DISTANCE EDUCATION INFRASTRUCTURE POLICY IN PRIMARY AND SECONDARY EDUCATION IN GREECE

Giorgos Gkorogias, Christos Zotos, Maria Mitroulia, Stefanos Armakolas

Abstract

In the present study, we investigated the infrastructures as they are presented through techniques and applied distance education programs in Greece. Information and Communication Technologies (ICT) that provide significant potential were studied to respond to the request of the flexible training of teachers and their application in Primary and Secondary Education in Greece.

Keywords: *distance education, digital infrastructure*

INTRODUCTION

The Advanced Learning Technologies (ALT) of modern and asynchronous transmission under pedagogical conditions offer important possibilities for the design and implementation of open - multifaceted training programs, giving considerable flexibility to the place, time and pace of learning (Anastasiadis, 2007) and the development of critical thinking through their creative integration in wider social and cultural context (Carr & Kemmis, 2002).

Teacher training is certainly a dynamic process, which is influenced by both the socio-political context in which it occurs (Vergidis, 1995), as well as by the general social structures and changes that occur in the context. Their active participation in innovation processes seems to be an important tool for changing their educational behaviour (Carbone & Eaton, 2008; Mclntyre & Byrd, 1998). It is an undeniable fact that training nowadays must be continuous, due to the fast advancements in science.

The new cognitive tools establish the framework in which the necessities and priorities of the orientation of education emerge (Giavrimis, 2011). The human factor plays a determining role in the success of the contemporary educational practices.

It is unquestionable that the present era is digital, and we must accept as a social reality the fact that digital specialization is redesigning and redefining the educational scene (Ryymin, et.al 2017). An additional powerful factor that gives incentive to teacher training is the increasing job demands.

DISTANCE EDUCATION INFRASTRUCTURE POLICY

Policies in the countries of the European Union over the last decade respond to this need to cultivate skills in education staff at every level (Agenda 2030). Regarding our country, on the official website of the Pedagogical Institute, one can find the balance between the national policy and the policy of EU for the education and training of teachers of both primary and secondary school (https://e-pimorfosi.cti.gr/to-ergo/gia-tin-epimorfosi). The utilization of Digital Technologies in education or Information and Communication Technologies (ICT), as it has been established, must contribute substantially. In addition, it must bring positive results in the process of teaching and learning.

In Greece, the need to improve the ICT knowledge and skills of the educational community was initially approached with the training of teachers in basic ICT skills in the period 2000-2004, known as "Training A 'level ICT" and then with the training in the utilization and application of ICT in the teaching practice, known as "Training B 'level ICT".

In 2020, the Mechanism for Organizing and Conducting Training Actions Utilizing Digital Systems was officially published, in the context of developing a National Teacher Training System. The training mechanism will support the organization and conduct training activities based on the blended learning model (i.e. a combination of face to face, modern distance learning sessions and asynchronous actions, in an appropriate context, depending on the subject, teaching material and / or other conditions), will include as a fundamental term the THEMATIC OBJECTIVES or THEMATIC UNIT and will include as components: a) procedures, b) systems and c) specifications - standards.

The ministry through its competent bodies and services will be able to: a) conduct assessment questionnaires and collect data in order to identify training needs. Also, it will conduct other relevant processes that will contribute to the decision-making and policy-making of teacher training b) centrally monitor the progress of the ongoing trainings, through appropriate reports that will be designed and made available for this purpose (c) monitor and, where appropriate, coordinate and support the efficient execution of training at regional level, through the relevant regional support structures or training staff; d) make further use, through the executives or other regional structures of education or central services, of the complete material of the thematic objectives that will be developed and will be available through the mechanism infrastructures; e) raise awareness of the educational community in matters of training related to the implementation of new educational policies, etc., f) publish appropriate material for the dissemination of results of training actions, etc., g) it can take on the role of implementing body for certain trainings, to design and / or implement new thematic training objectives, new training actions and in general to have the possibilities mentioned in the previous paragraph that concerns the ministry bodies - units / structures of implementation of the training.

