

The asynchronous distance education by means of Internet: factors that influence its effectiveness. The case of Hellenic Open University

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This article presents the findings of a research conducted in the field of asynchronous distance education by means of Internet. The research is focused on the current environment of the Hellenic Open University (HOU) and tries to identify the factors affecting its efficiency. The research is an analysis of this environment and presents similar environments operating on European and global level. Moreover, it contains an analysis of the environment's current condition of use, based on the statistical data obtained from HOU Laboratory of Educational Material and Methodology; Furthermore, this article contains the answers from the interviews given by 4 tutors who make use of the specific environment and 24 students (3 per tutor, who make relatively broader use of the specific environment and 3 students –per tutor– who make more limited use of the environment). The answers to the relevant questions are presented per category, based on the classification made during the study of international bibliography. Lastly, further to the description of "what's going on", discussion is made as to the true meaning of the findings of this research.

Key words: Asynchronous Distance Education, Asynchronous Learning Networks, Learning Communities.

I. INTRODUCTION

One of the means used in distance education during the last fifteen years is asynchronous distance education through the Internet. The purpose of this article is to identify the factors affecting the efficiency of this environment. This research was stimulated by a relevant observation made during an HOU Forum within the scope of a previous study [1], which referred to Forum modeling for distance learning purposes through the use of a formal language. This study however, focuses on the factors affecting the efficiency of asynchronous distance education through the Internet. According to observation and international bibliography, these factors can be classified into three categories based on the participants: a) students b) tutors, c) designers.

II. THE ENVIRONMENT OF ASYNCHRONOUS DISTANCE EDUCATION BY MEANS OF INTERNET IN THE HELLENIC OPEN UNIVERSITY

The environment of asynchronous distance education through the Internet used in the HOU has been developed both for communication purposes, i.e. as a supplement to other communication methods, such as: written or telephone communication or face-to-face communication (group consulting meetings between tutors and students), e - mail etc. as well as for purposes of presenting the educational material of the courses taught in the HOU.

The connection procedure with HOU environment of asynchronous education through the Internet is simple. Connection is made through the HOU portal from electronic address <http://www1.eap.gr>, or directly through electronic address <http://online.eap.gr>.

A. My places

At the entry there is an electronic location for each student (My places), which contains the "working places". According to the design, each course has its own working place. Moreover, there are places for HOU electronic library and places where one can find directions of use of the environment.

B. Directions

At the "quick place help" link one may find the following:

Introduction, where it is specified that its purpose is to provide all information and direction necessary as to the action options offered to the students in that place. It is further specified that the working places are the course places, which have been defined to contain the material needed by the students and useful information and fora for purposes of cooperation between tutors and students.

Directions to enter the places: by clicking on link "Education" one enters the place where they can find the forum of their department, which is accessible only by the specific department (Department XX), as well as the course's forum, which is freely attended by all students and tutors.

Directions as to the options provided by the Forum: here, reference is made to the *New* and *Cleanup* options. By clicking on "New", one is able to set a new subject for discussion, whereas by clicking on "Cleanup", one is able to erase certain student messages (each student may erase his/her own messages).

Moreover, directions are provided on how to write a message (title, attachments, posting or simple storage). Furthermore, there's the "Respond" option, where students

can create an answer, which, once published, will appear below the subject answered to and the "Revision" option, where the subject that they have selected to answer or modify also appears.

C. Frequently Asked Questions

In link "Frequently Asked Questions" one can see the questions most frequently asked by the students, e.g. how they can speak with somebody through the Internet, with relevant Skype directions or directions on how they can view the teaching material or the papers presented for the course they have selected.

D. Course places

Link "Course Places" contains sub-links relating to:

Organizational matters: This link contains information about the Teaching material of each course, as follows.

Teaching material, which contains the Teaching material –such as volume titles. Students can actually access the contents of each volume.

Academic Journal, which contains information about: the studying schedule and written paper delivery schedule, the Group Consulting Meetings schedule as well as the final and iterative examinations schedule.

