Education, Training and Informatics go hand in hand in (Foreign) Higher Education Institutions (HEIs).
Case Studies from live and online classrooms

Ekaterini NIKOLAREA
School of Social Sciences, University of the Aegean
Mytilene, 81100 Lesvos, Greece

ABSTRACT

Training and Informatics go hand in hand in (Foreign) Higher Education Institutions (HEIs) by presenting (1) the needs of non-native (or foreign) English students of ESP and EAP[1] classrooms; and (2) how these needs are fulfilled with students' training in how to use the Internet to: (a) do research required in their regular and ESP/EAP classes; (b) search for and find the appropriate terminology; and (c) to get some crucial aid from engines of machine translation in order to write an essay in English as a requirement in their EAP classes. It also discusses how general English (ELT)[2] online classes (e-learning) have helped a wider public (i.e. students, administrative staff and staff of Hospitality Industry) to use English orally and in writing and, thus, obtaining FCE(B2) and Proficiency (C2) in English, important certificates for their career development in Greece and Europe. What is presented is taken either from the 24-year teaching ESP/EAP experience of the author of this paper or from her one and half years of ELT online teaching experience and observations at the University of the Aegean (Lesvos, Greece).

Key words: Education, Training, Informatics, HEIs, ESP, EAP, ELT, Machine-aided translation.

1. INTRODUCTION

ESP classes
In her early and most of her recent studies [1, 3-17], the author of the present study has emphasized that non-English (or foreign) university students usually have to search for, find and read extended bibliography written in English and use the information and knowledge they acquire in: (a) oral presentations, (b) essay writing in their parallel courses, whose language of instruction is other than English (Modern Greek, in our case), and/or (3) in their ESP classes. To do that, students should first find a (difficult) text written in English most times on the Internet, second, understand it and, third, transfer their acquired knowledge to their local language (i.e. Modern Greek) in three forms:

The purpose of this paper is to show how Education,

(1) in terms of a *summary* (in their local language) that is included in the essays they write for their subject classes (when they want to avoid plagiarism);
(2) in *oral presentations* (in their local language) in their subject classes;
(3) in a *directly translated citation* of an English passage into their local language (i.e. Modern Greek), when they want to emphasize their point and avoid at the same time plagiarism.

Non-English (and Greek) university students can perform these tasks <u>only</u> if they are trained in carrying out research both in their local language (i.e. Modern Greek) and in English on the Internet. In the first case, when students search for some information in the local language, they do not usually have special problems provided that they know how to do the research with key words/terms. The difficulty arises when they must do the same research in English, when they do not find enough information about the subject of their research in their local language. Then, students should know where to find and how to select the appropriate equivalent terms in English. To achieve that, students should be trained in where to find these terms on the Internet and how to use them in the essays they write. In other words, they should know:
(1) where to find bilingual (or multilingual) specialist dictionaries [5, pp. 329-333];
(2) where to find Internet-based engines of machine translation [5, p, 331] [10] [12]; and
(3) how to manage all this knowledge acquired by constructing a bilingual (or multilingual) Terminological Data Bank (TDB) [2 -18].

By definition, these processes require: (a) training; (b) the use of the Internet (part of Informatics and AI); and (c) awareness and critical thinking (on behalf of students) of which equivalent they found is the most appropriate to be used in the texts they must write either in their parallel classes (in their local language) and/or in the ESP classes (in English). These issues will be examined in Section 2 of the present paper, and samples of four students' TDBs will

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[1] ESP: English for Specific Purposes; and EAP: English for Academic Purposes.

[2] ELT: English Language Teaching.

be provided, which reveal how differently students approach TDB.

