TELECONFERENCE IN SUPPORT OF AUTONOMOUS LEARNING

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Abstract

In Distance education, learning depends on the ability of the learner to manage his/her learning process, both through the creation of appropriate objectives, and by adopting strategies to achieve them. The role of the teacher is to develop an efficient methodology with flexibility over the learners' special characteristics and to create conditions to enable the learners to manage their learning process. This research aims to investigate the parameters which are involved in synchronous teleconference and which lead to effective learning through the support of an autonomous environment. The research was conducted with students of the Annual Training Program for Teachers of Higher School of Pedagogical and Technological Education Department in Patras. The results show that teleconference as teaching tool can support the autonomous learning and can enhance personalisation as this process can help students to learn and develop skills by receiving efficient support.

Abstract in Greek

Στην εξ αποστάσεως εκπαίδευση η μάθηση εξαρτάται σε μεγάλο βαθμό από την ικανότητα του εκπαιδευόμενου να κατευθύνει και να διαχειρίζεται τη μαθησιακή του εξέλιξη, τόσο με τη δημιουργία κατάλληλων στόχων, όσο και με την υιοθέτηση κατάλληλων στρατηγικών για την επίτευξή τους. Στο περιβάλλον σύγχρονης τηλεδιάσκεψης ο ρόλος του εκπαιδευτή έχει κύριο στόχο την ανάπτυξη μίας επαρκούς μεθοδολογίας με ευελιξία σύμφωνα με τα χαρακτηριστικά των εκπαιδευομένων. Επίσης, ένας ακόμα στόχος είναι η δημιουργία των κατάλληλων συνθηκών, έτσι ώστε οι εκπαιδευόμενοι να είναι ικανοί να δημιουργούν την δική τους μαθησιακή πορεία. Ο σκοπός της παρούσας έρευνας είναι να μελετηθούν οι παράμετροι της σύγχρονης τηλεδιάσκεψης, που μπορούν να οδηγήσουν σε αποτελεσματική εκπαίδευση μέσω της δημιουργίας ενός αυτόνομου περιβάλλοντος μάθησης. Η έρευνα πραγματοποιήθηκε με εκπαιδευόμενους του Ετησίου Προγράμματος Παιδαγωγικής Κατάρτισης της Ανώτατης Σχολή Παιδαγωγικής και Τεχνολογικής Εκπαίδευσης του Παραρτήματος Πατρών. Τα αποτελέσματα δείχνουν ότι η τηλεδιάσκεψη, ως εργαλείο διδασκαλίας, μπορεί να υποστηρίξει την αυτόνομη μάθηση, να ενισχύσει την εξατομίκευση, να βοηθήσει τους εκπαιδευόμενους να αποκτήσουν νέες γνώσεις και να αναπτύξουν δεξιότητες λαμβάνοντας αποτελεσματική υποστήριξη.

Key-words: effective teleconference, autonomous learning environment

Introduction

Distance learning is a structured set of means and procedures which provide the appropriate methodology so that students can define the place, time and pace of their study by themselves (Lionarakis & Lykourgiotis, 1999). The teleconference is used as a distance learning tool, in secondary and mainly in higher education and in adult education training as well, in the framework of educational applications and connection programmes between educational organisations. Anastasiades (2008a) analyses pedagogical issues regarding the design, development and implementation of a mixed environment for teachers' multiform education, focused on teleconference. Emphasis is given on the formulation of cooperative learning