Administrative support, which provides the relevant telephone numbers and e-mail addresses of both the Course's Executive Director and teaching material distribution unit.

Written Papers, which contains links where students may obtain information on issues such as: the importance of written papers, subject determination procedures, the correction and dispatch of written papers, the grading of papers etc.

Examinations, which contains links where students may obtain information on issues such as: examination material, terms of participation, examination topics and organization of course exams.

Rooms. Where the Group Consulting Meetings are carried out.

Teaching. Which provides the details of the tutors of each Course.

Classes. Where students can see how the students of each course are divided into classes.

Education. Which contains the following sub-links: *Useful Material, Papers, Announcements, Frequently Asked Questions, Course Forum.*

With regard to the *Course Forum*, this is an asynchronous discussion environment, which enables the students to discuss the contents of their educational material with their fellow students, or ask questions to the tutors during their study and get the answers. Tutors are able to designate to the students specific subjects of discussion, which are closely related with the topics of both the course's educational material and the relevant exercises /papers.

From the technological potentials that the particular environment appears to have, it seems that it could be also used for the following purposes:

- The assignment of exercises / papers by the tutors to students;
- Students solving and delivering the exercises to the tutors;
- Tutors delivering the corrected papers to the students;
- Students getting observations / corrections on their papers by other students;
- Students getting the correct answers and solutions to the exercises and find sample papers.

From the description of HOU distance learning environment (Cf. Fig. 1) it becomes quite clear that this environment has been developed in such a manner as to provide technological support to education in the "combined learning" approach, which combines "face-to-face" interaction with the tutors through the discussion fora with the "customized learning" process. Every student using this learning environment through the alternative facilities of the discussion tools described above, can study and explore the teaching material and participate in activities, resolve exercises and find the answers at *his/her own pace and place*, in accordance with the principles of distance learning.

Whether this technological potential is actually being utilised, to what extent and what are the reasons for failure are the question that will be fully exploited questions to which this paper.

II. THE FACTORS AFFECTING THE EFFICIENCY OF ASYNCHRONOUS DISTANCE EDUCATION BY MEANS OF INTERNET: TUTORS, STUDENTS, DESIGNERS.

According to Usrey [2] the *factors* affecting the efficiency of asynchronous distance learning are: a) the student; b) the tutor; c) the contents; d) the environment; and e) the *students' community* (as a whole).

A relevant research conducted by Vonderwell [3] has led to the conclusion that asynchronous education is affected by the following relations: a) *between students and tutors*; b) *between students* and c) *between students and the teaching material*.

The relevant bibliography shows that the factors affecting the efficiency of online distance learning can be classified in three categories depending on the parties participating in it: a) students b) tutors and c) designers.

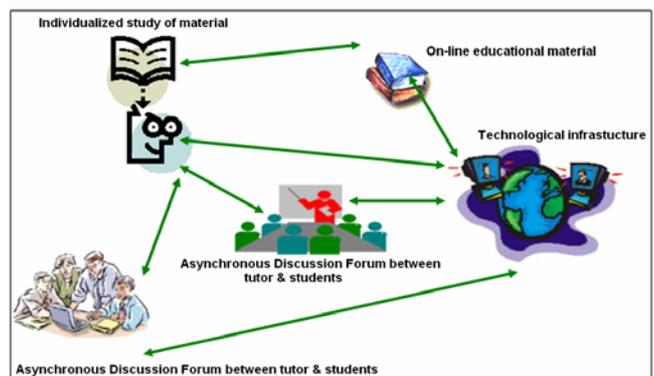


Fig. 1. General view of HOU's distance learning environment.

A. Students

The relevant research carried out by Hastings [4] on students from 23 different courses (distance learning) using asynchronous education through the Internet in the Community college of Monroe (New York) has shown among others that when asked "what is the biggest disadvantage of the courses in asynchronous distance learning through the Internet", 37% of the students replied that it was "lack of face-to-face contact".