For the development of the training mechanism support platform, the systems and applications developed and utilized by Computer Technology Institute and Press - "Diophantus" can be gradually utilized for the implementation of the B 'level ICT training, which can be adapted and expanded to meet the new requirements of the mechanism. It includes the following systems and applications:

1 TRAINING AND CERTIFICATION MANAGEMENT INFORMATION SYSTEM (MIS)

It supports all the training procedures (e.g. keeping records, training and certification applications, registration of trainees, keeping presentations, issuing Certificates, etc.) and therefore it concerns all three stages, as described in the previous section. All the involved parties, depending on their role in the training process, will have appropriate access to specific MIS functions that concern them. MIS subsystems include:

1) Thematic Objective Design Subsystem (course): Supports the design of a new material by the respective scientific teams. Its functions include:

a. Creating and introducing in a suitable way the required parameters related to its components (purpose - teaching aims, curriculum, number of teaching hours, etc.)
b. Proper distribution of these elements in the corresponding specialized systems - subsystems - applications of the mechanism, on the one hand for the development of training material and certification material (LMS / CMS and certification applications) and on the other hand for the organization of training activities (relevant subsystems of MIS).

2) Training action planning and organization subsystem. Its functions include:
   a. Identification and introduction of parameters of a training action (e.g., number - geographical distribution of trainees, connection with a specific subject, scheduling information)
   b. Online submission of applications for employment in educational courses (e.g., structures - training implementation units, trainers)
   c. Provision of educational courses (e.g., staffing, timetables)
   d. Validity - feasibility control functions and approval of submitted programs.
   e. Online teacher applications (potential trainees)
   f. Way of selecting and distributing candidates in educational courses (e.g., how to draw online)
   g. Trainees' registration
   h. Production function and printing of appropriate reports – forms for use in case of different user groups (e.g., Executives of implementing bodies, training factors, etc.)
3) Monitoring subsystem for the implementation of educational courses: It supports the conduction of the course and the procedures required for it. Its functions include:
   a. Keeping attendance records (trainees, trainers, and any other training factors)
   b. Organizing and monitoring functions of on-site control visits - Data recording and preparation of relevant reports
   c. Certification organization functions (Certifying Body Functions) where appropriate (e.g., online submission of applications, where required), recording and publishing of test results.
   d. Function of production and printing of appropriate reports - forms for use on a case-by-case basis by different groups of users (e.g., Implementing executives, training factors)
4) Subsystem for the completion and documentation of training activities: It supports the processes of completion and documentation of training activities and programs. Its functions include:
   a. Production of training program documentation forms and / or certification (e.g., collecting attendances, reports on the work of employees, etc.)
   b. Production and electronic distribution of Certificates of attendance (for trainees), Certificates of employment (for trainers, etc.) and any other certificates
   c. Designing, distributing, and completing online evaluation questionnaires for different groups of users (e.g. trainees, trainers)
   d. Producing and printing of appropriate reports - forms for use on a case-by-case basis by different groups of users (e.g. executives, training factors).

Specific standards included in the Training and Certification Management Information System (MIS) include specifications and course design instructions, specifications, and instructions for creating - maintaining registers, specifications, and programming instructions, as well as organizing and conducting training activities.

2 ASYNCHRONOUS DISTANCE EDUCATION SYSTEM, E-LEARNING MANAGEMENT AND TRAINING MATERIAL DISTRIBUTION SYSTEM (LMS/CMS)

It mainly refers to the support of the asynchronous part of the mixed training model, as well as the development and distribution of the training material to the interested parties (trainees, trainers, and any teacher who is interested). In particular, the functions and tools it supports include:

- Possibility of developing and marketing "Classical» e-courses (Moodle platform)
- Ability to develop and make MOOC (Massive Open Online Courses) format courses available (e.g., edX platform)
- Ability to establish and maintain e-portfolio trainees (e.g., Mahara)
- Ability to utilize VMs to meet specific requirements of thematic objectives (e.g., training of technical laboratories, internet security)
- Tools for writing training material and educational activities (e.g., study - reference material, sample activities and assignments, instructions and auxiliary material for the trainer, instructions for the trainee), with appropriate specifications for use in the context of a mixed learning model
- Library tools and functions / digital material repository for access to the training material through a specialized complex search engine and / or the interface with other existing repositories (e.g., photodentro.edu.gr)
- Communication tools for trainers - trainees (e.g., forum, chat)
- Tools and functions of assigning, submitting, providing feedback and evaluating-grading tasks.