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environments based on the principles of social constructivism. Using educational technologies, including the teleconference, in an Information Technology course at the Hellenic Open University important differences between the pilot use and their use on a large scale were indicated (Xenos, Tsiatsios, & Vassiliadis, 2008; Mavroidis, 2009). Teleconference helps participants to perform both formal and informal educational meetings as frequent as they want, develop technological skills, improve their social interactions and create a digital record of conducted lessons for review purposes (Kocdar, Karadeniz, Bozkurt, & Buyuk, 2018). On the other hand, the negative aspects of using teleconference in education are tightly connected with technical difficulties that affect its effectiveness in several ways (Weiss, Knowlton, & Speck, 2000; Panagiotakopoulos, Tsiatsos, Lionarakis, & Tzanakos, 2013). According to Gunawardena and McIssak (2004), the variables which seem to predict learners' success, apart from autonomy, are the learners' high expectations and confidence (Laube, 1992), the possession of an academic degree (Dille & Mezack, 1991) and external control (von Prummer, 1990; Baynton, 1992). Research findings suggest that a combination of personal (such as the learning style), environmental and social factors should be taken into account in distance learning programmes. In the research conducted by Mavroidis, Karatrantou, Koutsouba, Giossos, and Papadakis (2013), the majority of the students consider that teleconference offered them the opportunity to have an active role in the educational process and that it would be a pleasant means of communication with teachers and other students. Most of the students suggested participating in future educational teleconferences, as they considered them to be a promising educational tool. Social interaction and the development of new skills are also supported by the research of Alimisis and Plessas, (2011) and Panagiotakopoulos, Tsiatsos, Lionarakis, and Tzanakos, (2013).

This research aims to investigate the parameters which are involved in synchronous teleconferences and which lead to effective learning through the creation of an autonomous environment. Teleconferences were held in the framework of the "Educational Technology" course of ASPETE. ASPETE provides concurrent technological and pedagogical education and training at tertiary level. Synchronous teleconference services are available to the members of educational staff of ASPETE. The course outline includes the following: Distance learning and the role of the Internet (Synchronous and asynchronous e-learning forms – Online course development and support: Learning management systems, Characteristics of effective and well-planned distance courses – Current trends: Adaptive learning environments, Collaborative learning environments, Virtual environments), Teaching and learning methods.

After the course completion, students were expected to be able to: (1) Recognize the teaching practices and the strategies of technology integration which reflect the instructional and constructive approaches in teaching and learning, (2) design strategies of integrating technology in education, (3) develop learning activities which involve: (a) modern technology tools (educational software, general and specific-use software tools, multimedia/hypermedia), (b) World Wide Web services, tools and applications, and (c) mobile learning technologies and relevant applications.

The teleconference in education

As a methodological approach, the term *teleconference* refers to the creation of two or more learning environments where users communicate and exchange data, files, presentations, graphics and common applications. As mentioned by Anastasiades (2008a; 2008b), distance education contributes to the formulation of an interactive environment of collaborative learning under pedagogical conditions. The effectiveness of the teleconference in education constitutes the field of numerous studies. Despite any reservations, the teleconference can significantly contribute to learning, especially when the face-to-face meeting of teachers with students is not possible, and it also constitutes an interactive teaching tool (Armakolas, Alimisis, & Panagiotakopoulos, 2013;

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Panagiotakopoulos, 2014). Its effectiveness is related with self-regulated learning, which is a successful combination of will and skills and an integrated method of handling the learning process, which makes distance students able to design, implement, check, evaluate and review their actions. The support provided during a course taught via teleconference is deemed to be much more important and necessary in this environment due to the high degree of the students' learning autonomy (Nikolaki & Koutsoumpa, 2013; Giannakoudakis & Giossos, 2017). In adult education, in particular, it is aimed to promote self-efficiency, independence and creative and critical learning (Knowles et al, 1998). Learning programmes, as argued in detail by Jarvis (1999), should give high priority to creative learning over mechanistic learning.

Tutors are asked to take on a more active role, which is related with the increased demands of the new educational practices. This is because, while developments in Information and Communication Technology give new dimensions to teaching, preparation includes additional activities which teachers must do systematically (Tzanakos, 2012). One of these is the support provided to students. More emphasis is given on personalised guidance and on the encouragement of cooperation among students. Support is necessary because students take responsibility for the learning process (Armakolas, Panagiotakopoulos, & Fragoulis, 2014).

The opinions of experts in the field of adult education converge in the fact that adult learning becomes more effective through the use of experiential, participatory educational techniques. These techniques (Coureau, 2000; Valkanos & Fragoulis, 2007) promote the interaction between the teacher and the students as well as among the students themselves, giving stimuli to the latter so that they can look for information, develop their critical thinking, work towards solutions and learn by doing. It has been observed that in a teleconference environment, the teacher's role is mainly to develop the methodology and create the appropriate conditions in order to facilitate and motivate the participants with the use of the aforementioned techniques; in this way, the participants can process the information provided to them in such an environment as critically as possible (Armakolas, Panagiotakopoulos, & Vasilopoulou, 2014).

