2013) exceptionally prepared and practiced on a client-oriented play therapy. Filial therapy is primarily designed for children aged 3–10, respectively. 12 years. Together with the change of the child, however, there is also a change of a parent.

VanFleet (2011) makes the following therapeutic targets of filial therapy:

A. Therapeutic goals for children:
   – Give children the opportunity to learn and express their feelings fully and constructively,
   – Give children the opportunity to do that hearing,
   – To help children find effective ways of problem solving and effective coping skills,
   – Increase self-confidence and self-esteem of children,
   – Increase the confidence of children towards their parents,
   – Reduce or eliminate maladaptive behaviors and current problems,
   – Help children develop active behavior,
   – Encourage open and cohesive family atmosphere, which contributes to a healthy and balanced development of the child in all spheres: social, emotional, intellectual, behavioral, physical and spiritual.

B. Therapeutic targets for parents:
   – A general increase in parents understanding of the specifics of child development,
   – Increase the understanding among parents and especially their own child,
   – To help parents understand the importance of the game and emotions in the life of their child, as well as in their own,
   – Reduce frustration among parents regarding their child's,
   – To help parents develop skills that are likely to deliver better results in the upbringing of their child,
   – Increase the confidence of parents in their parenting skills,

- Help parents open the door to communication with their child and then help keep this door open,
- To enable parents to work better together as a team,
- Increase parental feelings of warmth and trust towards their children,
- Give parents a safe atmosphere in which are not afraid of problems associated with their children or their parenting.

Based on the research we can talk about the following benefits of filial therapy (Van-Fleet, 2010, cited under Halamíčková, 2013) for children with behavioral problems:
- Low rate of early discontinuation of therapy,
- Significant reduction until complete disappearance of the problems identified,
- Strengthening of parenting knowledge and skills,
- Increasing acceptance and understanding of parents towards their child,
- Reducing parental stress,
- High percentage of parental satisfaction with the outcome of therapy,
- Long-term benefits and sustainability of changes confirmed longitudinal research (after three to five years).

5 Conclusion

The aim of our study was to highlight the need to implement when working with children with intellectual and multiple disabilities therapeutic programs with an interdisciplinary focus. Interdisciplinary approach and teamwork in the modern era should have been obvious, and therefore we present the specifics of some programs, applicable in practice.

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New approaches to teaching mathematics to students with mental development disorder

(overview essay)

Aleksandr Petrovič Antropov

Abstract: *The article refers to new approaches to teaching mathematics in a new textbook for 9th grade to students with intellectual disabilities. The article describes the structure of the textbook, shows the opportunities of differentiation and individualization of learning, possibilities for the correction of cognitive activity of students, possibilities for generalization of mathematical knowledge. The correspondence between various kinds of mathematical tasks and stages of learning of children with intellectual disabilities is shown. Particular attention is paid to the formation of positive motivation of students.*

Key words: *Special education; students with mental development disorder; teaching mathematics; individual and differentiated approach; problem solving*

1 Introduction

In the textbook on mathematics for the 9th grade of special secondary schools for children with mental development disorder, instructions in mathematics form an inextricable connection with other disciplines taught at the school, i. e. geography, natural science, history, social orientation, the Russian language and visual art. This connection manifests itself in the contents, the structure and the methodological framework of the textbook.

The textbook follows a new structural pattern and contains, in addition to the usual geometrical material and arithmetic chapters, a supplement, an appendix and a teacher's guide. Geometrical lessons are complied into a single chapter in order to help the teacher to compose a course schedule under specific conditions set by the learning environment and the school enrolment rate, to organize individual revision and to actualize the images and concepts by means of reference to relevant illustra-

tions. The supplement presents historical and other information, which is aimed to expand the students' notion of the mathematical concepts familiar to them, for example, the history of length, surface and volume measurements, the application of geometric figures in architecture, and the history of numeration. The contents of this chapter can also be applied in out-of-school work. The appendix contains extra photocopiable and modelling materials (paper-patterns for making a right-angled parallelepiped, a cylinder, and a cone; ellipses depicting cone bases, etc.). The teacher's guide contains general methodological recommendations. The new textbook's structure substantially expands the applicable scope of the materials for both class work during the lessons of mathematics and out-of-class work.

The textbook also provides greater opportunities for individual and differentiated approach. The differences in the students' rates of development and achievement necessitate the need to include tasks involving various ways of thinking: students incapable of verbal reasoning will be able to base their learning on visual active thinking and eye-mindedness. Each topic and all revision materials offer a range of tasks from the easiest to the ones requiring a rather high level of generalization and concretization. Simultaneously, all levels of difficulty contain tasks aimed at the establishment of intersubject communications.

2 Review section

The review section has been significantly expanded and now includes all mathematical topics studied during the previous 8 years of instruction. Thus, the teacher may choose the content for revision according to the students' achievement, individual abilities and needs. All tasks are ranked according to their difficulty level; computation exercises and word problems in every sub-topic are offered in ascending order of difficulty. Moreover, the tasks are also differentiated according to the way of thinking or the actions and operations required for their accomplishment. The tasks are sorted under different rubrics, i. e. "Let's design", "Let's imagine", "Let's draw", "Let's construct", "Let's speak correctly", "Let's compare", "Let's calculate", "Let's apply mathematics", "Let's reflect", "Let's review", etc. The "Let's look" rubric introduces samples of geometric figures and bodies, fractions, etc. The tasks under the "Let's construct" rubric prompt students to make models (angle stencils, prism, cone and cylinder models, and a flat model of a standard fraction on a slip of paper). "Let's imagine" tasks imply reference between mathematical concepts and real-life objects. "Let's draw" and "Let's construct" task types involve the development of various graphic skills. Drawing tasks are introduced with specific aims to increase students' motivation and to check the level of their grasp of geometric figures. "Let's construct" task types require the use of drawing devices. The tasks offered under the "Let's reflect"

rubric prompt students to reason, and the "Let's speak correctly" task types provide utterance examples and speaking patterns for reading or tasks that prompt students to produce grammatical speech, for example, to name the elements of arithmetic operations. In the case with the latter kind of tasks the correctness of students' responses is evaluated by the teacher. "Let's apply mathematics" task types introduce problem solving situations, which are viewed specifically as a way of applying mathematical knowledge.

3   Contents of the problems

The authors endeavoured to bring the contents of the problem solving situations in line with the students' knowledge level and their interests, as well as with probable applications of mathematics in their everyday and future professional life. The main topics of the problem solving situations include foodstuffs (sensible nutrition, grocery shopping and food consumption), construction and repairs (furniture arrangement, home improvement and redecoration, tending a garden), production (manufacturing and packaging), transportation (distance, time and speed), percentages (taxes, money transfers and bank transactions), geography (surface, length and height measurements), biology (animal body weight), history (length of historical periods, lifespan of historical figures), etc. Many of the problem solving situations are equivalent to the ones that students may encounter in everyday life, for instance, how many rolls of wallpaper are required to paper a room, or how many tiles are necessary to tile a kitchen, how much money an employee will be paid after tax, what fee needs to be paid to transfer a certain sum of money to another city, etc.

For the higher-achieving students who cope well with the academic programme, the textbook provides explanations that tie mathematics with various spheres of life, as well as extra materials – recommended, but not required – which will expand the knowledge students acquire within the programme (i. e. multiplication and division with a calculator, or the use of diagrams to find the missing elements of arithmetic operations). The texts can also be viewed as part of methodological guidance for teachers.

4   Generalization

The textbook facilitates generalization of the learned material, which allows the teacher to form students' knowledge in spheres other than mathematics. For example, this provides an opportunity to bring the students to a new level of generalizing such concepts as "a number" (whole numbers, fractions, numbers as results of calculations or measurements), "a geometric figure/body" (two-dimensional figures and

three-dimensional bodies), "a measurement" (old Russian measurements and other measurements), "a definition of quantity" (what it means to measure the length, the surface, etc.), "an arithmetic operation" (operations with whole numbers and fractions, with results of calculations and measurements; a new algorithm for division), "a problem solving situation" (real-life situations), etc. Generalization in its own turn facilitates the interconnection between the different sections of the course, between arithmetical and geometrical material, and forms the conditions necessary for regarding mathematics as a unified science. All the extra materials are accentuated with a special font and frames. Similarly to the review section, the decision on which materials are to be included in the learning process is made by the teacher. The authors regard the freedom of choice for the teacher in terms of materials' selection and individual differentiated approach as crucial in view of the differences in students' individual levels of achievement, abilities and needs. The textbook is merely a teaching medium, and the principal role in the learning process is reserved to the teacher.

5 Summary

The textbook facilitates the environment that promotes correction and further development of students' cognitive activity, i.e. correction of perception (various forms of presentation for similar tasks), memory (a large quantity of revision tasks and frequent reference to major notions, concepts, operations, etc.), thinking (consistent use of comparisons, analysis of real-life situations, "Let's reflect" and "Let's apply mathematics" task types, generalization, specification, etc.), speech (a great number of problem solving situations and real-life situations, numerous examples of grammatical speech and prompts to practice correct utterances), imagination (tasks that require to establish where certain operations or calculations may be of use in every-day life). There are also a large number of tasks aimed at comparing exercises, problem solving situations, solution methods, etc.

The role of visuals and demonstratives has been increased in this textbook in order to further promote the development of the students' understanding of mathematical representations and concepts. The textbook includes around 450 illustrations of various types that naturally compliment each other, such as photographs of real objects, drawings and diagrams (i.e. images of objects that resemble geometrical figures and bodies, images of buildings and architectural elements, geographical maps to illustrate some of the problem solving situations, drawings of students undertaking some tasks, diagrams to facilitate the solution of equations with unknown quantities, etc.). These illustrations will help to create suitable conditions for abstraction and generalization when learning new concepts and for specification during revision.

The texts required for memorization, such as the definition of per cent, the rules for calculating surface and volume or the algorithms for arithmetic operations, are

highlighted in bold. At the end of each topic and review section there is the "Essentials" rubric that reviews the most important material. Thus the emphasis is placed on the knowledge essential in everyday and professional life, and ultimately students are expected to form necessary life skills and competences.

There are several types of templates and task completion examples in the textbook. Such templates are presented with the new material a) before problem solving situations, b) in explanations, c) immediately before the task.

Templates are also provided in the review section under the "Check yourself" rubric and immediately after the task questions. The various types of templates correspond to the different stages of knowledge acquisition: the preparation for and introduction to new material and new knowledge; revision and acquisition of knowledge and skills by means of various exercises; generalization and consolidation of knowledge.

The authors devoted much attention to the importance of students' positive motivation in the process of studying mathematics in an attempt to demonstrate that mathematics ranks with other school subjects (biology, geography, etc.) in importance, as it also studies the environment – from the point of view of quantity, form, size and measure, and relative positions of objects in relation to each other. The textbook features recurring characters, who represent students' peers and parents (or ideal parents), and who have to solve different real-life problems.

The textbook for children with mental development disorder establishes positive conditions for the development of their integral worldview and for regarding mathematics as a unified science which has considerable practical importance in various spheres of life.

