Introduction

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As the demand for more highly skilled and qualified 21st century professionals is increasing, and vast amounts of populations are moving from one place to another worldwide, the numbers of English for Specific Purposes (ESP) courses are constantly growing. Learners nowadays need courses to cater for their needs dictated by the demands of the labour market (Jendrych, 2013). In this ever changing context, ESP has started to receive much attention by teachers, learners, and researchers in the field; as a result, there has been an increase in the organisation of conferences and colloquia and the creation of professional organisations related to ESP. Despite the developments in ESP research and practice, however, the literature shows that there are areas of ESP that remain pristine and unexplored.

Researchers in the field admit that studies on issues pertaining to ESP mainly focus on text or discourse analysis (Hewings, 2002), genre, and corpus studies (Johns, 2013) or on the analysis of the learners' needs. Basturkmen (2012) supports that Language for Specific Purposes (LSP) research in general "has been overly concerned with planning what should be taught, to the relative neglect of inquiry into implementation of LSP and issues related to teaching" (p. 60).

Issues related to ESP teacher education have not been thoroughly investigated yet. Publications focussing on ESP teacher education are very few, and they

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mostly involve journal articles. Books or edited volumes on ESP teacher education are hard to find, and apart from Howard and Brown's (1997) volume entitled *Teacher Education for LSP*, there has not been any other endeavour to publish a volume dedicated to this issue. In all the publications focussing on ESP teacher education, the view which unanimously prevails is the one that expresses the need for more opportunities for ESP teacher training and thus more research in this field (Abdulaziz, Shah, Mahmood, & Fazal e Haq, 2012; Adnan, 2011; Bezukladnikov & Kruze, 2012; Bojović, 2006; Bracaj, 2014; Chen, 2012; Fortanet-Gomez & Räisänen, 2008; Howard, 1997; Johnstone, 1997; Kakoulli Constantinou & Papadima-Sophocleous, 2017; Kennedy, 1983; Madhavi Latha, 2014; Mahapatra, 2011; Master, 1997; Mebitil, 2011; Rajabi, Kiany, & Maftoon, 2012; Savas, 2009; Wright, 2012; Zavasnik, 2007).

Apart from issues related to ESP teacher education, another area that has not received enough attention is that of ESP teaching methodology and the use of new technologies, although its value has been continuously expressed in literature (Blake, 2013; Donaldson & Haggstorm, 2006; Hanson-Smith, 1999; Walker & White, 2013). As Basturkmen (2014) claims, there have been only a few empirical studies investigating the work of ESP teachers and LSP teachers in general.

The limited research in the areas of ESP teacher education and ESP teaching, including the use of new technologies, and the intense need for ESP teacher training that have been detected in the ESP literature are the sources of inspiration for this proposed volume. Another factor that is considered as an impetus behind this publication is the belief that ESP is still a field that is advancing, and this can be proven by the ongoing evolvement of ESP, which "has been changing and developing all the time, and it is expected to change and develop in the future as well" (Jendrych, 2013, p. 43). The various socio-economic and demographic changes occurring worldwide created the demand for more capable professionals who are able to communicate effectively in their professional environment. In such a context, the need for more efficient ESP teaching practices and more proficient and research-based ESP teacher training is nowadays more powerful than ever.

The purpose of this edited volume, supported by the Language Centre of the Cyprus University of Technology, is to give the opportunity to researchers and practitioners to share their knowledge, skills, and experiences in ESP teaching and teacher education and trigger further interest in this domain. The aim is to further explore and share ESP research and practices.

The volume consists of an introduction, ten chapters, and bio statements for editors. It aims at addressing issues related to ESP teacher education and ESP teaching practices as they arise in today's constantly changing and developing world. It puts together a selection of chapters on issues pertaining to ESP teacher education and ESP teaching methodology.

The first five chapters focus on different aspects of ESP teacher education, including that of the use of new technologies.

In chapter one, entitled *ESP in teacher education: a case study*, **Kırkgöz** addresses the professional needs of future ESP teachers by designing an innovative ESP teacher education course in a teacher education programme in Turkey. The theoretical framework of the study is based on the constructivist perspective in order to help pre-service English teachers create meaning through their participation in various socialisation practices. The first part of the course was theory-informed to familiarise students with ESP-related topics, while the second part followed a practice-oriented approach. Data were collected through pre- and post-test open-ended questionnaires, student journals, and ESP projects. Content analysis was used to analyse the qualitative data. Findings underline the positive effects of the ESP course. Suggestions are offered for teacher education programmes.

