

# **Educational Technology in Cyprus and Strategies for Higher Education**

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#### **Abstracts**

This paper provides an overview of the status of educational technology in Cyprus. Recent developments and efforts in technology integration in Cyprus public schools and public and private higher education institutions will be presented and discussed. The emphasis of the discussion will be on the vision for establishing Cyprus as a regional education centre with the use of distance learning technologies. Issues such as the need for restructuring the education system to eliminate the lengthy bureaucratic procedures needed for implementing innovations, the need for teacher continuous support and professional development, and the need for evaluating, accrediting and supporting private higher education institutions will be presented. The role of these institutions will be discussed and concrete proposals will be presented on how these institutions can take the lead in establishing technology strategies to shape education in Cyprus and the region. Several of the issues raised and discussed in this article can transfer to other countries and similar contexts.

### La Technologie de l'Education à Chypre et les Stratégies pour l'Enseignement Supérieur

Cet article propose une vue d'ensemble de la technologie de l'éducation à Chypre. Les développements récents et les efforts dans l'intégration de la technologie à Chypre sont présentés et discutés. L'essentiel à la discussion porte sur l'établissement à Chypre d'un centre régional faisant recours aux technologies d'enseignement à distance. Les problèmes tels que le besoin de restructuer le système éducatif pour éliminer les longues procédures bureaucratiques utilisées pour soutenir les innovations, le besoin d'un sanction continue de l'enseignant et d'un développement professionnel et le besoin d'évaluer, d'accepter et de soutenir les institutions privées d'enseignement supérieur sont présentés. Le rôle de ces institutions est discuté et on trouvera des propositions sur la facon dont ces institutions peuvent conduire à l'établissement de stratégies de technologie pour reformer l'éducation à Chypre et dans la région. Plusieurs des problèmes soulevés et discutés dans cet article peuvent être transférés dans d'autres pays et dans des contextes semblables.

#### Unterrichtstechnologien auf Zypern und Strategien innerhalb der höheren Schulbildung

Dieser Artikel gibt einen Überblick über den Stand der Bildungstechnologie in Zypern. Es wird über neue Entwicklungen und Versuche bei der Einführung der Technologie in den öffentlichen Schulen und öffentlichen und privaten Weiterbildungsinstituten berichtet. Der Schwerpunkt der Diskussion liegt auf der Vision, Zypern als regionales Bildungszentrum auf der Basis von Fernbildungstechnologien zu etablieren. Dabei werden Probleme angeschnitten wie das des Umbaus des Bildungswesen um langwierige bürokratische Verfahren, die für die Umsetzung von Erneuerungen benötigt werden, zu streichen; die Notwendigkeit der Lehrerfortbildung , der Bewertung und Akkreditierung und die Unterstützung privater Institutionen im höheren Bildungsbereich. Es wird die Rolle dieser Institutionen erläutert und es werden konkrete Vorschläge gemacht, wie diese Institute eine führende Rolle in der Nutzung technologischer Strategien beim Bildungsaufbau auf Zypern und seiner Region übernehmen können. Einige in diesem Artikel aufgeworfene Fragen lassen sich auf andere Länder und ähnliche Fälle übertragen.

### Introduction

Information and communication technologies have a major impact on education and training around the world. Telecommunication technologies used in distance education can cut the costs of education, improve access to education and provide time flexibility for learners by creating both synchronous and asynchronous learning environments (Mason, 1994; Owston, 1997). The rapid transformation manifested as a result of technology advances has an impact on education, training, and on the administration and organization of educational

institutions around the world. One of most critical challenges facing higher education institutions is how to develop the capacity for change and remove the barriers built into their cultures that prevent change and maintain the status quo (Duderstadt, 1999).

In an era of information economy and knowledge management, it is imperative for nations and organizations to invest in continuing education and lifelong learning to maintain competitiveness in a global market. The so-called knowledge society's requirements for just-in-time customized education cannot be met by traditional education delivery methods. Educational technologies such as the Internet, satellite interactive television and interactive multimedia CD-ROMs are widely used in technologically advanced nations around the world. However, technology alone does not guarantee solution of educational problems. Only when used within the framework of a solid strategic plan will technology have a positive impact.