EAP classes

Nevertheless, some students, as they advance their studies, would like to participate in the Erasmus Exchange Program, present a paper in an International Conference (such as IIIs) and/or have a paper published in a well-known academic journal. The EAP class that has been taught by the writer aims to fulfill these needs, since she has been training students how to search for materials written in English on the Internet, how to organize their thoughts in a comprehensible way and how to support their views by citing different English and international writers (avoiding plagiarism) in their essays and construct bibliographical references [12]. Once again, these teaching/learning processes require training in a variety of kinds of Informatics (ICT, AI), since students should know where and how to search for and find: (a) appropriate materials (i.e. bibliographical references) to make up their minds as to which topic they will write about; (b) Internet-based bilingual/multilingual specialist dictionaries [16-17]; (c) Internet-based engines of machine translation to get some help when they are "stuck" and how they can edit the final text [16-17]; (d) technical styles (i.e. APA, Harvard etc.) according to which they make their in-text citations and compile their bibliographical references [12]. These issues will be examined in Section 3 of the present paper, and two drafts of a student's sample writing will be provided to show how an Internet-based engine of machine translation can help a student with very little knowledge of English to advance her academic writing in English.
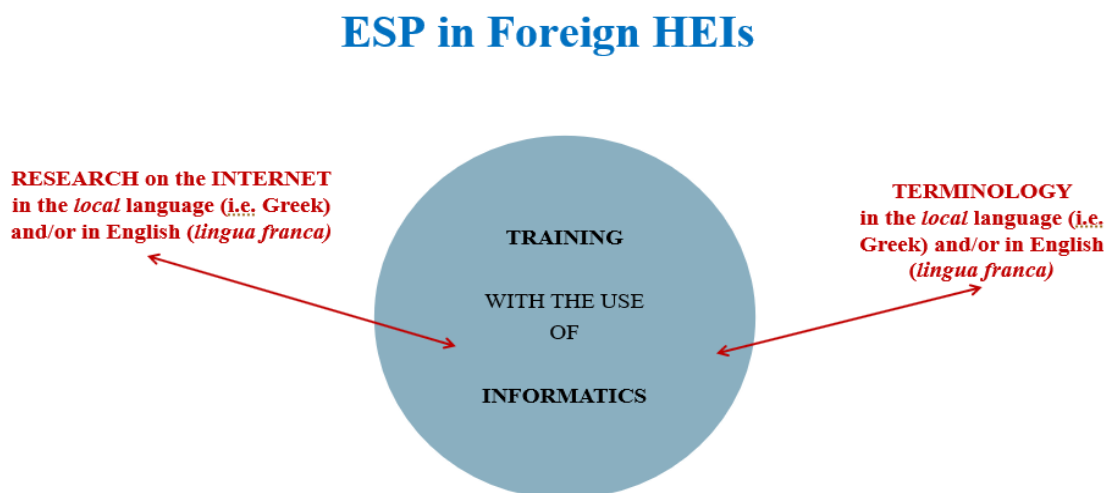
ELT online classes (eLearning)

The last one and half years the author of this study has realized that there has been a need for learning general English (or ELT) by the student population and the administrative staff of the University of the Aegean as well as by the general (Greek) public of six islands where the University is located.[3] The importance of online classes (eLearning) and its outcomes are discussed in Section 4 by the author of this study who is also the instructor of this eLearning initiative.

The implementation of the integrated approach to ESP and EAP (formal education) as well as the initiation of ELT online classes (informal education), as presented in the following Sections combine education, training and extensive use of Informatics in the form of Internet-based electronic dictionaries, engines of machine translation, e-learning and electronic correspondence can be applied to any ESP/EAP and ELT courses at other non-English universities and pairs of languages, scientific discourses and cultures, as the writer of this study claims.

2. COMBINATION OF EDUCATION, TRAINING AND INFORMATICS IN ESP CLASSROOMS

The interrelationship between Training and Informatics in teaching ESP in Higher Education and, especially in foreign HEIs, is presented in Figure 1.

