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Abstract: In their future careers, English for specific purposes (ESP) and languages for specific purposes (LSP) teachers-in-training are likely to initiate, participate in, and supervise the development of new language courses, including those targeting specialized workplace or discipline-specific content and language. This paper highlights the need for future ESP/LSP teachers to acquire additional professional competencies in order to meet the demands of present-day language professionals, and discusses how these competencies are targeted in a graduate-level teacher training course in ESP that is taught at a large public university in the western United States. The authors first contextualize the need for additional research focusing on teacher education in ESP/LSP and then offer an in-depth discussion of the three competencies targeted in the course, including the ability to conduct needs analyses, to explore authentic discourse, and to utilize corpus-based tools to examine specialized language. Formal evaluations from course participants, which served to provide feedback and to instigate revisions in content and procedures in subsequent offerings, are then discussed. The conclusion offers a set of recommendations to consider in future ESP/LSP work in teacher education.

Keywords: authenticity, corpus-based analyses, English for specific purposes, graduate teacher training, needs analysis

Introduction

One of the prominent themes that emerged during session discussions and networking events at the most recent International Symposium on Languages for Specific Purposes (ISLSP) & Centers for International Business Education and Research (CIBER) Business Language Conference hosted by George Washington University in May, 2024, was the current state of teacher education in LSP and how little information is currently available in this area (e.g., Bocanegra-Valle et al., 2024; Chery, 2024). While there are short-term programs and professional development courses being developed that address the most immediate needs of LSP in-service teachers (e.g., World Languages 21, LSP Teacher Education Online Course for Professional Development (see King Ramírez, 2017-2020), little is discussed about how long-term courses and programs prepare the next generation of LSP professionals who are expected to carry the field into the future, both in terms of teaching and research.

The existing void is not specific to any particular target language, albeit those who work in ESP (the authors' area of specialization) might have an advantage of having access to a larger collection of published resources, including professional journals and teacher training manuals, since the emergence of the field in the 1960s (Chambers, 1980; Munby, 1978). Despite the seeming abundance of ESP-related resources, practitioners who work with pre- and in-service

teachers note that although ESP instructors often embrace a range of roles by being a teacher, a content specialist, a researcher, a course designer and materials developer, as well as a course evaluator, the literature on ESP teacher development has been very limited (Belcher, 2013). As Basturkmen (2019) notes, the literature in general "has tended to foreground the needs of learners and background the learning and knowledge needs of teachers" (p. 318). The few empirical studies that examine the needs of current ESP teachers in the field provide additional evidence to support the observation stated above: Teachers report inadequate training, lack of support to engage in professional development activities, marginalization compared to teachers in other content areas, and the negative impact of the power hierarchies of academic institutions (Basturkmen, 2022; Chen, 2011; Estaji, 2024).

A step forward in this situation would be to consider developing a set of ESP/LSP standards for teacher preparation programs that would specify the knowledge and skills required of candidates to attain their degree and/or additional qualification/endorsement/specialization. Current standards for initial Teaching English to Speakers of Other Languages (TESOL) pre-K-12 teacher preparation programs (TESOL International Association, 2019) offer general guidelines by broadly referring to candidates' ability to support language learners' "academic achievement across content areas" (p. 6) and "to foster student learning of language and literacies in the content areas" (p. 9). Additionally, based on the published resources, the bulk of ESP/LSP instruction (at least in the United States) is currently taking place outside of K-12 contexts, with adult language learners pursuing instruction either at post-secondary institutions or in the workplace. Therefore, there is an apparent need for the ESP/LSP community to develop an additional set of guidelines for teacher preparation programs that offer more in-depth training on how to plan and deliver language instruction to learners in a variety of pedagogical contexts, including those outside of formal classroom settings. Some existing resources that might be useful to consider include the Competency Framework for Teachers of English for Academic Purposes, developed by the British Association of Lecturers in English for Academic Purposes (BALEAP, 2008) and the Oral/Writing Proficiency Levels in the Workplace (ACTFL, 2023). The former resource describes qualifications specifically for teachers of English for Academic Purposes and captures a comprehensive set of competencies, from recognizing disciplinary differences in academic discourse to investigating student needs for academic study, to engaging in syllabus design and program development. The latter resource focuses on language learners (not teachers) and offers insights about the level of proficiency associated with various professions/positions and the language functions these individuals would be expected to be able to perform. While neither resource targets ESP/LSP teacher competencies directly, both offer ideas of the relevant pedagogical skills and required knowledge that can be used to inform future ESP/LSP teacher preparation guidelines.

What follows below is an account of successes and lessons learned from engaging in a graduate teacher training course in ESP, which contributes to the scarce literature addressing the topic of ESP/LSP teacher preparation. The course was originally designed and taught by the first author of this article as an elective course for students who were interested in learning about curriculum development as well as conducting research in ESP. Based on extensive analyses of published literature, empirical research (especially studies published in *English for Specific Purposes*), and fieldwork conducted by the first two authors of this article (e.g., Nekrasova-Beker & Becker, 2017; 2020), the course targeted the most important competencies required of anyone involved in ESP work. These include:

(1) ability to conduct a needs analysis process to inform subsequent course development;

(2) ability to explore authentic discourse and to develop authentic pedagogical materials and tasks; and

(3) ability to utilize corpus-based applications and tools to examine specialized language.