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Pupils with a hearing impairment in primary education – partner relationships

(scientific paper)

Veronika Švecová

Abstract: A contribution entitled "Pupils with a hearing impairment in primary education – partner relationships" introduces the outcomes of a research realized in the Czech Republic among pupils with hearing impairments attending 8th and 9th grades of elementary school for the hearing-impaired and among non-disabled pupils of 8th and 9th grades. The research was realized using a questionnaire containing a total of 13 questions. It was focused on values preferences of pupils with a hearing impairment and those without; inclination towards marriage in pupils with hearing impairments and those without. The pupils with a hearing impairment were further asked about the choice of a partner while the non-disabled pupils were asked about hearing impairments. The theoretical part of the text defines pupils with hearing impairment, the system of their education and addresses the question of partner relationships in the target group. The legislative norms in force (acts and decrees) in the Czech Republic are used in the text. The practical part of the text introduces the target group, methodology and the realization of the research and complete outcomes. More detailed information may be found in the author's article in a publication by Finková, D., et al. entitled „Iniciační analýza podmínek inkluze u osob se specifickými potřebami" (Initial analysis of the conditions for the inclusion of people with special needs). The theme, partial and complete outcomes were also presented in foreign conferences in Poland and the Slovak Republic and domestic conferences in Olomouc and Hradec Králové.

Keywords: a pupil with hearing impairment; partner relationships of people with health impairment; the issue of socialisation of people with hearing impairment; the education of pupils with hearing impairment.

1 Introduction

Partner relationships is currently a very debated theme which occurs in media within expert programmes, discussions, debates and general public programmes introducing the theme. The focus on partner relationships is mostly from the perspective of the fields of psychology and sociology, however, the field of special pedagogy ought not to be forgotten since a person with health impairment seeks to establish partner relationships and considers the issue just as much as non-disabled persons. From the perspective of developmental psychology the beginnings of partner relationships are formed in the early adolescence stage and gradually gain importance in one's life. The following text focuses on the understanding of partner relationships, marriage and parenting by pupils with hearing impairment attending 8th and 9th grades. In the first part some information about hearing impairment and possibilities of education for pupils with hearing impairment will be offered; we will, attempting to integrate the issue of hearing impairment, address the characteristics of a developmental stage of adolescence with emphasis on seeking identity, peer group and partner relationships. Then we will address the objective of the research itself, the choice of the target group and we will interpret respective research outcomes.

2 Pupils with hearing impairment as a research group

Since we will deal with the understanding of partner relationships by pupils with hearing impairment it is appropriate to characterise the target group.

Pupils with hearing impairment are a diverse group varying in the degree of hearing loss, the type of hearing loss, the time of onset of hearing loss or the preference of communication system. According to the legislative norm concerned with the education of pupils with special education needs, namely "Act No. 561/2004 Coll., on Pre-school, Primary, Secondary, Tertiary Professional and Other Education" as amended, the pupils fall into the category of pupils with special education needs since section 16 (1,2) of this act clearly states: *"A child, pupil or student having special educational needs shall be a disabled person, or a person disadvantaged in terms of health condition or social position. For the purpose of this Act, disability shall mean mental, physical, visual or auditory disability, language deficiency concurrent with more deficiencies, autism and development deficiency in learning or behaviour."* According to the degree of hearing loss the pupils with hearing impairment are divided into the hard of hearing, pupils with remnants of hearing, deaf pupils, deafened pupils and in recent years also a group of pupils with a cochlear implant.

2.1 Hard of hearing pupils

It is characteristic for hard of hearing pupils that their ability to perceive information and speech by hearing is impaired to a varying degree, however, this ability is not completely lost (Souralová, 2005). Within this group of hard of hearing pupils there are differences; they are therefore further divided into mildly, moderately, severely and profoundly hard of hearing pupils (Potměšil, 2012). The group of hard of hearing pupils in most cases has the hearing loss well compensated by a hearing aid and prefers communicating using spoken speech.

2.2 Pupils with remnants of hearing

The pupils with remnants of hearing form a specific category that is not defined in many countries at all. In medical terminology the remnants of hearing or "practically deafness" is a subcategory of deafness. In special pedagogy, however, it is better to perceive this group as an independent category, mainly for the purpose of communication since for the pupils with remnants of hearing it is typical that their hearing loss does not enable them a spontaneous development of spoken speech, although some hearing remnants which can be developed and used are preserved (Pulda, 1992).

2.3 Deaf pupils

Within this category there are pupils who were born with a hearing loss or who lost hearing in early childhood (Potměšil, 2012). From the medical perspective deaf are those individuals who do not hear any sounds even with the greatest enhancement (Kučera, Langer, 2012). A different, wider, view of the group of the deaf is offered by the Act No. 348/2008 Coll., on communication systems of the deaf and deaf-blind, as amended, defines the deaf as people *"who are deaf from birth or lost their hearing before their spoken speech had developed, and people with complete or practical deafness who lost the hearing before their spoken speech had developed, and hard of hearing people whom the extent and nature of hearing impairment do not allow to fully understand spoken speech by listening"*. These pupils have great difficulties communicating using oral speech and therefore prefer sign language.

2.4 Deafened pupils

The group of deafened pupils consists of pupils whose hearing impairment occurred in the final stages of spoken speech development or when the speech had been formed. The spoken speech does not disintegrate but the quality of its formal side is impaired, as well as the normal pace of broadening vocabulary (Potměšil, 2012).

2.5 Pupils with a cochlear implant

The last and quite specific group is comprised of pupils with cochlear implant (CI). *"Within this group we may speak of two subgroups – the deafened children with CI and deaf children with CI"* (Schmidtová, 2010, p. 218). According to the same author the deafened children in most cases regain their speech communication capabilities. In deaf children with CI the success of CI use depends on a range of factors. It is mainly the early diagnosis of hearing impairment, early operation and application of CI around the 1st year of life, intensive education of speech and hearing and intensive follow-up care of experts and parents.

3 The possibilities of education of pupils with hearing impairment

Currently, pupils with hearing impairment may be educated in the Czech Republic in an elementary school for the hearing-impaired or in the form of integration. The choice of an appropriate form of education is very important since it is one of the factors that greatly influence the integration into the greater society.

3.1 A pupil with hearing impairment in an elementary school for the hearing-impaired

In the Czech Republic pupils with hearing impairment may be educated in 13 school assigned to them. Namely, there are 3 schools in Prague, one school each in Liberec, Hradec Králové, Plzen, Česke Budějovice, Brno, Olomouc, Valašské Meziříčí, Ivančice, Kyjov and in Ostrava-Poruba. The schools for the hearing-impaired are attended by all the mentioned degrees of hearing impairment together while these heterogenous groups may be found in elementary school only since 1991. Before then the pupils with hearing impairment were placed in schools according to the degree of hearing loss. For this reason there were elementary schools for the deaf, elementary schools for pupils with remnants of hearing and elementary schools for hard of hearing in the Czech Republic. Following the year 1991 more changes were made in the field of education of pupils with hearing impairment, mainly the use of sign language and associated educational approaches.

The oral, bilingual and total communication approaches are the educational approaches being used in the education of pupils with hearing impairment (Komorná, 2008). Before the year 1991 the oral approach was the only approved educational approach in the Czech Republic. This approach focuses on the development of spoken speech through which the hearing-impaired pupil has a better chance of integrating into the greater hearing society. Sign language as a means of communication was forbidden. A disadvantage of the oral approach lies in the fact that it is mainly intended

for the hard of hearing pupils whose hearing loss is well compensated by hearing aids and are able to communicate via spoken speech without more difficulties. The other two educational approaches are better suited for the other pupils.

The bilingual approach is based on the transmission of information in two language codes: the written form of the national language and the national sign language. Both these codes are used simultaneously although greater significance is given to the sign language (Kučera, Langer, 2012).

The last educational approach used in the education of pupils with hearing impairment and which allows sign language is total communication. Total communication consists of *"a complete range of language modes, gestures created by children themselves, the sign language, lip-reading, finger alphabet, reading and writing and the development of the remnants of hearing with the purpose of improving speech and lip-reading abilities"* (Gregory, et al., 2001, p. 88).

When we look at the advantages of educating pupils with hearing impairment in specially designed schools we may mention lower number of pupils in class, trained pedagogic staff, application of special methods, procedures and approaches in working with these pupils, the possibility to receive education in the form of sign language and last but not least a group of pupils connected by a shared health impairment. These advantages may also be viewed by the sceptic as disadvantages since the bases future minority are being established and the entry into the non-disabled society is made more difficult for reasons of low social interaction with the hearing.

3.2 Integration as a form of educating pupils with hearing impairment

Currently, the education of pupils with hearing impairment is addressed in the Decree No. 147/2011 Coll., amending the Decree No. 73/2005 Coll., on the Education of Children, Pupils and Students with Special Education Needs and Children, Pupils and Students who are Exceptionally Gifted. The decree fixes that the pupils with special education needs may be educated in the form of individual integration, in the form of group integration or at a school specially formed for pupils with a health impairment. An individually integrated pupil may be educated in a ordinary elementary school or in a school established for pupils with other kinds of health impairments. An individually integrated pupil is given an individual educational plan.

Jesenský (1995 in Michalík, 2000) views the pedagogic integration as *"a dynamic, gradually developing, pedagogic phenomenon that enables an equal comingling of the disabled and the non-disabled on a level of mutually harmonised adaptation during their upbringing and education and during their active participation at solving educational situations."*

The pedagogic dictionary (Průcha, Mareš, Walterová, 2009, p. 107) states the following in connection with integrated education: *"Approaches and ways of involving*

pupils with special education needs in the main streams of education and in the common schools. The purpose is to provide the pupils with severe and permanent health disabilities with an experience shared with their healthy peers while respecting their specific needs."

Beside the term 'integration' we may also encounter the term 'inclusion'. Although these terms are being mixed by some authors there is a difference in meaning. The above mentioned Pedagogy dictionary (Průcha, Mareš, Walterová, 2009, p. 104–105) explains inclusive education in the following way. Inclusive education is *"an education including all children into common schools. The basis is a transformed view on child's failure in the system, or a failure of the educational system in the case of a concrete child. In case of failure it is necessary to discover the barriers in the system that is not sufficiently open to the needs of the individual. Each child possesses unique characteristics, interests, abilities and educational needs. As the core impulse for the development of inclusive education is considered the Declaration made at the conference in Salamance in 1994 based on the belief that 'common schools' should educate all children irrespective of their physical, intellectual, emotional, social, language or other conditions."*

4 Elementary school pupil as seen by the developmental psychology

In the above chapters we were interested in pupils with hearing impairment from the point of view of the degree of hearing loss and their educational options. Now we will proceed to characterising the developmental stages of a pupil with a hearing impairment.

4.1 Period of adolescence in the life of a pupil with a hearing impairment

According to Vágnerová (2012) we may speak of the period of adolescence as an intermediary period between childhood and adulthood comprising the time between 10th and 20th year of life. This period is characterised by a complex change of personality consisting of a somatic, mental and social transformation. Two developmental stages may be defined within adolescence.