Users of the system are basically the scientific teams of design and development of thematic objectives, the authors of training material, the trainers, and the trainees (with appropriate access rights). Also, the training material will be freely available to the educational community. For the development of the material of the thematic objectives (courses) specific standards will be elaborated in the form of specifications and instructions for the authors, for each of the offered subsystems.

3 MODERN DISTANCE EDUCATION SYSTEM

It concerns and supports the modern distance part of the mixed model training and in particular the conduct of modern distance sessions. In particular, the functions and tools it supports include:

- Virtual classroom management and operation tools such as, video conferencing, application sharing, whiteboard, presentation, chat, voting, recording, etc. Depending on the extent of the required training programs, Open-Source products will be utilized (e.g., Big Blue Button) or other (e.g., Blackboard Collaborate).

- Virtual worlds development and utilization tools (e.g., OpenSim), to support special requirements in modern distance communication. Access to the "virtual rooms" of the programs will be generally through LMS / CMS platform (Moodle). Users of the system are the trainers and the trainees, as well as competent executives of the training implementation body.

3.1 FEATURES OF DIGITAL PLATFORMS

According to Tim O'Reilly (2011) he was the first to use the term GaaP (Governance as a platform) to describe a new form of government that operates and provides services in a digital and participatory manner. Next, O'Reilly outlines the seven key principles of GaaP:

- Openness: Participation in the platform is free for everyone and the operating rules and standards are known and open, set by the platform provider and addressed to all potential users, who are either individual citizens or organizations or other public authorities.
- Simplicity: To achieve the maximum possible participation, a platform is not enough to be formally open but to have short and understandable terms of use and to require the simplest possible handling through a friendly API.
- Participation: In general, user participation can be passive - formal, with comments and feedback, or it can be active - substantial, with new ideas, new data, and new applications.
- Tolerance in the initiative: There are cases that users of a platform can use it in ways that are legal and normal but were not provided by its creator.
- Adequacy of appropriate data. All applications require specific types of data to produce the desired outcome, otherwise not all their functionality is used.
- Experimentation and tolerance to failure: Participating in a simple, open platform with appropriate data adequacy where it is practically allowed not to be explicitly prohibited. Besides, that is not enough to guarantee success.
- Setting a good example: The platform provider itself can include some applications - examples that he developed to help the most inexperienced users and to spread good practices.

4 CERTIFICATION APPLICATIONS

These applications support the development of the certification material (writing questions - AutoCorrect issues and free development), as well as the organization and conduct of digital certification exams (test creation, digital examination, etc.). In particular, the applications - tools available and the functions they support include:

- Certification material writing tools (auto-correction issues and free development issues).
- Operation quality control and life support certification cycle issues.
- Operation and maintenance of a "test question bank" (classification by degree of difficulty, theme etc.).
- Tools for creating certification tests, drawing contents from the "test question bank", with specific assembly rules (e.g. Issues Selection of graded difficulty, certain sections of the curriculum).

- Applications to support digital exams through testing - self-correction and / or free development test topics.
- Electronic writing grading support applications (free development topics).
- Electronic distribution and authentication applications of certificates.

5 CENTRAL TEACHER TRAINING PORTAL

It will be informative and communicative, as it will provide:

- Information on the development and implementation procedures of the training actions through announcements and information material that will be published there, provision of educational material and management material,
- Participant's communication tools (e.g., Forum) in training,
- Frequently Asked Questions (FAQ) answers authorized access to other Operation support systems and infrastructures (e.g., MIS, LMS / CMS, Help Desk) with LDAP and Single Sign On support for shared user base etc.

