INFORMATION AND COMMUNICATION TECHNOLOGY; FIRST-AID TO THE PRIVATE TUTORING PROBLEM?

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ABSTRACT

In the past pupils at the elementary and high schools were only complaining about homework. Nowadays they must be rightfully complaining about private tutoring. Private tutoring has been seen by many as the plague of our times. One could predict that the problem is just as intense in Cyprus as it is at other places in the world, but a recent study was necessary to give the true picture of the problem. This survey was carried out among a random group of college students and researched the extent of the problem as well as the school level at which this becomes more intense. The results of the survey proved the existence of the problem to a high degree. Further to the presentation of partial survey results, the paper introduces a strategic approach for adopting information and communications technology (ICT) in an instructional schema. The aim is to support and enhance both the classroom instruction and the homework study of our pupils. In the proposed schema there are several active partners whose contribution is deemed vital for the fulfillment of its ultimate objectives. The opportunities for communications, connectivity and collaboration that Internet technology offers, along with the unlimited applications that are possible by the use of information technology, build a very strong technological infrastructure. Teachers and technology experts with their invaluable knowledge, experience, and expertise represent the human resource. The financial, practical and moral support of the government is the essential driving force and the spinal cord of this plan. With all these present, only positive attitude and good will on behalf of the stakeholders to cooperate for the success of these common educational plans, would be the final missing link.

INTRODUCTION

A generally recognized problem that has become the educational plague of our times is the need of our pupils, right from the elementary school, throughout the high school and even further, to seek private tutoring for a broad variety of topics. Private supplementary tutoring is an extra, private, fee-paying teaching for enhancing daytime school instruction and for acquiring additional examination skills.

Private tutoring has become an integral part of our educational system to such an extent that it has grown to become an absolute necessity and it is almost certain that every student will, at some point, during his/hers school years, seek private tutoring on one or probably more subjects. This ever-escalating problem, numbering three hundred and fifty registered institutions, according to the Ministry of Education & Culture, and probably several times as many unregistered ones, is not just an educational matter. Its implications reach and affect socioeconomic structures on a global level.

Cyprus and Greece are not leading the struggle of private tutoring for it has as many names as it has forms. Whether it is referred to as "frontistirio" in Greek, "private tutoring or cramming" in English, "Juku" in Japanese "hakwon", in Korean or "buxiban" in Chinese (Taiwan), private supplementary tutoring is described by educators and analysts as a "shadow" education system, dominating and imposing on millions of lives. Private tutoring is a multi-headed, multi-national, multi-lingual hydra

shadowing educational systems worldwide. The extent of private supplementary tutoring for secondary school pupils in Asian countries ranges from 30% in Singapore to 81% in Taiwan (Bray, 1999). According to the South Korean Ministry of Education, the national expenditure for private tutoring reached 13,528 billion won (about 12 billion USD) in 1999, reflecting the tremendous financial burden on Korean households (Chung, 2002).

But how exactly are we doing in Cyprus? An eye-catching statistic derived from our student survey, suggests than among our college students, most of whom graduated in the years 1998-2002, 86.4% used private supplementary tutoring during lyceum. When numbers speak so clearly further comments are not necessary. Only an analysis of the problem causes and proposed courses of action would be desirable.

On the other hand, in our days there is definitely a ubiquitous use of information and communication technology (ICT) in almost all aspects of our lives. Leader countries in the development and application of such new technologies have been making use of ICT in education for some decades now. One thing we must admit is that their graduates are better equipped for the ever-changing and technologically-oriented world since they have been exposed, trained, and given the time to accept and adopt ICTs in the personal and future professional lives. This must also be having an effect on the nation-wide use of ICTs for effectiveness, efficiency, and success in the work place and for increased economic output.

Thus, at times that others are considering "Virtual Schooling"[1] (Schnitz et.al., 1999), we should at least aim at introducing information and communications technology (ICT) in our education system for the delivery of teaching and to support and enhance both the classroom instruction and the home studying of our pupils. By doing this we might succeed in also solving the private tutoring problem. This paper introduces a strategic approach for adopting information and communications technology (ICT) in an instructional schema. The success of the proposed system will depend on the collaboration of the individual stakeholders being the pupils, parents, teachers, the ministry, advisor parties, technology experts and suppliers.

PRIVATE TUTORING IN CYPRUS

Gathering and analyzing data permitting a diagnosis of the phenomenon of private tutoring would be necessary for a more complete study of the problem. A survey carried out in 1978 by (Papanastasiou, 1978) revealed that the problem existed at that time already. Results of that survey showed that the overall percentage (in all cities) of pupils taking private tutoring was 47,77% of the total pupil population of 1977-78.