Autonomy in distance learning

In distance learning, learning depends largely on the students' ability to guide and handle their learning process, both by setting appropriate goals and by developing and adopting useful strategies in order to achieve these goals. Therefore, since distance learning is characterised by the learners' autonomy, it is obvious that self-regulated learning constitutes an important and crucial factor for success (Nikolaki & Koutsoumpa, 2013; Fotiadou, Angelaki, & Mavroidis, 2017; Kocdar, Karadeniz, Bozkurt, & Buyuk, 2018). However, it is supported that even though distance learning environments provide learners with opportunities to enhance self-regulated learning at a skills level as well as at a metacognitive abilities level, learners do need additional help and guidance (Bannert, 2006) during the learning process. In this context, freedom of choice during learning on the one hand and guidance on the other hand move in parallel. In this way, highly-motivated learners achieve better learning results if they feel that they have more control over their learning (Issing, 2002). In most cases, teachers acknowledge the value of self-regulated learning both in the short term (by helping their students succeed in their current studies) and in the long term (by helping their students achieve lifelong learning goals). However, in several cases, teachers do not receive any support from the respective bodies from institutions, such as resources and facilities which promote the provision of effective education (Mikroyiannidis et al, 2014).

Research has gradually shown that Learning Management Systems (LMS) put emphasis on the dissemination tools of the distance learning University programmes and not on the students' learning tools, even though the latter are more likely to promote learners' participation and

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interaction (Dabbagh & Kitsantas, 2011). Contrary to Learning Management Systems, Personal Learning Environments (PLEs) tend to be student-centred. They provide learners with a variety of services and they give learners the ability to select and use these services in the way they consider appropriate (Chatti et al. 2007; Wilson, 2008; Kop & Fournier, 2014; Castañeda, Cosgrave, Marín, & Cronin, 2016). Personal Learning Environments describe the tools, communities and services which are recommended by individual educational platforms and which are used by students, in order for them to direct their learning and pursue their learning goals (Castañeda, Dabbagh, & Torres-Kompen, 2017). They provide learners with support, so that they can regulate their own learning goals and manage their learning both its content and the process of communicating with others during the learning process (Fiedler & Väljataga, 2008).

Research has also shown that the creation of PLEs empowers learners by offering them a sense of personal representation in the learning process. PLEs enable the personal management of knowledge and construction and evolve into a social learning platform or a system in which knowledge is socially mediated (McGloughlin & Lee, 2010; Johnson et al., 2011). PLEs can be perceived both as a technological development and as a pedagogical approach designed for learners, taking into account each learner's goal, or as a learning approach which 'has been selected by a learner so that it corresponds to his or her personal learning style and pace (Johnson et al., 2011; p.8). Learners must acquire and apply a set of personal knowledge management skills, which is defined as 'the action of managing one's personal knowledge via the technology'; these skills range from the creation, organisation and common use of digital content and information to higher-level or more complex personal knowledge management skills, such as coherence, the ability to balance formal and informal learning, critical thinking and creativity (Armakolas, Mikroyannidis, Panagiotakopoulos, & Panousopoulou, 2016). However, there is an urgent need for pedagogical design and in-depth research on learning environments which include teleconference. Learners may feel free to organise their own environment, however, research shows their worry about the use of online tools or the use of a platform. Autonomous and personal learning environments are supported by technology and they have to be based on a pedagogical framework (Yen, Tu, Sujo-Montes, & Sealander, 2016).

The teleconference effectiveness

Weiss, Knowlton, and Speck, (2000) put the following questions regarding effectiveness: (a) does the environment encourage learners to participate actively? (b) is learning based on a combination of authentic knowledge and examples? (c) is collaborative problem-solving encouraged? (d) is feedback linked with performance? (e) are the students' motives taken into account during teaching? (f) which are the elements needed in order to arouse learners' interest and self-efficacy? Achtemeier, Morris, and Finnegan, (2003) studied the effectiveness of online teaching in correlation with the research conducted by Weiss, Knowlton, and Speck, (2000) and suggested the following: (a) increased communication between the teacher and the students, (b) increased communication among the students, (c) involvement in interactive participation and in the solving of problems which pertain to the course content, (d) immediate feedback, (e) generation and management of learner motivation, (f) time management, (g) alternative lesson planning and evaluation schedule.