Although Cyprus is not regarded a technologically advanced nation, there have recently been some developments that are likely to shape the field of educational technology. The news headlines on TV, radio stations and newspapers during the summer of 2001 focused on educational technology. A group of anonymous donors proposed to the Cyprus Ministry of Education and Culture (CMEC) that they would donate one computer for every student. The hype over this donation dominated public discourse during the summer. Some people thought that this was the opportunity for Cyprus to earn a place on the world map of educational technology, whereas others felt that this had the potential of a disastrous effort for technology integration in public schools. After a summer-long debate, the government of Cyprus turned down the offer since the donors refused to reveal their identity. Therefore, the government could not trust that the donors would indeed fulfil their promise. Besides, there were plans for equipping all schools with computers and connecting them to the Internet over the next five years. However, the lengthy media coverage and intensive debates over this matter illustrate the public's desire to upgrade Cyprus public schools and integrate information and communications technologies (ICT) into teaching and learning.

Next, I will provide some background information on Cyprus. I will then discuss some developments in educational technology in primary, secondary and higher education. I will address some issues facing higher education institutions and discuss three major barriers to integrating information technologies in education. Several of the issues raised and discussed in this article are transferable to other similar contexts.

## Background information

Cyprus is an island in the Mediterranean sea, strategically situated on the world map on the crossroads of three continents: Europe, Asia and Africa. The strategic position of Cyprus is an important factor that has contributed to its troubled history over the years. Its strategic location is one of the factors on which we will base the proposal for establishing Cyprus as a centre for education in the region. The population of Cyprus is estimated around 740,000: 82% belong to the Greek Cypriot community, 16% to the Turkish Cypriot community and 2% are foreigners residing in Cyprus. The per capita income is over \$13,000, one of the highest in the Mediterranean. Cyprus has an open free market economy and there are currently several offshore and high-tech companies operating in the island.

Between the 1960s and 1980s, educational technology efforts in schools were limited to the use of traditional audiovisual equipment and some government produced educational radio and television programming. Advanced ICT have not been a part of the Cyprus educational technology scene until the early 1990s. Educational technology efforts were influenced, in part, by the island's technological infrastructure. Cyprus has invested heavily in the development of telecommunications on the island. As a result, its telecommunications infrastructure is very well developed. Cyprus has recently acquired access to satellite technology in partnership with Greece, which will allow Cyprus to participate in interactive televisions projects and develop material for such broadcasts. Technology is used widely in the private sector and the CMEC feels the pressure to keep up with technology developments. Unfortunately, this pressure forces the CMEC to rush into decisions that are not well planned. One such example is the recent announcement by the CMEC for compulsory computer training for high school teachers, something that raised serious reactions since the ministry did not give teachers the opportunity to provide input on this issue.

Something that will have a strong impact on Cyprus education, economy and culture is accession to the European Union (EU), which is planned to take place by January 2003. Cyprus has been a member of the Council of Europe since 1960 and it follows policies similar to those of the EU member-states in the field of education. Cyprus is aligned with the principles provided by EU resolutions, declarations, conclusions, etc. (e.g. equality of opportunity, illiteracy, safety in schools, etc.).

# The status of educational technology in primary and secondary education

All European nations have established policies for incorporating ICT in education. Their objectives have been set in the categories of equipment, the acquisition and development of software, the skills of teachers and students, and the use of the Internet. Cyprus has established objectives in all six areas for primary education and upper secondary education. In the primary level, the trend among European education systems is to integrate ICT as tools for learning. Although most European nations have plans for in-service teacher training on ICT, Cyprus does not have such a plan (Eurydice, 2000a).

After the special evaluation report of the Cyprus education system – conducted in 1997 by the International Institute for Education Planning (1997) – a number of reforms were set forth in an effort to raise the quality of education. Among these innovations was technology integration into all levels of classroom teaching. Efforts are currently under way to integrate computers and the Internet in primary and secondary school levels.

The department of primary education has established a pilot programmeto introduce computers and related technologies into the classroom. During the academic year 1993–1994, computers were introduced to some primary schools as a pilot project (Information Technology Group, 2000). The main goal of the project was to identify how computers could be integrated into classroom teaching in ways that they will improve education and learning for all students. This pilot project was coordinated by the Information Technology Group of the Curriculum Development unit at CMEC.