The new survey was conducted among 1,120 Cypriot college students. A striking 86,4% said that they sought private tutoring in lyceum. This fact is depicted very clearly in figure 1 below. The majority of our student sample, 91,2% completed lyceum in years 1998-2002.

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[1] "Virtual schooling" implies the remote delivery of educational services that augment learning opportunities using information and communications technology (Schnitz et.al., 1999)

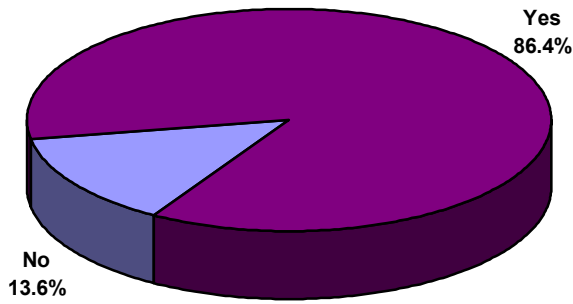**Did you have private tutoring at lyceum?**

Figure 1. Number of students having private tutoring at lyceum

The survey showed that the first three reasons for which pupils request private tutoring are:

- They consider the school offering insufficient.
- They have difficulties with their studies.
- They want to prepare for university-entry examinations.

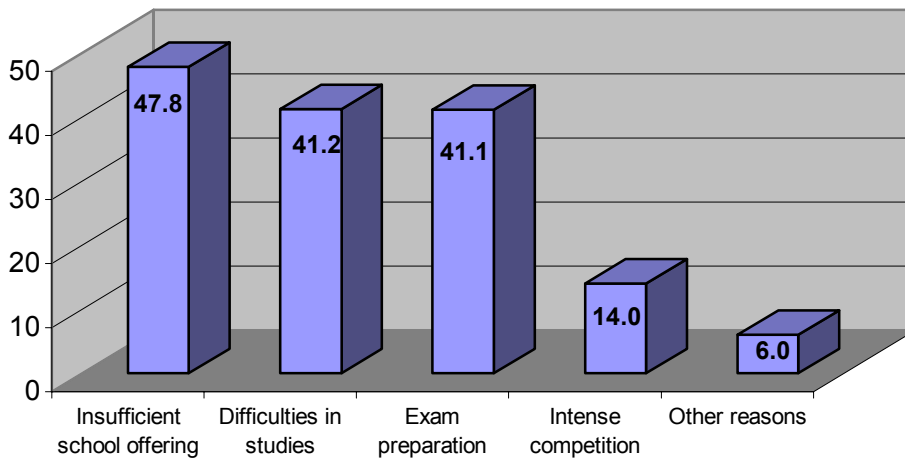**Why did you have private tutoring? (up to 2 reasons)**

Figure 2. Pupils' reasons for having private tutoring

The most popular topics for private tutoring are Mathematics and English. For these and especially for Mathematics there seems to be an increased need for private tutoring in the last grade of lyceum. At that level only, i.e. the 3rd grade of lyceum, there is a sudden demand for increased tutoring in Greek ("Nea Ellinika"). Figure 3 below shows the number of hours per week that students spend for tutoring in these three subjects. Other subjects in which they have tutoring are Physics, Ancient Greek, History, and Latin.

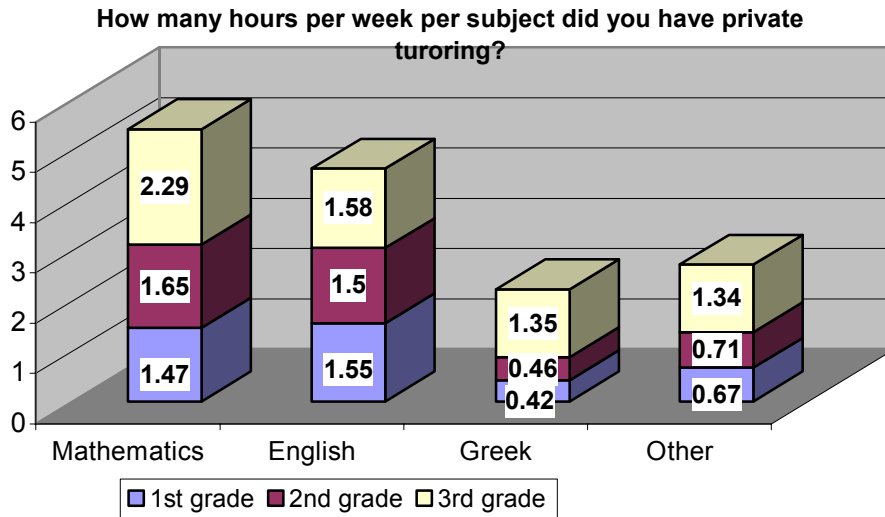**How many hours per week per subject did you have private turoring?**

