Use of cooperative learning scenarios in Computer Teaching for students with disabilities through an Internet platform

Argiroula Ath. Petrou[1], Dimitracopoulou Aggeliki[2]
[1]Phd Student of the Aegean University and Special School Computer Tutor, roula@rhodes.aegean.gr
[2]Professor of the Aegean University, adimitr@rhodes.aegean.gr

SUMMARY

This study is the last part of a three year research at the Special Gymnasium of Athens and aims at the exploration of how Information and Communication Technologies can be used during learning procedures to students with physical disabilities and also the study of the current Informatics Curriculum for the specific category of students and the development and study of teaching scenarios, in order to: (a) improve the quality of this particular subject to students with disabilities and (b) to find methods that will ensure the equal participation of all students during a learning procedure, both in the strict limits of a classroom and the wider borders of each educational activity. Through this study we present a cooperative educational activity using technological tools and we examine its effect on the participation of students, on the quality of the cooperation, the sociographics of the students in the classroom and finally on the cognitive result.

KEY WORDS: *Informatics Teaching, students with disabilities, Cooperative Learning*

INTRODUCTION

A question arising at times is as to whether the students with disabilities can be introduced in the classes of general schools and how effectively can Learning Disorders (LD) be dealt with. In Greece, general school often seems incapable of helping such students. The main reasons are usually: the curricula are imperfectly elaborated, very few lessons are analyzed enough to provide guidelines to the teachers. At the latest curricula of Special Education there is complete lack of guidelines as to how teaching procedures about Informatics should be held in Junior and Senior High School. There is an urgent necessity to plan a new social model which will inevitably extend this field of education. The planning of this model has to be ruled by principles such as shedding of access dimension, "intersurfaces for all", continuity, consistency and update of the broader social group (Ε.Σ.Α.Ε.Α., 2006). Most researches in the educational field are performed within the limits of these principles both in a European and an International level. There are also researches made over the past few years, within the same framework, in order to study the scenarios of cooperative learning and teaching for the students with disabilities, supported by technology, aiming to improve their conditions as well as their smooth introduction in school classrooms at first and gradually in the broader social frame. The use of Information and Communication Technologies (ICT) in various population groups has made it acceptable that ICT are a basic element for the modernization and the adaptation of educational qualification systems to the demands of the society and the economy of knowledge.

There are undoubtedly plenty of factors influencing the learning progress. However, it is of tremendous importance to concentrate specific elements for some of them such as: (1) learning supported by ICT, which is a combination of the based – on ICT learning and other learning methods like the group – centralized teaching;(2)

providing educational material appropriate to all students, even the less "specialized" ones, in order to improve their secondary abilities.

Through the everyday experience provided by students while teaching Informatics at the Special School, as well as through conversations with colleagues, we spotted a need to create scenarios for activities which will involve all students in the teaching process with clear and equal roles, help improve their already existing skills, understand and use better all those ideas which are related with currency and the awareness of critical issues and mainly support the development of social skills, cooperative spirit (necessary for the function of the group) and understanding of the functional principles of the group. With those general goals under consideration, we applied the research which is part of the current article, and was designed within a more general framework trying to improve the educational quality of the students with disabilities, exploring the support that the ICT offer, and contributing to the creation of activities (combined with the complete lack of curricula for the lesson of Informatics in special Education) which are virtually able to activate and socialize the students.

THEORETICAL FRAMEWORK

Students with disabilities and Learning within the school Framework

Students with physical disabilities compose a complex and dissimilar population. A vast number of such students are unable to write using hands or type. Simple and "normal" habits of other students, such as holding a pen or a book, opening the school bag or a notebook, cutting a piece of paper may seem impossible or painful to such children. Many students are not in a position to participate in everyday school activities while access to the curricula is extremely difficult. The chances of exploring the environment (whether this is the broader school area, or the place where any school event takes places) are very few and even fewer are the chances of expressing themselves through art and music (enormous difficulty in using delicate and sensitive instruments).

Children with physical disorders are students which usually face learning difficulties as well (for example, children with bifurcated backs and dropsy of the brain sometimes behave the same way as children who suffer from "non-verbal learning disabilities"). Those students have difficulty organizing their paperwork they don't have any kind of method or system in their actions. They have doctrinal views and attitudes towards various issues (Sherrill, 1996). This leads to an awkward behaviour on behalf of their classmates and affects their relationships with the others. Thus, school becomes a cause of huge disappointment. The problem of self – confidence and making relationships with others is getting larger and larger while at the same time school community seems incapable of supporting them.