Moreover, the study of Green, van-Gyn, Moehr, Lau and Coward [5] –which explores how satisfied first-year students are from the use of new technologies in health informatics– shows that "although the students agreed that their education has been improved (73.1%), they expressed (69.2%) a feeling of uncertainty, which was the biggest part of the negative feedback of this specific research".

Pei, Sho and Yun [6] have point out the following problems that need to be addressed in environments of Asynchronous Learning Networks (ALN): (a) lack of *satisfactory directions as to the use of the environment* (b) *deficient technical support* (c) *possible inaccuracy of the directions as to the interaction* between the students and the *flexible deadlines* within which messages can be forwarded in a discussion (d) *non encouragement of the cooperation* between students (e) *failure to designate roles clearly* (f) *lack of feedback* (g) *failure to remind* the students of the upcoming expiry of the deadlines and (h) *failure to make a summary* at the end of the discussion.

B. Tutors

As for the role of tutors, Tinker and Feknos [7] have stressed that tutors are no longer the "great coordinators" in this "bold new educational working environment, but rather, they become more and more mere administrators of the systems for the delivery of software and material developed or delivered by other experts. *Such lack of control and autonomy* often makes tutors feel incompetent when faced with changes that seem to take place beyond their control.

Kanuka, Collett and Caswell [8] have reached the same conclusion. While exploring at the University of Alberta (USA) the *tutors' notion* of the impact that the incorporation of asynchronous communication technology into the courses of distance learning has on education, they identified certain problems relating to "technical, managerial, social and pedagogic issues".

Whiteman [9] underlines certain problems concerning the tutors participating in asynchronous distance learning schemes, such as: (1) *Failure to create an environment of interaction and cooperation*; (2) *non-conformity between the contents* included in the papers assigned and the *communication tools* (3) *frequent failure by tutors* to view their role from the standpoint of an adviser.

C. Designers

Referring to the professionals that design these educational environments for adults, Whiteman [9] points out the following problems: (1) students are unable to *create the environment* (ideal working place in the internet) in which they can act and "sense" the new information (2) *low degree of interaction* (3) *lack of feedback mechanisms* (4) *deficient and inaccessible technical support*.

Gale, Bourne and Thompson [10] have done research on the development and maintenance of electronic environments used for "teaching" through the Internet, (they call it "asynchronous learning networks - laboratory ALN) at the University of Vanderbilt - on the innovation in the education of applied mechanics – which (research) addresses some issues of WWW site design, including the consistency (that should be governing) the resources, the colors and the backgrounds that maximize readability and minimize the time spent for the transfer of pages. The research findings are accompanied by dialogic examples.

This research has been triggered by the above findings. The findings of our research are presented below.

IV. FINDINGS

A. Indicative statistical data

The following data are set out by way of indication:

Out of most 10 powerful users of the HOU environment of asynchronous distance learning, no one belongs to a cognitive field other than information technology; actually 6 out of 10 belong to the same course (module INF11).

Six out of the 10 most popular web sites belong to information technology courses and the remaining 4 are websites used to enter the specific environment; hence, as regards the nodes of educational contents, 6 out of 6 most popular websites (with educational contents) relate to information technology.

Additionally to the above, even in an alternative environment, (<http://eap.forum.gr>) we note that only 2 out of 5 links to undergraduate departments are active, and only that of information technology is being used, having 22272 subjects against 5 of the other active link (Greek culture), and with 3373 users against 71 users respectively.

Thus, one can easily reach the conclusion that even though the specific environment could be sufficiently utilized (this applies only where the cognitive object is information technology), it is not being utilized by the overwhelming majority of the remaining HOU students.

Another significant element is that - from the statistical data presented on the monthly activity (of users)¹- we note that October, November and September (in that order and quite close from one another) are the months presenting the highest

¹ During July 2005- March 2006, and they relate to: a) Number of "clicks" on links of the particular environment b) Number of visitors and c) downloads/uploads (in KB).

activity in all three figures measured. As already mentioned, what is remarkable is that during the following months, during which the educational procedure is at peak, the use of this particular environment sees a significant fall –in the entirety of HOU students and tutors, which proves that the particular environment is not being actively used throughout the academic year to cover educational needs, but only at the beginning of the academic year (September – October), most probably for information purposes. If this environment was utilized –at a relatively high degree– then it should be expected to be at peak throughout the "active months", excluding summer (July - August).