ESP in Foreign HEIs

RESEARCH on the INTERNET in the *local* language (i.e. Greek) and/or in English (*lingua franca*)

TRAINING

WITH THE USE OF

INFORMATICS

TERMINOLOGY in the *local* language (i.e. Greek) and/or in English (*lingua franca*)

Figure 1: How Training and Informatics are involved in ESP teaching in Foreign HEIs

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[3] The University of the Aegean is dispersed on six islands in the Aegean Sea, that is, on: Lesvos, Lemnos, Chios, Samos, Syros and Rhodes.

At this point, the primary aim of ESP courses that the author has been teaching is for her to share with her students the knowledge she acquired from her specialty in Translation Studies. In other words, how students can overcome their difficulty with extensive difficult passages of scientific discourse written in English by training them in how to search on the Internet for finding: (a) monolingual, bilingual and/or multilingual dictionaries [1], [3-17]; (b) engines of machine translation so they can get a gist of what a difficult scientific text written in English is all about [2-17]; and how to construct a bilingual and/or a multilingual TDB, so they do not lose the knowledge they have acquired and are able to manage it.

Different approaches to TDB, their implications and usefulness

Figures 2, 3, 4 and 5 below have been constructed by current students of the Departments of Cultural Technology and Communication (2 and 3) and Sociology (4 and 5) as part of their final ESP assignment, which can exempt them from the upcoming final ESP examinations (between January and February 2025). All these TDBs are presented with the students' consent.

What is very interesting in these Figures is that they are not only bilingual (Fig. 2 and 3) but also multilingual or polyglot (Fig. 4 and 5). There is, however, a fundamental difference between them, if one looks up them closely.

Figures 2, 4 and 5 are based on 1: 1 equivalence, that is, an English term (1) is equivalent to one (1) Greek, Bulgarian, Albanian and French. Figure 3, however, shows some English terms that acquire two different meanings in the text, but these two different meanings have two different terms in Modern Greek, depending on the context. The students who constructed this TDB wrote the English term in **bold face** and the Greek terms in *italics*, adding an equivalent term in English in *italics*, too. To their credit, they also cited the sentence from the English scientific text they were dealing with.

Figure 3 is an overt case of ***inter-scientificity*** about which the writer has discussed and presented thoroughly in [6 – 17]. ***Inter-scientificity*** is a neologism introduced by the author of this article and refers to interlinguistic communication, that is, when two scientists from different linguistic backgrounds communicate in a *lingua franca* (: a common language of communication), which nowadays is English. Therefore, ***inter-scientificity*** is a skill acquired by a non-English student/researcher/scientist who can distinguish between various readings of a polysemous terminological entity or polyseme in English (e.g. see **Custom** in Figure 3) and can render it and use its equivalent polyseme in his/her own local language accurately (e.g. (1) *Έθιμο (cultural tradition)*; (2) *Συνήθεια* in Figure 3.)

Eyeshot	Οπτικό Πεδίο
Facebook Environment	«Περιβάλλον» του Facebook
Facebook Profile	Προφίλ Facebook
Face-to-face interaction	Αλληλεπίδραση Πρόσωπο με Πρόσωπο

Figure 2: Part of the English: Greek TDB by Dimitris Kolios
(a student in the Department of Cultural Technology and Communication, 2024-2025)

Consumption: (1) *Κατανάλωση (eating).* "Food consumption habits differ culturally." (2) *Χρήση (usage).* "Resource consumption impacts the environment."
Culture: (1) *Πολιτισμός (society's practices).* "Food culture is understood as the set of representations, beliefs, knowledge associated with food shared by individuals from a given culture." (2) *Καλλιέργεια (crop cultivation).* "Food production, processing, and storage entail cultures and ceremonies during these stages."
Custom: (1) *Έθιμο (cultural tradition).* "Sharing meals is a valued custom in many cultures." (2) *Συνήθεια (habit).* "The preparation style became a custom."