The expansion of purgative, emotional, conceptive abilities, experiences on different social roles as parts of a group, the contact with people having the same needs as they, offers children with learning difficulties with opportunities to be part of the society. For students with learning difficulties it is extremely important to intervene according to their needs in order for these interventions to be efficient.

Cooperative Learning and Special Education – Activity Planning

The dissimilar groups are directly connected to the efficiency (Slavin, 1991). According to researchers the teacher has the ability to erase all inequalities and make worthy all the differences of the group (Villa et al., 1996). Schulte (1999), based on her long-term research on cooperative learning, suggests the grouping of students with

different abilities, skills, personalities and sex within the same classroom. Armstrong and Mesler (1999) made a similar research with contiguous results. Cohen (1994) suggests to teachers to convince their students that different "intellects" are the ones contributing to the group's success.

In the case of students with special needs cooperative learning, supported by technologies, is suggested. However, the Tateyama-Sniezek (1990) research has not shown a clear relationship between cooperative learning and the success of students with special needs in an academic level, throughout a framework which emphasized in their interaction with other students without special needs. It is well known that free cooperation does not always result in learning (Dillenbourg, 2002). In cooperative learning the success of the activities depends both on the distribution of roles to the students and the effort to understand that their interaction in the group is the means to achieve a good cooperative outcome. One way to enforce the efficiency of cooperative learning is to structure the interactions together with the students' participation in specific scenarios. The idea of structuring cooperative learning arises from the practical conclusions of the efficiency of cooperative learning. A cooperative scenario is a total of predetermined guidelines that specify the way students should organize the groups, the kind of interaction and cooperation and how to investigate the problem under study.

Researches have pointed the importance of cognitive and transcognitive practice for the improvement of learning efficiency. For students with learning disadvantages, however, the development of good study skills is one of the most important areas, since this is where they face the greatest deficiencies. It is necessary to combine the appropriate general principles together with side adjustments that have to do with certain disabilities, aiming to plan specialized interferences. Theories on growing do not take for granted that children with different disabilities grow the same way and, thus, children with aesthetic-kinetic disorders experience their world and experiment using their other senses and skills than children with other kinds of disorders. However, some other sides of growing – mostly the successions in various fields – are the same to all children, both to those with various disabilities and those without any disabilities at all (Hodapp, 2003).

Teaching with specific learning strategies, as a complete approach, allows students to compensate their cognitive deficiencies and can influence their characteristics by making those learning strategies more accessible to them. Research has shown that many students with LD, among them those with kinetic disorders (where LDs they may face come from their physical condition and other environmental factors as well), do not use basic cognitive strategies either for solving problems or for the learning procedure itself. Glaser (1999) claims that for those students there are special learning interferences in order to develop the appropriate strategies. People with such kinds of difficulties also show some problems in self-regulation and in the end have trouble in social perception and interaction. Those disorders are due to a dysfunction of the central nerve system which is based on innate procedures of learning and use of information.

According to all those mentioned above, the severity and complexity of the planning of cooperative learning scenarios arises, when during the formation of the group students with disabilities are included, since their efficiency depends on many complex factors.

Informatics in high-school – Teaching Informatics and students with disabilities

One of the most recently introduced subjects in Greek schools is the one of Informatics. It is a necessary subject in order for all Greek citizens to keep up with the demands of current times, where actually all the fields of our lives involve the knowledge of technology. The aim of this subject, as it is described by the Educational Institute (High-school Informatics, 2002), is to activate students and involve them in various activities which: (1) Ease the development of the skills that students have in order to create, (2) Activate different learning models through various teaching strategies, (3) Underline the participative – cooperative character of learning, (4) Develop computer and network technologies as a tool for learning and thinking, (5) Function under mutual respect, (6) Cultivate skills for the use of software, (7) Encourage the analytical and complex thinking, (8) Provide fluency in the use of symbolic means of expression and research, (9) Favour the development of modelization skills as well as techniques for solving problems.