Portal subsystems include:

1) Information - Announcement subsystem etc. which will support the functions of posting and publishing articles and announcements on the issues of training actions, with users, the competent executives of the implementing bodies (for the posting) and anyone interested in receiving the relevant information.
2) Material Distribution Library Subsystem which will support posting and distribution (with graded access) functions of material (e.g. material related to the organization and management of training activities, information and other training material), with users the competent executives of the implementing bodies (for posting) and trainers, trainees, other stakeholders as appropriate.
3) Communication and Support Subsystem of learning and practice communities which they will be supported and available:
    - Communication and collaboration tools (e.g. forum, wikis or/and other tools, web 2.0) for the operation and support of learning and practice communities, for various groups of teachers (especially after the completion of the training activities, in addition to the tools of the asynchronous distance education system).
    - Tools for conducting and filling out online questionnaires e.g. to receive feedback from the educational community on training needs (detection of training needs).
    - Users of the subsystem are the trainers, the trainees and the educational community in general, as well as the executives of the implementing bodies and the Ministry of Education.

6 ONLINE REQUEST MANAGEMENT SYSTEM (HELP DESK)

This is an e-ticketing system for receiving user queries that will support:

- Users of the subsystem are basically the support groups of the training actions, but also other competent executives of the implementing bodies.

7 REPOSITORIES

For the development of the educational material and the educational activities for the trainees it is possible to use repositories that have been developed and are available to the educational community through previous relevant actions of the ministry, such as the Photodentro, Aesop, interactive textbooks, etc.

As mentioned above, for the utilization of the above systems and infrastructures of the training mechanism by the various groups of users, where required, standards will be developed in the form of specifications and instructions for use (e.g. specifications and development instructions for authors of training material, certification material, standards and guidelines for the organization of a training activity, specifications and instructions for the establishment - renewal of a register of trainers).

CONCLUSION

Distance education has been recognized as an educational practice, which supports a model of access to knowledge, which is flexible. In other words, it provides the possibility of education and training to a numerically larger audience than what is supported by the respective traditional forms of training. In fact, the development and spread of Web has given additional impetus to the field of distance education. The implementation of adult education programs and teacher training can be carried out by utilizing the basic principles of distance education, enhance their skills both as citizens of the world and as professionals of a modern world. It is very difficult to describe and systematize its demarcation, due to its varied and special features and its various programs. In general, in the context of distance education, various educational programs are organized by specialized scientists to satisfy the needs of those involved in its operation and to transfer knowledge, without the need for the physical presence of the trainees.

Distance Education is a very dynamic and evolving field, which seems to be the natural evolution of a branch of education that focuses on the human-student and with absolute respect for the needs, expectations and personal time tries to activate these processes that will offer the best learning outcome (Lionarakis, 2006). According to (Lionarakis, 2005), a key concern that has been developed in recent years by many researchers, regarding distance education and improving the effectiveness of learning through it, whether distance education is defined by specific tools and instruments transfer of information or from the logic of design and development of teaching material.

Now, as it is obvious above, new information systems are created that operate based on this logic, modernizing learning and at the same time utilizing a variety of data from various individual computers. The infrastructure is constantly upgraded. In this way the training options widen. User experiences, giving a useful and satisfactory character to the use of the Internet, as it is called to serve educational purposes (Kaput, 2007). At the same time, it promotes the autonomy and self-action of the trainees, creating a learning environment that adapts to their needs and choices and facilitates their

interaction. By intervening in this environment, they can also give personal characteristics and facilitate the essential learning and easy distribution of educational material (Keagan, 1994).