Figure 3: Part of the English: Greek TDB by Paris Angeladakis & Emmanouil Mouzourakis
(students in the Department of Cultural Technology and Communication, 2024-2025)

English	**Greek**	**Bulgarian**
Bourgeois society	Αστική κοινωνία	Буржоазно общество
Broad cultural consensus	Ευρεία πολιτιστική συναίνεση	Широк културен консенсус
Brunt of the attack	Το κύριο βάρος της επίθεσης	Основната тежест на атаката

Figure 4: Part of the English: Greek: Bulgarian TDB by Nevena Mintseva
(a student in the Department of Sociology, 2024-2025)

English	Greek	Albanian	French
Activism	Ακτιβισμός	Aktivizëm	Activisme
Activity	Δραστηριότητα	Aktivitet	Activité
Age	Ηλικία	Mosha	Âge
Air transport	Αεροπορική μεταφορά	Transport ajror	Transport aérien
Alter-globalization	Εναλλακτική παγκοσμιοποίηση	Alter-globalizëm	Alter-mondialisation

Figure 5: Part of the English: Greek: Albanian, French TDB by Eirini Karna
(a student in the Department of Sociology, 2024-2025)

Although the author has discussed thoroughly about the usefulness of the TDB as a mnemonic tool and knowledge management tool [2-17], Figure 3 shows that students, having searched in Internet-based dictionaries, can be aware of polysemy of an English term and can render it in their local language (i.e. Greek) in the most appropriate way.

3. COMBINATION OF EDUCATION, TRAINING AND INFORMATICS IN EAP CLASSROOMS

Development of academic discourse in English

During EAP classes, to help her students acquire and develop their academic discourse in English orally and in writing, the writer of this study encourages them to carry out research on the Internet (part of Informatics and AI; see Figure 6), recalling what they learned in the ESP class, that is, to use key words/terms in English (see Section 2). After they have done this research, they can propose the topic of their own essay and try to write an academic essay in English, thus, showing their academic independence.

At this point, it should be clarified that writing an academic essay in English and its in-classroom oral presentation in English is part of the final assignment and one of the assessment criteria for students' exception from the final examinations.

Essay Writing. During this process, the EAP instructor (the author of this study) provides her students with some general guidelines for essay writing in electronic form and discuss thoroughly in the classroom what steps they should take, especially if they decide to write an essay as a final assignment, with which they can be exempted from the final exams.

Since the students are going to select their own topic, the instructor advises them to jot down their initial thoughts of their topic as brainstorm. Then, the instructor and all the students discuss in the classroom whether the various topics are manageable or not and how the students can proceed with their own research. The instructor makes clear to her students that they should make advanced search onto the Internet using key words/terms to see whether there are enough bibliographical references.

EAP in Foreign HEIs

RESEARCH on the INTERNET
in the *local* language (i.e. Greek)
and/or in English (*lingua franca*)

MACHINE-AIDED TRANSLATION
[rendering the *local* language (i.e. Greek)
into English (*lingua franca*)]

