THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE EDUCATION OF CHILDREN WITH MILD INTELLECTUAL DISABILITIES

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Abstract. The paper outlines how the application of the Information and Communication Technologies (ICT) helps the students with Mild Intellectual Disabilities (MID) in the education field. For this research six different Greek educational software products have been introduced TO twelve students in a Gre ek school

Keywords: special education; special education software; children with mental retardation; mild intellectual disabilities.

Mental deprivation is a multidimensional problem with medical, social, psychological and educational aspects. Thus, a situation faced by the teacher after the entry of these people into school is shaped. There is a need for specific vocational training for mentally retarded children in order to ensure a smooth transition to adulthood and the world of work, with the ultimate goal of integration and autonomy in society. For students with a mild and moderate mental retardation, the use of appropriate and available technology, whenever necessary, can improve the conditions, provide success of teaching programs and enhance communication and learning. Software for teaching children with intellectual disabilities is particularly important as computers are practical because they allow an easy presentation of different kinds of stimuli and goals, often with higher quality than other media. Educational and teaching multimedia as well as automated frames provide a greater incentive and include a more enjoyable environment than other types of programs. The evaluation and repetitions included in most software provide an easy and ready-to-use list of users' activities and progress.

Methodology and methods of the study

This study evaluates software aimed at children with intellectual disabilities. The children were given different software in two phases (a & b) in order to be

able to compare the data observed by the researcher. Each child had a separate application of the software in order to have the time to become familiar with them.

Basic educational approaches and principals for people with minor mental retardation

Today, the term mental retardation is still a vague term that creates pessimism and despair. For a large audience, mental retardation is a disease, a pathological condition, a traumatic experience the child acquires shortly before or shortly after birth or during childbirth. In reality, however, mental retardation is nothing more or less than a symptom, a form of behavior that results from one or more of the multiple causes that cause it (Terziyska, 2013).

According to Thomas & Woods (2008), it is difficult to identify numerically individuals with mental retardation since classification is also a difficult and complex issue. Sadock et al. (2009) in DSM-IV-TR, referred that mental retardation is defined as the under-mental mental function. Based on the Diagnostic Statistical Manual of the American Psychiatric Society (DSM-IV-TR) used by Sadock et al. (2009), there are five types of mental disorder:

I. Mild (light) mental retardation – I.Q. 55-69 to 70 (trainees): II. Moderate (median) and marginal mental retardation – I.Q. 40-55 to 30-35 (Exercisable): III. Serious mental retardation – I.Q. 25-39 (dependent persons): IV. Heavy mental retardation – I.Q. 29 (Deep mental retardation below 20): V. Undetermined gravity mental retardation. Another category often associated with mental retardation is the one of learning disorders. If these disorders are not diagnosed and treated promptly, they lead to a loss of the child's morale, low self-esteem, and disorders in his social skills, with the result the clinical picture of the individual fitting with the clinical picture of a mentally retarded person (Sadock et al., 2009).

At the same time, parents can participate in special education in many ways, as supporters, trainees, children's trainers, assistant teachers, school volunteers, educational policymakers and collaborators in the educational process (Wolfendale, 1983).

Education today uses various teaching methods that can be described as the organized processes, forms and steps of teaching and learning during the acquisition and transmission of specific contents. These methods should be considered in the context of the independent general aims, the specific objectives of each course, content, media, learning conditions and social needs and from Fisher as "methodological models" (Soulis, 2002).

One of these is the project-oriented education, another method is playing through games, other the open lesson.

Lesson for pupils with mental retardation

The term "lesson", according to the rules of didactics, describes the organized, deliberate, mainly professional and institutional transfer of knowledge, views,

skills and skills. Learning is a process that helps people to alter their behavior and is characterized by permanence as a characteristic because no change in behavior is needed (Flouris, 1984). Learning is the result of more than one internal processes, which in the case of education are enriched by the influence and effects of the teacher's actions during the educational process (Trilianos, 1998).

Educational capabilities (abilities) and deficiencies (disabilities) of people with mild intellectual disabilities

Students with mental retardation need specialized help to learn skills that many of their classmates learn by accident or naturally. The learning difficulties caused by mental retardation create barriers in many areas of life. However, with the support of their families, friends, teachers and classmates, students with mental retardation can be successful at school and in their lives (Algozzine & Ysseldyke, 2006).