Early adolescence stage in the life of a pupil with a hearing impairment
Early adolescence, also called pubescence, is a period between 11th and 15th year. The most noticeable changes in this period concern the physical part. It is during this period that biological maturation takes place connected with the rise of secondary gender characteristics. The way of thinking also changes. The adolescent is capable of abstract thought. It must be mentioned that this may not be true in all pupils with a hearing impairment since these pupils' ability of abstract thought is impaired due to their verbal dictionary being poor in content.

Zborteková (2001 in Vágnerová, 2008) mentions the following statement about the hearing impaired. Their *"thinking is more linked to the concrete reality—the real world—therefore it is more difficult to achieve such degree of understanding to enable abstraction and hypothetic thinking. Children with a non-standard speech development do not give full attention to various connections and relations between parts of knowledge. They are not able to make proper use of respective pieces of information in different situations and linger on the concrete context. The attachment to the current reality is also expressed in their unwillingness and difficulties in planning, thinking about the future and similarly in reflection, generalisation and evaluation of past experience. The development of logical operations tends to be slower, terminology thinking develops strenuously even in those adolescents who have mastered speech well."* Emotional imbalances also occur in this period in adolescents – pubescents. Gaining independence from parents increases. Pubescents with a hearing impairment may encounter problems in this process since they often do not possess the necessary mechanisms for it (Vágnerová, 2012).

The period of late adolescence of a pupil with a hearing impairment
This period covers the time between 15th and 20th year of life when a more complex psychosocial transformation occurs. An important milestone of this period is the conclusion of professional preparation and the beginning of employment. The period of late adolescence is characterised by search and development of identity (Vágnerová, 2012). In people with a hearing impairment we talk about a so called 'first identity crisis' since they do not consider their hearing impairment a unalterable fact but rather begin to understand the limitations involved (Vágnerová, 2008). It may be thought that the form of education and the peer group are among the factors that influence the intensity of the realization of these limitations in pupils with a hearing impairment. Since the text's primary objective is not to focus on the physical transformation of adolescence nor on its cognitive processes we will not address this issue further.

4.2 The issue of socialisation of the hearing-impaired pupils in the period of adolescence

Generally it may be stated that the biggest problem of any hearing impairment is not the impairment as such but a communication barrier and the problems it causes in other areas of life. Hearing-impaired people often have problems in social orientation, are disoriented due to difficulty in understanding. Problems with the needs of their communication partner also often occur; they do not understand social situations,

do not know what is allowed and what is forbidden. In the context of their hearing peers the communication barrier is a significant limitation (Vágnerová, 2008). The speech impairment is greater the sooner the hearing impairment occured and the bigger the hearing loss. For people with a hearing impairment communication with their hearing partner may be uncomfortable and the hearing people may perceive the hearing-impaired to have a lower level of cognitive abilities. Another big problem are non-verbal expressions comprising of an intensive eye contact, higher frequency of touches, noticably loud breathing or champing during eating. Sign language represents another great communication barrier in a relationship between a hearing-impaired and a hearing person. In the previous developmental stages in the life of a pupil with a hearing impairment a significant role in socialisation was played by the family, however, in the adolescence stage the adolescent gains independence from family more intensively as a result of which it does not have such an important role in the interaction with the person's social environment. A significant socialisation role is covered by a peer group. Vágnerová (2008) states that in the case of an adolescent with a health impairment empancipation from the family is more difficult since the person often does not have the necessary abilities to manage it. On one hand adolescents with a health impairment may be, due to an inappropriate upbringing, dependent on their parents, on the other the mutual emotional relationships may be weak or idealised in case the family did not address the child's need for safety and security; in neither case can the emancipation process occur.

4.2.1 The importance of a peer group in the period of adolescence

Peer group provides an individual with support during the creation of individual identity through the group identity. Connection with a group diminishes individual responsibility and strengthens self-confidence and self-assurance. In case an individual is not accepted by a group from some reason such acceptance is being sought. Sometimes an adolescent may accept anyone who offers acceptance (Vágnerová, 2012). In people with a hearing impairment the creation of individual identity depends on whether they are in interaction with hearing or hearing-impaired peers.

In adolescents who are in a group of healthy peers the sense of belonging may be worsened by an indifference of the hearing to their impairment and the differences involved. A hearing-impaired individual may be isolated on the outskirts of a peer group, may lack the necessary social contact and have problems initiating peer relationships whether friendly or partner-like and these may be significantly asymmetric. A different situation arises when an adolescent with a hearing impairment is in every day interaction with a group of peers with the same impairment (Vágnerová, 2008). This situation arises in individuals educated in elementary schools for the hearing-

impaired. All pupils are equal in this type of educational institution since they all have a hearing impairment.

During the period of adolescence sexual relationships are also in the forefront. A sexual relationship of an adolescent fulfils several functions: *"contributes to the development of socialisation, supports the development of intimacy, it is a source of knowing one's self and influences the formation of identity. It may bring satisfaction not only on an emotional and erotic level but also in the area of self-realization because it may contribute to achieving a desired social prestige"* (Vágnerová, 2012, p. 438). The situation is more complicated in case an individual with a hearing impairment is looking for a partner, mainly because of the mentioned communication barrier. Individuals who are educated in an elementary school for the hearing-impaired have significantly higher chances of finding a partner among their hearing-impaired peers because they have daily contact. On the other hand this prolonged, intensive and every-day contact, often starting in preschool age, leads to the pupils with a hearing-impairment not seeing each other as potential partners. This usually changes with the start of secondary school for the hearing-impaired with an introduction to new hearing-impaired peers. Preliminary results of the research suggest that pupils with a hearing impairment in an elementary school for the hearing-impaired prefer to have a hearing partner. According to Vágnerové (2008) a partner relationship has a greater significance for a person with a hearing impairment because it confirms one's normality.

5 Partner relationships as seen by the pupils with a hearing impairment in the context of the research

In the text above we have addressed the theoretical basis of the issue. Now we will introduce the research realised in the year 2013 as part of a project called: "Initial analysis of the conditions for the inclusion of people with special needs". Partial goals of the research and the target group will be defined, the research method will be characterised and possibilities and methods of further research will be outlined.

5.1 Research objectives

The research focused on the understanding of partner relationships in pupils – adolescents had for its aim to find answers to these research questions:
1. What is the hearing-impaired pupils' view on marriage and parenthood?
2. In what age do the pupils want to enter into marriage?
3. How many children do the pupils want to have?

Furthermore, we were interested in the values of pupils with a hearing impairment, the position of partner relationships and factors influencing the choice of a partner.

Besides the findings concerned with the ideas of the adolescents with hearing impairment on partner relationships the research also aimed to ascertain whether the views of these adolescents on the partner relationships differs from their healthy peers (Švecová, 2013).

5.2 Research group characteristics

The research focused on pupils of 8th and 9th grade of elementary school for the hearing-impaired and their non-impaired peers who posed as a control group. The target group was chosen with regards to the pupils with a hearing impairment because the speech of these pupils is often poor in content, as was mentioned in the theoretical part, and this makes reading comprehension and the comprehension of questions more difficult. Since the pupils learn about partnership, marriage and parenthood within the educational field "The Human and the Society" within the Framework Educational Programme only in the 8th grade the participants of the research were from 8th and 9th grades.

Altogether 23 pupils were hearing-impaired out of which 11 were girls and 12 were boys. Their mean age was 15 to 17. For the purpose of the research the pupils with the hearing impairment were considered as one target group. The control group was chosen from the pupils of 8th and 9th grade of common elementary school. This was a group of 31 pupils out of which 16 were girls and 15 boys.

Pre-research was realized before the start of the research itself. 10 respondents participated in the pre-research: 5 respondents of 8th grade and 5 respondents of 9th grade. Due to the low number of respondents they were not divided according to grades, only according to gender. 6 girls and 4 boys participated in the research. The mean age of the girls was 15.5 and the mean age of the boys was 16 (Švecová, 2013).

5.3 The characteristics of the research method

Questionnaire with 13 questions was chosen as a research method. Based on pre-research some questions were deleted or edited. One of the problematic questions was a question regarding ideal qualities of a father and a mother. Because of limited vocabulary most pupils answered with adjectives such as "good", "nice". In the case of qualities the pupils also based their answers on their concrete reality because in cases when they grew up with only parent they did not answer the question regarding the qualities of the absent parent.

The pre-research questionnaire consisted of 18 questions (6 open ended questions, 3 scaled questions and 9 closed ended questions). After the conclusion of pre-research some questions were deleted, formulated differently or added. After the edits the final version of the questionnaire consisted of 13 questions (Švecová, 2013).

5.4 Realisation of the research

The main emphasis was placed on the pre-research which was realized in an elementary school for the hearing-impaired and in which 10 respondents participated. The questions as well as the procedure of filling out the questionnaire were explained at the beginning. More explanation was offered individually where necessary. The first question aimed to ascertain whether the pupils understand the meaning of the word 'marriage'. This question was later deleted from the questionnaire based on 90% rate of correct answers. The fourth question required the pupils to choose one item from a list that they desire the most. The pupils were not able to choose one or make plans for the future and this question was therefore changed so that the respective items were to be placed on a numeric scale. The most problematic questions were the open ones. Question number 6 aimed to ascertain what qualities should have an ideal boy or girl. Most respondents were not able to answer this question so it was deleted. A similar problem was encountered in the questions 15 and 16 asking how the pupils imagine an ideal father or a mother. When answering these questions the pupils focused solely on the description of qualities. Based on their poor vocabulary the pupils had difficulties finding the correct terms for the respective qualities. Generally it may be concluded that open questions often ascertain the pupils' vocabulary level and not their attitudes or opinions. Open questions are not appropriate in a questionnaire. After the realization of the pre-research the questionnaire was distributed to schools for the hearing-impaired in Olomouc, Brno and Valašské Meziříčí and to an ordinary elementary school in Olomouc (Švecová, 2013).

5.5 Interpretations of the results

54 pupils participated in the research, out of which 23 were hearing-impaired.

The research aimed to ascertain the existence of a direct relationship between the preference of marriage and the hearing impairment. The hypothesis was formulated in the following way:

H1: Pupils with a hearing impairment prefer marriage significantly more compared to pupils without a hearing impairment.

The hypothesis was **not confirmed**. It may be concluded that there are not statistically significant differences between the preferences of marriage in pupils with and

without a hearing impairment. 39.13% of pupils with a hearing impairment would enter marriage in age 18–25; 30.43% between ages 30–35 and the same percentage has not decided.

The same question was answered by the hearing pupils. 64.52 % wants to enter marriage between 25–30; 22.58% between ages 30–35 and only 6.45% before year 25. Based on the fact that 93.55% of hearing respondents wants to study university in the future and also the fact that marriage is being pushed to later years nowadays, the hearing respondents fall into this trend.