Figure 3. No of hours per week per subject having private tutoring

Since the survey was conducted among college students it was possible to check whether private tutoring is also required in the college years. The survey showed by far that college students do not seek private tutoring since 96,5% of them replied to the relevant question with a No (see Figure 4). Among the few that have private tutoring at college, the most popular reason they do so, is that they have difficulties with their studies (81,5%). On the other hand, the main reason for not having private tutoring at college, as this was selected by the 96,5% of students who do not have private tutoring, is that they find the school's offering to be sufficient (73,9%).

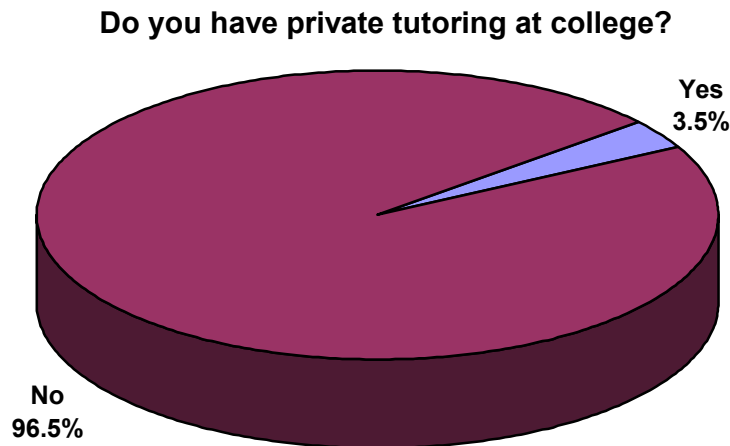**Do you have private tutoring at college?**

Figure 4. Number of students having private tutoring at college

A comparative picture of the students seeking private tutoring at the two levels of education is very interesting and requires an analysis of its own (see Figure 5). It is worth investigating and analyzing the reasons for which the picture is suddenly reversed. Some of these according to students and as derived from the survey are shown in Table 1.
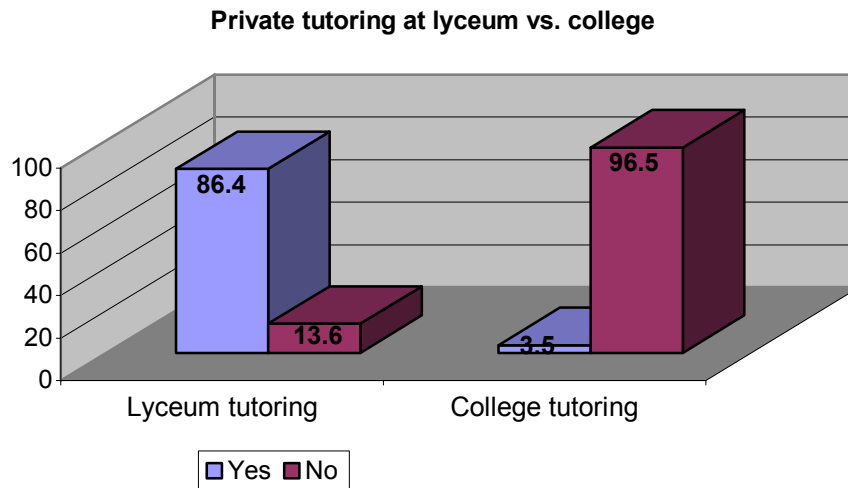
Private tutoring at lyceum vs. college

Figure 5. Number of students having private tutoring at lyceum vs. college

Table 1. Comparing the reasons for having private tutoring at lyceum and not having any at college

I had private tutoring at lyceum because*:	I do not have private tutoring at college because*:
•School offering is insufficient (47,8%)	•School offering is sufficient (73,9%)
•Had difficulties with my studies (41,2%)	•Cannot afford it economically (17,6%)
•Wanted to prepare for university-entry examinations (41,1%)	•Other reasons (12,7%)
•Competition was intense (14,0%)	•I am an excellent student (11,3%)
•Other reasons (6%)	•Cannot find available teacher (2,0%)
*Note: Students could select up to 2 reasons	

Certain other aspects are also suspected to be problematic but further research will be needed to investigate them more thoroughly. In this list we could include:

- The type of the educational system in practice, which is a highly teacher-centered system through which pupils become accustomed to be given ready knowledge (spoon-feeding). In the absence of the teacher at home, the pupil has difficulties to exercise critical thinking, find and use the necessary information resources, and direct his/her own studying.
- The fact that parents or guardians are many times incapable of helping their children with their studies due to lack of free time and/or knowledge.