In chapter two, entitled *Finding the way through the ESP maze: designing an ESP teacher education programme*, **Kakoulli Constantinou**, **Papadima-Sophocleous**, and **Souleles** report on the first findings of a technical action research study, which aims at exploring and addressing the problem of insufficient ESP teacher education suggesting an intervention in the form of an online ESP teacher education programme. Following the spiral pattern of

action research, the study evolves in cycles of continuous improvement. The chapter focusses on the initial stages of the study, during which the problem of lack of ESP teacher education opportunities was identified, and a remedy to this problem, an online ESP teacher education course, named Online Reflective Teacher Education in ESP (ReTEESP Online), was developed and piloted with a group of ESP practitioners before its implementation.

In chapter three, entitled *Self-scaffolding and the role of new technologies in esp teacher education,* **Aleksić-Hajduković**, **Sinadinović**, and **Mijomanović** explore how ESP teachers and practitioners utilise new technologies, e.g. massive open online courses, webinars, online platforms, etc. as a means of self-scaffolding in order to exceed their threshold in pedagogical, linguistic, and discoursal competencies in various ESP domains. The study analyses the data provided by ESP teachers and practitioners from various educational backgrounds. The findings obtained via a questionnaire show to what extent ESP teachers and practitioners exploit new technologies as a means of self-scaffolding, but also offer a classification of the tools, strategies, and opportunities available for their self-directed unassisted professional development. Furthermore, various electronic self-scaffolding resources are discussed and evaluated according to their accessibility, applicability, and popularity among teachers. While this research is not concerned with cross-cultural differences in ESP teacher education, broadly speaking, it is concerned with gathering data from various teaching environments with a view to providing a universal representation of current trends in ESP teacher education. Offering an up-to-date model for ESP teacher education is an important implication of this research and the authors hope its findings serve as guidelines and contribute to material development.

In chapter four, entitled *Providing feedback on the lexical use of ESP students' academic presentations: teacher training considerations,* **Zareva** describes a methodology for providing training to pre-service EAP/ESP teacher trainees in giving evidence-based feedback on the lexical composition of ESP students' academic presentations. The author discusses a study based on the analysis of the mock feedback provided by the EAP/ESP teacher trainees to ESP students' presentations with a focus on the effects of training. The results reveal that the

training was successful in areas such as raising the teacher trainees' awareness of how to evaluate various lexical categories in an ESP presentation, how to incorporate their evaluation into the feedback they give to the students, how to highlight relevant lexical deviations in an evidence-based manner, etc. but there were also a couple of areas that needed to be emphasised more in the training process. The results confirmed that providing training on evidence-driven feedback to teacher trainees planning to teach in an EAP/ESP context is a necessary component of ESP teacher education.

In chapter five, entitled *Context & communication in ESP – validating new perspectives and methodologies for learners and teacher training in English for aeronautical communication,* and based on evidence from research conducted in previous years, **Bullock** conducted classroom-based research with 33 air traffic controller students, undergoing their basic operational and technical training at the ROMATSA training centre in Constanta, Romania. That earlier research argued for a change of perspectives in LSP teaching and for a more appropriate and valid methodology for English learners in the aeronautical domain by adopting a more inclusive communication and knowledge-based approach in order to fill the disconnect between what is often taught and what is used in the real world. The aim was to demonstrate how the transfer of such theory into practice would address real world communication needs. The chapter gives supporting background evidence to the research, followed by the rationale and methods used in the research. It demonstrates the positive impact such methodology had on the students and their learning and suggests more appropriate training and education for LSP teachers, which would offer learners the most appropriate environment in which to maintain and improve their communication skills through language.

The next five chapters focus on ESP teaching with the use of technologies.