TRAINING

WITH THE USE

OF

INFORMATICS

TECHNICAL STYLES
[primarily in English
(*lingua franca*)]
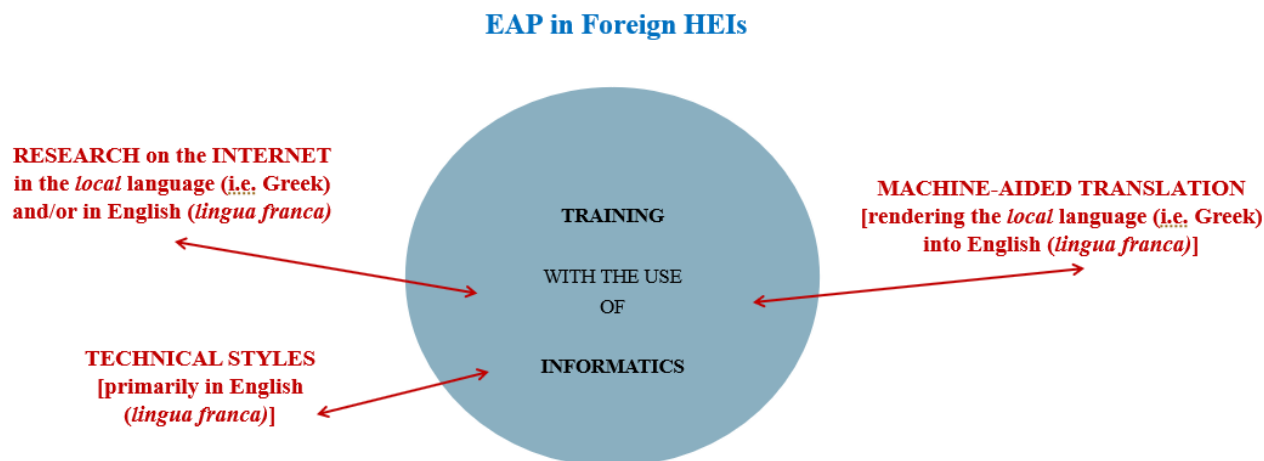
Figure 6: How Training and Informatics are involved in EAP teaching in Foreign HEIs

However, during this kind of search the students usually come across difficult scientific texts that raise issues of terminology, general understanding and *inter-scientificity*, as discussed in Section 2 of the present paper and in [6-7]. For students to overcome these issues, the instructor repeats some of the training that was done in the ESP class, that is, how to use the Internet, where to find and how to use electronic monolingual and bilingual (multilingual) online dictionaries (e.g. Cambridge dictionary online, Meriam-Webster dictionary online), engines of machine translation (e.g. Google translate, DeepL translate etc.), as presented in Section 2.

Once the students have found the appropriate materials, they bring them to the classroom. Then, the instructor discusses with them how they can plan and draft their essay and use the bibliographical references. During these discussions the following issues are usually raised as how the students can:

(1) distinguish between personal writing style and technical styles (e.g. Harvard Style, Chicago Style, APA Style, MLA Style);

(2) use a specific Methodology of how find one of the technical styles, decode it and then recode it into their essay (see below); and

(3) avoid plagiarism by paraphrasing, rephrasing and summarizing important parts of bibliographical references (that is the reason why the instructor trains her students how to summarize short and/or long passages in her ESP classes; see Section 2).

Sometimes in the EAP classes, there are students who may not know English very well or they may have almost a zero knowledge of English. Then, wishing to help them, the instructor advises them to use one of the available engines of machine translation, and, afterwards, she helps them to edit their text.

The following sub-section will show how a female Greek student, with very little knowledge of English, has used an engine of machine translation to write an essay in English.

Machine-aided translation

With the consent of Afentoula Konstantelou, a third-semester student of the Department of Social Anthropology and History at the University of the Aegean (Lesvos, Greece), the EAP teacher and the author of this study presents how an engine of machine translation has helped the student to write the essay entitled *Understanding Anxiety and Panic Disorders (Causes, Effects, and treatment)*.

Her first step was to write the whole essay in Modern Greek (see Draft 1 below), and the second step was to translate her essay from Modern Greek into English with the aid of one of the applications of the Interned-based machine translation (see Draft 2 below).

It should be noted that the instructor has not intervened (i.e. edited) Afentoula's English version. The student herself edited the English text/translation, as shown in Draft 2.

Διαταραχή Πανικού

Η διαταραχή πανικού είναι μια ψυχική κατάσταση που χαρακτηρίζεται από επαναλαμβανόμενα και ξαφνικά επεισόδια πανικού. Αυτά τα επεισόδια περιλαμβάνουν έντονο φόβο ή δυσφορία που κορυφώνεται μέσα σε λίγα λεπτά και συνοδεύεται από σωματικά και συναισθηματικά συμπτώματα. Τα άτομα με διαταραχή πανικού συχνά ανησυχούν για το πότε θα συμβεί το επόμενο επεισόδιο και μπορεί να αποφεύγουν καταστάσεις ή μέρη που συνδέονται με προηγούμενα επεισόδια.