From the 352 primary schools, only 48 have computer technology available, which corresponds to 13.6% of all public primary schools (Information Technology Group, 2000). Furthermore, from the 48 schools that have computers, very few have access to the Internet. From the schools that have computer technology, only 32 of them are officially participating in the 'computer integration' programme run by CMEC. In the summer of 2000, an official decision was made to equip every classroom of upper-primary with a computer and a color printer. A plan for lower grades is also under development (Information Technology Group, 2001).

In Gymnasia (lower secondary) and Lykeia (upper secondary), informatics and computers are currently being introduced. The aim behind these initiatives is to provide access to computers to all students and prepare them to be informed and critical citizens of the information era. In 12 out of 31 Lykeia, there are local area networks installed. All Lykeia and technical schools are connected to the Internet. All physics laboratories are equipped with at least one computer. Teachers have access to computers and they can use them in all areas of the curriculum (Republic of Cyprus, 1999).

Although there are plans for equipping schools with technology, what is lacking from most of the efforts of technology integration is any serious consideration for teacher training. Very few of the teachers have been trained and are prepared to effectively integrate these technologies in their teaching. This is true for primary education as well as secondary education teachers. The Key Data on Education report shows that in primary education Cyprus spends approximately 95% of its budget on hardware and only 5% on human resources and training. Other European nations like Finland, the UK and Greece spend between 20–47% of their budgets on human resources (Eurydice, 2000a). It is evident from the decisions taken by CMEC and from the allocation of funds that state officials have the false belief that equipping schools with hardware and software will result in successful integration of technology in schools. Neglecting the teacher training and professional development component of such innovations could be disastrous.

In many European countries, ICT has been included as a compulsory part of curricula for students. However, this is not the case in curricula for teacher training and teacher preparation programmes for either primary or secondary level. An ICT course in teacher training is compulsory in fewer than half the European countries (Eurydice, 2000b). In Cyprus, in-service teacher training in educational technology is optional. Therefore, there are hundreds of teachers that are asked to integrate technology into their teaching without training on how to use technology. Only teachers who have been trained in the use of technology will be able to successfully integrate ICT in their classrooms and guide their students in becoming technologically literate and capable of using technology to access information, collaborate with others, communicate with peers and construct knowledge.

CMEC offers optional training to prepare primary school teachers to integrate technology in their teaching. However, between 1993 and 2000, from the 3439 schoolteachers only 600 of them attended the computer preparation programme (Republic of Cyprus, 1998). Partnerships were established in collaboration with Israel to offer teacher training in educational technology. A programme was also established with the Greek island of Crete to provide online training for teachers working in primary schools. Although the online programme failed to provide training to Cypriot teachers, this was an opportunity for some Cypriot schools to get connected to the Internet and use it in other areas of the curriculum (Information Technology Group, 2001).

Although there are plans to expand the use of educational technology in schools, very little is discussed about the need to reform teacher training and teacher preparation programmes. We have argued elsewhere in this journal that both in-service and pre-service teacher training should be addressed in order for technology innovations to succeed (Vrasidas and McIsaac, 2001). In addition to training, what is also needed is continuous support (Zembylas and Reese, 1999). For teachers that want to integrate ICT in their classroom, the support provided to them is minimal. There is no official plan for providing continuous support and opportunities for professional development for in-service teachers. I will argue that teacher training and support can be provided in part through the development of online communities with the help of private and public higher education institutions, within the framework of a technology strategy.

# Trends in higher education

Although there are several development efforts undertaken in educational technology, empirical research on educational technology in Cyprus is in its early stages. Therefore, any technology integration efforts are based on influences and success stories from other countries, usually countries from which educators leading these efforts received their education (Greece, the UK and the USA).

Cyprus did not have a public university until 1992. Several private higher education institutions have been operating on the island for decades, but their focus was on teaching rather than research and development. After the establishment of the University of Cyprus and the expansion of operations by the Cyprus Institute of Neurology and Genetics, government spending on research and development has increased substantially. In January 1998, the government approved a plan to improve research and development efforts and to promote Cyprus as a centre for services, business and education. One of the components of this plan was to improve the higher education provided by both public and private institutions.