In chapter six, entitled *Technology-enhanced curriculum development in a coursebook-based learning culture: the ESP tertiary context*, **Giannikas** focusses on a curriculum that was developed to tailor the academic and professional needs of 20 ESP first year students of the Department of Chemical

Engineering, with the aid of a technology-enhanced environment. The aim of the personalised curriculum was to stress the fusion of interactive tools and make use of applications that would deliver opportunities for: (1) autonomy, (2) resource and content management, and (3) communal and individual content production, presentation, and sharing. Data reports on the transformational period, the progress made, and the impact the technology-enhanced curriculum had on their learning. The investigation revealed insights on the level of intensity of cognitive and instrumental interactivity.

In chapter seven, entitled *Embedding a serious game into ESP curriculum*, **Pappa** and **Papadima-Sophocleous** describe how a selected Commercial Off-the-shelf (COTS) Serious Game (SG) was evaluated before being integrated into ESP curriculum through the steps and decisions taken before the implementation of the selected COTS SG in a specific ESP learning context. The aim of the single-case study was to explore the areas of ESP teaching with COTS SGs, by illustrating a combination of assessment methods that could be adopted by those considering embedding SG in formal ESP language settings. First, the authors outline the reasons which initiated such an integration. Then, they present the validation of their selection process of the particular SG through an initial assessment of the game and the game design. After evaluating its pedagogical use, they analyse the way they considered applying the selected tool within the curriculum.

In chapter eight, entitled *Facilitating the development of collaborative online dictionaries in the ESP field*, **Nikiforou** reports on the results of data taken from a course in a tertiary institution in Cyprus. English Foreign Language (EFL) students worked collaboratively on a wiki to complete the task of creating a shared online biomedical dictionary. The methodology that lies behind the research is grounded theory. The research conducted is qualitative and as such the data are primarily collected from the wiki and the history pages which kept track of the students' work. Emphasis is given both on the frequency with which the students entered the wiki to add, edit, and format vocabulary items, and the quality of their vocabulary entries, including the editing of the items that followed. This chapter offers practical suggestions on how to design and

implement such a task in any ESP and EFL course across different language levels as well as in mixed ability classrooms.

In chapter nine, entitled *Going beyond words and actions: teaching metacognitive and soft skills to ESP communication students at the dawn of the fourth industrial revolution,* **Di Pardo Léon-Henri** examines ways in which new technologies can be integrated into reflective ESP teaching methods to stimulate student motivation and encourage the development of the aforementioned skills which are not only professional but also metacognitive in nature, within the context of non-specialist English language students in communication studies. The chapter begins by presenting the theoretical framework, method, and procedures for a collaborative one-minute film project. Finally, it presents some initial results, as well as various observations and potential for further transversal research.

In chapter ten, entitled *Pronunciation instruction in ESP teaching to enhance students' prosody,* **Quesada Vázquez** investigates the efficacy of explicit rhythm instruction to improve engineering students' prosody in English. As part of this research project, a pronunciation module, consisting of ten weekly sessions of 30 minutes held within the class schedule, was designed for a technical English course at Rovira I Virgili University. According to the author, every session followed Celce-Murcia's steps to teach communicatively. The participants were 298 Spanish/Catalan first year undergraduates divided into three experimental and three control groups. Experimental groups received explicit rhythm instruction while control groups did not. All students were recorded before and after the training. Six native American English speakers were also recorded as a reference point. Varco-V values were calculated and compared using Praat and the data were analysed using mixed analysis of variances and t-tests. Results reveal that students who took rhythm instruction tend to increase in Varco-V after training, approaching English rhythm, while those who did not train rhythm present broader variance. Despite results not always being significant, an analysis of the effect sizes for the t-tests comparing before and after Varco-V values for the experimental versus the control groups show significance. These results, though preliminary, support the hypothesis that rhythm instruction can be beneficial to improve ESP students' prosody.

The audience for this volume is expected to be a broad one, since the issues on which it focusses may be of interest to many specialists in the field. More specifically, it is expected that this volume will appeal to ESP teacher trainers or language teacher trainers in general, who would like to learn about the newest research, ideas, and practices in the field of ESP teacher training. The volume will also attract the interest of ESP practitioners who wish to be informed about the latest developments in the field of ESP teaching and the opportunities that they may have for professional development in the field. Moreover, the volume may also be useful to ESP researchers, teacher trainers, practitioners, policymakers, material developers, students, as well as any other ESP specialists who may be interested in being updated about the latest developments in the ESP field.

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