Draft 1: Excerpt from the essay that the student wrote first in Modern Greek.

Panic disorder

Panic disorder is a mental condition characterized by recurrent and sudden panic attacks. These attacks invole intense fear or discomfort that peaks within minutes annd is accompanied by physical and emotional symptoms. Individuals with panic disorder often worry about when the next attack will occur and may avoid situations or places associated whith previus attacks.

Draft 2: The English translation of the previous excerpt in Modern Greek.

Technical Styles

After 24 years' experience of EAP teaching at the University of the Aegean, the instructor is fully aware of the students' confusion between **personal writing style** and **technical style**, so in her EAP classes she discusses that the latter is used when one makes in-text citations and compiles one's bibliographical references.

Only very recently, the EAP instructor and the writer of this study became aware that not only her students in EAP classes but also the students of subject classes in the **Department of Sociology** do have an issue with doing research, writing an essay (not only in English but even in Greek) and compiling bibliographical references. Therefore, she was invited to give a live presentation "Methodology in finding and compilation of Technical Styles"[4] on November 23, 2024, and an online presentation on the same topic on December 14, 2024; both presentations were delivered in Modern Greek.

During those presentations, the instructor emphasized the importance of four factors: (1) Knowledge of what one has in one's hands, that is, a writer of a book, an article etc.; (2) Which technical style the instructor of each subject requires; (3) Where to find the various technical styles – An Internet-based research; see the links provided in Figure 7; and (4) A Methodology how to extrapolate the information about in-text citations and references.

The instructor's advice to the Sociology students was that they should have a very good knowledge of English (apart from the knowledge of what they have in their hands). If they do not have it, then they should use either an Internet-based bilingual (English: Greek) dictionary or an Internet-based engine of machine translation.

From the above discussion, it becomes evident the importance of HEIs students' training in using a variety of sorts of Informatics – such as: research on the Internet, use of monolingual, bilingual and multilingual electronic dictionaries and a variety of engines of machine translation as well as in methodology of how to use technical styles.

APA (American Psychological Association) is used in various fields in Social Sciences: https://apastyle.apa.org/
HARVARD is used in various fields in Social Sciences and Sciences
1. https://www.mybib.com/tools/harvard-referencing-generator
2. https://librarydevelopment.group.shef.ac.uk/referencing/harvard.html
3. https://www.sbs-studies.gr/harvard-style/?gad_source=1&gclid=EAIaIQobChMIh4bCsMWkigMVlKiDBx32tgGqEAAYASAAEgLjmfD_BwE (This link has the Harvard style in Greek)
TURABIAN/CHICAGO is used in various fields in Social Sciences (especially in History and Archaeology) https://www.chicagomanualofstyle.org/turabian/citation-guide.html
MLA (: Modern Language Association) is used primarily in (World/Comparative) Literature, Linguistics and Translation Studies. https://style.mla.org/; see CITING SOURCES.
IEEE (: Institute of Electrical and Electronic Engineers) is used primarily in New Technologies and Computer Science http://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/IEEE_Reference_Guide.pdf

Figure 7: Links of different Technical Styles.

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4. THE USE OF TRAINING AND INFORMATICS IN ELT ONLINE CLASSROOMS (E-LEARNING)

For the last one and half years the author of this study has been volunteering and offering an ELT online class, named "General English for All!", which is open-accessed and free of charge to a wider public (Greek and international), that is, to undergraduate and graduate students and administrative staff of the University of the Aegean. There are two levels: (1) Beginners – intermediate; and (2) Upper Intermediate - Advanced. The announcement, as seen in Figure 7, is written in both Greek and English (for non-Greek public) by the writer of this study and is made public by the Administration of the University. The online classes are offered at specific hours on specific Saturdays (dates).