While one might argue that the list of competencies identified above is not as comprehensive as it should be, we attempted to emphasize the most salient skills that (1) were referenced across various publication types in ESP (including teacher reference books) and (2) could be introduced and practiced within the course of one semester. In addition to addressing these competencies within the course, the first two authors of this article also target the development of these skills when supervising student research in the field of ESP and directing graduate projects that focus on curriculum development for specific purposes.

In the subsequent sections, we first offer a detailed discussion of the course, highlighting its structure, the content targeted during the sessions, major assignments, and the teaching methods employed during the course. Next, we discuss each of the three professional competencies targeted within the course: (1) conducting a needs analysis, (2) exploring authentic discourse and developing authentic materials, and (3) utilizing corpus-based applications to analyze specialized language. We start each of the three sections with a comprehensive overview of existing literature on the subject, followed by a discussion of challenges with existing practices that we identified in class discussions, lessons we learned from those experiences, and the questions that remain. To illustrate the most relevant concepts discussed in the sections, we include references to research and curriculum development projects completed by the course participants. Following the discussion of the three professional competencies targeted in the course, we summarize input from course evaluations completed by the participants and how it was used to inform revisions in course content and procedures in subsequent offerings. Finally, we conclude the paper by offering suggestions for additional topics and directions for research that, based on our analysis, require further attention from ESP/LSP practitioners.

Graduate ESP Course: Contextualizing Participants' Experiences

The course featured in the present discussion was designed as a face-to-face 3-credit course for graduate students in an MA program who were training to become teachers of English to speakers of other languages at a large public research university in the western United States. The goal of the course was to provide an overview of essential aspects of ESP course design and material development, as well as to offer participants an opportunity to examine current research topics in the field. Since the first offering in 2016, the course was taught four times, each time by one of the first two authors, with the number of participants ranging from 8 to 19, and one of the course iterations offered via a hybrid format (i.e., face-to-face followed by remote teaching) due to restrictions imposed by the COVID-19 pandemic. During each course cycle, participants met weekly for two 75-minute sessions over a period of 16 weeks.

To meet the course objectives, the instructors employed project-based learning as their predominant instructional approach, with task-based language teaching and rhetorical genre-based perspectives incorporated throughout to help trainees develop the skills necessary to tackle the content and language associated with a specific target language use domain (e.g., a lower-division university survey course in engineering, a standardized language proficiency exam, or a teacher-parent conference in a K-12 setting). Project-based learning was implemented to help participants cultivate relevant skills by engaging in a sequence of meaningful tasks, which they completed either individually or collaboratively over an extended period of time.

In line with the best practices of project-based learning, students worked on course projects following a step-by-step approach with multiple deliverables and feedback points (e.g., a project proposal, a progress report, a round-table discussion, a presentation) incorporated throughout the semester (see Appendix A for examples of a project proposal assignment description and progress report templates). To support participants' work on the projects and to further promote their development of required knowledge and competencies, a number of additional course assignments and in-class activities were carried out throughout the semester, including (but not limited to) pedagogical/research resource demonstrations, training on corpus-based and genre analyses, and in-class discussions and training on research basics and data collection methods. The three competencies that comprised the learning outcomes in the course are discussed below.

Target Competency 1: Conducting Needs Analyses

Since the inception of ESP courses in the 1960s, needs analysis has been considered an integral component to course development. Called the "backbone of ESP course design" by Woodrow (2018, p. 21), the most significant ESP textbooks have all discussed needs analysis as an essential component of course development (Basturkmen, 2010; Hutchinson & Waters, 1987; Long, 2005; Paltridge & Starfield, 2012). Strevens (1977) and later Dudley-Evans and Johns (1998) emphasized needs analysis as the first step in ESP course-building that informs all of the following phases: syllabus design, materials production, instruction, and evaluation. To simplify, Brown (2016) defined needs analysis as "the systematic collection and analysis of all information necessary for defining and validating a defensible curriculum" (p. 16). Through needs analysis, course designers and instructors examine the present situation and target situation for language learners and consider their needs in terms of necessities, wants, or lacks (Hutchinson & Waters, 1987) and the language forms required to perform real-world tasks in the target situation (Long, 2005). Furthermore, the field of ESP has emphasized an "ethnographic, or social-use-centered, orientation" since the 1980s (Dressen-Hammouda, 2012, p. 502), which points to the importance of investigating cultural, disciplinary, and professional aspects of the target situation.