At school, mental retardation means that children can learn, but they need more time and effort than other students of formal development. About 27.90% of the students with mental retardation are slightly below the average in terms of learning new information and skills (Algozzine & Ysseldyke, 2006).

However, mental retardation may coexist with other conditions. This is why it is almost impossible to identify characteristics that are common or specific for students with mental retardation (Algozzine & Ysseldyke, 2006).

They learn slower that the other students and they cannon concentrate easy. Finally they are not motivated to learn (Heward, 2006). In particular, students with mental retardation cannot remember easy the information that they receive. The less information people with severe mental retardation remember (Bray et al., 1997; Nielsen, 1997). Also, significant weaknesses have been reported in the management of functional memory information and in the simultaneous processing of information unless the volume is very limited (Heward, 2003). Another important observation is that people with mental retardation rarely use a basic strategy to help memorize and recall information (Ormrod, 2003). Another problem is found in the learning rate. Children with mental retardation show a much slower rate of assimilation, memorization and application of knowledge than children of typical development (Hardman et al., 2002).

Designing of an educational environment for people with minor mental retardation

The educational reality needs to be designed in such a way as to ensure that every student has equal access to the everyday life experiences and goods (Scott et al., 2002). In order to reach mentally disabled children's access to education, some issues need to be considered, such as:

To formulate clear educational objectives within the school, which allows all pupils to participate in the learning process successfully, and on the other hand they allow for the effective use of teaching time.

Use the use of multiple educational tools and materials. Each teaching subject can be multi-sensory, such as images, sound, etc., so that it becomes accessible to students with different needs (Terziyska, 2004).

Supporting the use of multiple alternative teaching methods (Tomlinson et al., 2003) and teaching strategies such as the principle of differentiation, the principle of the "upcoming development zone", the principle of constructivist theory, the principle of gradual reconstruction, flexible group formation, collaborative teaching, collaborative learning, and so on.

Allow and indicate to the school differentiated ways of engaging the learner in the learning process, for example, giving the learner the choice of how he / she displays the acquired knowledge (written, spoken, drawing, playing roles, etc.).

Prioritize the development of skills related to the quality of "everyday life" for students with intellectual disabilities, so as tomorrow's citizen to participate equally in social, economic, cultural and political affairs.

Prioritize the development of learning skills, that is to say, promote the ability of students to "learn how to learn".

To support effective assessment methods, characterized by elasticity, continuous feedback and respect for the individual characteristics of each student (Dewsbury et al., 2004).

Implement the curriculum as early as possible from pre-school age in order to achieve the best possible learning outcomes for the mentally disabled disciple (Gunn et al., 2004).

To be set up by an interdisciplinary team, but also with the cooperation of the parents of students with mental disabilities.

Software solutions in the education of people with minor mental retardation
The benefits of using new technology to students with disabilities have been officially recognized by many countries (Tsankov & Rangelova, 2010). Students with learning disabilities, in particular, are facilitated by frequent, patient and pleasant repetition, with a multi-sensory approach to cognitive material and by providing patterns of desirable behavior. Students with physical weaknesses in coordination, vision, hearing, etc. It is possible, with specially adapted to their needs technological equipment, to gain gradual access to the common curriculum, which reduces the gap of equal opportunities. Children develop a sense of control and opportunities to interact with each other, feel proud of the excellent appearance of their work, learn to access information at the time they need it, and use the data constructively and scientifically (Kimball & Smith, 2007).

However, Assistive Technology does not help all students with disabilities in the same way, nor are there any magical recipes for everyone (Chou & Liu, 2005). That is why teachers who decide to use Assistive Technology as an assistant need to keep track of developments in the field, and learn how to test the various tools and related applications.

Through the use of computers, appropriate basic learning needs can be addressed to children with intellectual disabilities, such as need to provide a safe learning environment, predictability of teaching activity, ensuring gradual passage from one level of learning to another, direct feedback, exploitation of the visual communication path, exoneration from the pressure it causes children (especially with developmental disorders), social interaction, personalized work etc. Therefore, research reports support their usefulness in the teaching of the particular student population (Whalen et al., 2006; Williams et al., 2002).