What seems to be promising for research and development in Cyprus is the gradual expansion and growth of private higher education institutions such as Intercollege, Cyprus College and Frederick Institute of Technology. In discussing the opportunities and challenges faced by private higher education institutions, I will be referring to Intercollege, which is the largest institution (among private and public institutions) in Cyprus with just over 4,000 students enrolled. Although the government is slow in acknowledging and accrediting these institutions, other countries and educational institutions around the world have established partnerships with them and have been offering accredited undergraduate and graduate degrees for the last 20 years. Areas they offer accredited degrees include education, computer science, business and engineering. It is interesting to note that during the academic year 1998–1999, there were 2,379 students at the University of Cyprus. In private higher education institutions combined, there were 5,780 students (Republic of Cyprus, 1999). Recent statistics show that during the academic year 2000–2001, there were 13,118 students studying in higher education institutions in Cyprus, 8,408 of which were attending private institutions (which corresponds with 64% of the students) (Chrysanthou, 2002). This is a clear indication that Cyprus needs private universities and that the public tertiary education system cannot serve the needs of the largest portion of Cypriots.

Private higher education institutions are flourishing, with several of their degrees being accredited by the CMEC last year. It is expected that the number of students attending these institutions will increase dramatically in the next couple of years, after the government grants them 'university' status. Furthermore, the government has approved special financial aid for Cypriot students enrolled in accredited degrees, which is expected to increase the number of students enrolling in private higher education institutions. In addition, these private institutions use English as language of instruction and, as such, they can serve students whose native language is not Greek. Therefore, they attract international students from countries like Egypt, Syria and Eastern Europe, as well as students from as far as Pakistan, India and China. During the academic year 2000–2001, 36.79% of the students (which corresponds to 3,093 students) attending private higher institutions in Cyprus were international students (Chrysanthou, 2002).

With the help of distance learning technologies, Cyprus has the potential to become a regional centre for higher education. To succeed in this, it needs the co-operation of the government in furthering the process for accrediting the private higher education institutions and ending the monopoly that the University of Cyprus (the only state university) has enjoyed for the last decade. Once these institutions receive the status of a university, they then need to receive comparable support from the state, if they will be able to compete on equal grounds with other state institutions. Building collaboration among private and public institutions will benefit education and all Cypriots (Mavroides, 2002).

# Overview of educational technology projects in higher education

Over the years, Cyprus and the EU have signed several protocols on financial and technical co-operation providing substantial financial aid to the island. Cyprus participates in programmes based on bi-lateral agreements and financial contributions of participating states. Two of these programmes are 'Leonardo da Vinci' and 'Socrates'. The main goal of these programmes is to encourage co-operation between organizations and people from different countries. The Leonardo da Vinci programme covers vocational training, career orientation, distance learning and training. The Socrates programme aims to improve the quality of education at all levels (primary, secondary and tertiary). At the tertiary level, exchanges of students and staff are encouraged, as well as the development of joint European programmes, while at school level the main aim is co-operation between schools of different countries.

There are several educational technology projects under way at Intercollege. Last year, a group of faculty received funding from the Cyprus Research Bureau to develop online classes for the computer science department. In addition, partnerships are established with US universities to collaboratively develop online undergraduate and graduate degrees in business administration and international relations. The training and development centre at Intercollege has received funding through the Leonardo project to develop online training material for the European Computer Driving License (http://www.intercollege.ac.cy).

The department of computer science at the University of Cyprus participates in the project Multimedia Education Innovation Network (MENON). The MENON Network was initiated with the support of the European Commission under the ESPRIT Programmeof DGIII (4th Framework Program). The MENON Network is a European organization providing information, evaluation and support services to the education multimedia market. MENON supports educators to integrate multimedia and the Internet and supports the industry to improve the quality of education software and other products and the distribution of such products to an international market (http://www.menon.org).

## Issues in educational technology in Cyprus

Three of the major issues involved in attempts to integrate information technologies in education are:

- The bureaucratic nature of the education system;
- · Lack of strategic planning; and
- Lack of teacher training and continuous support.