More recent studies agree with the aforementioned results (Wiesenberg & Stacey, 2005; Garrison & Cleveland-Innes, 2005; Welsh, 2007; Chaney, Eddy, Dorman, Glessner, Green, & Lara-Alecio, 2009; Dobbs, Waid, & del Carmen, 2009; Smith, 2011) and focus on the above features which influence effectiveness and the creation of an appropriate learning environment.

After careful study of the literature regarding research on the effectiveness and the creation of an appropriate learning environment in teleconference environments, we arrived at the following

variables: (a) student-teacher interaction, (b) active learning techniques, (c) the duration of each module taught via teleconference, (d) learners' and teacher's preparation and (e) the support provided by the teacher (Weiss, Knowlton, & Speck, 2000; Achtemeier, Morris, & Finnegan, 2003; Wiesenberg & Stacey, 2005; Garrison, Cleveland-Innes, 2005; Welsh, 2007; Chaney, Eddy, Dorman, Glessner, Green & Lara-Alecio, 2009; Dobbs, Waid, & Carmen, 2009; Smith, 2011).

Several researchers have studied the problems that arise in teleconference environments and the ways in which they can be resolved. The literature review highlights the necessity for further research on the following parameters: the time teachers devote to learner support, the preparation that both teachers and students have to do in order to meet the needs of a course taught via teleconference, the interaction and adaption of the learning environment to the students' interests and educational needs, the possibility of having alternative choices in lesson planning (Khan, 2005; Welsh, 2007; Ehlers & Pawlowski, 2009; Smith, 2011; Hrtoňová, Kohout, Rohlíková, & Zounek, 2015).

Methodology

The present study aims to investigate the perspectives of future teachers. These future teachers are studying at the School of Pedagogical and Technological Education (ASPETE) in order to become teachers at Primary and Secondary education. For their participation in this research studies attended three teleconferences. Teleconferences were held in the framework of the "Educational Technology" course. Before the students participated in the teleconferences, they had in-class familiarisation sessions in the workshop, which lasted for 3 hours, as well as a pilot teleconference in the workshop in order to experiment on the use of the platform and its tools, the participation and the use of experiential techniques. Experiential learning is a process based on the pedagogical principle of *learning by doing* as students acquire

knowledge after having experienced or done something new (Koutsoukos, Fragoulis, & Valkanos, 2015). Experiential techniques can go beyond traditional lecture and transfer of information can actively engage students making the learning procedure more interesting and appealing (Maloof, 2006).

With regard to these techniques, brainstorming, collaborative learning, case study and simulation were used. The main teleconference was held on the Big Blue Button platform and lasted for 60 minutes. The educational content was supplementary of the content presented in the in-class sessions. The combination and balance of teleconference with in-class sessions are important factors (Tsiotakis & Jimoyiannis, 2017) for effective learning.

The present research is qualitative. The main objective of qualitative research is to understand the meaning of a phenomenon and not to measure or statistically analyse the phenomenon. Qualitative research mainly aims to "examine the meanings and representations that the subjects attribute to social phenomena and processes" and "aims to describe, analyse, interpret and comprehend social phenomena, situations and social group characteristics, mostly answering the questions how and why". When the research concerns the study of how people experience something and the study of their opinions, when someone explores a new field whose concepts have not been fully understood, when someone evaluates if a new service or product is marketable, then the qualitative research methodology should be used (Athanasiou, 2000). Finally, the selection of qualitative research was based on the fact that the researcher wanted to reach objective conclusions which would not be questioned, as would happen in the case of ontology or phenomenology (Kyriazopoulos & Samanta, 2011).

The semi-structured interview was used because it addresses our need for communication with the interviewee to a higher degree in comparison with a structured interview, it offers the

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interviewee the chance of providing answers and perhaps asking questions and it provides the interviewee with information, opinions and support. The biggest advantage of an interview is the adaptability (Bell, 2014).