The would-be participants express their willingness to participate in these online courses to the writer, who

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[4] This is one of the three parts of the general presentation entitled: "Translation issues in writing scientific papers". The other two parts were: (1) "Insertion of excerpts or statistical tables and figures of foreign bibliographical references in scientific papers (which are written in Greek)"; (2) "Methodology in finding and compilation of Technical Styles"; and (3) "Organization of mixed bibliographical references (when using bibliographical references written in non-Latin system, i.e. Greek, Arabic, Chinese etc.)".

compiles an e-mail list so that she can contact them and inform them about their zoom meeting. The instructor, with the help of the IT technicians of the Department of Geography has created an open-accessed e-class (https://eclass.aegean.gr/courses/GEO-OTHER369/), where she has been posting several teaching/learning materials.

Instructor's Observations

Although the instructor was initially hesitant for this e-learning adventure, the outcomes have been encouraging. There have been undergraduate and graduate students as well as administrative staff from all the islands where the University of the Aegean is dispersed (see footnote 3), so online ELT help students and administrative staff from different islands to participate in these online classes.

1. There has been a good number of participants, especially of Hospitality Industry, who have felt the pressing need to practice their general and special English orally and in writing.
2. Depending on their level (Beginners - Intermediate and/or Upper-Intermediate – Advanced), all participants, whose majority is Greek, try to communicate in English. Only if they are "stuck", they use Greek. When this situation arises, the instructor helps students by explaining to them linguistic and cultural differences between Greek and English; she uses Greek when she finds it necessary.
3. The participants are motivated to participate in these online classes because: (a) these classes are free of charge; and (b) the participants wish to participate in international examinations in English, such as: FCE / ECCE (B2) and/or Proficiency of Cambridge / ECPE (C2),[5] which are one of the requirements <u>either</u> to get into a Master's or a Ph.D. Program in Greece or in Europe <u>or</u> to get a job in the public or private sector in Greece.
4. The participants do ask questions the instructor during the online class (and/or e-mail them to her) about how they should deal with vocabulary and terminology issues, phrasal verbs etc.

Figure 8: The Announcement

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[5] FCE: First Certificate of English (Cambridge Language Assessment); ECCE: Examination for the Certificate of Competency in English (Michigan Language Assessment); ECPE: Examination for the Certificate of Proficiency in English (Michigan Language Assessment)

Outcomes

Most participants have felt comfortable speaking in English – whereas before they had shied away. This has been evident in the following situations:

1. Undergraduate and graduate students participated in international examinations of English, such as: FCE (B2) and ECPE (C2) and succeeded, with only the help of the online classes and the instructor's guidance.

2. Undergraduate and graduate students have been able to communicate in English with foreign distinguished professors who were invited by the University of the Aegean.

3. The speaking part of these online classes has helped administrative staff of the University, located on different islands, to communicate orally and in writing in English with Erasmus students and professors (i.e. in the Erasmus Exchange Program) as well as with administrative staff from other European universities.

4. Participants from the Hospitality Industry have admitted that these online classes and, especially the speaking part and the discussion about how they should deal with terminology issues, have "liberated" them from stress and have made them feel very comfortable when using English in their demanding jobs.

5. CONCLUSIONS

Nowadays, Informatics in different forms has become an integral part of people's lives. The same is valid for Education and, especially, for Higher Education Institutions (HEIs) all over the world. What is, however, very crucial from an educational point of view is that University students (native and non-native English ones) should be trained to use certain applications of Informatics to their advantage. This is a staggering point at non-English (Foreign) HEIs if students, academics and administrative staff are not well versed in English, which the language of international communication (*lingua franca*). As the ESP/EAP instructor at a non-English University and the author of this article has tried to show, non-English (Foreign) students, academics and administrative staff of HEIs should be trained not only in using the variety of forms of Informatics but also in understanding the English language that most of these forms are written, because, as the writer has shown especially in Section 3, non-English students, academics and administrative staff cannot function in an international context and, therefore, their knowledge and research produced in their local language cannot become known to a wider public and market.

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