#### **Bureaucracy**

Cyprus has a very centralized public education system, which is proving to be inefficient in many ways. For any change in the education structure – curriculum and the like – lengthy bureaucratic procedures are required that often take months and even years to complete. For example, even when primary schools find the financial resources needed for Internet access and connection, state education officials will not allow them to get connected to the Internet. There is an extensive and time-consuming paperwork to be completed for a school to be approved for Internet access. These procedures usually take longer than one academic year. The CMEC needs to allocate some of the responsibilities and decision making to local authorities and eliminate the lengthy bureaucratic procedures and paperwork. Local school boards could be authorized to review applications for Internet access and make decisions based on proposals and plans for use, availability of skilled personnel, availability of funds, and technology infrastructure. On the contrary, the structure of the private education sector is more flexible, which allows it to participate in innovations and integrate ICT more effectively and efficiently.

## Strategic planning

For successful technology integration, dichotomies such as online and offline, on-campus and off-campus, face-to-face and at a distance, need to be avoided. Technology is blurring the boundaries between traditional face-to-face and distance education, and educators need to revisit their fundamental assumptions about teaching and learning. Educational institutions need to be flexible and open to adjustments brought by technological developments and changes in the education scene and social needs. Higher education institutions have been criticized for the following three reasons: (a) they have not been able to accommodate the increasing number of students seeking education, (b) teaching methods used in large lecture halls, typical in universities, are ineffective, and (c) the sense of academic community is disappearing (Daniel, 1996). Daniel has argued that 'technology, which has already made a dramatic impact in most areas of human endeavour, is a key to the renewal of higher education' (p. 1).

Technology has the potential to support education reform. However, reform efforts alone will not cause the necessary change. There is a reciprocal relation between reform and technology. In Cyprus, unfortunately, state education officials have the misconception that once technology is introduced in schools, reform will automatically take place. In addition to increased funding, what will facilitate technology integration in schools is serious strategic planning and reform of pedagogical practices from teacher-centred to student-centred approaches. The CMEC and higher education institutions in Cyprus need to place emphasis on both the content and process that is required to develop technology strategies that will lead Cyprus in becoming an educational technology, research and development centre. In order to develop strategies that will be implemented successfully, all parties impacted by these strategies need to have an input. Personnel from private and public higher education institutions including faculty, heads of departments, technology co-ordinators, government officials and k-12 educators - should participate in the planning, implementation and evaluation stages of technology plans. Good leadership that 'inspires a vision for the future that is attractive to all concerned' is an essential characteristic for establishing a strategic plan (Daniel, 1996). The need for change should be communicated to all those concerned with higher education.

Commercial developers and providers of educational material are growing in Cyprus. Private companies such as 'Future-Kids' and 'Computer-Kids' that offer training and diplomas in computer skills are flourishing, since pubic schools are failing to prepare the young for the information era. A similar trend is obvious in higher education. Higher education needs to prepare technologically literate citizens who can solve real life problems using technology solutions. Establishing a technology plan is essential since it cannot only improve teaching and learning but it can also improve productivity. Daniel warned us of the following danger:

Unless universities become generators of technology-based courses their faculty will gradually become buyers' guides and librarians for materials produced outside the academy. New uses of technology should be linked to shared academic goals and previous experiences of institutional success. Mechanisms for implementation need to emphasize cooperation, teamwork and support.

(1996, p. 138)

The needs of students should be at the centre of any technology strategy in higher education. Upon choosing the right technologies to invest in and implement within the structure of an education institution, the following issues need to be considered:

- Primary and secondary goals driving technology integration;
- Target audience and kinds of technologies prospective students have access to;
- Budget and costs for necessary expenses;
- Pedagogical practices and how technology can be integrated;
- Skills needed to use the technology, interactivity, and ease of use; and
- Timeframe within which the technology plan will be implemented.