The framework

The course consists of two parts which are taught in parallel: the theoretical part and the workshop. In the theoretical part, the teacher puts emphasis on active and collaborative teaching methods which engage students in constructive learning activities and prepare them for the development of related practical activities in the workshop. In the workshop, students have practical training in subjects which have been discussed during the theoretical part of the course and become familiar with the use of related software. Most of the tasks and practical activities done in the workshop follow the collaborative approach, vary in their form and include: the participation in online discussions with the use of various synchronous and asynchronous communication tools, the creation of educational material and learning objects with the use of modern tools and the first contact and/or familiarisation with state-of-the-art technologies which have proven potential for use in education. The main goal is to have students develop learning strategies through the activities and not to transfer *ready-made* knowledge, as well as to engage students in explorative and autonomous learning. The aim of this procedure is to make students acknowledge its educational value and adopt related methods in their future teaching practices.

Research questions

For the purpose of this research the following research questions were put

- What is the potential of using experiential techniques in a teleconference?
- Was the teleconference effective?
- Which is teleconference contribution to the support of an autonomous learning environment?
- What are the advantages and disadvantages of getting involved in teleconference environments?

In order to receive answers to the above questions, we interviewed nineteen students. The students' specialty, were in different fields: three philologists, five information technology teachers, three engineering teachers, three social science teachers, three economic science teachers and two technology teachers. They were chosen according to the following criteria: their successful participation in teleconferences which were held and their scientific interest in the future use of teleconference tools.

Big Blue Button digital platform

Big Blue Button (bigbluebutton.org) is an open source platform that is built on fourteen open source components for creating a web conference system. It can be used on any computer regardless of operating system features. Big Blue Button is in constant development and it is supported by a very active user community. Big Blue Button supports similar through a friendly and intuitive user interface.

Big Blue Button is a better choice for conducting a web conferencing session. Our decision is also based on the fact that Big Blue Button is an open source platform and so we can modify it according to our needs. However, this requires knowledge of software development. However Big Blue Button is capable of supporting collaborative learning activities with great success.

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Research tools

The semi-structured interview is characterised by the existence of an interview guide as well as by an important fact; the purpose of the interview is specified but the subject is not restricted. Meanwhile, this type of interview also gives the interviewee the possibility of describing the nature of his or her experiences in his/her own words, as the interviewer and the interviewee develop a relationship of communication in which the former obtains the data defined by the research scope (Dunn, 2000; Kvale, 1996). The interviewer's main concern is to bring the discussion back to the context of the research, according to the criteria established by Mertens (2014), i.e. faithfulness, transferability, reliability, verifiability, authenticity and emancipation. The researcher aimed to offer the participants the chance of freely expressing their opinions on the subjects-questions which they were asked to answer.

The interview dimensions were based on the literature research (Welsh, 2007; Valkanos & Fragoulis, 2007; Smith, 2011: Panagiotakopoulos, Tsiatsos, Lionarakis, & Tzanakos, 2013; Tsiotakis & Jimoyiannis, 2017; Fotiadou, Angelaki, & Mavroidis, 2017) and concerned:

- The communication between the teacher and the students.
- The use of experiential techniques.
- The use of educational resources and useful educational information.
- The adaptation of the teleconference learning environment to the learners' interests and educational needs.
- The learners' cognitive, communicative and technical skills which are required during a teleconference.
- The satisfaction of participating in a teleconference, the reflection and the effectiveness.
- The possibility that a teleconference supports an autonomous learning environment.

The validity of the axes of the interview was tested as follows: The axes used in the study were discussed with 3 researchers in the field of distance learning and educational technology and slightly revised on the basis of two piloting interviews (Cohen & Manion, 1997).

Results

Out of the nineteen participants, twelve interviewees are women and seven are men. Regarding the participants' age, all of them are 28-55 years old. In particular, eleven interviewees belong to the age group of 28-40 years, three interviewees belong to the age group of 41-45 years, three interviewees belong to the age group of 46-50 years and two interviewees belong to the age group of 51-55 years.

The potential of using experiential techniques in a teleconference

Fifteen out of the nineteen interviewees had participated in a teleconference before, without having used experiential techniques. The techniques which were used in this research were brainstorming, working groups, case study and simulation. Three times during the teleconference, minor difficulties were occasionally encountered in the case of dialogue, the brainstorming and the simulation, due to problems concerning the coordination of interventions, anxiety and the unequal time participation.