The effects that the phenomenon of private tutoring has on our society should also be examined. Some of these are positive (Bray, 1999). Such as:

- Private tutoring can be seen as a mechanism through which pupils extend their learning.
- Tutoring may also reduce the workload of mainstream teachers.

Some others are negative:

- anti-sociability: the fact that our youth spends so much time on studying does not many times allow them to socialize with their peers.
- health-related problems: studying requires immobility for long hours and restriction in a closed-space. The absence of free time does not allow students to play or exercise their bodies in other ways, and/or look after their diet. Mental health should also be safeguarded.

and more…

SUGGESTIONS OF ALTERNATIVE SOLUTIONS

All-Day Schooling

The Ministry of Education, for some years now, has been promoting amongst the educators, students, and parents, the idea of all-day schooling. Plans for all-day schools were developed and some elementary schools were selected for a pilot implementation of this school structure. Recently the Minister of Education announced that more schools would be converted to all-day schools in the coming academic year. It might be that the Ministry has not managed to sell the idea of all-day schools to all stakeholders or that its implementation did not take off as planned, or for other reasons, that many are still reacting to it and many others are now criticizing and doubting its results and implementation. No post-implementation review became publicly available so we cannot know how the experiment went. We do not also know if the Ministry of Education has run an investigation to relate the all-day school to the need for students to have private lessons or to the other problems that it was aiming to solve.

Updated Subject Syllabi

Subject syllabi should be updated to cover the syllabus examined in university-entry examinations as well as to follow the trends of our times and the demands of our economy, and satisfy the requirements of today's competitive society and not some other past society's needs.

Computer-Aided Education

Introduce a strategic approach for adopting information and communications technology (ICT) in an instructional schema. The objective will be to support and enhance both the classroom instruction and the homework study of our pupils. Included in the context of this solution would be the development of online and other study tools such as CDs or online material to accompany textbooks, with chapter summaries, practice questions, testing material, and more. This may support the teacher in delivering course material and the student in absorbing it more easily. The fact that, according to the survey conducted, the majority of our students are currently users of modern technology (computers and Internet) at home (see Figure 6), makes the implementation of this plan more feasible.

Do you use a computer at home?
Is it connected to the Internet?

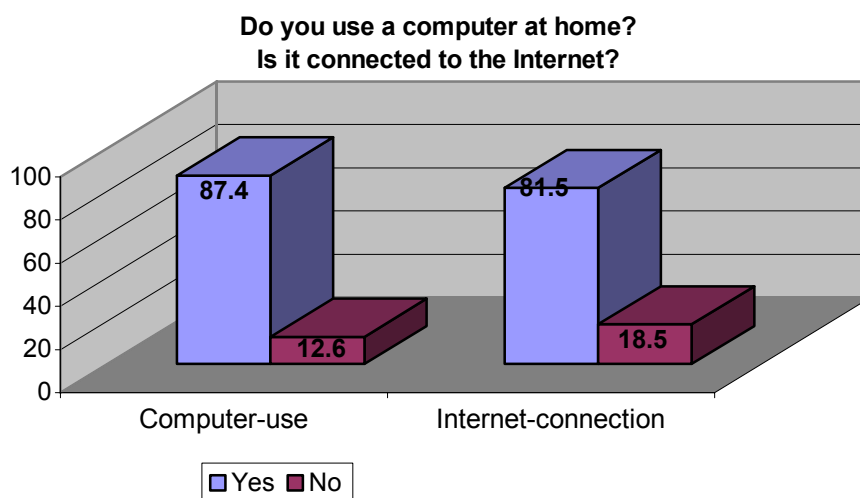|	Computer-use	Internet-connection
Yes	87.4	81.5
No	12.6	18.5

Figure 6. Computer-use and Internet-connection at student homes

More potential solutions could of course be identified. All of them would have to be evaluated critically for their feasibility according to financial, scheduling, technical, operational, and other issues. Consulting with teachers in this vital decision-making process as well as on other important educational reforms is the best guarantee that they will commit themselves to the implementation of these reforms. Success will be enhanced if other stakeholders- principals, parents, students and local communities- are also involved in decision-making through school councils (UNESCO). Everybody's concern should be to meet centrally-established goals on curriculum and ensure equal opportunities for every child.