According to Vigotsky, the development and interference are connected to socio-genesis and, thus, supported that all developmental phenomena first appear when interacting with other more skilful adults. Therefore, teachers help students to develop, by suggestions or using other ways and later students internalize and apply strategies and behaviours by themselves. The current level of "imminent development" can influence both the efforts of interfering and the evaluation of development of children. The idea of a "curriculum organized in stages", which is always one step ahead from the child's ability, is very common among those who work with non-disabled children (Bruner, 1982; Kaye, 1982), but is applied only circumstantially to disabled children (Feuerstein et al. 1979, Jamieson 1994). Despite the necessity for a curriculum organized in stages, there is no distinction to the guidelines for each students with disabilities category at the previous curriculum, but there is a simple general guideline, leaving the teaching process with several gaps as to how it should be held to students with disabilities. What is more, in the new curriculum there is not even a simple reference to the subject of Informatics for disabled students in Junior and Senior High-school.

RESEARCH PROCEDURE

Research goals, questions and methodology

In this particular research we applied a non categorical approach, which means that we studied children with various disabilities in common (Rowitz, 1988) and, subsequently, with various specialities and needs. The central axis of the teaching procedure was to make students work together in order to produce a final teamwork result and promote principles of a social character. The teacher/ researcher during some phases of the activity kept the role of the observer. In some other cases they had a more active role either as organizers of the general activity or as coordinators of those conversations which were organized by a scenario, votes within the group etc. together with the planning of the activity, elements concerning each student were collected and classified in order to create the personal report of every student including data for their personal relationships and their sociograms.

The central search question under inquiry is summarized as followed:

→ Can the activities of cooperative learning that involve learning strategies actually activate students with different kinetic disorders and different LD? Do they stir them up in order to work as a group, and at the same time help each student achieve specific learning goals?

At the same time the present research set as a goal to explore two more general questions: (a) Is the current curriculum appropriate for students with disabilities as far as the lesson of Informatics is concerned? (b) Can we confirm the principles which support that through the social procedure of learning and the improvement of the position of a person in the group at the same time improve their learning status, when all these have to do with students with disabilities?

Description of the group – Characteristics of the population

The children selected as our research group are nine (9) students of the 3rd class of Junior Special High-school. These students do not show particular learning difficulties and cooperate to a certain degree both with their teachers and with each other. The element of competition is rather intense among some of these students. They show some inclination towards the subjects concerning computers and new technologies and respond positively to new experiences and teaching approaches. The intensively seek communication and cooperation of a general level with other teenagers of the same age (e.g. through opportunities provided from various educational programmes). As to the kind of kinetic disorders, the group was consisted of five muscle disorders of the Duchene type, one athrogriposis, two brain paralyses (one of which is accompanied by epilepsy) and one metatraumatic. However, due to their heavy health condition, those students usually quit from the educational procedures at times, focus on their personal health problems and a large number of them are incapable of cooperating and functioning within a group. Two of the students are bilingual (Greek language is not the mother tongue of two students, while one of them is also facing an important difficulty because of some hearing problems he has). The age of those students was between 15 – 19 years old. The composition of the group according to gender was three (3) girls and six (6) boys.

Activity Framework

Studies show that the efficiency of cooperative learning depends on various factors such as the composition of the group (size, age, gender, dissimilarity …), the cognitive demands of the learning goal and the means of communication (Dillenbourg, 2002). Those factors are multiple and interact with each other in such a complex way that it is impossible to guarantee the results of learning. Thus, the control of efficiency moved from the outside to the inside, from presuppositions to the conditions of cooperation (Dillenbourg et al., 1995). Instead of coordinating the terms which indirectly specify the interactions of the group, scholars try to directly influence the interactions: they raise the frequency of socio-cognitive conflicts which encourage argumentation, and enforce mutual understanding and the construction of new knowledge. Cooperation can hopefully be influenced by the construction of cooperative procedure in order to favour the appearance of productive interactions, or, retrospectively, by regulating the interactions, with the help of teachers. Those two approaches are supplementary. Having this specific trend as a criterion, there has been an effort to design a specific activity in order to teach the unit of "Informatics, Present and Future" at the 3rd grade of junior high-school.