The working groups and the case study, were implemented in a very efficient way as it results from the participants' answers. Sixteen interviewees mentioned that

> *"the experiential methods which were used helped us a lot because we participated and worked both individually and in groups"*

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> *"during the teleconference, we were motivated and we collaborated more than if we had been confined to traditional teaching methods"*

Four interviewees added that teachers have to devote a lot of time to preparation if they wish to achieve effective teaching practice with the use of experiential techniques, by focusing on each student's needs.

Seventeen interviewees mentioned that the use of experiential techniques in the teleconference gave many options to them and to the teacher, in order for the process to be adapted to the students' needs at an appropriate pace. Two interviewees commented on the use of the case study and the simulation. They reported that:

> *"When you mentally get into a situation, you are concerned and, with the help of the group, you think of how you would handle it. We understood the various aspects of the case more deeply and perhaps we will be able to deal with such a case more effectively in the future. This context formulates a learning environment which offers the possibility for communication, contact and exchange of opinions and ideas."*

The teleconference effectiveness

According to all interviewees, the teleconference was quite effective. It was supported that the key points for the success of any teleconference is the efficient preparation of both the teacher and learners, the teachers' flexibility over the learners' special characteristics, the targeted teaching and the use of experiential techniques to make students involved in the learning process as much as possible.

> *"During the teleconference, there was interaction among the learners."*

A high percentage (17/19) of the interviewees responded that:

> *"We cooperated, we formed groups, we automatically became self-organised in an effort to save time and act effectively."*
>
> *"We formed groups at a different time. We worked as members of various teams. We presented our results to the others."*
>
> *"The teleconference promoted the learners' cooperation with the teacher as well as the cooperation among the learners themselves. It contributed to our study."*

One interviewee responded that:

> *"I would use it if I would have been trained before."*

Satisfaction was expressed concerning the achievement of learning objectives via the teleconference. One interviewee supported that:

> *"The participation was assessed and there was feedback on the didactic content."*

and, regarding the interaction, she responded that:

> *"Yes, everybody was involved. Neither tiredness nor boredom was observed."*

According to sixteen interviewees, another main advantage is the learners' active participation. The following answer is indicative of this opinion:

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> *"During the teleconference, skills such as critical thinking, abstract thinking, collaboration and mutual help were developed."*

One interviewee characteristically mentioned that:

> *"The learning environment is very interactive, provides the learner with the opportunity for meaningful communication, it is pleasant."*

Another interviewee mentioned that:

> *"It offers cognitive and emotional incentives and it arouses our interest. The experiences of all the learners were meaningfully used."*

In conclusion, the teleconference learning environment helps learners develop their cognitive, social and technical skills. There is the ability for communication and collaboration among the learners, as well as the ability for online exchange of opinions. The teleconference also gives the teacher the chance to be able to teach in a supportive and autonomous context at all the levels of a classroom.

Teleconference and autonomy

Most interviewees (16 out of 19) reported that the environment of teleconference is able to help students to learn on their own as well as in collaboration with the others. Most interviewees (16) consider that the teleconference can constitute a student-centred model where learners can develop many skills by receiving efficient support. A teleconference can enhance personalisation since, as mentioned, "the teacher may be far" but he/she may be equally or more interested in the students' learning than he/she would be during in-class teaching'. One interviewee reported that 'the teleconference is an environment where the teacher can explore a learner's needs, existing knowledge and interests and organise his/her support in an appropriate manner. The teacher's personalised support which is provided to the learner can enhance the latter's autonomous learning'. Another interviewee characteristically responded that 'most learners who work or live far from educational institutes will benefit from their participation in teleconferences which encourage autonomous learning'.

A teleconference platform provides an environment where learners can feel free and use tools and techniques. However, due to the fact that knowledge could be socially mediated (McGloughlin & Lee, 2010; Johnson et al., 2011) and that the educational context of a teleconference is necessary, it is imperative that detailed educational design should be done and fully implemented.

The advantages of the teleconference

According to all the interviewees, the teleconference contributes to saving money and reducing transportation. It offers the opportunity to use experiential educational techniques and methods. Through suitable educational design, the teacher adopts a coordinating and collaborative role and the learners can interact and are encouraged to learn in a cooperative way. Collaboration between the learners and the teacher or among the learners themselves can be substantial Finally, a teleconference can be recorded so that it can be accessed by all the learners. This enhances the learners' autonomy, as they can choose their own way, place and pace of study.