The needs of language learners can be categorized in various ways. One dichotomy is that of subjective and objective needs (Brindley, 1989). For example, individual learning styles, cultural backgrounds, experiences with English, and motivations are considered subjective needs, while objective needs surround the discourse and language skills needed to accomplish tasks to meet the target-specific purpose. Another framework for needs analysis models considers the target situation analysis (TSA), present situation analysis (PSA), and learning situation analysis (LSA). Chambers (1980) argued for the prioritization of the TSA, defining it as "the establishment of communicative needs and their [realizations], resulting from an analysis of the communication in the target situation" (p. 29). PSA, on the other hand, evaluates students' language and learning abilities before or at the beginning of a course (Dudley-Evans & St. John, 1998). Richterich and Chancerel (1980) suggested that PSA also include the analysis of the students' cultural and social context as well as their attitudes towards English. Lastly, LSA is a more subjective model that deals more closely with students' cognitive and affective factors that influence their motivations and how they learn most effectively (Dudley-Evans & St. John, 1998). While some scholars have emphasized certain models over others, most agree that needs analysis should attempt a combination of TSA, PSA, and LSA.

One of the most salient best practices of needs analysis is the triangulation of data sources and data collection methods (Long, 2005). For example, to design a (hypothetical) Medical English course in Colombia, the sources of information might include Spanish-English linguists, medical students, and expert doctors—ideally from both Colombia and an English-speaking country. Course designers or instructors could gather their data through a combination of semi-structured interviews, questionnaires, doctor-patient observations, corpus analyses of medical texts, and reviewing previous literature about the development of Medical English or related ESP courses. Long (2005) also argued for a task-based approach to promote coherence in course design and consider learner needs in terms of the tasks required in their field rather than focusing specifically on linguistic units. Both triangulation and task-based needs analysis were the essential elements targeted in the teacher-training course featured in this paper. Specifically, one of the projects carried out by the students – the Needs Analysis Proposal – was tailored to meet their individual interests in ESP course design. The goal of the project was to develop a plan for conducting a needs analysis for a specific group of learners to identify the needs that can be addressed in an instructional unit (e.g., a course, a module, or a series of workshops). Using class readings, lectures, and discussions as guidelines, students were instructed to describe their target learner group as well as the occupational domain by defining such parameters as the pedagogical context, a preliminary set of competencies/skills/knowledge that needs to be acquired, types of procedures and instruments to use during data collection, considerations for data triangulation, and resources (e.g., previous needs analyses, methodological pieces targeting a similar group of learners) that might facilitate participants' work on the project. Students were guided through Long's (2005) framework for task-based needs analysis and encouraged to triangulate sources of data and methods of data collection. Depending on their project, students took different approaches to gathering information about the needs for their ESP courses. For example, one student surveyed writing center consultants on campus, while another spoke with a bilingual informant in Saudi Arabia about the English he used in his work in the pharmaceutical industry.

Challenges with Needs Analysis

Since ESP courses are context-dependent, it can be difficult to rely on a singular ESP textbook without revising and repurposing the materials (Basturkmen, 2019). While there may be "no need to 'reinvent the wheel' when it comes to materials design…" (Anthony, 2018, p. 107), an instructor might still choose to create supplemental activities and lessons to meet the needs of a highly localized teaching situation. Designing new materials can be challenging, especially if the instructor lacks experience in the specific target field.

Some of the challenges in the ESP course mirrored those that real-world ESP instructors face. For example, ESP instructors often confront a lack of time, resources, or access when conducting their needs analyses and building their curricula, especially when teachers might be hired into a new teaching position abroad with just weeks or days to prepare a curriculum. For teachers-in-training, it can be challenging to balance the demands of developing and teaching an ESP course while simultaneously learning how to do so, often in the confines of one semester. Therefore, it would be useful for teacher training programs to include practice and guidance for developing needs analyses within constrained situations. If time is limited, what data collection methods should one prioritize? If a teacher is unable to communicate with or gather data from

actual participants in a course or experts in the field, how might they still consider students' needs during course development?

These questions were explored in the course, which some students took during the height of the COVID-19 pandemic. Taking an ethnographic approach to needs analysis would have been ideal, but in-person observations and interviews were rendered impossible due to pandemic restrictions. Even under normal conditions, the time constraints of the semester-long course prevented the deep, focused, and sustained methods of data collection and critical reflection required for a truly ethnographic approach (Dressen-Hammouda, 2012). Instead, students practiced alternative data collection methods, examining the existing literature for teaching contexts similar to their projects and analyzing corpora. For example, one of the participants (who is also one of the authors of this article) developed a needs analysis and pedagogical recommendations for a multilingual gifted and talented classroom in a public high school (Pedrotti, 2021). The goal of the project was to explore ways of serving these dual-identified students with both academically challenging content and sufficient language support to access and engage with that content. The project targeted a high school in a district with roughly 30% English language learners (ELLs); the class was based on an existing weekly pull-out gifted and talented class in a different school district[1]. In an ideal course development scenario, the student would have conducted semi-structured interviews and administered written surveys to various stakeholders, including subject teachers and the gifted and talented teacher at the target school, school administrators, the students themselves, and their parents. She also would have collected observational data by visiting the target students in their existing classes. Instead, Pedrotti (2021) conducted a phone interview with an expert in the gifted and talented field who was currently teaching a pull-out course that inspired the project. She also utilized a corpus-based tool, Compleat Lexical Tutor (Cobb, n.d.), to create an academic keyword list by cross-referencing a textbook for a college composition course with the Corpus of Contemporary American English (COCA). The results informed lesson plans devoted to developing students' academic English vocabulary, which helped meet the specific population's need for college readiness.[2]