The curriculum suggests that this unit should be taught within five teaching hours. According to the latest curricula, both of the general and the special education, a lesson plan is suggested based on the cross-thematic curriculum study framework. During the planning of the activity there has been an effort to satisfy Gumpel's (1989) model for the development of social skills (in this particular model we focus on 6 "areas": those of decoding ability, the decision of performing, the opinions of self-observation, the environmental opinions and the cognitive structures). The cognitive goals of the activity include those of the curriculum (Informatics on junior high-

school, Pedagogic Institute of Greece, 2002): (1) students should be able to distinguish the basic technological applies into the modern world and classify them into categories. (2) They should be able to rationally use ICT, not to accept without judging first all those idols and habits that the technological evolution and the Media impose. (3) They should form their views on current matters, defend their opinions with arguments, and learn through discussions. (4) They should realize that they must constantly be informed and watch the latest news but also distinguish the so called apparent technological development in all fields. (5) They should create short essays-reports combining data and presenting their opinions formally.

The activity is suggested to apply in critical conditions which demand opportunities for solving any kind of misunderstanding, and social negotiation of ideas among groups of students. Students are expected to express their ideas, explain their views, classify their thoughts, embroil in social negotiations and finally develop the scientific construction of notions either when they function cooperatively in groups or when presenting their essays alone. At the same time the teacher is expected to be able to diagnose, to define all misinterpretations and finally to apply all the appropriate side strategies of teaching depending on the condition and the special situation of each student without preventing the intergroup and group cooperation.

In order to fulfill the scenario, the School + Platform (Samara & Hatziargyris 2001, Petrou & Dimitracopoulou, 2004) was used, which have already been used completely at the Special High-school of Athens.

School+ Platform – a brief description

The School + platform is part of a school environment . 'School+ More than a Platform to Build the School of Tomorrow', is a project partially supported by the European Commission under the Information Society Technology (IST) programme(IST-2000-25162). Although Microcosmos from the technological point of view, doesn't show anything radically new, since Web-based learning management systems (LMS) or virtual learning environments (VLE), have made their first appearance several years ago, and since then many of them have evolved from "virtual classrooms" to complex collaboration and communication tools, Microcosmos has achieved something unique: to set as its main aim to become the vehicle designed and constructed hand in hand by the technologically-oriented people and the real school actors (teachers, students, parents) on a cross-border manner, to support the schools (and not to impose !) towards educational innovation, which can be applied the same way in diverse cultural communities. All involved users regard Microcosmos as their shared ownership, and this new feeling greatly supports the success and impact of Microcosmos in schools, promoting the idea of European citizenship. The main features of Microcosmos can be summarized as follows: (1) Offers an integrated environment, combining ICT with appropriate educational models, accepted by diverse school systems and communities., (2) Provides access for all school community members, (3) Offers a fully flexible interface and functionality pool, able to be arranged as considered appropriate by any school., (4) Allows collaborative work within and outside the school, (5) Support a multidisciplinary, process-oriented education model, (6) Enables the rethinking of time and space in school organisation, (7) Provides access 24 hours a day / 7 days a week inside and outside the school building., (8) Supports any language, (9) Is based on open source technologies (Apache, MySQL). The entry point to School+ Microcosmos is the foyer, it provides access to the school's announcements, and events, and invites the user o log in(Samara & Hatziargyris 2001). The log in process guides the user to his/her *personal page* where his/her personal information (public to all school

members) is displayed(personal agenda, messages, assignments, groups, files, workshops, evaluations, management etc). The language issue is highly important for schools, since each school needs to communicate in its native language, while in international collaboration projects, English is desired. Consequently, Microcosmos has to provide a smart feature to support as many languages as each school wants to offer to its members. The school can set a default language, in which Microcosmos will be visited, allowing each user to decide on his/her own, which language will be used for his/her personal view. As it was referred previously, Microcosmos is based on the open source platforms Apache, MySQL and PHP, in order not to depend on commercial platforms, and to minimise the costs for the schools. Microcosmos is also compatible with the majority of the browsers used today. If the user does not have a compatible browser, s/he may download the browser supported by the native operating system with no additional costs. Additionally it support the use of all the assistive technology that is used be students with physical disabilities such us (alternative keyboards, keyboards filters, electronic pointing devises(eye, chic sensors etc), joysticks, trackballs, on-screen keyboards, screen-enlargers, screen magnifiers, screen readers, speech synthesizers, speech/voice recognition program, TTY/TDD conversion modems etc)

Description and Application of the Activity

Cooperative students should prepare and create a composition for a common subject that they are asked to analyze. During the process they have the chance to interact, while using general guidelines provided for each phase. All students must complete the same tasks. Each one works with their own PC, and apart from the rest of the students. Students must "function" in two ways: (a) synchronous and asynchronous cooperation using the tools of the technological environment School + and (b) cooperation between every two students using neighboring PCs (by physical contact). The whole process is being done under the supervision of the teacher. The students are motivated to work: personally and in groups mainly at the Forum area for the asynchronous discussion on the specific platform. Table 1 analyzes the activities per teaching hour.