As to the issue of life values of pupils – adolescents they could choose from 7 items. Each item had a 5-point scale from the lowest 1 to the highest 5.

It may be concluded that there are no significant differences in the values of both groups of adolescents. Both groups put health among the first. This is because the hearing-impaired do not consider their impairment a disease. Relatively small significance is given to appearance and school success by both groups although appearance is a significant factor in the formation of identity.

The pupils with a hearing impairment were asked whether they would prefer a hearing-impaired partner, a hearing partner or any. 47.83% of the hearing-impaired adolescents preferred a relationship with a hearing partner; 30.43% do not care whether their partner is hearing or not and 13.04% adolescents prefer a hearing-impaired partner. The preference of a hearing partner by adolescents with a hearing impairment may be influenced by the degree of their impairment or a pattern in their family. Three factors usually play a role in the choice of a hearing-impaired partner by a hearing person: 1. The degree of the hearing impairment and the degree of communication; 2. Previous experience with hearing-impaired people; 3. The degree of attractiveness of the partner for the hearing peers.

Based on the assumption that the healthy pupils are currently not in a partner relationship with a person with a hearing impairment and they are not considering such a person as a potential partner the first question aimed to find out how the pupils understand the term 'hearing impairment'. The answers of the hearing adolescents show that they think it means "people who do not hear or are deaf". Only a small percentage of pupils was able to differentiate various degrees of hearing loss and only one pupil mentioned the terms 'deaf' and 'hard of hearing'. A positive finding of the research is that 58.84% of adolescents met a person with a hearing impairment but only 16.13% is able to imagine a relationship with a hearing-impaired person. The low number is probably consistent with the distorted view on hearing-impaired people by the majority of the society.

Both groups were to choose from the following items the criteria important in the choice of a partner: 1. Common interests; 2. Appearance; 3. School success. The results are shown in the following table.

	THE HEARING			THE HEARING-IMPAIRED	
1.	Common interests	4	**1.**	Common interests	4.13
2.	Appearance	3.8	**2.**	Appearance	3.7
3.	School success	2.7	**3.**	School success	2.74

Figure 1: Criteria for the choice of a partner

96.77% of the hearing respondents answered positively the question regarding children compared to 67.57% of the hearing-impaired. The lower number may be connected to the fact that 30.43% is from a single-parent family without a father.

5.6 Discussion of the results and suggestions for future research

The text above introduced the issue of partner relationships as viewed by the hearing-impaired pupils. The theoretical part of the text addressed the hearing impairment, the possibilities of education of the hearing-impaired and the issue of their socialisation. The research realized among the pupils of 8th and 9th grades for the hearing-impaired was introduced and the results were interpreted.

Marriage is currently being preferred by the hearing-impaired pupils as well as the hearing. The hypothesis about a higher preference of marriage in the hearing-impaired pupils was not confirmed.

There are no significant differences between the life values of the hearing-impaired and the hearing pupils. Both groups emphasise health and lower meaning is given to school success and appearance.

The pupils with a hearing impairment were asked whether they would prefer a hearing-impaired partner, a hearing partner or any. Almost half of the hearing-impaired adolescents preferred a relationship with a hearing partner. The preference of a hearing partner by adolescents with a hearing impairment may be influenced by the degree of their impairment or a pattern in their family. Three factors usually play a role in the choice of a hearing-impaired partner by a hearing person: 1. The degree of the hearing impairment and the degree of communication; 2. Previous experience with hearing-impaired people; 3. The degree of attractiveness of the partner for the hearing peers.

In case the healthy pupils are in a partner relationship we do not assume they are in a relationship with a person with a hearing impairment and we also do not assume that they are considering entering a relationship primarily with such a person. A great role in a partnership between a person with a hearing impairment and without is played by the degree of the hearing loss and communication. Another important factor is whether the healthy pupils have met a person with a hearing impairment and the individual characteristics of the person. If the same question was given to

the healthy individuals it would be misleading. Therefore the question was not used and instead the pupils were asked how they understand the term 'a hearing impairment'. The answers of the healthy pupils show that the distorted view of the hearing-impaired pupils is still prevalent. Most pupils understand this term to describe deaf or deafened people. Relatively positive is the finding that 60% of healthy pupils have met a person with a hearing impairment (Švecová, 2013).

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Mental mapping of space in an individual with visual disability

(scientific paper)

Hana Majerová

Abstract: *The mental mapping of space in an individual with visual disability may be viewed from several perspectives just as it is in any person, a bio-psycho-socio-spiritual being. On one hand mental mapping may be viewed in terms of the special pedagogy training in spatial orientation and independent movement in persons with visual disability and on the other hand the theme is closely related to typhlopsychology – meaning the process of the creation of a mental map. An important role is undoubtedly played by the lower and higher compensatory mechanisms. In a person with visual disability the hearing, the touch and partly also the smell and the taste together with mental processes participate at the information intake, its following processing and evaluation. The perceived is then processed using the concentration, the thought processes including analytic-synthetic activity, the memory and the imagination. The perception and the imagination, as parts of the conscious processes, form an integral part of the research on consciousness that is currently the target field of contemporary research tendencies.*

Key words: *person with visual disability, spatial orientation and independent movement, mental mapping*

1 Introduction

An individual with visual disability is before all else a human, a bio-psycho-socio-spiritual being. The ability to move in space is in this individual greatly influenced by the visual disability, external and internal factors. Independent movement in space is dependent on the training of lower and higher compensatory mechanisms. To achieve a successful orientation the individual creates in his or her mind a so called mental map of space. The process of mental mapping in this sense and the form of the mental map entails certain characteristics in our target group.

2 An Individual with Visual Disability

According to Finková, Ludíková, Růžičková (2007) a person with visual disability may be defined as an individual with an eye disease whose perception remains impaired even after optimal correction to such extent that it creates problems in daily activities. Vágnerová (2008) adds that an individual with visual disability is a person who is incapable of correctly and easily perceiving all visual information and this dimension of the external world is fully non-existent for him or is limited. It should be added that the external world of a person with visual disability consists of many dimensions. These lead to the reception and processing of information of various quality and quantity. According to the theory of information the bio-psycho-socio-spiritual aspect of information may be mentioned in the context of a holistic approach to a human being. The aspect of information in special pedagogy of people with visual disabilities is closely related to compensation. Edelsberger et al. (2000) define compensation as an enhancement in function of one organ as a reaction to the diminished function of another. Among the lower compensatory mechanisms are the hearing, the touch, the smell and the taste whilst among the higher are memory, concentration, thought and imagination. The result of this is that the hearing, the touch, the smell and the taste are involved in the process of mental mapping of space as much as memory, concentration, thought and imagination. What also influences, to a great extent, how an individual uses information in the process of creating a mental map of space is the will and emotions.

Besides characterising a person with visual disability from a holistic point of view and defining the term 'compensation' the subject of space, spatial orientation and independent movement of individuals should be addressed. Space may be defined as an area into which objects are placed and is given certain boundaries (Jesenský, 2007). A person in space moves and accomplishes daily activities. The successful orientation is dependent on internal factors, e.g. the individual; and external factors, such as measures in traffic, public areas or buildings (Wiener, 1986). The term 'orientation and mobility' used in English-speaking countries is, in the context of education, described as learning concepts, abilities and techniques necessary for a safe, effective and elegant movement of a person with visual disability in the environment, under various conditions and situations. Orientation is considered to be an ability of an individual to use the respective senses to understand the given placement in the environment in a given moment (Jacobson, 1993). Mobility is then defined as a set of movements enabling the repositioning of the body and the accomplishment of work (Hartl, Hartlová, 2000). In the case of a person with visual disability it means a complete regaining of abilities and inclusion in all spheres of life (Wiener, 1986). Finková, Ludíková, Růžičková (2007) further specify the methodology of training in spatial orientation and independent movement which consists of mastering elements

of spatial orientation and independent movement, the technique of white cane and orientation analytical-synthetic activity. The basic elements comprise of human guide walking, self-protective postures, and the so called trailing technique. The white cane technique further requires the mastering of basic holding, the trailing, the pendulum and diagonal technique. Orientation analytical-synthetic activity is represented as work with orientation points and signs detectable on the path through senses. It must be added that certain theoretical basis for the mental mapping of space in people with visual disabilities may be seen in the orientation analysis and synthesis.

3 The Mental Mapping of Space in an Individual with Visual Disability

The mental mapping of space in an individual whose dimension of visual perception of the outer world is impaired is very specific. The simple diagram below (Fig. 1) clearly shows that the individual with visual disability enters the process of mental map creation as an independent entity using lower compensatory mechanisms with the inner dimension and the potential of higher compensatory mechanisms. Movement in space then takes the meaning of a part of the dimension of the outer surroundings, the physical world that surrounds the individual. In the process of the mental map creation the inner and outer dimensions interact in an individual and these areas may overlap.
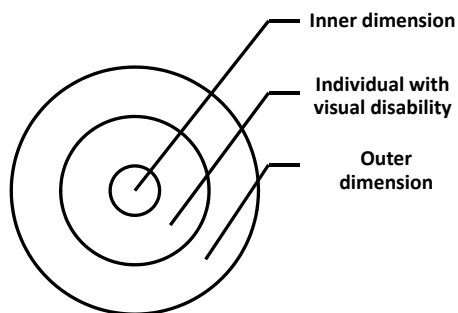
Fig. 1: The dimensions of mental mapping in the spatial orientation of an individual with visual disability

As part of the mental mapping of space the so called perceived space and action space is considered. The perceived space is a subjective mental representation of the surroundings. Every person chooses different stimuli of the surroundings within this space that then receive attention (different things and situations are interesting, different elements of the surroundings serve orientation, different emotions are felt, different memories are created). The action space is represented by that which is at the given time on the person's mind. Moreover, in the practice of spatial orienta-

tion and independent movement other spatial stereotypes are used which practically means that in most cases a person has a tendency to use routine and known places. It is known as some kind of space of activities, a mental image of the surroundings with a concrete, quite stereotypical way of using space (based on http://ucitele.sci.muni.cz/materialy/86_1.pdf). This leads to the conclusion that the mental mapping of space in a person with visual disability consists of inner and outer dimension, perceived and action space.

However, it is obvious that it is a process that can be divided into certain logically connected phases. In the process of mental map creation the basis is formed from the information within the outer dimension that the individual perceives through senses. The information is taken to the brain for processing and creation of an image of the environment. The process of mental mapping of space is defined by these four basic stages:
– Information intake using the senses.
– Selection and conscious processing.
– Memorising the spatial image.
– Decision-making, movement and orientation based on the memorised image (http://ucitele.sci.muni.cz/materialy/86_1.pdf).

If we were to apply the above mentioned stages to our target group certain differences would arise. These can be summarised in the following form in harmony with the methodology of the spatial orientation and independent movement training of a person with visual disability:
– Acquiring information using the lower compensatory mechanisms or the remnants of sight.
– Using the higher compensatory mechanisms to select data and process information.
– Memorising the spatial presentation of space while considering the differences in acquiring and processing of information.
– Spatial orientation and independent movement of an individual using the mental mapping of space.