Additional Considerations for Conducting Needs Analyses in ESP

As established earlier, gathering data from different sources on the needs, deficiencies, and desires of the learners is considered a best practice for needs analysis. However, different informants often report contradicting information. For example, Chen et al. (2019) conducted a needs analysis for the language skills needed to discuss green building and other environmental

[1] In a pull-out course, students are temporarily taken out of their regular classroom to receive specialized instruction, support, or enrichment. For example, multilingual learners might be pulled out to receive targeted language development, as opposed to a "push-in" model, which instead places an additional instructor or intervention specialist in the students' normal classroom to provide support from within.

[2] It is worth mentioning that the work completed by Pedrotti (2021) for this project helped her prepare for a position teaching English at a private language institute in Bucaramanga, Colombia. The school was in the early stages of developing a textbook and materials for the B2 course, which was attended by adolescent and young adult students with various goals: using English in their existing jobs, expanding employment opportunities in the future, and attending university in English-speaking countries. Pedrotti accepted the position just one week before the start of the class; to prepare quickly, she drew upon not only the theory but also the practical resources she had developed in the ESP course. By reworking and administering surveys and interviews she had designed for the gifted and talented ESP course, Pedrotti was able to quickly assess students' writing and speaking abilities and develop course materials tailored to trends in student interest and learning goals.

issues in English. Through questionnaires, semi-structured interviews, and on-site observations of university students, experts in the field, and ESP instructors, the researchers found differences in the prioritization of language domains. The ESP instructors emphasized listening and reading skills as the most important, while students and green-building experts expressed a stronger need for the development of speaking skills. Similarly, Farea and Singh (2024) administered semi-structured interviews and questionnaires to medical students, ESP teachers, and university lecturers in the Department of Medicine. The researchers found that the students rated listening and reading as their most frequently used English skills, while the other groups indicated that writing and listening were the most commonly used. When the data is inconsistent, whose ideas should hold the most weight when designing a course: the learners, the field experts, or the English-language experts?

Hutchinson and Waters (1987) asserted that "all decisions [in ESP] as to content and method are based on the learners' reason(s) for learning" (p. 19). From this learner-centered lens, it would be important not to discount the students' perceptions of their own needs, even though they are not experts in their target context or language. If students perceive what they are learning in an ESP course to be relevant to their target situation, their motivation and active participation in the course will be stronger than if they believe that they are not receiving the instruction they need to be successful. However, while students certainly have insight into their own learning preferences and tendencies, they likely lack nuanced understanding of the language demands in their target situations and misperceive their own needs. Part of the work ESP instructors must conduct throughout the course, especially in the beginning, is helping students better identify, understand, and articulate their own needs. As with any teaching scenario, the way to approach a needs analysis and how to analyze the data depends on the context of the learners, institution, and the culture in which they are situated.

Needs analysis procedures should also consider the localized setting of the target community. Rather than referring to geographical location, localization is concerned with the "characteristics (individual, linguistic, cultural and social) of the learners from a particular population" (Brunfaut, 2014, p. 217). In their review of recent ESP literature, Bolton and Jenks (2022) were surprised to find scant research devoted to localization, which led to "somewhat thin descriptions of the sociolinguistic settings where these investigations [needs analyses] take place" (p. 500). O'Sullivan (2012) cautioned that not centering the localized learners' language operations during needs analysis would lead to issues with test development and exclude the test-taker from full participation in the specific target situations. Future ESP teacher-training courses could approach ESP from a critical perspective—to consider social and institutional hierarchies within the teaching and learning context (Starfield, 2012). At a minimum, future ESP instructors should be trained in cultural awareness and sensitivity and become familiar with power dynamics and the complicated colonial origins of some English teaching/learning situations. We recognize this as another important competency to target during the next course cycle.

As in many sectors today, future directions and shifts in the best practices for needs analysis might emphasize technology for gathering and interpreting data. Bao (2021) suggested that the triangulated methods for conducting the present situation analysis, learners' needs analysis, and target situation analysis could include cloud computing and information sharing of big data. Future research in the field of ESP should explore the growing concerns and applications surrounding artificial intelligence (AI) technologies. While there are ethical concerns about the privacy of learner data and the need to develop digital literacy in both learners and teachers (Hockly, 2023), incorporating AI as one of many methods of data collection

and analysis could help provide a more accurate assessment of the target situation and learner needs, and potentially save ESP course developers' time.

Ammar (2022) called for another shift regarding needs analyses—in this case, they stressed the importance of analyzing the needs of future ESP teachers during their training courses. Ammar (2022) argued that "in the midst of the excessive focus on students' needs, their intents behind English language learning, tasks to be selected and methodology to be implemented, the pivotal agent in the teaching and learning process—the teacher and his training—has been neglected" (p. 759). It could become common practice for instructors of ESP teacher training programs to openly model the needs analysis practices they teach their students; they could gather data to shape their own syllabi while demonstrating needs analysis to their students in an authentic situation concurrently.