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The disadvantages of the teleconference

With regard to the disadvantages, fifteen interviewees reported that they experienced technical difficulties, which mainly concerned the sound and the connection to the Internet. Twelve learners mentioned that

> *"I encountered a problem with the sound."*

and two of them added that

> *"The participation in a team via the teleconference was sometimes a limiting factor mainly for learners with poor communicative skills."*

The anxiety caused by participating in the teleconference, as well as the effort to deal with it, is a major factor. One interviewee mentioned that

> *"I became anxious about the time and the quality of the messages that learners or the teacher would get. This happened when, for example, we were asked to present the result of our teamwork. At that point, we were all coordinated in order to be quick and effective. The fact that we are adults perhaps contributed to this. We chose a clear message without unnecessary references and rhetoric."*

Two interviewees reported that

> *"In order that someone participates effectively in a teleconference, they need to be trained in the use of the platform."*

> *"I would definitely use it, if I would have been trained in its use."*

Discussion

The purpose of this research is to study the parameters of synchronous teleconference that support the creation of an autonomous learning environment. The use of experiential techniques and their application in a synchronous teleconferencing environment is a difficult process that takes time and can be challenging for a trainer who aspires to accomplish effective distance learning. However, experiential educational techniques can be used to a large extent as they are consistent with the characteristics of adult learners and the way they learn effectively. Experiential educational techniques that can be used are the following: (a) questions – answers, (b) discussion, (c) brainstorming, (d) case study, (e) working groups, (f) simulation, (g) role playing. In this research brainstorming, working groups, case study and simulation were used. Based on the results of the research, there is a strong intention by the participants to use teleconference with experiential educational techniques in their teaching because: (a) the quality of their teaching can be improved (b) they can be engaged more actively; (c) they can develop communication skills and cooperative relationships with their trainers and co-trainees; (d) trainees with low social skills can be encouraged to participate more.

Education is a process of continuous interaction and communication between trainer and trainees. Therefore, an effective teleconferencing environment, should favour the creation of conditions of authentic relationships among the participants, through an established pedagogical framework (Yen, Tu, Sujo-Montes, & Sealander, 2016; Fotiadou, Angelaki, Mavroidis, 2017). Additionally, the better the relationship among participants, the more value the communication will have. The context in which trainers work affects their perceptions of themselves, their learners and their relationship with them. As it has been found, the learning process through a teleconference class is an interesting experience, but it is also difficult since it differs from

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traditional teaching. Before the start of a teleconference session, the teacher should study the participants' specific characteristics, needs and expectations, their experience with ICT, and then proceed to formulate the purpose and objectives of the lesson, organize the learning activities, choice of appropriate educational techniques and teaching tools.

Through learning design, the appropriate conditions for the achievement of the learning objectives during teleconference are created. Türker and Zingel (2008), highlighted the relationship between personal mediation and self-regulation of learning. They argued that the organization of learning resources could be achieved in a learning environment with specified learning activities. Therefore, the achievement of the goals set can also be considered as an act of educational design and this *act* is related to the phase of self-regulating learning (Dabbagh & Kitsantas, 2011). Understanding the processes of self-regulating learning allows teaching to identify appropriate development methods, both in terms of design and then in the implementation of the process. Therefore, learning design is of great value for the effectiveness of a teleconference, which is confirmed by the literature (Panagiotakopoulos, Tsiatsos, Lionarakis, & Tzanakos, 2013). Based on the analysis of the findings, it can be seen that, in a teleconference *meeting*, the support for an autonomous personal learning environment is feasible but not an easy process. The difficulty is mainly due to the lack of personal contact that differentiates it from the traditional classroom of teaching. Major difficulties have to be overcome which bridge the distance between trainer and trainees and among trainees. The trainer in a teleconference should be encouraging, instructive and should try to engage participants through a teach learning design. But this is not enough, because his role is more complicated than it seems, due to distance and lack of physical presence, there is a lack of authenticity and empathy that creates difficulties in coordinating the participants' interventions, in the sense of equality among themselves and therefore in their activation.