The outcome of the process of mental mapping in spatial orientation and independent movement of a person with visual disability is a mental map. The form of the mental map of the individual is in the end dependent on the developmental level of the lower and higher compensatory mechanisms. Differences are expected at the level of the senses because of impairment in the visual information perception. Among the higher compensatory mechanisms the level of memory, concentration and imagination is important (Majerová, 2014).

4 The Possibilities of the Development of Mental Mapping in Spatial Orientation and Independent Movement of an Individual with Visual Disability

4.1 Current Research Tendencies

Research connected with the names Lahav, Moiduser (2011) was undertaken at the Tel Aviv University in Israel. The main goal of the study was the development of haptic virtual surroundings for the effective creation of cognitive maps in individuals with visual disability (with the support of a Microsoft company grant and the Ministry of Education in Israel). Below are cited the published results of this study.

In mental map creation two main scanning strategies are used: the route strategy and the map strategy. The route strategy is based on linear spatial characteristics while the map strategy involves multiple perspectives of the target place. People with blindness usually use the strategy of the first type, however, the necessary spatial information acquired using the compensatory sensory channels contributes to the mental mapping of the surroundings that can lead to the improvement in spatial orientation in these individuals.

Three basic areas are being mentioned by authors in connection with the theme of mental mapping: the development of multisensory virtual surroundings (which enables people with blindness to know the surroundings); a systematic study focused on a complete arousal of the abilities of people with blindness using the virtual surroundings; the research of the import of this mapping for people with blindness in connection with the development of their touch.

The haptic virtual environment in the research enabled the individual to actively learn the mental map creation using the compensatory sensory channels (the compensatory mechanisms). The real space in which the individual lives was simulated using the multisensory virtual environment. In the research the virtual environment used two modes of operation: the teacher mode and the learning mode. The teacher mode enabled to define the characteristics of the environment (the size of the room, its type, objects and their character, the door, windows, the types of floors with their sound characteristic like the wooden floor or grass, etc.). The editor provided haptic as well as sound response. The learning mode included operations for students and teachers. The user was able to walk through the virtual environment using the feedback joystick and receiving haptic response received by feet in the given environment through the joystick (texture, surface imitation), and a sound response (names of objects in the environment, the sounds of the windows and doors). The individual moved in the virtual environment using navigation that enabled to react to situations when the individual got lost in the virtual environment.

In the research virtual environment was used and subsequently observed how an individual with blindness can use it in the construction of cognitive maps and orientation in real space. The individual first moved based on the instructions in the virtual environment and later was to transfer into the real space. The advantage of the virtual environment was the possibility to use repeated mapping of space (room) which gave the individual enough information and an abundance of feedback. Lahav, Moiduser (2011) assume that these virtual instruments could become good additional means for the blind in the learning process in understanding new phenomena and events of real world. More can be found by the reader in the author's text that introduces the research as such (http://muse.tau.ac.il/publications/99.pdf).

Although the world of technology is constantly expanding we do not consider this trend as the only direction of development in special pedagogy. The special pedagogy of people with visual disability as human science should not in time become a virtual system science contrary to the great influence of technology. The special pedagogy is a science about a living system and not about the artificial. We do not disregard the involvement of technological devices into education, socialisation, the support in the development of individual personality, nevertheless, we emphasise the importance of special pedagogy to remain a science about a human being. Below we will mention additional possibilities of the development of abilities within the mental mapping in a person with visual disability from another perspective besides the information-communicative.

4.2 The Focused Attention within the Spatial Orientation of an Individual with Visual Disability

An individual with visual disability must be able, during orientation in space, to immediately concentrate, evaluate and solve current spatial situations. People use mental maps in practice naturally, nevertheless, it may be stated that it is possible to improve the process of their creation and implementation. At this point we would like to stress the importance of training the lower compensatory mechanisms as well as the ability to concentrate, immediately relax and use all available information from the inner and outer environment of the organism. It is possible to increase stimulation of higher compensatory mechanisms and secondarily also the lower ones using the higher within practical situations through various stimulatory exercises directed at mental hygiene and visualisation. The permanent and adequate stimulation of nervous system is considered crucial. In the final academic paper Majerová (2014) introduces advice for practice in the form of attention, imagination and memory training.

Referencing attempts described in academic literature Požár (2000) confirms that the auditory attention is more differentiated and has wider range in blind people. The individuals are capable of narrow differentiation and permanent focused attention.

Nakonečný (1998) adds a definition of attention as a state of organism activation that enables conscious adaptive reactions. It must be added that individual training of attention in a person with visual disability requires outer as well as inner stimuli. For immediate relaxation in a difficult situation in space we recommend conscious attention training using daily mental hygiene for example in the form of breath exercises, relaxation and meditation training, concentration training using a focus point (the term originates from yoga; it is a point the person concentrates on while consciously breathing), etc. Hypothetically it may be stated that regular stimulatory exercise influences the central nervous system, improves attention and secondarily enables a more effective creation and implementation of mental maps in spatial orientation. These exercises support development through the individual's own actions rather than through technology or computer systems only.

4.3   Stimulating Imagination

Regarding the imagination of a person with visual disability Lopúchová (2010) defines imaginations as a higher level of a sensory image which, however, is not a simple copy of sensory experiences. Impaired or completely lacking vision influences imagination while the structure of the visual stimuli consists of current visual perception and past experience of the individual. Visual imaginations are, therefore, due to the impaired visual perception, different. We would like to add that imagination training practically means stimulation of this higher compensatory mechanism but in this way we may also support the training of the lower compensatory mechanisms used in daily life.

Imagination improves during daily activities performed by a person with visual disability together with the compensatory mechanisms through immediate experience. Mental hygiene exercises may also contribute to a more effective implementation of imaginations (mental maps). The use of imaginations in autogenic training is known to most workers of helping professions. In practice a person may include visualisations in the form of mental involvement of a concrete sense in the concentration training. A person who became blind later and is learning to read the Braille writing may in this way imagine for example perceiving clearly and prominently the text in Braille, trailing the paper and clearly perceiving the writing through fingertips. Such visualisation may be used also in the typhlographics training including the reading of typhlographic maps, plans and other images. Moreover, stimulating the imagination of clearly recognising typhlographic images, using the cutaneo-muscular apparatus and touch in general works as a positive stimulation for practical training, as a motivating factor. This kind of daily activity does not need to take more than several minutes during which the individual carries out relaxing exercises and then the visualisation. Similar training may be advised also within the training of dif-

ferentiating sounds as part of spatial orientation (the individual consciously thinks of various sounds the differentiation of which has been mastered during practical training). Similarly, smell and taste imaginations may be included and eventually, the individual may combine all the mentioned compensatory mechanisms within a concrete or model situation in a visualisation exercise.

4.4 Memory Training

Regarding the memory we repeat the above mentioned process of creating a mental map of space in a person with visual disability in regards to memory mechanisms. The process works in the following way: acquiring information through lower compensatory mechanisms, or remnants of vision → implementation of higher compensatory mechanisms in data selection and processing → memorising the space image with differences in acquiring and processing information → spatial orientation and independent movement of an individual using the mental mapping of space. This process of working with information and the creation of a mental map are specific in a person with visual disability but are still subject to the general biological and psychological laws. Generally propagated and existing approaches may, therefore, with minor changes be applied. For example Preiss, Křivohlavý (2009) created a title called "Training memory and cognitive abilities" that may be an inspiring resource for a typhlopedic's practice. Lopúchová (2010) adds that the acoustic and word memory becomes, as a compensation to the increasing demands, sharper and better in people with visual disabilities compared to the intact. Memory and cognitive activities training thus becomes an integral part of daily life.

In the above mentioned literature comparison and practical exercises we have not exhausted the possibilities available in the field of mental mapping of space support. The text should serve as an inspiring resource for further study and practical activity.

5 The Neurobiologic View

Two types of information transmission function in the nervous system: the synaptic and the extrasynaptic (the glial cells communicate with neurons using ions in the intercellular fluid). The processes generated by the brain in analysing an image or realising the state of consciousness and others cannot be interpreted solely based on the neuronal or extraneuronal signal transmission. The quantum mechanics is a part of the quantum physics but contrary to the Newton mechanics it uses the wave and probabilistic character of particles that are part of matter with qualities such as energy, electric charge and spin. Each submicroscopic particle has a dual nature, the wave and the corpuscular. The particles perform motion and assume position

undefined in space and time (non-locality). However, once they come into interaction with the environment, the collapse of the wavelength of the particle occurs. The collapse occurs at the instant of measurement and can affect a considerable area. On top of the mentioned physical description of quantum phenomena Dylevský (2009) adds that **in the central nervous system the quantum processes may happen in intercellular space limited by the cell membranes that are impermeable for many elements.** It is the intercellular space that functions as a vast communication channel in which **the quantum transport of particles from any place in the system is possible without the movement of particles between the spaces**.

In quantum physics this is possible due to the mentioned collapse in the intercellular space (the decoherence of the wave function of the particles). This intercellular space is limited by membranes with high ohm resistance. What is important is that quantum phenomena happen at the level of atoms, ions and all (some) small molecules. However, in the central nervous system it is mostly the calcium ions that play a role in intercellular communication, although it is also electrons loosely bound in ionised forms, or smaller molecules of protein and fat, neurotransmitters and neuromodulators (peptides). **Quantum changes occur in the structures of the brain constantly, constantly creating new connections, while those necessary for the given momentary state of the system are selected. In the quantum communications transmission is probably of the relatively simple information.** Quantum information transmission principles are still being researched. **In the central system, according to the quantum theory, "everything" should be linked to "everything".** In practice in humans, there first are established short-term connections which can later become more permanent. When asked whether the quantum theories are realistic we may explore the brain development in fetus and child. The activity of the nervous system of the child is affected by apheresis, in other words the dominance of information supply and the trends of functions, or memory. Initially the fetus and infant brain has no trend – it responds only to the current range, and only gradually builds up the continuity of functions. In this way, the brain of a child corresponds better to the quantum model, while the adult brain to the newton model (Dylevský, 2009).

The individual with visual disability also cannot be excluded from the possibility of quantum theory application in terms of the nervous system functioning. A hypothesis that the particle transmission is possible to any place in the system without particle motion between these places in a system where "everything is connected to everything", is thought-provoking. From this perspective, active stimulation of the center takes on a new dimension, we believe that adequate stimulation may promote the development of those parts of the brain that are, in such individuals, involved to a limited extent or not at all. At this point, the question of plasticity of the human brain is of great importance, as highlighted by Kulišťák (2011).

6 The Conclusion

The mental mapping of space in an individual with visual disability concerns the neuroscientific as well as the special-pedagogic dimension. The spatial orientation and independent movement training in people with visual disability has its full methodology, nevertheless, we emphasise defining the mental mapping of space as an independent field within the spatial orientation of an individual with visual disability. Focused training of mental mapping of space in an individual with visual disability has its theoretical and practical foundation.