Target Competency 2: Exploring Authentic Discourse and Developing Authentic Pedagogical Materials and Tasks

Historically, ESP courses emphasize the importance of authenticity, as it is understood that ESP teachers should rely on authentic materials; these materials model the target language, tasks, skills, and competencies, providing useful examples of what students need to produce. Dou, Chan, and Win (2023) underscore this point, emphasizing the importance of matching course objectives in ESP and LSP courses to the learners' specific needs. Specifically, the authors' state that, "[The ESP course] would concentrate on the language, identified skills, and genres that are most relevant to the specific activities that learners need to perform in so as to use English efficiently" (pp. 1-2). This quote outlines key steps for the learner in ESP courses: first, that they engage with authentic texts, and second, that learners have opportunities to use and practice their language skills.

Although many teachers understand the crucial role of authentic materials and seek to incorporate them in their language instruction, not all teachers have an equivalent knowledge base for teaching domain-specific content. Some teachers may have specific subject expertise, experience as an English as a foreign or second language (EFL/ESL) teacher, or both, while others may not. Several studies examine how deeply an ESP teacher must know the field in addition to their background in Teaching English to speakers of other languages (TESOL). Drawing from ESP studies, Basturkmen (2022) recommends that teachers have at least an awareness of the subject area to effectively collect and analyze materials. As she explains, "the question of who is best placed to provide discipline-, occupation- or profession-specific language support, the language teaching expert with a background in TEFL/TESL [teaching English as a foreign or second language] or a subject specialist, is one that is open to debate" (p. 518). However, as Dou, Chan, and Win (2023) note, the importance of this familiarity or expertise "would depend largely on target situation analysis in which learners' real-world communicative needs are recognized in order to set some founding principles for course design" (p. 5). In this regard, the internet serves as a viable resource to provide access to a plethora of authentic materials, much of which can serve as a supplement to textbooks, corpora, workbooks, and other formal materials (Garcia Laborda & Litzler, 2015).

To cultivate students' abilities to approach authentic discourse and task types, participants in the ESP course were invited to execute (some of) the procedures outlined in the Needs Analysis Proposal to inform a subsequent development of pedagogical modules, especially decisions pertaining to the goals/objectives of an ESP course, description of the target language

use (TLU) domain, possible units of instruction, and the linguistic content to target in the course (see Appendix B for a worksheet to guide the process). Since the topic of task and language authenticity, and how to approach it in pedagogical materials, was essential for the purposes of the course, participants were trained to identify relevant authentic features from different (but complementing) perspectives. First, when observing authentic tasks/activities conducted in the TLU domain, participants were instructed to note corresponding skills and competencies required for completing each task. Appendix C includes an example of a similar analysis conducted for major course assignments identified in one of the engineering courses observed by the first two authors during fieldwork (Nekrasova-Beker & Becker, 2016), which were discussed with course participants. The skills/competencies identified within each TLU assignment can then be scaffolded and practiced in a pedagogical task, provided that it offers a contextualized situation, so that learners are able to transfer the skill they learned in a pedagogical task to a real-world problem/task. The next perspective targeted in the course was Bachman and Palmer's (2010) framework for task authenticity to identify specific characteristics of real-world tasks—format, features of input, language characteristics, expected response, etc.—that could serve to inform the ways in which to create pedagogical tasks. While the original framework is extremely detailed in capturing task characteristics, the participants were encouraged to utilize certain elements of the framework that were most relevant for their purposes (e.g., zooming in on the language of the expected response). Finally, the rhetorical genre perspective was discussed with the participants to raise their awareness of the rhetorical structure of each TLU task and to help them identify the moves necessary to successfully complete the tasks. Moves can be broken down into sub-moves to gain an even greater understanding of the sequence of tasks and what is required for their completion (in terms of the knowledge, skills, and representative language patterns, see Appendix D for a template to guide such analyses). In outlining the moves that make up each task, learners' needs can be further met by scaffolding the tasks and helping the students develop an understanding of the different levels of complexity included in each task.

Utilizing the perspectives discussed above, one of the authors of this paper examined consultant strategies and writers' satisfaction following authentic writing center consultations between native English speakers and multilingual writers in a case study (which subsequently evolved into an MA thesis, see Miller, 2017). The impetus for the study was that, while many writing center handbooks exist, few devote more than a single chapter to varied approaches for working with multilingual learners. This study examined this gap through consultations between writing center consultants and writers, and aimed to provide additional resources for consultants working with multilingual writers. These authentic, unscripted interactions allowed the author to compare consultants' approaches to higher-order rhetorical concerns (e.g. achieving a purpose for a specified audience), which are prioritized in composition classes rather than grammar and form, which may take priority in language-learning classes (Miller, 2017). This interdisciplinary project drew on research in writing center studies, rhetoric and composition, as well as sociolinguistics and second language acquisition. One outcome of the study was the development of a list of tips for best practices in writing consultations, particularly for consultants working with multilingual learners. To that end, Ryan and Zimmerelli's (2016) scripts for writing center consultations were seen as being helpful, as they outline specific steps, such as: a greeting and small talk, a shift to the topic of the consultation and a writer's needs, negotiating to develop an agenda, and finally the consultation itself. While the moves of the consultation are more formalized, these encounters allow for authentic conversations that are guided by the learner rather than the consultant. Similar to teachers who may lack familiarity with a given subject area,