Table 1: Analysis of activities per teaching hour

Teaching hour	**Goal**	**Kind of students' activity in relation to the group**
1st teaching hour	Understanding of the problem	Personal work in specific areas of the subject- the teacher does the distribution
2nd teaching hour	Structuring the problem – common initial understanding of the subject/problem	Interaction through the Forum (School+)- 1st voting →fulfilment of a common chart of meaning →analysis of the initial confrontation of the problem
3rd – 4th teaching hour	Creation of an essay for the formation of the subject: includes written argumentation to make elements valid & the difficulties faced	Personal work of the members of the group
5th teaching hour	Presentation of the final essay in the classroom 7 voting as to which direction the group will follow about the subject	Personal work and Interaction for argumentation
6th teaching hour	Final form of the class' essay on the subject. Announcement on the class' website and the Informatics Lab	Group work and consignment of its final form to a person-coordinator which is selected from the group
Students evaluate the activity through a short questionnaire		

Table 2 shows the side effects on students during the application of the activity together with the kind of cooperation required. The article was chosen according to the suggestions of the educational institute (Greek Pedagogic Institute) the book which included the cross-thematic curriculum approaches, as well as relevant articles from the internet which discussed the subject of technology and the laws of

democracy – news of that period of time: use of cameras in the streets). The article was rather difficult for the students and there was a thought to change it but it wasn't changed after all since it included a lot of information (e.g. about the Media) giving motives for discussion and debating.

Table 2: Activities – Results

Activity	Group / Teacher Actions
Hanging up of the subject "Informatics in our lives" at the Informatics Lab (1st-2nd teaching hour)	Creation of a table 7 its publication at the Lab from a representative of the group under the supervision of the teacher
Choosing the article with the title: "Virtual Democracy" (2nd teaching hour)	Choice made from the teacher
Discussion about the article with the groups and the teacher in the classroom → Questions arise (Appendix 2) for the final elaboration of the subject from each student (3rd teaching hour)	Participation of all, teacher as a coordinator
Question in the Form "as to *how well does the issue of personal data allude as well as personal freedom within the limits of security and μηχανογραφιση of services"* (4th teaching hour)	Expression of views. [two different views were recorded: Positive (girls) Negative (boys)]
Final essay of all which all students should vote for (5th teaching hour)	Participation of all
Composition of the final essay, representative of all members of the classroom & its publication at the Lab (6th teaching hour)	Participation of all – Publication and support of the essay from the representative of the group at the Forum

RESULTS

The research provided us with some basic elements on the use of cooperative learning using a scenario for the teaching of the lesson of Informatics. Questionnaires (filled in at the end of each phase) and interviews were also to evaluate the process. The log files of the workshop and the assignment and the questionnaires gave data about the invested time from each participant student. So the mean time for the 1rst phase(table creation and publication a the Lab) was 72', the mean time for the 2nd phase(Virtual Democracy) was 123' and the mean time for the 3rd phase(final essay) was 23'. The communication / cooperation of the students occurred on three other phases (Table 3). We will analyse the results: (a) according to the participation of students, (b) according to the creation of cooperative relations and (c) according to the cognitive result. Reference to students are used so conclusions can be come up easily.

As far as the participation of students is concerned, during the 1st phase, the discussion, which had the table of ICT applications in real life as a result, all students participated, while two students (Paul, Bill) showed a slight difficulty. This may be due to the difficulty of the subject, but also due to the difficulty in understanding the meanings involved for those two children which face LD. During the 2nd phase, in the discussion taking place at the Forum, based on the 10 questions that the students themselves had set for better negotiation of the subject, everybody participated except of two students (Sotiris, Paul). Bending on the participation of some students may be due to the following reasons: (i) the difficulty of the subject taking into account the LD faced, (ii) the time when the activity was performed (near the school break for the Easter holiday), (iii) the lack of experience on behalf of the children on the elaboration of such issues, combined with the lack of external experiences capable of providing them with related motives, (iv) the frequent absences from the lessons because of health problems (Sotiris was absent for half of the sessions so was Anna) or because of other activities (Tasos), (v) the temperament of each child, (vi) the fact that students consider the issue as a very difficult one and not so interesting.

