ICT support to people with developmental disorders (specific learning disabilities)

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Abstract: Specific learning disabilities are one of the most common developmental disorders in inclusive education systems. For the formation of a "friendly" environment for these pupils within the school institutions, as well as for promoting and facilitating the learning process, correct application of ICT support is of great importance. The paper presents the basic principles and the positive aspects of using ICT support in work with students with specific learning disabilities, as well as practical problems that the education system in Greece is facing in this area of work.

Keywords: Specific learning disabilities, ICT support

1. INTRODUCTION

Handicap or disability is traditionally observed through a medical model or approach. This effectively meant that every disability is seen as a personal flaw that causes limitations in the capabilities of the individual, which are diagnosed and treated within the medical institutions. In recent decades, this approach has drastically changed and revived a new, fundamentally different view of the handicap, which moves the focus of the difficulties in social environment. In a social approach, causing restrictions in the possibilities of a person with disability is mismatched environment, full of barriers, which may be of different types (physical, psychological, social, political, etc.). But certainly not insurmountable. For proper rehabilitation and normal life of people with disabilities is most important to remove these restrictions.

The shift from a medical to a social model has contributed to the development of inclusive educational system, within which it is necessary to adjust the maximum setting individual needs of each person with disabilities, regardless of the type and degree of manifestation of difficulties. For all kinds of difficulties it is necessary to establish a "friendly environment" within all, including educational institutions, which will help students with disabilities to

function in the most efficient manner. In addition to systemic changes that are the basis for this shift, of crucial importance is educating teaching staff for these changes.

One of the most common categories of disability in student population is specific learning disability (SLD or just LD). This term is usually marked by a whole group of developmental disorders associated with mastering basic school skills (reading, writing and numeracy), but in many countries the term dyslexia has the same meaning. Manifestation of specific learning difficulty involves problems with characters (letters) and/or mathematical symbols and difficulties in connection with the phonemes and mathematical operations, slow, and difficult adopting of skills of reading and writing (inaccurate and / or nonfluent, slow reading and writing single words and text) and often difficulty in understanding the meaning of text or mathematical expression. This common clinical picture is not universal, nor is the degree of manifestation of these disorders the same in all persons; often accompanied by attention problems, delayed language development, motor skills and coordination etc. although these difficulties by themselves are not indicators of dyslexia (Rose, 2009; BDA, 2009). Visible problems are result of altered cognitive functioning, primarily related to deficient phonological processing, and insufficient working and short-term memory. There is relatively common comorbidity of dyslexia and attention deficit disorder; according to some findings (Pauc, 2005), 62% dyslexic have also and attention deficit disorder (ADD), while the 38% dyslexic present and complete hyperkinetic syndrome (ADHD).

2. PRACTICAL ASPECTS OF ICT SUPPORT IN WORKING WITH PEOPLE WITH SLD

The phenotype of these developmental disorders suggests that there is no universal support program that would fit every individual with the SLD, but it is necessary within each educational system to form a support programs that provide opportunities for the evaluation of individual educational needs of persons with SLD and then provide adequate support for each of them. Using ICT system provides additional opportunities for practice school skills and to improve concentration and attention control (Underwood, 2000), as well as to facilitate social interaction and communication among students, to develop motivation and self-confidence (Crompton & Mann, 1996).

Practically, the implementation of ICT systems in schools is used for forming a friendly and supportive environment in the learning process. Some of the important positive effects of ICT support for student with learning disabilities achievement are:

- controled environment reduces the distractors of attention in learning situation
- multimodal processing of information (a combination of acoustic, optical and kinesthetic) facilitate new learning and provides better material retention
- the possibility of unlimited repetition action allows a person with learning difficulties to master the new material in a manner and at a rate that is suitable to his personal needs
- helping to avoid the frustration caused by the failure (because no element of control involves social interaction), also an important element of the automatic control is currently corroboration (rewarding) the correct answer, which raises the level of motivation
- difficulties related to verbal and sequential learning can be reduced by using ICT support.

As a list of the positive effects of ICT on the achievement of people with SLD this does not exhaust (Bjekić, Obradović, &Vučetić, 2012), it is very important to know that the simple application of ICT system is not enough. Although worldwide developed numerous software to facilitate the acquisition of knowledge for people with learning difficulties, it is not enough to solve the problem. According to Florian & Hegarty (2004) ICT is very important in pupils' communication, interaction, cognition, and learning, as well as in their emotional and social development.

It is known that if we want to change the school reality as applying ICT support, teachers have to lead this change. There are three dimensions of the teachers' ICTcompetencies (Awouters et al. 2008, according to Bjekić, Obradović, Vučetić, &Bojović, 2014):

    (a) the teacher knows what learning activities ICT can be used in teaching (ICT awareness),

    (b) the teacher has the necessary skills for using hardware and software (ICT readiness), and

    (c) the teacher knows the pedagogical-didactical elements of ICT (ICT drill and practice).