A project and technology for the application of ICT in the education of children with minor mental retardation (software)

Aktines: Is a structured educational environment that is suitable for preschool children and children with mild and moderate mental retardation. The Rads are based on the Curriculum for children with moderate and light lag. The presentation of the various themes is done by using three sensory paths: acoustic, visual and tactile. The exercises and activities of the software are designed to help students achieve as many educational goals as possible. The content of the software is organized into five main modules: Man-orientation, Environment, Objects, Mathematical concepts, Greek.

I learn to run with security. Integrated training package that exploits information and communication technologies with simple and creative training courses, traffic games and familiarization games that achieve a direct visual - acoustic effect and allow the transfer of results to other media and materials. It approaches knowledge in a cross-curricular and experiential way. It is appropriate for pre-school education, primary classes, children with learning disabilities and AMD. This software approaches the knowledge intertwined and experiential and allows improvisation, random, spontaneous. It includes traffic education lessons, creative traffic education lessons, games, video lessons and situations and music.

Small artists in action: The "Small Artists in Action" educational package exploits Information and Communication Technologies with sections of painting, drawing, music, texts, images, works of art, and achieves a direct visual - acoustic effect, allowing the result to be transferred to other media and materials. It includes painting, colors, and shapes, creative and cognitive games, video, music.

Sterxis: Educational software developed within the framework of the STERXIS program with a sponsor of the Specialized Vocational Training Center and related to the improvement of the process of integration of people of special categories into the educational system. It includes the following activities like painting workshop, find the goal, objective and letters, weather, clothes, Europe, store, pictures, mark the ball.

Round with value: Euro coins have their own purchasing power. The purpose of this educational software is to help students with serious learning difficulties familiarize themselves with the use of coins and develop transactional skills. It includes puzzle puzzles, and several of games and exercises of perceiving the purchase value of coins with parallel display of goods.

My home and school: This software consists of two "talking" educational programs (home, school) designed to help children with severe mental disabilities and serious communication difficulties to understand and express the language they meet in their daily activities. Each program uses four attractive scenes to teach more than 100 common vocabularies. With this you can teach all objects in a specific setting or choose specific objects. These programs are not only fun to use, they build functional language skills and develop autonomy.

Design of the empirical study

Empirical research was designed on the basis of specific criteria and indicators to show students' progress in the use of software and how they contributed to improving their knowledge and skills. Since children who participated in the experiment were diagnosed with mild mental retardation, they are expected to improve in specific areas.

In particular, the criteria on the basis of which pupils will be assessed are:

● *Ability to achieve goals.* If students can complete the activities they undertake and achieve, with the appropriate support, the goals set after the software is used.

● *Active participation.* If pupils, after using the software, become interested in the lessons, they maintain it during the course and activities and show willingness and intent to participate actively.

Communication & Collaboration. If the pupils, after using the software, demonstrate greater communication and collaboration skills with both their classmates and their teacher.

● *Learning.* If students, after using software and collaborating in the classroom, have better learning outcomes, thereby enhancing their knowledge. Also, if students can acquire better strategies and approaches to acquire knowledge that will improve the learning process according to the needs of each child.

● *Critical Thinking.* If students use their software to develop critical thinking, improving their ability to understand.

● *Responding to realistic conditions.* If students, after using the software, acquire skills that are not merely academic but will also make a significant contribution to improving their everyday lives, since they will be able to apply them to its activities.

● *Expression.* If students, after using the software, improve their expressive abilities and manage to better formulate what they think and feel.

● *Personality.* If students, after using the software, develop personal characteristics that improve their personality and behavior

● *Sociability.* If the students, after using the software, acquire skills that will help them improve their social life.

The experimental survey was conducted in two phases and the children involved were divided into two groups. Dealing with the first group took place last year, from

February to June 2017, with the second team from September 2017 to December 2017. The software was used on a daily basis with students for about four months. In software that was larger in size, such as rays, some modules were used depending on the age, gender and pupil level of learning. Some other software that was of smaller size was used whole, as for example with the euro. The use of programs has been done both at school and at home as will be discussed below.