Finally, the selected course of action that will be proposed might be some combination of these alternatives. But no matter which this course of action will be, the utilization of ICT will eventually be deemed unavoidable.

On this issue and recognizing how technology is changing education, the American Association of School Administrators (AASA) presents its findings which include the following:
- The definition of school, teacher and learner is being reshaped by a digitized world.
- Teachers and administrators need to be prepared effectively for the global knowledge/information age.
- Students, school systems and communities need to be connected around the clock with each other and with the world through information rich, interactive technology (UNESCO).

ICT-BASED LEARNING

Finally, we realize something very important for our future plans: we live in an information age that makes heavy use of technological advancements. All fields are currently undergoing dramatic structural changes, mostly driven by information and communication technologies. The consensus among the policy, strategy, and market makers is that only the institutions that adjust to the new business environment will continue to thrive. At the center of this revolution is the information and communication technology." (Gartner)

Yet, "while use of technology is rampant in society, it has not yet infiltrated all classrooms and curricula…. Use of technology in the infrastructure of academia, while much improved over the last ten years, is less than it could be and perhaps less than it should be." (UNESCO)
Unfortunately, within our national educational boundaries improvements accompanied by the adoption of new teaching methodologies and technologies seem to be made at an even slower pace.

Information and communication technology has already penetrated all kinds of learning and teaching processes and is altering and enhancing knowledge generation, acquisition, aggregation and distribution/dissemination. The need for information technology education and I.T. policy is apparent even at some remote and developing countries such as Nepal (Shakya et. al, 2002), and India (Nair et. al, 2002).

Additionally, "the Internet is changing everything from personal communications to the pervasive use of e-business… It is altering the roles, functions and focus of teaching and learning… It adds communications, connectivity and collaboration." (UNESCO, 1997).

Making use of information and communication technology (ICT) in our educational system is not a pioneering step to take. UNESCO reports that 80 percent of all Slovenian schools are Internet connected (UNESCO, 1999). The United Kingdom is 43 percent connected. By the year 2000, some 15,000 Italian schools were expected to have installed computers and multimedia. Almost 94 percent of Japanese schools have computers and all their schools will have Internet connections by 2003. Chile and other Latin American countries were anticipating substantial school-Internet hook-ups by the end of 2000. Of course numbers increase in the world's most technologically advanced countries where reside 90% of all Internet users. A recently completed nation-wide survey carried out by the U.S. Department of Education informs us that in 2001 the ratio of students to instructional computers with Internet access

in public schools was 5,4:1, an improvement from 12,1:1 ratio in 1998 (U.S. Department of Education, 2002).

A PROPOSED MODEL OF AN ICT-BASED LEARNING INFRASTRUCTURE

The following model is proposed for developing an infrastructure for learning, based on the use of information and communication technology. We propose that at the initial stages the application of the model is for supporting the studies of the student at home as a student-centered learning environment. Later on the teacher can also make use of this model to enhance teaching in the classroom and thus promote a technology-assisted teacher-supported environment. The plan is to use state-of-the-art technologies to link learners, teachers, possibly parents and the educational authorities. A diagrammatic representation of the model can be seen in Figure 7. Below follows an explanation of the major components and actors.

Model Administrator. The Ministry of Education must play the role of the central actor with several responsibilities including the generation and maintenance of course curriculum and tentative schedules, generation of electronic textbooks and/or multimedia notes and instructions for the teachers and the students for the coverage of the syllabi.

The Teacher: Each individual teacher will follow the guidelines set by the Ministry of Education to deliver a course's contents. He/She should also be given the freedom to post on the network additional material, useful links to information and other resources, solved problems, homework instructions or guide   lines   to   the   students.

The Student: Accessing the academic network while at home, the student will follow course material but will mostly be helped by the daily analysis of topics covered and the other assistance provided by the lecturer.