In developing technology strategies, one needs to begin with the skills and resources that are already available. In higher education institutions and in the CMEC, there are often faculty and personnel involved in research and development but their efforts are not known by most of their colleagues. There is a need to establish better communication channels for faculty and scholars to share ideas and collaborate on projects. Sharing ones work and discussing projects can help build the collegiality needed to bring faculty and officials together in planning the strategy. Furthermore, they need to upgrade their telecommunications infrastructure that will allow multiple users to access online resources and programmes. Another technology component that can help is to establish a satellite uplink that will allow faculty and students to participate in videoconferencing and in courses offered via satellite from other places around the world. Intercollege has recently installed a videoconferencing system that allows conferencing with institutions locally and internationally.

For higher education institutions in Cyprus to take the lead in promoting educational technology, research and development, the government needs to establish policies and procedures that will facilitate their growth. In addition, higher education institutions should collaborate closely with all other levels of educational institutions, namely primary and secondary. It is only with close partnerships with all parties involved that a clear vision for a better education will be realized.

Within the strategic plan, an important component is funding for research and development. Bates (2000) postulated that funding is 'probably the strongest leverage for change' (p. 4). The government of Cyprus allocates very little funding for research and development. If Cyprus wants to engage in serious research and development to improve education and the quality of life of its people, it has to take research seriously and put in place the necessary mechanisms for providing the necessary education funds. Furthermore, higher education institutions need to pursue research grants from corporations and the European union. Another strategy for investing in technology is reallocation. Bates (2000) argued that 'reallocation is the ultimate test of an institution's commitment to teaching with technology' (p. 4). Faced with the need for change, institutions need to be flexible and willing to make adjustments in the ways funds are allocated within their organization.

## Lack of teacher training and continuous support

Europe is currently facing a lack of personnel skilled in ICT. The lack of teacher training has been discussed in detail in earlier sections. This lack can only be addressed effectively within a framework of a solid technology plan. A dominant trend in training and professional development is the use of network technologies for distributed learning and online learning communities. One of the central ideas behind the conception of online communities is that teachers and other professionals need constant training, and support (Zembylas and Reese, 1999). The author will argue that the development of online and face-to-face communities that will provide training and support to educators can address the need for continuous professional development. Such communities can be implemented within a framework of lifelong learning.

With the extended use of computer networks and distributed multimedia systems for communication, education and training, learning is now dispersed among people, artefacts, communities and nations around the world. With more and more countries and people getting connected to the Internet, the network of networks is both growing and changing very rapidly. The development of computer supported collaborative learning (CSCL) tools and online communities have made a tremendous impact on the evolution of the field of distance education and distributed learning. Educators, students, scientists, scholars, researchers and practitioners can participate in online communities, work on collaborative projects, exchange ideas and share information. Distance education as a field has grown from simple correspondence education to a highly sophisticated distributed interactive learning experience.

A central idea behind online communities is that learning is a social process. As such, being a part of a community involves building connections among what is being learned and what is important to the participants, and connections among participants with similar goals. The interest in online communities grows day by day, and corporations and education institutions alike are utilizing the power of online community building for lifelong learning and continuing education. Distance learning and online communities have a lot of potential for countries that are in remote locations like Cyprus. With the rapid growth of the Internet and computer ownership in Cyprus, the possible use of Internet technologies is becoming a reality. By investing in online communities, Cyprus can take advantage of the knowledge and expertise of Cypriots and other scholars around the world to share some of their expertise.

An example of an online community that provides a model for continuing education and professional development for teachers is STAR-Online (Supporting Teachers with Anywhere/Anytime Resources) developed at the Center for the Application of Information Technologies at Western Illinois University (http://www.star-online.org). This online staff development provides teachers the training, support and communication links necessary for their continued success in the classroom. Teachers can access mentors, colleagues and resources via a Web-based Virtual Teaching and Learning Community (VTLC) system. The VTLC provides interactive, self-paced, collaborative staff development, which allows teachers to gain knowledge and skills in the applications of educational technology. Through the VTLC, teachers can participate in quality online training modules, access resources and an online portfolio as well as network and collaborate with other teachers nationwide (Vrasidas, 2001).

One challenge faced by those designing projects for professional development and continuing education is to examine if online communities are worth the effort and investment and if they actually make a difference in increasing the efficiency of an organization. Does the community approach to learning have an educational value? Does participating in a community make learning immediate, practical and real? Does participation in online communities provide opportunities for participants to learn anywhere, anytime? The multicultural nature of Cyprus raises another question: is participation in communities influenced by gender, ethnicity and other socioeconomic factors? Can we 'design anything resembling community' online? (Barab et al., 2001).