Forming the groups for the studies, pilot study and entry-level study

The teams were formed by pupils attending a special school where the researcher works as a special education IT teacher. Twelve students were diagnosed with light mental retardation with the agreement of the school management and their parents.

In order to avoid problems during the survey, a pilot study was initially made. The researcher worked for about four months with only one student, besides the twelve who participated in the research, applying the software chosen. This test was done in order to avoid problems that cannot be addressed during the final research. The positive results and findings demonstrated by the pilot study led to the final formulation of the research.

Developing didactic experiment

All software was applied daily for about four months with each child. The software was implemented in the school's laboratory during the course. Completion of the questionnaire by the researcher on the results was made in the presence of the student guardians for school policy reasons and the legislation stipulating that the experimental procedures require special permission for any recording within the school. Some of the software was also available to parents so that students can work with them at home.

Exit-level study

During the experiment, bellow there are indicatively four figures that record the section from the observation form "Is the content appropriate for the age and knowledge of students?" from the softwares Aktines and Sterxis in Phase A and Phase b.
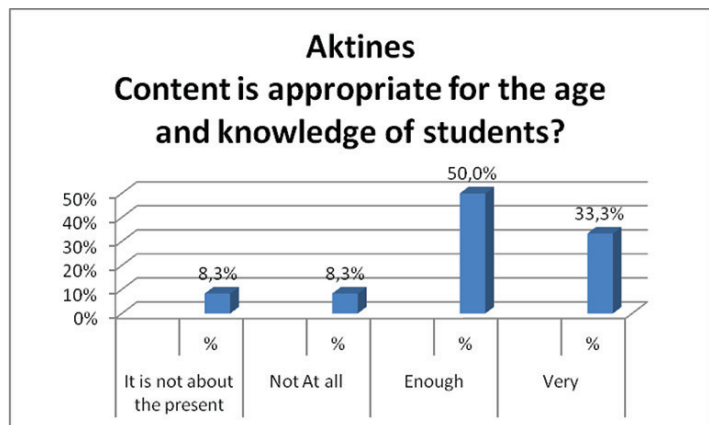

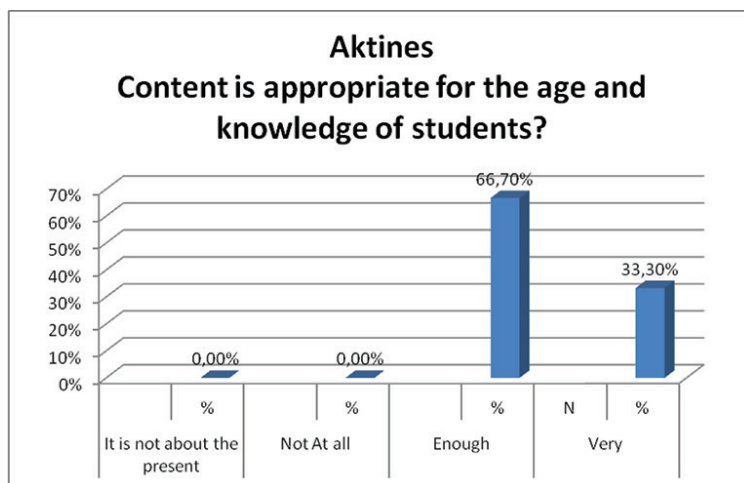**Figure 1.** Phase a (Software Aktines)

Figure 2. Phase b (Software Aktines)