B. Answers to questions per category

Research data has been collected from 3 sources: a) tutors teaching courses by making use of the environment of asynchronous distance learning through the Internet b) students attending the specific courses and using this specific environment and c) a representative of the work team that designed this particular environment.

1) Tutors

As regards to the tutors using the HOU environment of asynchronous distance learning through the Internet, 4 of them were interviewed. The questions asked to them are categorized as follows: a) information and guidance issues; b) encouragement issues; c) usefulness and usability issues and d) issues pertaining to the perception of the position and the role of tutors in this particular environment. The answers provided per category of questions are presented below:

1.1) Information and guidance issues

When asked: "Were you informed of the existence of this particular environment? If yes, how?" the tutors replied that they had been informed of the existence of this environment by HOU, as follows:

- By letter, which contained the user name and password and a brief reference to the potential offered by this environment;
- By email, containing the same information as the letter;
- From the relevant HOU website, which provides directions for use;
- By the course director (it should be noted though that this applies only to tutors of undergraduate departments of information technology).

When asked "Did you have any other type of guidance on how to use the environment?" they replied that they had not been provided with any other type of guidance, with certain differentiations as to the reasons:

- With regard to information technology tutors, such guidance was considered unnecessary.
- With regard to tutors of others courses, they were probably not interested enough to seek such guidance.

When asked "what other type of guidance would you like to have?" they replied as follows:

- Through manuals, containing detailed directions of use of the specific environment.
- Through seminar meetings, where the potentials of this environment would be presented.
- Through a help desk where technical questions could be answered.
- Through the establishment of a special service supporting the operation of the environment.

1.2) Encouragement issues

The answers to the "Were you encouraged to make use of it?" varied depending on the tutor's object. In particular, IT tutors replied that they were encouraged by the course directors, who "warmly encouraged" them to use this specific environment by stressing the educational value of such use. However, given that these are people of computer "culture", they were already convinced of the value of such use.

On the other hand, non-IT tutors stated that they were not encouraged to use the new environment but found out its usefulness when they got connected to it.

When asked "Do you believe that a financial motive would enhance the use of the particular environment by tutors?" – which was asked in an effort to identify motives to use the specific environment - they gave similar answers. No one considered this to be an important motive for using the particular environment and they definitely did not consider this as an efficient way of convincing them to make such use.

1.3) Usefulness and usability issues.

When asked "Do you think that this environment has helped you at your work?" all tutors replied positively and they even specified the fields of such usefulness, which indicates that their positive attitude is not just theoretical and abstract, but very practical, deriving from their personal experience of the use of this environment. In particular, the tutors who were asked this question not only consider this environment as very useful but also specified such usefulness as follows:

- Additional teaching material which is not included in the books of the relevant course;
- Additional exercises and activities;
- Provision of explanations to specific questions from students;
- As a communication means that will replace – to a certain extent –telephone and email communication and will provide more time for tutors to handle substantial educational issues.

At this point it should be noted that tutors seem to perceive the usefulness of this environment in its correct dimensions, i.e. as an *additional means* of the educational process rather than as a *redundant means* that must be used just because "it's there".

When asked "Do you think that the size of a team (i.e. the number of students comprising it) affects the efficiency of the use of this environment? If yes, which fields are affected?" all tutors gave answers that fall into line with two basic findings:

- The size of the team is not fundamental when it is only used as a communication means;
- The size of the team is fundamental when it is used in issues pertaining to very core of the educational process, e.g. when used to assign papers to students, or for commendation on the corrections of their papers through personal references to each tutor etc.

When asked "Do you think that the communication tools provided are equivalent to the contents of the papers assigned to the students?" the tutors provided relatively similar answers: that these two figures are relatively equivalent. Again, there is some differentiation between IT and non-IT tutors, with the former ones getting into deeper issues, such as, apart from the informal exchange of messages, the answers to particular questions, date management, activity directions, collection of views etc.

