A Comparative Study on ICT Use Amongst Greek and Cypriot University Students Through an Online Class

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ABSTRACT
The purpose of this study is to measure previous possessed knowledge and skills, identify behaviors, deem possibilities and abilities of students enrolled in an online ICT course entitled "Introduction to e-learning" in the Department of Primary Education. Students' attitude and aptitude as perceived through their participation and declared by individuals, as well as their satisfaction level has been analyzed and measured. As to other variables regarding attitudes and performance towards ICT's, differences between Greek and Cypriot students were identified. Using Moodle as an LMS, students' reactions in their nearly first-time experience of an online course, had shown positive signs.

KEYWORDS: E-learning, ICT, Moodle

BACKGROUND

In the UNESCO report "A Curriculum for schools and programme for teacher development" (UNESCO, 2002), part of UNESCO worldwide campaign to reduce the "digital gap" amongst developed and under development countries, is clearly identified that Information Communication Technology (ICT) literature should be expanded and through it, a transformation in education should be achieved.

Greece encompasses ICT as a mixture of an educational objective and a tool for education through generous programs for computer infrastructure and technological hardware funding for several years, through autonomous and/or European projects (Information Society, 2008).

A growing body of research suggests that users' attitude about technology is affected by their prior technology experience (Gefen, Karahanna & Straub, 2003; Martins & Kellermans, 2004; Stoel & Lee, 2003). According Volery & Lord, 1999 the amount of experience users has with technology, causes higher levels satisfaction.

Based on the above, a study via an online course titled "Introduction to e-learning" has been conducted in the Primary Education Department at Democritus University, from November until December 2007. The aim of the study was to measure students' existing knowledge, attitudes, and reactions related to ICT, but also in the aspect of how students identified their own abilities, and how they reacted on an online environment according to their established attitude. During the study, differences in skills, beliefs and even performance amongst students entered

University from Greek educational system and students coming from Cypriot schools had been identified. Aim of this particular paper is to analyze these differences and/or similarities amongst the two focus groups.

RESEARCH METHODOLOGY

The online course has been defined as a 12-hour course, divided in 4 aspects. A mixture of instructional design with social constructivism has been used for the preparation of the online course material and the equivalent activities. The primary educational objectives of the course are: (a) To introduce and describe the e-learning forms, (b) To describe the roles in e-learning, (c) To introduce the online asynchronous type of e-learning delivery method, and (d) To identify the advantages and disadvantages of e-learning delivery method.

The secondary educational objective is the familiarization with ICT and, especially the use of educational software such as LMS (Learning Management System) (Dougiamas, 2001). In addition, the students' acquaintance with e-learning, through an online environment, had lead to a mixture of instructional design and of "On the Job Training" (OJT). This combination of theory and practice seemed to function better, as verified from students' replies. Moodle (Modular Object-Oriented Dynamic Learning Environment) has been used for the course preparation and delivery. Moodle is a robust, fully-featured package incorporating various technologies (i.e., journals, quizzes, assignments, glossaries, surveys, polls, wikis). It was selected since it has being developed to enhance learning in a variety of environments and especially for courses which needs social constructivist pedagogy (Dougiamas, 2004). It combines various learning technologies to enable hybrid or online learning. Due to the nature of open source software, Moodle is under constant revision and feature-enhancement.

For the course preparation, researchers' basic guide was the Theory and Practice of Online Learning, (edited by Anderson & Elloumi, 2004). The course was driven, as close as possible to the above guidelines, in order to identify the "quality" factor to the e-learning delivery method and its value. Time measurements have been performed to adjust students' required effort in conjunction with their parallel obligations of other lessons and social activities.

At the beginning of the project, a 3-hour in-class session had been performed. This session served as a "kick-off" meeting, since it was the introduction of Moodle to students. During the session course's procedures and objectives had been explained to students. Moodle log-in and basic procedures had been demonstrated and an online questionnaire had been replied by them. At the end of the session, students were asked whether they wanted to participate in this online course, or not.