Regarding the advantages of teleconference, the use of the Big Blue Button digital platform proved to be really useful for conducting teleconference making it more direct and more interactive. The interaction was very satisfactory and allowed not only the transmission of information (something that could otherwise have been achieved), but also the essential communication and *team sense*. The most basic, as the respondents point out, is the change of attitude to a large extent and an urgent need to make greater use of new technologies. Teleconferencing platforms are said to be as attractive and capable of supporting collaborative learning activities with great success. Additionally, it can support not only the learning design of the trainer but also the use and exploitation of cooperative experiential techniques. Furthermore, there is a need for training in use and exploitation through training seminars to be used more and more.

According to the results of this survey, most recognize the concept of an autonomous learning environment and state that it is an environment in which the trainees can learn by themselves with various methods. Learner autonomy is also considerably affected by the learning environments, where students' autonomy is a significant requirement innovative learner-centred techniques should be prevalent (Fotiadou, Angelaki, & Mavroidis, 2017). Teleconferencing with the use of experiential techniques helps to create autonomous learning environments in content and process.

The present study has certainly revealed some drawbacks. We should mention the presence of some technical audio and video problems which were, however, usually resolved as quickly as possible. Specifically, in a few cases, there was low interaction in teamwork due to the above problems, but the trainer eased the difficulties. Additionally, the familiarisation with the platform is important for the teleconference session. What is proposed during a teleconference is to give more importance to the process of interaction among participants. The trainer must design

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empowerment methods to coordinate the teamwork of participants so that they can be prepared and express themselves. A carefully designed teleconference should include a good balance of activities with the tutor taking the role of a *critical friend* or *fellow learner* that allows room and scaffolds learners to take control of their own learning, (Vlachopoulos, & Hatzigianni, 2017). This in turn requires recognition of the self-awareness and motivation of trainees so that they are able to gain to manage not only their activities but also their internal processes. According to Zimmermann and Schunk (2001), the learning environment is beneficial for the effective development of intervention education.

Conclusions

The analysis above, leads to the following conclusions according to the sample responses:

1. For the first research question, concerning the potential of the applied experiential techniques, we can conclude that several experiential techniques could be useful in teleconference sessions with minor or major difficulties. The difficulties were identified when dialogue, brainstorming and simulation are used and these are in relation with the coordination of interventions, the anxiety and the unequal time of participation. This aspect of the research suggested that even work in groups could be applied successfully in teleconference teaching sessions, which is an effective and common technique in face-to-face meetings. But, every experiential technique requires proper and adequate preparation of the instructor, to a greater extent than these for to face-to-face teaching sessions.
2. About the second research question, the effectiveness of the teleconference, we can conclude that this parameter is in relation with the preparation of both teacher and learners. Moreover, it depends on the teachers' flexibility over the learners' special characteristics, the targeted teaching and the use of experiential techniques to maximize the interaction (that means the active participation) between them and between them and the teacher.
3. The teleconference as teaching tool can support the autonomous learning and can enhance personalisation as this process can help students to learn and develop skills by receiving efficient support. This aspect could be maximized when the teacher provides personalised support to their students who feel more free than in the conventional classroom. In a teleconferencing environment, teachers should promote students' self-confidence in their ability to learn. It has been proven that it is essential in teaching to encourage self-regulating learning (Laurillard, 2012) during all the phases in the educational process. Learning does not happen at random but is motivated by learners. Learners take an active part in their own learning processes to the extent that they are able to manage and direct them. Teachers should recognize the usefulness of self-regulating learning and try to motivate and support their students to achieve a high level of independence in their learning (Mikroyiannidis et al., 2012).
4. About the advantages of teleconference environments, we can conclude that using teleconference we can save money and time for transportation. With proper educational design, the teacher can apply experiential educational techniques and methods to increase the interaction between the participants, and to encourage them for collaboration. On the other hand, learners can attend a recorded session from their own place and with this way, they can regulate the pace of their study. The interviewees reported that the disadvantages are often in relation with technical problems, such as lack of sound and internet connection problems. These obstacles increase the learners' anxiety when a teleconference session is conducting.

Overall, we can conclude that the sample considers the teleconference as a very powerful and effective tool for distance education. But, in comparison with face-to-face meetings, we still have

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a long way to go to apply the teleconference as the one and unique tool for open and distance education.

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