a writing center consultant may have little or no familiarity with the content of the writer's work; instead, they are positioned as a writing expert trained in Socratic questioning and nondirective feedback methods (Jaegar, 2016). This may serve as an advantage in writing centers, engaging writers through "questioning methods, whether designated Socratic or Rogerian…[which] can cue students to recall knowledge they have and construct new knowledge that they do not" (Carino, 2011, p. 118). In this way, both oral and written forms are negotiated and allow for authentic conversations about the written product.[3]

Challenges with Targeting Authenticity in ESP

Targeting authenticity in ESP is not without some difficulties, stemming first from the variety of ways authenticity is understood and implemented in the classroom. Taylor and Breen identified different types of authenticity, including authenticity of language, task, and situation (as cited in Tatsuki, 2006). While the classroom can present opportunities to use language authentically and in authentic tasks, the situations are devised and facilitated in many cases by instructors which is, by definition, an artificial construction. Brown and Menasche pose the idea of a spectrum of authenticity, accepting this artifice and recognizing that inauthentic materials have a place in language instruction due to the varying levels of proficiency that learners exhibit over time (as cited in Tatsuki, 2006). By thinking critically about the inclusion of authentic materials, alongside authentic tasks and situations, course participants were invited to reflect on ways they could mimic and develop their classroom more intentionally and achieve an appropriate degree of authenticity based on the level of learner and the context of the classroom.

In light of these complications, identifying authentic texts could present another challenge for language teachers. Basturkmen (2019) identifies a few key challenges with incorporating authentic texts, including finding appropriate texts that fit the exact context of the course, identifying texts that are beyond the students' language level, and adapting texts appropriately. Learner fit is challenging and made more difficult by the rate of change in a globalized world (Dou, Chan, & Win, 2023). That is, once suitable materials are identified, the students may not have the necessary skills required to comprehend and/or interpret the text, situation, assigned task, or other materials. For teachers less familiar with the target language, analyzing and adapting texts may pose additional difficulties, as they might be unable to interpret the language and may not have access to proficient users of the target language. Further, after so many adaptations, the authenticity of the materials could become questionable due to the degree or number of changes made. Despite these challenges, authentic materials remain central to the ESP classroom and present opportunities to coach learners through specific tasks in the target language.

In addition to the materials themselves, students need activities and opportunities to practice their skills in the target language. Needs analysis can help teachers to identify these tasks and situations (as discussed above), which can lead to material and activity development. Depending on the environment (e.g., EFL or ESL), different opportunities and constraints may

[3] As a full-time composition instructor and mentor to incoming graduate teaching assistants, Miller-Dickerson made this project the basis for guiding workshops in composition classes (including first-year and upper-division level classes), which are open to native speakers and multilingual writers. The results of this study led to several conference presentations (Miller, 2016; Miller & Hamrick, 2017) and the opportunity to serve as a graduate reviewer for the International Writing Center Association's journal *The Peer Review*, where Miller-Dickerson continues to serve as a reviewer.

exist. As Garcia Laborda and Litzler (2015) explain, “while materials for an ESL setting tend to be real and immediately applicable, in an EFL environment they may have a wider range of origins and often be artificially created to accommodate learners’ limited access to language use outside the classroom” (p. 43). Access to various technologies has eased some of the challenges in most settings, providing more authentic opportunities with which students can engage inside and outside of the classroom.

Additional Considerations for Targeting Authenticity in ESP

There are many classroom opportunities to incorporate authentic materials and tasks, helping both teachers and students. First and foremost, student samples from previous semesters (with permission) could be a resource to model the course goals and previous students’ successes. While these are not necessarily examples from the professionals in the field, teachers may benefit from having more specific examples of what they want students to produce. This practice could also allow teachers to avoid modifying samples. Collaboration between teachers with ranges of specialties could be another source of authentic samples from within the field, though modification or closer assessment may be necessary to ensure materials are level-appropriate for students. Teachers in interdisciplinary settings could benefit from collaborating with subject-specialists to acquire materials. Experiential learning opportunities in an ESP setting that take students out of the classroom could offer additional access and opportunity to interact with materials and other native speakers. Similarly, long-term relationships built with students who enter into the profession could serve as a resource of specialists, providing the opportunity to network and make connections to bring materials or speakers into the classroom, though these collaborative options could still require modifications based on the level of materials and students.