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Online assessment, documentation and evaluation tool in early childhood intervention – Pilot study in Slovakia in multisensory therapeutic environments

(scientific paper)

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Abstract: *The article presents partial results of qualitative research in the effects of therapeutic interventions provided by therapeutic educators in multisensory rooms. The research was focused on exploring how specific components of multisensory environments influence competencies of clients in early childhood intervention. The authors focused on children with multiple disabilities and children on the autism spectrum. They introduce an online assessment, documentation and evaluation tool created by the ICF-Train project that utilizes the International Classification of Functionality, Disability and Health for children and youth (ICF-CY) in direct work with children and families in early childhood intervention.*

Key words: *early childhood intervention, multisensory therapeutic environments, ICF-CY*

1 Introduction

Presented article is based on the praxis of the authors in the area of early childhood intervention with clients with multiple disabilities and with clients with autism spectrum disorders and their families. Interventions were provided in multisensory rooms, with a focus on sensory stimulation, relaxation and integration. The practical experience and qualitative research data were utilized in a pilot study of an online assessment, documentation and evaluation tool developed in the LLP Leonardo da Vinci ICF-Train project (Project number: 2012-1-AT1-LEO05-06975). The ICF-Train project is focused on training of professionals in multidisciplinary teams working in early childhood intervention in applying the ICF-CY coding system in the documentation of their cases, including anamnesis data as well as evaluation of provided interventions.

International Classification of Classification of Functionality, Disability and Health for Children and Youth represents a common communication base of helping professionals in medical, social, and educational sectors working with families. ICF-CY uses a descriptive, non-judgmental language. Moreover, the ICF-Train online tool is completely transparent and opens the assessments of professionals towards parents. It invites the parents or caretakers to be partners on the team. Therefore, professionals are taught to use simple and clear explanations. The superior position of experts over the parents is reduced in this way. Also, the coding of ICF-CY is only descriptive. It is not a diagnostic tool. It serves an instrument of documenting the assessments. The aim using ICF-CY lies in precise and condensed transfer of observed, assessed and discussed information about the client. The qualitative data is coded by a common classification, which allows further research of the observed phenomena, comparisons in time, evaluations of provided therapeutic and supportive interventions, or supplementing opinions of different experts.

Therefore, the authors used the ICF-Train online tool as a means to record and further assess the data of qualitative research in multisensory environments. Therapeutic interventions such as concepts of sensory integration (Ayres et al., 2005) or Snoezelen rooms (Ponechalová & Lištiaková, 2010; Strašilová & Lucká 2011) are not highly structured. They rely on effects of prepared environment and a free choice of activities by the clients. Such non-directive approach means that it is difficult to evaluate the benefits of these interventions. ICF-CY coding system provides a simple tool of categorizing observed behaviours and changes in clients' reactions, emotions, participation and overall supported competencies.

The goal of this article is to present the results of a pilot study that applied the ICF-CY coding and used the online documentation tool as a method of categorizing qualitative data from observations of clients during early childhood intervention programmes for children with disabilities. The theoretical part of the article describes the principles and background of multisensory therapeutic approaches with the focus on perception and its disorders. The research part attends to partial results of qualitative inquiry into the effects of components of multisensory rooms on clients with multiple disabilities and clients on the autism spectrum.

2 Perception in the context of competencies

The main focus of interventions in multisensory environments is activation of communication and interaction in the physical world and social relationships. In this regard, it is important to focus on supporting responsibilities. Competence according to OECD (2005) includes skills and attitudes. It also argues that the core competencies must *"include valid implications for groups and individuals, assist individuals to*

meet the requirements of wide variations, be important not only for professionals, but for all individuals" (p. 4). Core competencies, according to OECD (2005) are divided into three categories: conversational skills (pragmatic language level), interactions in heterogeneous groups, and autonomous procedures. The acquisition of conversational competence in the usage of language, symbols and text interactively is called a conversational competence. Williams (2011) stated that people with disabilities have the right to be engaged in the communication process and the right to speak and to express themselves outwardly. According to Tedder, Warden and Sikka (1993), communication is dependent on the interpretations of the recipients and their ability to decode the characters transmitted to them. Communication, especially in the case of people with autism, or with severe multiple disabilities, has its own specifics. Development of language often remains only on an instinctive level. Mainly, if the speech impairment is more severe, it also causes difficulties with non-verbal expression. One of the basic prerequisites for the success of interventions is preparedness of the expert to be in the communication process, to be able to seek ways of communication and to decrypt it. Pavlis (2010) outlined some of the barriers to communication that can occur. They include cognitive and sensory barriers, deficiencies in motor and emotional/volition area, permeable sensory channels, processing and storage apparatus, and last but not least expression. For this reason, it is often necessary to focus on alternative or augmentative form of communication. Janovcová (2004) considered as most appropriate alternative forms of communication basal stimulation, when communication of clients is on a basic (basal) level, and allows connection with people who have a problem with sensory integration. Another key competence is interaction in group. Therefore, it is important to support perception and processing of sensory stimuli as a part of supporting competencies in general.

Perception is a complex phenomenon consisting of sensations, such as visual, auditory, tactile, vestibular, proprioceptive stimuli, and their processing (Goldstein, 1984). Perception enables to navigate in the environment and to create an idea of it (Capáková & Kováčová, 2014). Ayres et al. (2005) described the function of brain to process stimuli in an adaptive way as sensory integration. It is necessary for effective behaviour in the environment. Visual and auditory systems process stimuli that do not necessarily need to be in a close proximity to the body. They are called tele-receptors (Ayres et al., 2005). They are often addressed when talking about academic skills support. In enhancing development in early childhood intervention, it is important to focus on the connection of visual and auditory stimulation with more basal sensory system that create the platform for development of higher functions. Vestibular perception is responsible for gathering information about position and movement of the body. It is provided by the semi-circular canals of the inner ear that react to gravity. It is activated by movements of the head and its position in relation to the ground (Bundy et al., 2002). It affects static and kinaesthetic balance – staying

still and walking, or movement in general. It is also a part of nonverbal communication, which shows emotions and it is necessary for cognitive development (Abraham, 2002). Through tactile system, feeling of pressure, vibration, temperature or pain are gathered by receptors in skin and then further processed (Kranowitz, 2005). Tactile system represents surface perception of the body that is closely connected with building relationships and intimacy. Lack of tactile stimuli can lead to sensory and also emotional deprivation, which is connected to the theory of attachment (Bowlby, 2005). Touch is important for learning about objects, but also about the body itself. If tactile information is not precise, it can hinder body coordination and movement (Abraham, 2002). Tactile discrimination describes the ability to differentiate between particular tactile stimuli, awareness of touching and being touched, differentiation of shape and form of objects, temperature, or surface (Kranowitz, 2005). Another system called proprioceptive perception represents information from the inside of the body through muscles and bones. It creates awareness of the body schema and oneself. Thanks to proprioceptive systems, conducting and controlling movements without thinking about them is possible (Kranowitz, 2005). Also, being aware of the position of different body parts relies on proprioception (Friedlová, 2011). Integrated with visual, tactile and vestibular control, it helps in motor planning. It precedes fine motor skills and it is responsible for generalization of movements (Harms & Mariano, 2003). In order to perform an intentional action connected with movement, such as sitting down on a chair, or grabbing a glass of water, it is necessary for the sensory systems to be connected and the information to be processed together. Then it is possible to react adaptively to the environment. Adaptive response according to Ayres et al. (2005) means a meaningful and situation appropriate behaviour, for example judging the position of the chair correctly, sitting down with accurate speed and without looking at the chair. Academic skills are even more complicated and require highly developed sensory integration. Looking at the board, and then redirecting the head towards paper and pen, writing while constantly looking up and down, at the same time, keeping the body still on a chair, listening to the teacher and responding are only some examples of complex actions.

3   Sensory Processing Disorders

Children with learning disabilities, attention deficit and hyperactivity, autism spectrum disorders, or mental retardation may have issues in sensory processing. These can be observed and addresses in early childhood intervention. Kranowitz (2005) mentioned several categories of sensory processing disorders affecting areas of (a) modulation, (b) discrimination, and (c) motor skills. When modulation of sensory stimuli is affected, people feel the sensations are stronger (hypersensitivity) or they

do not feel them enough (hyposensitivity). A separate category constitutes of sensory craving which signifies a search for a certain type of stimuli. Hyper- and hyposensitivity, as well as sensory craving can be present in any of the sensory modalities.

Hypersensitivity in visual system can be observed for example when people avoid light. Hyposensitivity seems to be more common in children with autism, since they flicker their fingers in front of their faces for a sensory stimulation. In the area of auditory stimuli, hypersensitivity is often visible from behaviours such as covering ears and screaming in order to cover other sounds coming from the environment. Hyposensitivity can be seen when children do not react to certain sound frequencies. We can assume that tactile system is affected when children hate wearing clothes, cannot stand certain textures of clothing, materials or food, also when a soft touch of another person is perceived as painful. On the contrary, some people do not feel touch, which might be dangerous in some situations and can also influence their social relationships. Proprioceptive system is highly connected with tactile system, but it is focused more on feeling the body as a whole, with the perception of body schema. Children that throw themselves on the ground, push against other people or relax under heavy matrasses are likely to be in need for strong proprioceptive stimuli. Vestibular system might be hypersensitive for example when people cannot bear changes of position of the body, or are afraid of walking on uneven surfaces. Hyposensitivity may be present in case of craving trampoline jumping, roller-coaster rides, swinging, or spinning.

Disorders in modulation described above may be accompanied with discrimination issues. In this type of sensory processing disorder, people are unable to differentiate parts from the whole, or distinguish between stimuli. Capáková and Kováčová (2014) pay particular attention to the promotion of visual perception of children as a preventative action. In visual systems, this is often present in case of dyslexia, when people cannot spot differences between similar visual information, such as orientation of letters. In auditory system, children with differentiation problems cannot focus because it is difficult for them to choose the right sounds to listen to. They perceive the environment as too chaotic. Similarly, in the area of tactile information, touch of clothing on the body may distract from touching a toy for example. Proprioception may be affected when children have difficulties identifying body parts without looking at them. Vestibular system is connected with kinesthesis in space, so children might have a hard time navigating through space.

The third type of sensory processing disorder is caused by a lack of integration of various sensory systems and it is connected with motor skills. It can be either a postural disorder or dyspraxia (Kranowitz, 2005).

According to Pagliano (2001), multisensory environment establishes especially suitable conditions for assessment because it allows professionals to observe children in stimulating surroundings. Early childhood intervention in multisensory environ-

ments is based on the theory of plasticity of the nervous system. Changes of plasticity in the nervous system are referred to two groups of changes – the first one is adaptation (adaptation to changes in the environment) and the second one is the rate of onset of these changes. A lack of incentives for the nervous system means that its functions cannot develop and differentiate adequately. As described by Friedlová (2007), in this case, there is a risk of secondary damage to the central nervous system. According to the neurophysiological model of developmental plasticity, in addition to identity, also trophic functions are important (Langmeier & Krejčířová, 1998). Based on these arguments, it is necessary to obtain a certain number of incentives inevitable for activation of the central nervous system.