The technological challenge faced by designers of online communities relates to the continuous development and improvement of tools that will allow participants to utilize them without a steep learning curve. Transparency in user interface design and human–computer interaction is a critical component of successful integration of technological innovations within education and training settings and influences the adoption rate of such technologies. Higher education institutions in Cyprus can engage in research and development of such tools accounting for the diverse cultural backgrounds of the region.

# Concluding thoughts

Successful higher education institutions, with their undergraduate and graduate education offerings as well as with their contribution in research and development, are important components of education in Cyprus and the region. Once private higher education institutions earn university status, it will allow them to receive funding from European resources and freely establish partnerships with educational institutions and organizations around the world. Ending the monopoly of the University of Cyprus will benefit all Cypriots and the University of Cyprus itself. Healthy competition and collaboration between the University of Cyprus, the CMEC and future private universities can only benefit education in the region and the country as a whole.

Establishing a clear vision for the future is not an easy task, particularly when one deals with technologies that change so rapidly. The most critical challenge facing higher education institutions is how to develop the capacity for change and remove the barriers built into their cultures that prevent change. In addition to increased funding, what will facilitate the development of advanced educational technologies is the restructuring of the education system in ways that will remove the barriers placed on attempts for change and innovation. Technology drives reform. However, reform cannot happen without the use of technology and serious strategic planning. Establishing a technology strategy within which online communities and technology-based learning can be planned and developed for providing training, continuous support and professional development for professionals, is just one of the many ways in which the establishment of Cyprus as a regional education centre can be realized.

#### References

Barab, S, Scheckler, R and Makinster, J (2001) Designing system dualities: Building online community. Paper presented at the Annual meeting of the American Educational Research Association, Seattle, WA, April.

Bates, AW (2000) Managing technological change: Strategies for college and university leaders, Jossey-Bass, San Francisco, CA.

Chrysanthou. C (2002) Education: hopes and challenges. *Phileleftheros*, 10 February, B1.

Daniel, SJ (1996) Mega universities and knowledge media: Technology strategies for higher education, Kogan Page, London.

Duderstadt, I (1999) Can colleges and universities survive in the information age? In Katz, RN and associates (eds) Dancing with the devil: Information technology and the new competition in higher education, Jossey-Bass, San Francisco, CA.

Eurydice (2000a) Information and communication technology in the education systems in Europe. Available online: http://www.eurydice.org (accessed September 2001).

Euryclice (2000b) Key data on education in Europe: Information and communication technology in the education systems in Europe, 4th edn. Available online: http://www.eurydice.org (accessed September 2001).

Information Technology Group (2000) The use of computers in primary education, Cyprus Ministry of Education and Culture, Nicosia.

Information Technology Group (2001) The use of computers in primary education, Cyprus Ministry of Education and Culture, Nicosia.

International Institute for Educational Planning (1997) Appraisal study of the Cyprus education system, UNESCO, Paris. Mason, R (1994) Using communications media in open and flexible learning, Kogan Page, London.

Mavroides, G (2002) Public and private universities in Cyprus: common vision and goals for the future, Phileleftheros, 24 February, C4.

Owston, RD (1997) The World-Wide-Web: a technology to enhance teaching and learning? Educational Researcher, 26, 2, 27–32.

Republic of Cyprus (1998) Annual report on education 1998, Ministry of Education and Culture, Nicosia.

Republic of Cyprus (1999) Annual report on education 1999, Ministry of Education and Culture, Nicosia.

Vrasidas, C (2001) STAR-Online: Building online learning communities for professional development and continuing education. In Manolopoulos, Y and Evripidou, S (eds) Proceedings of the 8th Panhellenic Conference on Informatics, Nicosia, Cyprus, Livani Publishing, Athens.

Vrasidas, C and McIsaac, M (2001) Integrating technology in teaching and teacher education: Implications for policy and curriculum reform, Educational Media International, 38, 2/3, 127–132.

Zembylas, M and Reese, G (1999) The troubles with technology: a study of teachers struggling to use computers in career-oriented classrooms. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada. April.

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