In addition to authentic materials, a variety of classroom tasks present similar opportunities for students to collaborate, utilizing each other as resources. The peer review process is a staple in college composition classes, pairing two students to provide and discuss feedback for each other. Often, these students come from varying backgrounds and disciplines, but share instruction in genre and rhetoric, the focus of peer review. Employing similar activities in the ESP classroom could create an opportunity to engage in a more authentic task, requiring negotiation and communicating feedback. Given the potential for varied skill levels and disciplines, ESP teachers could promote collaboration and the opportunity for students to learn from each other, or pair students more intentionally with attention to these differences among students. Additional tasks, such as group projects or papers that require collaboration, mock round-table discussions, or peer evaluations could offer a similar opportunity for students to interact authentically through engaging with feedback and revision. The focus on the skills taught in ESP, such as genre or grammar, is especially important given these individual differences among students in the classroom; in these cases, guided worksheets or specific prompts for feedback could help students focus on the target skills. Similarly, ESP teachers can work to create knowledge alongside students who may have more discipline-specific expertise, like genre awareness, inviting students to explain and demonstrate these skills. In this way, teachers have opportunities to learn from students, negotiating in collaboration with them.

Target Competency 3: Utilizing Corpus-based Tools to Examine Specialized Language

As mentioned previously, within the study of language there are multiple ways to gather information regarding the target language and its instruments. One such methodology of capturing and analyzing authentic language has been developed in the field of corpus linguistics. Corpus linguistics is the study and curation of corpora, which are a collection of pieces of language text in electronic form, selected according to external criteria to represent, as far as possible, a language or language variety as a source of data for linguistic research (Sinclair, 2004). These corpora have the primary function of giving detailed insights into the construction, use, and function of language in a particular context (Römer, 2021), as long as the size of the corpus contains enough eligible information to be relevant to the context (Sinclair, 1991). In the course, most students utilized corpus-based tools to carry out analysis via the construction of word lists in support of data-driven learning, which is utilizing authentic language to inform student language development (Hadley, 2002).

Word lists, which can be determined by using multiple indices, such as frequency (the number of times a word occurs in the corpus), range (the number of documents that use a particular word in a corpus), or "keyness" (the extent to which a word is unique to a corpus and is likely to represent a key concept), break the words within a corpus into tidy lists that can be used for further analysis or as pedagogical targets during classroom instruction to promote data-driven learning (Anthony, 2018; Hadley, 2002). Taken together, the three features of identifying words (frequency, range, keyness) have been utilized to compile various lists for both research and pedagogical purposes, although practitioners often prioritize certain features over others depending on the goal of the research, the materials in the corpus, and the purpose of the word list. Word lists that demonstrate these characteristics include the frequency-based General Service Word List (West, 1953) and its updated version, the New General Service List (Browne, 2013), which offer the most common headwords in the English Language. Further, the Academic Word List (Coxhead, 2000) is a frequency-based word list that features the most common academic words in the English language. In addition to these lists, generally specific word lists that focus on a range of subjects have also been created, such as The Computer Science Word List (Minshall, 2013), the Marine Engineering Word List (Đurović, 2021), and the Medical Academic Word List (Wang et al., 2008) (for an example of a Medical Spanish Terminology word list, see Miller De Rutté, 2024).

For a teacher in training, learning how a corpus can be used could be especially useful, as acquiring access to accurate language in the target discipline can help reveal deeper accurate insights into the language of a given field (Anthony, 2018). To understand what is truly being communicated, practitioners must first have access to acquiring the language in all the forms where it might appear. While language can be acquired via the consumption of materials, building an informed quantitative view of the language employed in the TLU domain can provide insights into the frequency of a word's usage, essential phrases, and required collocations. This is why all course participants received training on how to utilize corpus-based tools for language analysis as well as in material development, followed by in-class discussions of corpus-based research and its implications for classroom teaching. Appendix E includes examples of corpus-based analysis tasks completed by course participants during one of the lab sessions. As illustrated by the activities, the major focus was on developing students' abilities to generate frequency-based word lists, collocations, concordance lines, and keywords.

To further illustrate the skills mentioned above, one of the authors of this paper created a student corpus and word list in the computer science sub-discipline of extended reality (XR) (Mangus, 2023). The goal of the study (an MA thesis) was not only to create a corpus and word list, but also to examine how those two items increased accessibility to the content. The resulting information demonstrated that there was a keen interest by students in and out of the field of XR to have a word list for accessing the materials so that they could better access the discipline's content such as journal articles and conversations with experts (Mangus, 2023). This research illustrated that access to information for a teacher in training might already lie within the hard drives of their computers.