One student (Tasos) who did not present even one single personal paper and according to the opinion of the special educational stuff who evaluated the children, is

Table 3: Participation of students per phase

Phases of communication	Participation of students
1st phase	Intense – Active from all
2nd phase	Bending
3rd phase	Intense from almost all

due to his condition (his physical condition became significantly worse), while according to the opinion of the teacher – coordinator of the activity, he had no motive since he seems to be activated mostly when he is about to show himself personally to the social environment. He works very well though on a personal level. All the students have been affected positively from the activity especially two of them (Catherine, Kanellos) have shown much improvement in relation to their educational level. Puberty matters worked as an obstacle, especially for girls (Catherine).

The evaluation of the group relationships was made by using social-graphics[1]. Two different kinds of social-graphics were used, one by Netdraw and one created by the researcher using the theory of Moreno. So, while evaluating the creation of cooperative relationships we noticed: The already existing balances remain, and more specifically: The leader stood his ground (Kostas) and had a leading position throughout the whole activity and everybody in the class realises that. Anna restores moderation of Kostas and his group of supporters by using common sense. Anna is respected by everyone. The creation of a new group(Melpo, Anna), is an important change since the two girls were competitive to each other at first, especially Melpo was very disputing towards Anna. This new group cooperates smoothly. Bill position in the group was improved. He gained self-respect and motives for further work at the home (PIKPA) in order to be competitive and useful to his group. The outcome for Sotiris is similar, who was left behind both in the use of PC and his educational level compared to his classmates, as previous sessions in the classroom had shown before this particular research was conducted. Cooperation in this form was successful, all students involved in it despite their differences, learned and participated in social procedures and responded positively to the part of the procedures. Social events actually had a positive impact both to the students personally and to the whole performance of the class. Using this particular scenario and the network platform the students managed to overcome their limits due to their physical weaknesses when they had to perform certain works (Dimitracopoulou Ang., Petrou Arg., 2004) and they even participated as equals to all social activities (discussion at the Forum, Voting) without being afraid of rejection.

As far as the cognitive content of the activity is concerned, students responded to the goals of this particular unit as these are set by the Greek Pedagogic Institute (they created the final product using technology). Evaluating the subject, the Greek Pedagogic Institute, considered it as interesting for students of the 3rd grade of junior high-school, but for these particular students it is proved to be far from their interests as teenagers. Special attention should be paid on the variety of subjects chosen for this particular unit, since these groups of students have specialties as to their real interests and the subjects capable to activate them. From the first phase of cooperation it came that there were points students could not fully comprehend. Problems were located on the meanings that had to do with technology, but also with meanings that had to do with everyday life, and although they seemed to be familiar with them on the surface, they have trouble analyzing relevant issues or connecting them, even though they were issues analyzed by the Media (e.g. democracy, protection of personal data). After the end of the procedure students seemed more capable in connecting those

[1] study and record the personal relationships of the students as well as the structure of the relationships

meanings and discussing about them. More specifically, 6 of the 9 students who answered seemed to realize the existence of a relationship between new technologies and the sense of democracy, the Media, the forming of a common opinion etc. There was a problem while explaining the term "Virtual Democracy" and its connection to the previous. About half of the students needed further explanations in order to understand the text, answer the questions and create their own essay.