The system will not require synchronous two-way communication between the teacher and the student or the Ministry and the teacher.
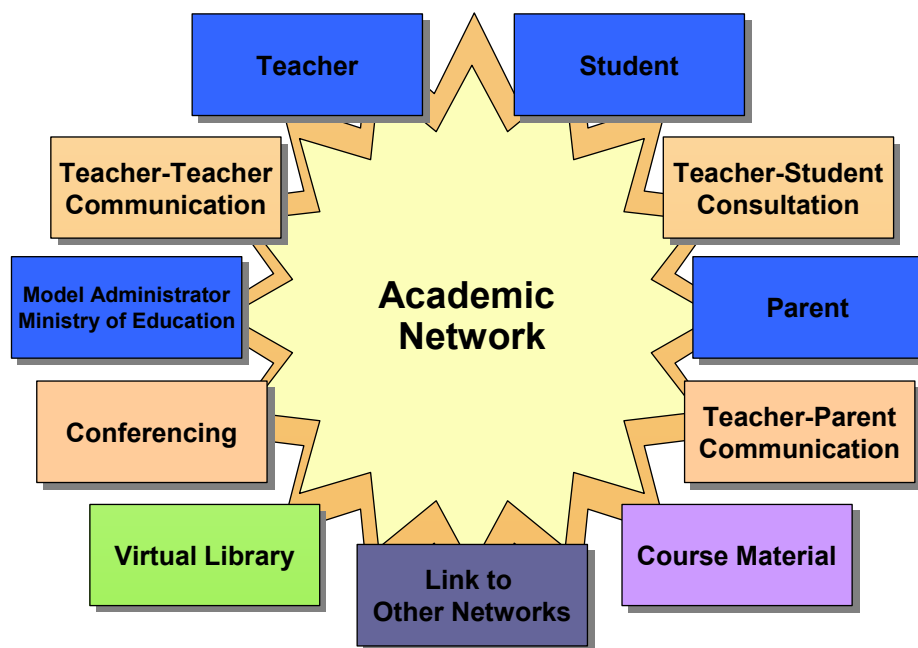

Figure 7. A model of an ICT-based academic network

Teacher-Student Consultation. This module will be particularly useful and supportive to the student's home studying. Asynchronous communication between the teacher and student should definitely be available in the form of electronic mail (e-mail) and computer conferencing. These will support one-on-one discussions between the student and the instructor → private conferences analogous to a

professor's "office hours" on campus and group discussion on topics of common interest or course material → group conferences.

Further to these, synchronous communication might also be useful for real-time consultation and on-line support. Technology-wise this could be implemented by means of video or audio conferencing, a whiteboard on which the teacher and student can exchange notes, or using other available technology. **Teacher-Teacher Communication**. The same facilities installed for teacher-student consultation will also enable the communication between teachers for the exchange of information and resources. **Library**. A virtual library of resources useful to teachers and students can be created. This is a very important facility especially for the less fortunate, the students of schools in the suburban areas and villages that usually lack such a resource.

The academic network can later on be expanded to include more facilities. At the initial stages the network would require the creation of a network administration unit to be run by the Ministry of Education. Further ICT will need to be installed at schools at a minimum number (depending on the size of the school) to allow the teachers to get involved with the academic network and update their individual courses whereas, at the same time almost all students already have computers at home. Internet access will be required for all the nodes of the network.

CONCLUSIONS

The student survey has revealed a definite presence of the private tutoring problem -86,4%, among our lyceum pupils. This statistic brings about the requirement for a major paradigm shift in our educational approaches. There is clearly a need for educators and education policy-makers to catch up, keep up and move ahead with technology. Yet the traditional models of educational presentation and delivery, even older technologies, present obstacles to this information reform (Gartner).

The IT revolution has been making significant impacts in our daily lives and within a short span of time if has managed to change the very landscape of human existence. Information and communication technology presents us with an opportunity for designing new and reengineering existing systems and educational organizations, which can generate and provide very flexible products, services and combinations of products/services for a vast majority of individual education needs. Using such technology we can create a basic infrastructure for the development of an academic network. A simple form of such an academic network has been proposed in the paper to hopefully alleviate the intense problem of private tutoring that exists in Cyprus. This academic network will also:

- create links between producers and users of education information by promoting the interaction between them,
- bring closer all the actors involved in the educational system, including educational researchers, by providing them with a new means for communication,
- give greater responsibility but also opportunities for initiative to school heads and teachers,
- allow access to common resources to all schools, teachers and students,
- promote partnerships that would yield great benefits to education, and more.

The main objective for this and other initiatives made to incorporate ICT in education is to meet centrally established goals on curriculum, alleviate undesirable bi-products of education, and ensure equal opportunities to education for every child.

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