Providing appropriate stimuli from the outside contributes to building neural connections and thus promotes improvement in participation in life and generally, higher quality of life of people with disabilities. Stimulation happens through prepared safe environment that triggers reactions of children with developmental delays. In this way, multisensory environments offer the surroundings for children to follow and fulfil their developmental needs. As well as in Montessori theory (1972), multisensory environments follow natural development and support it by created conditions. In prepared stimulating environment children naturally seek sensory-motor activities that they need most for their next developmental step, so they are in the zone of proximal development (Vygotsky & Cole, 1978). The environment offers a challenge but it is manageable so children can experience a feeling of success and empowerment. All the senses are stimulated and children have a chance to explore and feel the impact of their individual actions.

4 Purpose of using multisensory environments

The usage of multisensory environments in early childhood intervention is quite broad. Children with intellectual disabilities, multiple disabilities, or autism spectrum disorders can benefit from its relaxing and stimulating elements (Ponechalová & Lištiaková, 2010). In case of children with challenges in specific areas of development, particular components can be used individually or in combination (Lucká & Strašilová, 2011). In multisensory therapy, providing atmosphere that is pleasant for the client represents a crucial principle. Through the means of sound, light, smell and touch, clients are given an opportunity for living experiences they do not meet in everyday life due to their disabilities. Friedlová (2011) mentioned that the goals of multisensory interventions are set individually for each client based on their particular issues. Multisensory environments are also suitable for using the techniques of basal stimulation since they offer stimuli similar to prenatal development in the womb. They facilitate body awareness and orientation in the environment. Friedlová

(2007) argued that in addition to communication and perception of movement, it is a pure communication channel with a person who has a disability. Szabová (1998) defined the *"autonomous self"* as a way that people perceive their body, their body borders on another level (p. 19). An important role here plays the experience people have of their own body in their social interactions with the environment. All this is reflected in the physical survival of a person. Identical stimulus does not induce identical physical reaction in different people. The body is essential for communication.

Social competencies express relations of people to their surroundings and interpersonal relationships. Bolton (1986) argued that functions of social interaction separate people from other forms of life. Social competencies are therefore closely linked to communication competence. A prerequisite for a successful implementation of interactions is a constant practice. And this is possible to achieve using multisensory environment.

Defined competencies are essential for people with autism or multiple disabilities. They need to develop the interaction that is commonly used in the society and is related to human needs, possibilities and capabilities. For the acquisition of these competencies, particular children in their individualities stand in the centre of the early childhood intervention network. Important parts of the support include interpersonal relationships coming from the support of experts, and from the support of the family. In case of people with difficulties in sensory integration, such as children on the autism spectrum or children with multiple disabilities, also the use of multisensory environments is highly useful.

5 Research Methodology

Based on the theoretical background of above described sensory integration theory (Ayres et al., 2005), basal stimulation theory (Friedlová, 2007; Friedlová, 2011), and the professional background of the authors as therapeutic pedagogues providing early childhood intervention, we present research observations carried out in multisensory rooms with clients with autism spectrum disorders and clients with multiple disabilities.

Multisensory environments are structured into a few types of multisensory rooms with different components and therefore different therapeutic goals. White rooms are used for relaxation and dark rooms for activation (Lucká & Strašilová, 2011). Adventure or playful rooms are generally targeted towards gross motor skill stimulation (Ponechalová & Lištiaková, 2010). In our research we focused on capturing the impact of the multisensory environments on clients in early childhood intervention and on exploring the effect of particular components of these environments on clients. The research was conducted in two different settings: (a) a white multisensory

room and an adventure room in a centre for children with autism spectrum disorders, (b) a white room and a dark room in an institution of social care for people with multiple disabilities. Observations were carried out over a period of one year, during regular sessions with clients attending early childhood intervention programmes in these settings. Participants of the research were children between 3–9 years old with developmental delays, autism spectrum disorders or multiple disabilities, with the informed consent of their parents. Some of the parents were present during the intervention.

Research data obtained from observation records were processed using the ICF-CY coding system in the online tool of ICF-Train project (Pretis & Stadler, 2013; Pretis, 2014). This online tool allows full documentation of client anamnesis data, including information about the family and their concerns about the child's development. Professionals can enter assessment observations and code these with the ICF-CY codes. After that, the coded areas of development are considered to be either strengths or risks and marked as such. This allows the next step of planning intervention goals and proposing appropriate therapeutic or supportive strategies. It is based on the idea that the goals in general need to reflect the needs of the child and their possible levels of competencies. The goal is derived from the risk area, but the fulfilment of the goal (in our case, the early intervention strategies) relies on the strengths observed and coded in the previous part. Therefore we can exhibit our reasoning for the selection of therapeutic methods. The system uses a scheme of: If we provide certain intervention, the child will achieve certain goals, because the strengths in the family system or in the child are such and such. After setting these general goals, we set smaller goals in each area in the need of support. These goals are discussed together with parents and they follow SMART criteria (specific, measurable, attainable, realistic and time-limited). It is possible to document all intervention observations in the online tool and to use the ICF-CY codes to track changes in child's development.

6 Research Results

In this article, we present partial results of the qualitative part of our research, organized into two longer vignettes and several small excerpts. The vignettes describe behaviour, bodily and emotional reactions of the client to the multisensory room and offered activities. In vignette nr.1 (V1), we described a client with autism and in vignette nr. 2 (V2), we described a client with multiple disabilities. Vignettes 1 and 2 are coded with the ICF-CY codes. For clarity we list the names of the codes on the bottom of the vignettes.

V1: David is six years old. He has been diagnosed with autism and mental retardation. He does not speak. He is hypoactive (d429) with low muscle tone (b735). He walks when holding hands with an adult (b2351). He is not able to stand up on his own (b7306). He crawls with moving one side of the body and then sitting back on his bottom (b7601). The goal of the therapeutic intervention is to motivate him towards independent movement activities. His mother uses a hyper-protective strategy (e410) and catches him before he falls down. David thus does not have any idea of the impact of his actions and does not have enough experience with his body in the environment, for example when walking on a low gym bench, he does not realize he needs to place his feet on the bench in order not to fall down. In the sensory integration therapy room, his eyes are wide open looking at the therapist in search for understanding when a new activity (d1601) such as slow spinning in a funnel or swinging on a four-point swing is introduced. As he learns with repetition of the activity that he does not need to be afraid (d2500), his eyes do not focus on the therapist. He stays where she put him. David is on the four-point swing, lying on his stomach (d4150). The therapist pulls him forward so that his head and his arms are in the air. She lies down on the floor under the swing. She moves the swing and every time David can see her, she says "cuckoo". David loudly laughs when their eyes meet. She takes David's hands and tries to push at his palms pretending to push away from him to move the swing. David is not able to push away (d4451) but he understood that he is supposed to stretch his arms towards the therapist.

V2: Michaela is six years old. Her diagnosis is a multiple disability – specific combination of physical and mental disabilities. Communication is realized in the form of alternative – winking eyes (d350). Michaela does not have enough motivation to cooperate in the intervention process (b130). Her family interaction is limited to the fulfilment of basic needs (e310, d760). Her mother says that the therapist tried everything, but she does not know how the actions that endure her attention could be sustained for a longer time. Because of a problem with movement and perception of body boundaries (b156, b147), she often strikes when waving her arms (b176), and passing through narrow passages. She responds to intense stimuli, and then keeps attention for a longer time (b140, d160). When Michaela entered the multisensory environment, she looked surprised (b114). After placing her on the music waterbed (b156), initially, she perceived only volatility of the body. After turning on the music and spreading the vibration, first, the body stretched and after a while it completely released (b147). Impressed by watching how the therapist moved the bed, her body lifted sharply, and she exhaled air from her mouth (b140, b152). She was focused on the activity (b140). The therapist responded by words, Michaela communicates on an alternative level (d350). When the therapist brought optical fibres, she followed them first by sight and touched them (b140, b156, d160). She observed as the therapist passed fibres through the body that surrounded it. Subsequently, she stretched towards optical fibres (b760, d445), the therapist inserted them into her hands and she explored them with concentration (d315, b156, b210).

List of codes used according to ICF-CY (WHO, 2001):

b114   Orientation functions
b130   Energy and drive functions
b140   Attention functions
b147   Psychomotor functions
b152   Emotional functions
b156   Perceptual functions
b176   Mental function of sequencing complex movements
b2351   Vestibular function of balance
b7306   Power of all muscles of the body
b735   Muscle tone functions
b760   Control of voluntary movement functions
b7601   Control of complex voluntary movements
d160   Focusing attention
d1601   Focusing attention to changes in the environment
d210   Seeing functions
d2500   Accepting novelty
d315   Communicating with – receiving – non-verbal messages
d350   Conversation
d4150   Maintaining a lying position
d429   Changing and maintaining body position, other specified or unspecified
d445   Hand and arm use
d4451   Pushing
d760   Family relationships
e310   Immediate family
e410   Individual attitudes of immediate family members

7 Interpretation of Results

In behaviour of children, parents and professionals can observe specific patterns connected with sensory perception preferences and issues. These behaviours are often registered as inappropriate in situations when they occur. For example, throwing oneself on the ground, pushing other children with great power, taking off clothes, avoiding certain materials, shouting or making sounds, flickering fingers in front of eyes, rocking, smelling or touching other people and materials. It can be explained through sensory craving, under- or over-responsiveness in vestibular, proprioceptive, tactile, visual or auditory system. Early intervention strategies include exploring and fulfilling sensory needs in a safe space.

V1: Multisensory room created the environment for meaningful interaction of the therapist with the child with autism. Regarding sensory integration, vestibular stimulation on the swing was connected with visual and auditory stimuli, allowing a complex perception. The environment offered unusual and therefore interesting and motivating materials for the child. A hypoactive child, such as David, can get use out of materials that do a part of the work instead of him, such as swings, slides, or rolling cylinders. The presence of the therapist is also important to create the connections between the child and the materials and to offer a safety of the relationship in a new environment. During the sessions, David's mother was present and she was pleased to see that her son is able to react and to do things on his own, which is an important aspect in early childhood intervention. From the perspective of ICF-CY, the focus on body functions (b-codes) was considered important in the case of this child. Also, we can assume that because of the observer and researcher being a therapeutic educator, attention was brought to the area of participation and activities (d-codes).

V2: Multisensory rooms and their components are suitable for fulfilling the need for intensive stimuli found in Michaela. Focusing simultaneously on multiple senses at the same time allows integration and grounding in the environment. Multisensory environment is suitable for the implementation of interventions directed towards progress of this client with multiple disabilities. Due to strong stimuli in this environment, she could maintain focus for longer periods so that work and intervention was not exhausting for her. As a helpful tool we considered the possibility to describe situations with multiple codes in the online system. It was necessary especially in categories assessing body functions (b-codes) and at the same time the data expressed abilities of the client to participate actively in the intervention (d-codes).