1.4) Issues pertaining to the perception of the tutors' position and role as to the specific environment.

When asked "Do you feel that you have lost control of the team due the use of the new environment?" the tutors provided invariable answers, which means that they felt exactly the opposite: Not only they don't feel that they have lost control over the team but they perceive of this environment as an additional possibility provided for that purpose exactly and they see it as a significant tool that enables them to inform their students on various issues and at the same time obtain information as to how many and which students have been informed. Moreover, they perceive it as a fast and efficient way to know at any given moment what's going on in the students teams, the students' questions, considerations etc.

When asked "Do you think that the independence of your educational role is being limited or that you are given an opportunity to enhance such independence?" the tutors, notwithstanding the position of Kanuka et al. (2002) and Tinker & Feknous (2003), replied that not only their independency is not being limited but they see this environment as an opportunity to enhance that independency. They don't perceive it as a factor that hinders their educational autonomy but rather, they think that this is a matter of approach on part of each tutor.

When asked "Do you think that your role as tutors (in the traditional sense) has changed into the role of advisers - instructors?" all tutors provided the same answer, i.e. that in an open education institution, such as HOU, the role of tutors is essentially of advisory-instructing nature.

Lastly, the tutors where asked the following summarizing – conclusive question: "Do you think that this could help your work in the future? If yes, under what circumstances?"

From the answers provided it becomes clear that the tutors are already assisted in their work by this environment and that they think that they could be assisted considerably more in the future if this environment was used not merely as a communication tool – which is its primary use today – but if it were more broadly used on substantial educational matters.

2) Students

With regard to the students, there were 24 interviews (3 students per tutor, out of those using the specific environment more frequently and 3 students of those who make more limited use). The questions can be classified as follows: a) information and guidance issues b) encouragement issues c) issues pertaining to perception of the usefulness of this environment. The answers provided per each category of questions are summarized below:

2.1) Information and guidance issues

When asked "Have you been informed as to the existence of this environment? If yes, in what ways?" all students without exception replied that they had been informed by HOU as to the existence of this environment:

- By letter from HOU, which contained the user name and password and made a brief reference to the potential offered by this environment;
- By the tutors of the respective courses;

When asked "Did you get any other type of information as the use of this environment?" all students invariably replied that they had not been provided with any guidance by HOU. Those who replied positively (16 out of 24) stressed that they had been informed on certain issues of technical nature by their fellow students.

2.2) Encouragement issues

When asked "Were you encouraged to use the new environment?" the students came up with variable answers. The majority replied (21 out of 24) replied that they had been encouraged by the tutor of the specific course. Three (3) students who replied negatively, had a non-IT tutor and belong to that category of students who do not make systematic but rather only occasional use of this environment. The fact that the other three (3) students who belong in the same course (and therefore have the same tutor) replied positively could be explained as lack of concentration on part of the students (who gave a negative answer) in this particular consulting meeting. So the relevant reference made by their tutor probably escaped their attention.

From the students' answers when asked "What reasons – other than technical difficulties– discouraged you from using the new environment?" it becomes quite clear that those students out of all 4 courses who are regularly connected with this environment, (12 students in total out of 24) had clear views and expressed them through specific observations. On the contrary, the remaining 12 students (i.e. those who make rather infrequent use) they didn't provide an accurate answer or any answer whatsoever.

Hence, from the answers provided by the students as above, we are led to the following conclusions:

- Many links are not updated. I.e. they merely contain the link's title;
- The site is not regularly updated with new material for study;

- It is not used by tutors of specific courses (excluding of courses the tutors who were interviewed for this paper); therefore, they don't have any obvious reason to use it.

2.3) Issues pertaining to perception of the usefulness of the specific environment

When asked "Do you think that this environment would be useful during your studies?" the students answered as follows:

IT students (12 out of 24 students questioned) agreed (fairly to quite strongly) that it had been useful during their studies, with the level of usefulness varying according to the rate of use. That is, IT students, who make broader use (6) stated that it was very useful, whereas the remaining six (6) students, stated that it was "fairly" useful.