References

1. Anastasiadis, P. (2007). Teaching Utilization of Interactive Teleconferencing in the Modern School: A Social-Constructive Approach. In Lionarakis, A. (ed.). Forms of Democracy in Education: Open Access and Distance Education. *Proceedings of the 4th International Conference on Open and Distance Education* - Athens 23-25 November 2007. EAP, Open University of Cyprus, Hellenic Network of Open & Distance Education, Propompos Publications, 668-681.
2. Carbone, R. E., & Eaton, P. T. (2008). Prospective teachers' knowledge of addition and division of fractions. Retrieved from: https://vbn.aau.dk/ws/portalfiles/portal/212829223/ICME11_TSG10_2008.pdf#page=40
3. Carr W. & Kemmis St., (2002) Για μια κριτική εκπαιδευτική θεωρία – εκπαίδευση, γνώση και έρευνα δράσης, Εκδόσεις κώδικας.
4. Crook, C., Cummings, J., Fisher, T., Graber, R., Harrison,C., & Lewin, C. et al. (2008). *Becta report: Web 2.0 technologies for learning: The current landscape –opportunities, challenges, and tensions.* London, UK: BECTA
5. Giavrimis, P. (2011). Training as an object of structural ambiguity of teachers' action. In A*. Papastamatis, E. Balkanos, E. Panitsidou & G. Zarifis (eds.) Lifelong learning and adult educators: Theoretical and empirical approaches.* (275-298). Thessaloniki: University of Macedonia.
6. Keagan, S. (1994). *Cooperative Learning*. CA: San Juan Capistrano.
7. Kaplan, A., & Haenlein, M. (2009). *The fairyland of Second Life: Virtual social worlds and how to use them.* Business Horizons.
8. Kaput, J. (2007). *Technology becoming infrastructural in mathematics education.* Models & Modeling as Foundations for the Future in Mathematics Education.
9. Lionarakis, A. (2005). Open and distance education and learning procedures, at A. Lionarakis (Ed.), *Open and Distance Education. Pedagogical and Technological Applications.* Patras: EAP 310.
10. Lionarakis, A. (2006). The theory of distance education and the complexity of its polymorphic dimension. In *A. Lionarakis, ed., Open and Distance Education - Elements of theory and practice*. Athens: Propobos.
11. Manousou, E. & Chartofylaka, T. (2011). Social networks and social media in distance higher education. In *2nd Panhellenic Conference "Integration and use of ICT in the Educational Process*", pp. 497–509, Patras.
12. McIntyre, D. J., & Byrd, D. M. (1998). *Strategies for Career-Long Teacher Education.* Teacher Education Yearbook VI. Corwin Press, Inc., A Sage Publications Company, 2455 Teller Road, Thousand Oaks.
13. Ophus, J., & Abbitt, J. (2009). Exploring the potential perceptions of social networking systems in university courses. MERLOT. *Journal of Online Learning and Teaching,* 5(4). PMID:21546994.
14. O'Reilly, T. (2011). Government as a Platform. *Innovations: Technology, Governance, Globalization*, *6*(1), 13-40.
15. Sessums, C. (2006). Weblogging and teacher learning: getting the most out of the online social networks. Retrieved from: http://eduspaces.net/csessums/weblog/134953.html
16. Skoullos, M. (2007). Conceptual clarifications on education for sustainable development (SEN) as reflected in UNECE strategy indicators. Science Teaching and New Technologies in Education. Teaching of Natural Sciences and New Technologies *in Education, Proceedings of the 5th Panhellenic Conference*, Issue A.
17. Rymnin, E., Kunnari, I., & D'Andrea, A. F. (2017). Digital Solutions in Teacher Education enhance Wellbeing and Expertise. *Journal of Finnish Universities of Applied Sciences*, (1).

18. Zhang, J. (2010). Social media and distance education. Retrieved from: http://deoracle.org/online-pedagogy/emerging-technologies/socialmediaanddistanceeducation.html?PHPSESSID=adb9b0c9f094d0d923de6f3b3f65ef7a

Contact

Stefanos Armakolas
Department of Education
School of Pedagogical & Technological Education
e-mail: armakolas@aspete.gr