CONCLUSIONS – DISCUSSION

As mentioned previously, within the general spirit of the curriculum and also the goal of enrollment and embodiment, included in our research's framework, we created a series of cooperative activities for the lesson of Informatics. The specific scenario was chosen to be studied thoroughly since it is connected to the teaching of the last unit of the subject of Informatics for the 3rd grade of junior high-school, because it is "closest" to the spirit of the subject, as suggested by the cross-thematic curriculum study framework, and characterized as interesting for all students with or without physical or mental disorders. As mentioned already, in this particular research there was an effort through a categorical approach, to apply scenarios of cooperative learning to students with kinetic disabilities, by using a network platform in order to overcome any kind of physical or lingual disorders or other possible problems that may come up due to the physical or social condition of the students and also explore the propriety of the existing curriculum of Informatics for high-school, in order to provide data for the creation of an appropriate and creative curriculum that will be suitable for all students and mainly those with kinetic disorders. The results are considered as positive, but there is a need for some modifications on the curriculum so that students with disabilities can be taught the material suitable to their cognitive-lingual age. Furthermore, the use of a network platform suitably designed is necessary because it seems to help overcome physical difficulties, make non-verbal communication worthy, whenever possible, and mainly enforce cooperation, isolating any negative interference that could create problems to the developing personality of the handicapped teenager, contributing to the enforcement of its positive elements.

It must be noted here that there are still several points demanding exploration that relate both with elements of the cognitive development of handicapped students (possibly based on the category of the disability whenever this is required) and environmental factors (family, social state etc) before a complete curriculum will be developed that will smoothly lead to enrollment and embodiment.

BIBLIOGRAPHY

Armstrong-Melser, N. (1999). Gifted Students and cooperative learning: A study of grouping strategies. *Roeper Review*, 21(4)

Dillenbourg, P. (2002). The risks of blending collaborative learning with instructional design Over-scripting CSCL, In P. A. Kirschner (Ed). *Three worlds of CSCL. Can we support CSCL* (pp. 61-91). Heerlen, Open Universiteit Nederland.U.S. Department of Education.

Glasser W. (1999) *Choice Theory: A new psychology of personal freedom*, New York Perennial

Gumpel T. (1989) Social skills training with mentally retarded adults: A reformulation of a construct. Proceedings of meeting of the *Council of Exceptional Children,* Toronto Canada

Hodapp M. R. (2003) *Αναπτυξιακές θεωρίες και αναπηρία* , Μεταίχμιο

Okey, J. R. & Majer K., (1976) Individual and small-group learning with computer-assisted introduction. *Audio-visual Communication Review*. pp 79-86., Spring.
http://web.udg.esw/tiec/orals/c2.pdf {last visited Oct.2006)
Slavin, R. E. (1995). *Cooperative Learning Theory, Research and Practice*. (2nd ed.) Boston: Allyn & Bacon.
Sancho J, Hernández F., SamaraV., Müller J., Bosco A., Casablancas S., Larraín V (2002). School+: A Collaborative Project to Build the School of Tomorrow On the Basis of Users' Needs (Centre for the Study of Changes in Culture and Education.- Barcelona Science Park, University of Barcelona.) http://web.udg.esw/tiec/orals/c2.pdf {last visited Oct.2006)
Villa R., Thousand J, Nevin A, Magleri C.,(1996) Instilling collaboration for inclusive schooling as a way of doing business in public education.*Remedial- Special Education* 17(3)
Ε.Σ.Α.Ε.Α (2006). Εθνικό Στρατηγικό Πλαίσιο αναφοράς 2007-2013: Μια μεγάλη ευκαιρία για τα άτομα με αναπηρία που δεν πρέπει να χαθεί .*Θέματα Αναπηρίας* (τχ 06)
Παιδαγωγικό Ινστιτούτο, (1998). *Πληροφορική στο Σχολείο* (ISBN 960-7251-04-0), Ελλάδα, Παιδαγωγικό Ινστιτούτο (2000). *Αναλυτικό Πρόγραμμα Σπουδών – Πρόγραμμα Σπουδών Πληροφορικής στο Γυμνάσιο,* (κεφ. 18), Υ.Π.Ε.Π.Θ.

APPENDIX

Student	Kinetical problem
Catherine	brain paralyse, which is accompanied by epilepsy, Albanian language is her mother tongue, facing minor LD
Anna	muscle disorders of the Duchene type
Kostas	muscle disorders of the Duchene type
Melpw	brain paralyse
Kanelos	muscle disorders of the Duchene type, facing medium LD
Bill	Athrogriposis, facing serious LD
Tasos	muscle disorders of the Duchene type
Sotiris	muscle disorders of the Duchene type, facing serious LD
Paul	Metatraumatic, with serious hearing problems, Albanian language is her mother tongue, facing serious LD

Table 4: Kinds of kinetical problems of target group

All the names of the referred students are pseudonyms