Moreover, 117 out of 135 students volunteered to participate in this study (86.7 %). 19 of them (16.24 %) had finished their second-level education in Cyprus while the rest 98 (83.76%) in Greece. From a total of 117 finally 113 participated. Their obligation was to log-in once per three days (4 times in a 12 days period) for at least half an hour. Course scoreboards were not accounted into their official uni-

versity score. Also, students were informed ahead of time that assignments were not mandatory.

In the online course, students were assigned by activities (assignments), quizes, forum participations, and a final questionnaire. Most of the above-mentioned activities had a deadline. Assessments had been posted directly after the desired learning outcomes had been defined, and before the bulk of the course activities had been displayed to the students (Dick, Carey and Carey, 2000). Since it was a lead-in scenario, no access restrictions had been placed to the students who were extended the deadline. After the first week assignments, delays had a pre-announced, cut-off percentage in the overall assignment score.

RESEARCH FINDINGS

Three factors had been evaluated during the course: the already possessed knowledge, the comfortability level and the satisfaction level. For those factors several data captured through questionnaires, activities and logs of students' in the course participation.

Already possessed skills and knowledge

At the beginning, all students participated in the course, had been asked to submit a need-assessment questionnaire. In this questionnaire, the scale used for all answers was 4 to 1 as follows: 4 represented the "Expert" skill or knowledge, 3 stood for "Satisfactory level but need some more practice", 2 stood for "Can perform this activity with some external help", and 1 represented the total ignorance or incapability of the specific skill or knowledge.

The questionnaire consisted of 38 questions, covering 5 areas: (a) general ICT literacy, (b) word processing, (c) electronic presentations, (d) abilities for communication, and (e) browsers basic usages. Most of the questions appointed to technical skills possession, while others (much less than technical oriented) tried to extract mentally organization abilities (mainly for e-learning aspects) or critical thinking (as combination of electronic presentations with pedagogical issues). However, the time that this questionnaire was submitted (some weeks before students were taught electronic presentation software in University) might had influenced students' answers, even if most of them had been taught the same software, some years ago, in second-level education cycle.

This questionnaire had been submitted electronically, via Moodle, at the first cycle of the online course. 100 out of 113 students submitted it (88.50%). 89 of the total (78.76%) were coming from Greek second High Schools and 11 (9.73%) had graduated from Cypriots senior High Schools. As regards participants' gender, 83 out of 100 were female and 17 were male. 73 of 86 from Greece (84.88%) and 10 of 11 from Cyprus (90.91%) were female.

The sum of marks students have been given formatted the total score. According to this, Cypriot students declared much more self-confident than their co-students from Greece (96.55 vs 85.21). Standard variation amongst Greek students was clearly higher than equivalent amongst Cypriots, as depicted in Table 1.

Table 1: *Mean of Total Sum in questionnaire of knowledge assessment*

country	Mean	N	Std. Deviation
Greece	85,21	89	19,473
Cyprus	96,55	11	13,692
Total	86,46	100	19,201

More precisely, students had shown a lack of confidence in question 2: "Are you able to install/upgrade a computer application?" The results are displayed in Table 2. The average mean for all students was 1.72 with a standard deviation 0.972.

Table 2: *Statistics for Question 2 "Are you able to install/upgrade a computer application?"*

Rank given	Greece count	Cyprus count
0	12	
1	29	
2	28	6
3	20	5

The results of Greek students were significant lower than the equivalent of their Cypriot peers, as depicted in Figure 1. To be more specific, the mean for Greek students' answers was 1.63 with a standard deviation of 0.981 in the range 0 to 3. While Cypriots' equivalent was 2.45 with a standard deviation of 0.522 in the range 2 to 3. It is obvious that students from Cyprus were feeling much more confident than their Greek peers for installing and upgrading computer applications.