When asked "Do you think it will be useful for your studies in the future?" the students –except for one non-IT student (Physics) who makes rare use of this environment– replied positively, whereas in certain cases they even made suggestions:

- For sufficient and constant guidance by "experts" who will help them solve problems, possibly through a help desk that would provide specifications (a similar answer was given by the tutors as well);
- For the entry of appropriate educational material additionally to the printed material distributed to the students;
- For more exercises that would help them in their papers.

3) Designers

As regards this team was represented at the interview by one of its members. The answers given to each questions are as follows:

Q: "Were you in contact with any HOU tutors?"

The answer was that they had contact with a small group of tutors.

Q: "If yes, the group of tutors you were in contact with, was representative in terms of cognitive field and experience in the use of similar educational environments?"

The answer was that the group of tutors they were in contact with consisted of persons relating to Information Technology and that there was no contact with any non-IT tutors, during the design phase, but only later on, during the phase of the environment's operation and maintenance.

Q: "Were you in contact with any HOU students?"

The answer was that they had no contact with any HOU students during the design phase, but only later on, during the phase of environment's operation and maintenance.

Due to the fact that the designers' team representative is an executive at the HOU installations and networks department, the interview reasonably expanded to other issues, pertaining to the environment's future operation and use. Hence, the representative reported us that his department is currently trying to improve the environment, by focusing on:

- Convenient infrastructure;
- Operational stability;
- Avoidance of technical problems to the extent possible;

- Understanding by all users of the way that the environment operates.

Following the above, it becomes clear that the department was aware (also due to the statistical records they keep) of the fact that the environment was insufficiently –i.e. not to the desirable extent– used by HOU students and tutors.

V. DISCUSSION

Based on the description of the environment of asynchronous distance learning of HOU, the answers given in the relevant interviews and the statistical data collected on the environment's use, one may easily reach the conclusion that although all terms that a system like the environment examined herein needs to meet – in terms of Information Technology – were fully met, it is quite obvious that the environment is not utilized to the extent intended by its creators.

The fact that this specific environment is acceptably functional, is proven both by the review presented in the environment's description as well as by the statistical data collected on its use (for a fair period of time, i.e. 12/7/2004 through 31/3/2006-); a successful example of its functionality being the IT undergraduate courses. However, it seems that the majority of the students and the tutors of other HOU courses does not use it as a tool that helps them in the educational process, even though in the relevant interviews they seem to understand its usefulness.

The reasons invoked in the interviews by both students and tutors are similar to those appearing in similar international cases, as same appear in international bibliography. As regards the issue of information and guidance, the number of suggestions made to that effect indicates the problem's dimensions.

A similar picture is shaped from the interviews of students and tutors on the issue of encouragement. That is, there was a variety of different answers depending on the courts and - primarily - of the cognitive field. Moreover, the cause of the discouragement of students to make use of the specific environment were: a) the fact that many links are not updated; b) the fact that the nodes containing some material are rarely or even never updated with new material for study and c) the fact that the environment is not being used by tutors of specific courses, which makes it hard for the to find any obvious reason to use it. The designers' representative has expressed a similar view, i.e. that there is no "obligation" to use the environment.

Nevertheless, both tutors and students seem to understand that the specific environment may be useful in the educational process. Actually, their positive attitude is not theoretical or abstract, but quite clear, deriving from their personal experience in using it, which becomes clear by the fact that they –mainly the tutors– identified specific fields of use, such as: exchanging messages, finding the answers to specific questions, managing dates, finding activity instructions, providing specifications, collecting opinions etc.

Following the above, the question that arises is: "what could be done?" One possible answer would be to set up a support mechanism for the specific environment, not only in

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terms of functioning on IT terms –which is already applied quite successfully– but rather, through a number of activities aiming to encourage the provision of instructions on permanent and constant basis, so as to minimize any feeling of uncertainty, possible fear of the new object, isolation etc, which (according to the findings of this paper and bibliography) characterize distance learning to some extent.

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