8 Conclusion

Multisensory rooms can be adjusted according to the needs of different client groups. In multisensory rooms, clients can explore and experience themselves in interaction with other people and the physical world. They are useful for hypo-active children because they stimulate reactions and they are also used for hyper-active children in order to eliminate stimulation and promote relaxation. In our research, we explored the effects of components of multisensory rooms on observable behaviour of children with autism spectrum disorders and children with severe multiple disabilities in early childhood intervention. As the main effects of multisensory rooms, we consider: activation and motivation of passive clients, gaining interest and prolonged focus of attention of clients with low participation, creating means of expression and communication for clients with difficulties in spoken language and social interactions, sensory-motor and psycho-motor skills support.

The ICF-Train online tool allowed us to document qualitative data through the ICF-CY codes and therefore they may serve for future comparisons of changes over a longer period of time of providing multisensory interventions. The transparency of the online tool towards parents constitutes also an important component of professional early intervention services. Parents are able to look at the documentation of services offered for their child and therefore become a part of the multidisciplinary team. ICF-CY codes are non-judgemental and understandable. The goals follow small steps and are very particular. The online tool thus creates a base of a partnership of professionals and families in early childhood intervention. This pilot study constitutes a beginning of a thorough research plan focused on exploring all the functionalities of the ICF-Train online tool.

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Accommodations in national examinations in Nigeria: Analysis of the experiences of candidates with disabilities

AJUWON, P. M. Ph.D (2012). in E. D. OZOJI Ph.D, I. A. KOLO Ph.D & T. A. AJO-BIEWE Ph.D (Eds), Contemporary issues in guidance, counselling and special education, Ibadan-Nigeria: Glory-Land Publishing company

Reviewed by Ewa, James Abua

Prof Paul M Ajuwon is a Nigerian with visual impairments settled in the USA. He is a lecturer at the Missouri State University. He is a prolific writer and has many researched articles published in learned journals to his credit.

In the work, the author tries to projects the plight faced by individuals with disabilities in Nigeria in their efforts to scale through public examinations in the Nigerian school system. He started by drawing a comparison to the American system of education which makes for accommodation of all persons (disabled/non disabled) equal opportunities to participate and benefit from the school. He pointed out that test accommodations are frequently given to students with disabilities in order to reduce barriers that may hinder the true assessment/measurement of their knowledge, skills and abilities. Hence, test accommodations are considered as adjustments or modifications to the standard testing conditions which alleviates the impact of the applicant's functional limitation on examination process without fundamentally altering the nature of the examination; imposing an undue administrative or fiscal burden on the Board; comprising the security, validity or reliability of the examination; or providing an unfair advantage to the applicant with the disability. (http://www.nybarexam.org/Docs/ADA%20Application%20.pdf).

The author holds that in the United States, a number of mainstream testing services provide various types of testing accommodations for candidates with disabilities. The Educational Testing Services (ETS) divides their testing accommodation into computer-based testing and paper-based testing. Accommodations for computer-based testing include: providing extended testing time, providing additional rest breaks, providing a reader, providing an individual to record the student's answers, providing a sign language interpreter (for spoken directions only), allowing the students to select the background and foreground colours of the computer and providing alternate testing formats including: audio recording, Braille and large prints. ETS's

accommodations for paper-based testing include: providing extended testing time, providing additional rest breaks, providing a reader, providing a sign language interpreter (for spoken directions only), providing the test/answer sheet in large print, providing an audio recording that may be accompanied with a large print figure supplement and/ or a raised-line figure supplement. The American College Testing (ACT) is a college entrance examination which also provides testing accommodations for students with disabilities. ACT divides their testing accommodation into three types. These include: Centre testing No 1. This provides accommodations but the students with disabilities must abide with the Standard Time National Testing. Centre Testing No 2. is classified as Extended Time National Testing. The third category is classified as Special Testing accommodation for students with disabilities. Similar to ETS is SAT which is another college entrance that provides accommodations. Other accommodations are divided into four groups namely: 1. Presentation, 2. Responding, 3. Timing/scheduling and 4. Settings.

In the Nigerian situation of the educational system according to the author, examinations to various post secondary institutions are organized by three main bodies namely: The West African Examination Council (WAEC), The National Examination Council (NECO) and the Joint Admissions and Matriculation Board (JAMB). In these types of examinations, the author pointed out that candidates with disabilities are lumped in together with the non disabled students into writing the examinations without proper/adequate accommodations made for them which hitherto affect their performance. Candidates with disabilities on the other hand often encounter barriers in participating in National examinations characterized by:

- Invigilators and supervisors ignored candidates with special needs when assistance is sought.
- Invigilators are unable to respond to candidates inquiries pertaining to poor transcribed questions in Braille.
- There is perceived negative attitudes of the invigilators towards candidates with disabilities.
- Invigilators' unfamiliarity with sign language, thus hindering communication with deaf candidates.
- Inability to present examination materials in preferred format.
- Extended time not offered to the candidates with disabilities to complete examinations.
- Deaf/hard of hearing candidates are made to sit for/write oral English which has not been taught them.
- Delay in the release of the results of the candidates with disabilities by the examination bodies.

In a bid to for stall the discrepancies trailing the poor conduct of examinations in the country for candidates with disabilities, a number of measures have been articulated by the author to help curb the problem. These include:

- Training of the invigilators/supervisors on disability and specific needs of candidates with disabilities in the examinations.
- Providing noise free environments during examinations especially for candidates who have hearing difficulties.
- Ensuring that examination questions are properly transcribed into Braille.
- Allowing breaks during examination because of arm fatigue particularly for candidates with physical or health limitations.
- Carrying out extensive awareness programme among stakeholders on the challenges faced by individuals with disabilities in the conduct of public examinations in the country.

The author rests his case by submitting that the current initiatives in the education sector must focus on best practices in accommodating candidates with disabilities in national examinations. So as a practical first step, the agencies shouldered with the responsibilities of the conduct of the examinations must formulate a coherent policy that will guarantee accessibility in examinations for all candidates with disabilities. Furthermore, there is need to carefully scrutinize the process of constructing examination items to promote inclusive assessment of all candidates to buttress the tenets upheld in the country' National policy on education (2004) that education in Nigeria is 'an instrument par excellence' for effecting national development and that every Nigerian child shall have the Right to equal educational opportunities irrespective of any real or imagined disabilities, each according to his/her abilities.

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If only I were a little boy or sketches about life springs, where they spring from and how they diffuse us

SMÝKAL, Josef. *Chtěl bych být malým klukem aneb* Črty *o pramenech* života, *z* čeho *tryskají a jak se rozlévají* v *nás samotných* [online]. Brno, 2013 [cit. 2014-03-24]. Available at: http://www.smykal.ecn.cz/publikace/kniha19.htm

Reviewed by Martin Fink

Josef Smýkal is a personality, who dedicated his life almost in its entirety to the disabled. At first, he mastered the craft of basket making, and yet his interest in the issues of the disabled was such, that he later got the degree of pedagogy and music teaching at the Pedagogical faculty of Palacký University and subsequently worked for his whole life with children with visual impairment. He was a pedagogue at the Elementary school for the blind and visually disabled in Brno, the founder and director of the Typhlopedic centre at the elementary school and kindergarten for the blind. Since 2000, he has been working in the department of documentation of typhlopedic information in Technical museum Brno and is at the same time a researcher. Eventhough PhDr. Josef Smýkal was born in 1926, he remains a very active person. To prove this fact, we bring you his latest publication, which he published on his web in 2013.

Josef Smýkal decided to write this book on the one hand on the basis of the impetus of his surroundings, and on the other hand, further motivation to him were the narratives of Josef Vinklář (once a very popular Czech actor) about his take on life. Josef Smýkal thus tried to create a retrospective narrative about his life, professional and personal alike. He commits to playing some roles that have been, as he puts it, assigned to him, but also to those roles he chose himself. He also contemplates whether or not these roles were successful, yet leaves the final evaluation up to his readership.

The book consists of ten chapters which are assorted from the memories of his childhood, family and school in Vlčnov, where Smýkal (2013, s. 40) himself says: *"This were merely five years, and yet they formed a firm cornerstone of my lifelong struggle to fill my life creatively."* over his arrival at the Brno Sightless Institute as a student, the meeting of his future wife who was also a student of this institute up to the active work for the visually disabled. To name but a few activities of Josef Smýkal,

one should mention the participation on the foundation of the Czech Audio Book (1960), magazine publishing in Braille, or his work for the Blind museum in Brno.

Chapter titles:

Changing one's life roles	*(Přetvářet své životní role)*
If only I were a little boy from Vlčnov again	*(Chtěl bych znovu být malým klukem z Vlčnova)*
A little shepherd boy	*(Já pasáček malý)*
The beasts of ours	*(To naše zvířectvo)*
Springs of life	*(Prameny života)*
Vlčnov school *(Z vlčnovskéj školy)*	
A handful of memories	*(Hrst vzpomínek*
on the Brno school for the blind	*na slepeckou školu v Brně)*
Cold fosters	*(Studený odchov)*
Preparing for an independent life	*(Příprava pro samostatný život)*
At the village green	*(Na návsi)*
Epilogue – Petr Gratias	
Hooked illustration	

The book is beautiful, full of memories of the author's life. As the epilogue says, the book is written in a realistic fashion without any embellishment, and yet with a hint of life's poetry. The author gradually changed his visions and longings by his studies and work, which could only be described as a mission. It is therefore impossible to criticize the book itself or to contemplate whether this book should be published. The only thing we can do is wish the author a lot of strength for his future doings, for I, as a student, still find inspiration in the life and work of Josef Smýkal.

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Information for authors

jep

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Journal of Exceptional People (JEP), should be based on 2 times a year publishing period in both electronic and traditional – printed form. To guarantee professional standards of the Journal we have applied to the front of special needs teachers, psychologists, therapists and other professionals in the U.S., Finland, Spain, Slovakia, Hungary, China, Russia, Poland and other countries. Above mentioned scientific journal aspires to be registered into the international database of impacted periodicals (Journal Citation Reports).

Journal of Exceptional People (JEP) will provide research studies and articles on special education of exceptional people. This area covers individuals with disabilities and, on the other hand, gifted persons. The *Journal* will focus on publishing studies and articles in the field of education, social science (sociology) and psychology, special thematic issues and critical commentaries. The publishing language of the *Journal of Exceptional People* is to be English exclusively.

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The file should be saved under the same name with the surname of first author and sent in a format with the extension doc or docx (MS Word 2007 and upper versions). Before sending a file with the paper it is required to scan for possible infections or viruses. Authors are responsible for content and linguistic aspects of the contributions. Please, do not number pages. Images, graphs and tables should be numbered according to the example (***Figure 1:*** *Preparatory exercise* [Times New Roman 11 b, italics]).

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Section headings should be numbered and written, as described in following manual: standard signs, symbols and abbreviations are to be used only. Monosyllabic preposition are ought not to figure at the end of the line, but at the beginning of the next line – they can be shifted using the "hard returns" CTRL + SHIFT + SPACE.

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