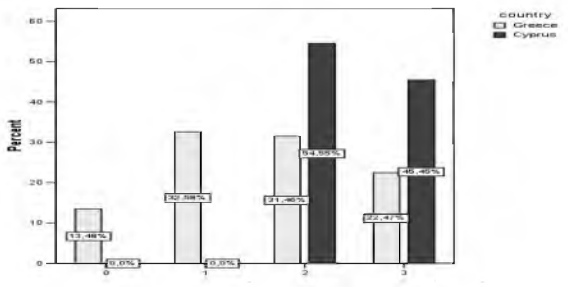

Figure 1: *Graphical representation of Q2 answers, depending of country originality*

Replying to question 11, "Are you able to handle situations with computer viruses?", students' answers were even more depressively. Only 16.85% of Greek students responded that they can handle situations with viruses, while 29.21% needed some more training in the area. Moreover, 34.83% responded that they need external assistance to deal with such situations, and finally, 19.1% responded that they do not know anything about these situations. However, amongst Cypriots things seem better. 36.36% comfortably deal with such situations, while the same

percentage might require some more training. Also, 27.27% still need external assistance, while none of them declared ignorance about this specific issue. The following figure displays students' responses for this specific question.

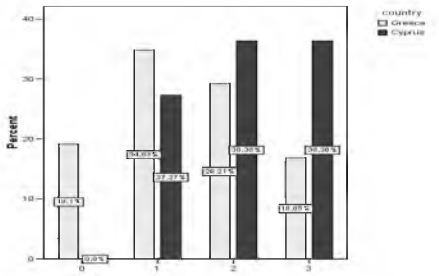

Figure 2: *Responses in Question 11 "Are you able to handle situations with computer viruses"*

The above figure can also be confirmed by students' responses in the introductory questionnaire, where 71 out of 128 respondents (55.47%) had ranked "data security" as major deficiency of Internet usage.

Level of comfortability

Even if in the kick-off meeting students had been asked to participate at least 4 times per half an hour (total required online time: 120 min), a total of 33,008 minutes had been recorded by 113 participants, leading to an average of 292 minutes for each student. That time was 243.33% above the required time. Categorized by country (Table 3) it is obvious that Cypriots had spent more online time than their Greeks peers.

Table 3: *Online time for students during course period*

	country			
	Greece		Cyprus	
	Sum	Mean	Sum	Mean
duration	28724	282	4284	389

Most of the students logged in the course without any problem. Therefore, help-request messages were limited. These messages were mainly referred to activities content questions and not to technical issues. During the course period, students had to read 10 resources of various formats (text and video), to attend in a voluntarily basis consisted of 3 resources (two videos and one text) and to submit 7 assignments (in various formats). Lead-in and final questionnaire had not been included in the above-referred activities.

In the two first assignments all (113) participants replied, even if in the second assignment (1.2 Upload your picture in the profile) they were not given any instructions of how to perform this action. In the next 3 assignments 108 students responded for 2.1, and 107 for 3.1 and 3.2. Finally, the last 2 assignments were per-

formed during the last 3 days of the course, and while students started vacating the University for their Christmas vacations. Furthermore, 96 and 107 students replied, while one of the assignments was the final quiz (4.2). In total, 751 assignments were submitted, while 791 had been asked. Thus, leading to 94.94% participation, which is extremely high, if we consider that this course was in a volunteer basis, plus that the score in the online course would not count on students' final grade. Students had been informed in advance for this rule.

Table 4: *Assignments submission rates*

Assignments	1.1	1.2	2.1	3.1	3.2	4.1	4.2	Total
Students number participation	113	113	108	107	107	96	107	75
Participation Percentage	100,00 %	100,00 %	95,58 %	94,69 %	94,69 %	84,96 %	94,69 %	94,94 %

Focusing in the assignment 1.2, researchers had noticed a great difference amongst students from Greece and Cyprus, regarding the content of the picture uploaded. To be more specific, 11 out of 102 Greek students had uploaded their own picture (10.78%), while 9 out of 11 Cypriot students had uploaded their own picture (81.82%). This attitude will be further investigated in a quantitative research through interviews.

The results of the final quiz gave an average score of 6.33 with a standard deviation of 1.44. Which was quite acceptable if we consider that quiz questions were on subjects, never been taught before. Additionally, it was the first time students performed an unattended quiz, through an online course.