According to Figure 1 we can see that all the children evaluated Enough (50%), or Very good (33,3%) for the quality of content of all the software in relation to the appropriateness for the age and knowledge of the students. In the observations It is not about the present it was 8,3% and in the Not at all was 8,3%. If someone notice in the Figure 2, will see that all the children evaluated Enough (66,7%), or Very good (33,3%) for the quality of content of all the software in relation to the appropriateness for the age and knowledge of the students. The percentages in the first two columns became 0%. The percentages in the third column increased from the first and the second.
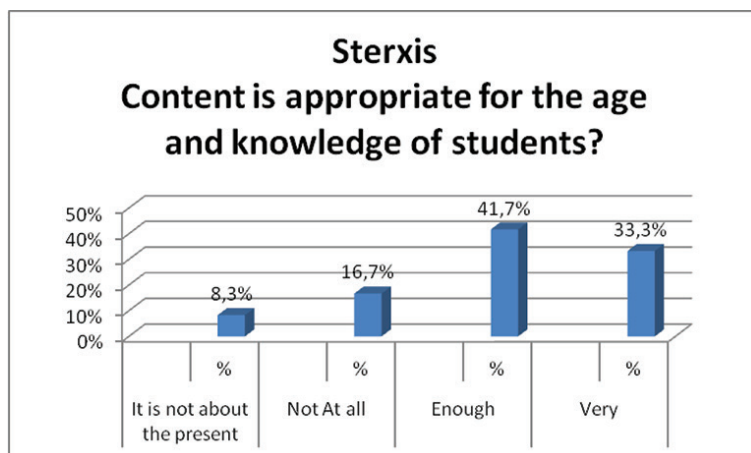

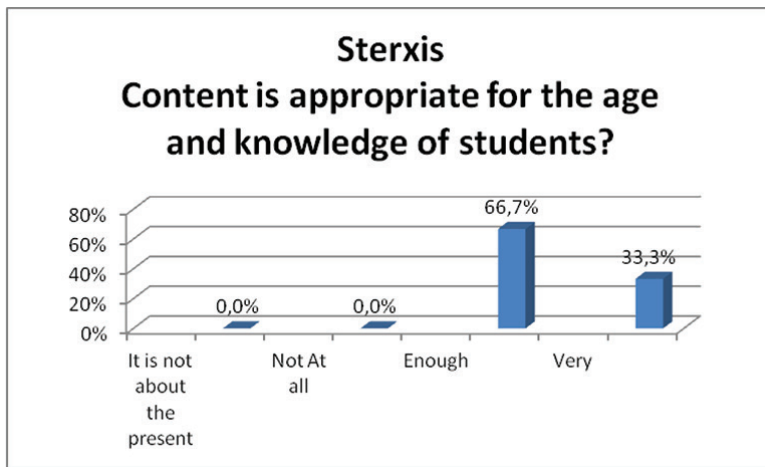**Figure 3.** Phase a (Software Sterxis)

Figure 4. Phase b (Software Sterxis)

According to Figure 3 we can see that all the children evaluated Enough (41,7%), or Very good (33,3%) for the quality of content of all the software in relation to the appropriateness for the age and knowledge of the students. In the observations It is not about the present it was 8,3% and in the Not at all was 16.7%. If someone notice in the Figure 4, will see that all the children evaluated Enough (66,7%), or Very good (33,3%) for the quality of content of all the software in relation to the appropriateness for the age and knowledge of the students. The percentages for the first two columns became 0%. The percentages in the third column increased from the first and the second.

Conclusions

From the analysis conducted above it can be drawn that the software can be used according to the children perception for collaborative works and decision taking. Also, from Phase B all children evaluated enough or very good the quality of content of all the software's in relation to the appropriateness for the age and knowledge of the students.

The application of the software showed that students with mental retardation were eager to use computers and felt the integration and enhancement of their self-esteem and self-confidence with the successful use of computers, while they seemed to have a lot of fun with the software. Also, self-directed use of computers by people with mental retardation to perform various tasks significantly reduced the amount of help they require from others. Moreover, software provided immediate sensory learning experiences and encouraged practical thinking and the children were able to see their progress tangibly. There has

been empowerment and focus of attention, patience, and persistence. Also, the use of software has given children confidence, made conscious reflection possible and stable in their "behavior".

These software are necessary to be applied in practice because they provide important skills to children with mild mental retardation. Particularly, Aktines is very important because it allows students to practice in activities that enhance their learning readiness and Sterxis because it teaches students how to properly manipulate the computer and its applications. Also, without showing figures in this paper for the other software, it is significant to be pointed that using the software My home and my school, the students learned objects that will be useful in their everyday life that will give them autonomy, with the software Small artists in action the students exercised their observation skills and imagination in order to be able to distinguish them all based on colors, with the software Round with value, the students can recognize and manage money, something of particular importance to their everyday life, since it will give them autonomy and the program and finally using I learn to run safety the students learned to move safely and acquire important skills in their everyday life that will give them autonomy.

NOTES

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