ICT integration in every day teaching and learning system is defined by three key components (Mishra and Koehler, according to Jimoyiannis & Komis, 2007: 153): knowledge of pedagogy that is applicable to the specific content; knowledge of how subject matter is transformed by the application of technology; knowledge of how technology can support pedagogical goals.

At the practical level, first of all, the choice of software plays a key role, since there are programs that do not enhance the learning process (Wilkinson -Tilbrook, 1995), so it is clear the necessity of continuous training of teachers, and test application of software by teachers to establish a realistic possibility for application of these tools in practice. Also, according to the findings of some researchers, the computer can not replace teachers, as direct human contact is of great significance to corroborate the positive form of learning for people with SLD, which is not given in the same way using the ICT support system (King-Sears, 2008), so teachers must have adequate knowledge in the field of psychology and pedagogy.

Ahead of all this, however, is the need for educating the teaching staff to recognize and use the weaknesses and strengths of the specific cognitive functioning of people with LD. This means that the teacher must be qualified for the evaluation of educational areas in which a person shows extreme hardship, but also, and in which areas is the best, sometimes even very talented (Heaton & Winterson, 1996); assessing the ability of expressive and receptive communication of oral and written speech of students; assessment of conditions that affect the achievement of learning (Griffiths, 2012) etc.

It is also necessary that the teacher, in cooperation with professional services (psycho-pedagogical) can find out every possible information about individual cognitive function of each student with a LD in order to know its capabilities and limitations. This cooperation is important so the teacher can organize classes in the best way to reduce distractors of attention, facilitate learning and to identify alternative learning strategies for each student individually, and in this process the computer can be helpful. Lewis & Neill (2001) recommended that teachers who work with students with LD always have a computer handy. It is significant that people with learning disabilities use the support system in the presence of teachers or parents, because it improves the learning process, but also reduces the risk of emotional withdrawal and isolation of students with LD. Therefore, the recommended practice is also to use small groups and workshops within the class in which the cooperative way comes to

teaching a given objective. Teacher can facilitate learning of students with LD, and here are some examples of good practice:

- teacher creates a "word bank" for each topic dealt with, which are useful for students;
- elects software that make it easy for students to organize and develop ideas;
- commonly used diagrams, illustrations and demonstrations related to the topic and used graphic programs where there are prototypes;
- encouraging students to use different fonts;
- leaves notes on the board as long as possible, to give enough time to students with SLD;
- avoiding long sentence structures in assigning tasks, and expecting an analog answering from students; to concentrate only on the basic and essential information;
- at the end, takes into account the mode of expression, because teachers speech is the source of information, instructions, penalties and rewards for his students.

3. ICT SYSTEMS SUPPORT AND TEACHER TRAINING

Organized study the implementation and improvement of the ICT support in European countries is started decades ago. During this period there has been many different proposals and the number of system changes in order to provide equal educational opportunities for all participants in the educational process, including those who have special educational needs.

Among other things, the tasks that were set before the educational systems meant the training of teachers to enable them to identify specific development difficulties, provide insight into the nature of atypical cognitive functioning of LD and ways of forming a "friendly environment" for these people within the educational institutions, as well as the best ways to overcome difficulties in the learning process. Also, along with educators, support programs include education and preparing of all other participants who work with people with SLD (parents, psychologists, occupational therapists, speech therapists and social workers) to use ICT support systems.

Although the implementation of the ICT system does not develop at the same speed in all European countries, it is important to emphasize that in this field are working intensively and that, in most of these countries it has become quite common to further education of teachers carried out during the whole professional career.

Specifically in Greece (which in this area is unfortunately not the forefront), in the last decades were introduced special items related to the implementation of ICT systems in the curricula of university institutions, both at the basic and at the level of postgraduate studies. However, while in Greece are developed many software to support students with SLD, only in the universities that prepare future teachers and special educators are studied these special systems of support. Given the inclusive education system, there is a need for all teachers profiles to be adequately prepared to work with students with SSU, which until today has not been achieved.

During the professional development of teachers, they can attend accredited training programs related to the implementation of ICT systems if they wish, but it is not mandatory. This is one of the problems encountered in practice. In addition to these difficulties, there are other limitations in the application of the support system in Greece, which are primarily related to the lack of good technical equipment in schools.

4. CONCLUSION

We know that teachers often feel insecure and inadequate competence in relation to the use of support systems (Balanskat, Blamire, &Kefala, 2006) and the most common reason is lack of knowledge of ICT systems, and to a lesser extent, lack of psycho-pedagogical knowledge. This leads to the development of negative attitudes of teachers towards the implementation of support systems (Earle, 2002). This fact brings us back once again to conclusion that not only their education (theoretical and practical) is important, but also and possibilities for creative changes and freedom in achieving educational goals. It seems to be very difficult to achieve this goal, but at least we have to try. Removing barriers in the teaching process seems to be very complex and harder than it looks at first glance.

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