Comparing scores researchers observed homogeneity in the results despite of students' origins, as depicted in Table 5:

Table 5: *Mean of student's scores in the final quiz depending on the country originated*

country	Mean	N	Std. Deviation
Greece	6,3411	95	1,50604
Cyprus	6,2217	12	,76978
Total	6,3277	107	1,44025

Also, a bivariate correlation between score and total online time showed (Table 6) no significant correlation at any level.

Table 6: *Bivariate correlation amongst score and student's total online time*

		score	duration
score	Pearson Correlation	1	,113
	Sig. (1-tailed)		,123
	N.		107
duration	Pearson Correlation	,113	1
	Sig. (1-tailed)	,123	
	N.	107	107

During the course, 113 participants posted in a total of 297 posts (average 2.63 posts per student). Most of them had been required as assignment submission, while there were no "How to…" posts, even if they were heavily asked.

Satisfaction Level

Generally speaking, the online course had been well accepted by the vast majority of the students, as responded in the equivalent questions at the final questionnaire. 89 out of 99 (90.19%), who responded in this questionnaire, declared satisfied or fascinated (response 4 and 5) from the course, while 9 students declared neutral (3) in a 5 Likert scale. None of them had declared 1 (very dissatisfy) or 2 (dissatisfy) as presented in Table 7.

Table 7: *Ordinal ranking of satisfaction (see Fig. 1)*

Satisfaction	1	2	3	4	5
Total Students	0	0	9 (9.18 %)	70 (71.43 %)	5 (19.39 %)
Greece oriented	0	0	8 (9.20 %)	65 (74.71 %)	14 (16.09 %)
Cyprus oriented	0	0	1 (9.09 %)	5 (45.45 %)	5 (45.45 %)

In the question "How much satisfied or dissatisfied you feel from the online course?", the average mean was 5.887 in a scale 1 to 7 (1 fully dissatisfaction, 7 fully satisfaction), as depicted in Table 8.

Considering the above findings in regards of students' origins, the average between Greek educational graduators was 5.793, while students graduated in Cyprus had an average of 6.636.

Table 8: *Nominal Satisfaction response in Q12*
(Likert scale 1 to 7, 1 very dissatisfy, 7 very satisfy)

Satisfaction	1	2	3	4	5	6	7
Students	0 (0 %)	1 (1.02%)	1 (1.02%)	3 (3.06 %)	24 (24.49%)	43 (43.88%)	26 (26.53 %)
Greece oriented	0 (0 %)	1 (1.15%)	1 (1.02%)	3 (3.45 %)	24 (27.58%)	39 (44.83%)	19 (21.84 %)
Cyprus oriented	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	4 (36.36%)	7 (63.63 %)

CONCLUSIONS

This research constitutes a first approach on the subject. However, due to the small sample we can not provide an in-depth answer to all the aspects of the questions. In general, it confirms previous findings about technology usages experience and perception of learning for and through technology. Most students declared very satisfied and enthusiastic with the online course, confirmed by their online total time. In addition, Cypriots had much more online time than their Greek peers. Logs

will be examined in conjunction with an interview research of focus groups students in an effort of reason's identification. Also, Cypriots safety feeling might be higher, as indicated by their own picture upload in a great percentage. Above mentioned findings and indications will be furthermore investigated through interviews in a quantitative basis research.

Students' performance had moved on satisfied level since the average of the online quiz was 6,327 out of 7, while a comparison between online time and performance in this quiz showed no evidence of dependency. Participation in the course's discussions had been rated "sufficient", since they covered whatever had been asked through assignments. However, ways and methods of how to expand self-request participation in the discussions should be further exploited. Preliminary findings about relations amongst various factors and students' satisfaction and performance will be searched at the close future during the second research phase. Although the sample is situated only in the area of our Institution, it was estimated that the results of the research should be announced, so that some general comments will contribute toward identifying the problem more clearly, and support the further studies of the questions that arise.

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