Challenges with Utilizing Corpora and Corpus-based Tools

The ability to construct corpora has grown dramatically over the years, but challenges remain. To the practitioner, acquiring permission to use textual data, licensing so that their corpus can be made publicly available, and developing a platform to share the information can not only be laborious but costly (Nesi, 2012). While traditional methods and tools remain, such as using Microsoft Excel, LexTutor (Cobb, n.d.), or AntConc (Anthony, 2022), today's student might work with generative AI systems (e.g., ChatGPT) as a method for bypassing some of these struggles altogether. Generative AI systems allow for the input of files, but they also rely on their extensive databases to provide information. Thus, instead of the hours of dedicated deconstruction via corpus-based methods of authentic material, one could present singular questions to a generative AI system and potentially receive similar results. Despite the ease that comes with generative AI systems, there are challenges such as the reliability of information, the source(s) of information, and the user's correct interpretation of information without substantial context from the original source(s). Instructors might ask themselves how the more modern student might be led to understand the benefits of using traditional methods of corpus linguistics and avoid potential limitations such as user statistical error, a lack of attention to detail with inherent nuances, and maintaining a level of guided oversight by experienced users throughout the workshop process. To accomplish this, there must be a discussion on these current challenges and limitations of corpus-based techniques and word list methodology so that there can be a centralized effort to preserve a system which provides some of the clearest, most accurate and most specific insights on language use.

In Mangus (2023), the student corpus in XR was created using a blend of traditional and novel methods. While this experimentation was appropriate for the scope of the project, it demonstrated the need for the solidification of a modern methodology for the construction, analysis and production of corpora. The curation of a discipline-specific corpus in Mangus (2023) required insider information in the field on which academic journals and conference proceedings could best represent the field. From the discipline of interest, XR, there were even smaller sub-fields that required analysis to ensure that the publications being acquired for the corpus were going to be uniform enough to give an accurate account of the field's discipline-specific language. In addition to the conference proceedings and academic journal articles acquired, the corpus did not include publications produced by companies that are generally published in open-source archives, such as Cornell University's arXiv (2024). In rapidly changing fields such as computer science, this lack of corporate-based language could have led to missing pieces of language in the research. Despite the best efforts of a researcher, the lack of

easy access to materials for a corpus will limit their success in largely representing an entire discipline's use of language.

Additional Considerations for Utilizing Corpus-based Tools in ESP

Beyond the challenge of acquiring enough materials to build a potentially representative corpus, to this point, there has been limited literature that has provided a solid discussion of the following important considerations:

> (1) What is considered a discipline, sub-discipline, and further sub-sub-disciplines and how narrow might the scope go before the nature of the text is lost in rapidly changing linguistic environments such as computer science?
>
> (2) Based on the discipline, what might be the ultimate level of tokens necessary to capture the ever-evolving language and the core foundational elements of discipline-specific language?
>
> (3) Are the cross-referencing word lists up-to-date with the most common words in use today from a foundational language and/or academic language standpoint?

These issues within the field leave room for the curious and explorative teacher or researcher to develop their own comparative word lists, as did Mangus (2023), who utilized a Natural Language Processing list from the Michigan Institute of Technology (2020) rather than more traditional lists such as the New General Service Word List (Browne, 2013) for keyness analysis. As language continues to rapidly evolve, researchers and students are already using generative AI to write academic work (Hoover, 2023), which has revealed word and collocation usage that was not previously seen before generative AI (Stokel-Walker, 2024). Looking to the future, there are opportunities to determine what elements of traditional methodology are essential for use alongside modern tools, to construct word lists that meet particular disciplines at their level, and for those who utilize corpus-based tools to develop definitive guidelines on what stands as a corpus for linguistic analysis by those in the humanities before it becomes a fundamental sub-discipline of computer science itself.

Evaluating Workshop Effectiveness

While the previous sections illustrated several case studies completed by course participants in efforts to demonstrate the usefulness of the competencies targeted in the course, each iteration of the course also included an evaluation phase to identify both its positive aspects as well as areas which needed to be reworked or developed further in subsequent offerings. Various sources of information were employed for evaluation purposes, including informal feedback from students, analysis of student performance in the course, instructor lesson plan notes, and notes from classroom observations completed by a peer instructor. However, in this section we focus on the data collected as part of formal course evaluations completed by participants at the end of each cycle. These evaluations were completed anonymously via an online learning platform and included a standard set of questions about the various aspects of the course and the instructor, as well as spaces for students to include extended comments. Appendix F includes data from questions pertaining to the content and procedures of the course, as well as representative comments from the students. Here we briefly summarize participant

input from these evaluations and present ways that we addressed student feedback through changes in the course. A more extensive examination of the complete data will be presented in a future article.

The data shows that, overall, students felt the course (sessions, discussions, materials, and tasks) positively impacted their knowledge of the subject and their growth. Student comments highlight several features of the course that they identified as strengths, including its project-based nature, its focus on conducting a needs analysis and course development, and its contribution to students' professional development as language teachers. Several students noted the rigorous nature of the course and their appreciation of this facet (e.g., "The course was challenging but many things about it could be helpful to my future career, which is important to me."). At the same time, participant feedback also highlighted the aspects of this course that needed further attention to support student learning. Specifically, some participants saw completion of two extensive course projects as an overly ambitious undertaking.

To address this feedback, the instructors adopted an individualized approach to each proposed project by determining its scope together with the participants. For example, some projects were completed with partners; projects which required substantial data collection (e.g., for a new course featuring highly specialized content) included some collected data along with a detailed proposal for how additional sources and data collection methods should be utilized to collect required information. When possible, the instructors also collaborated with other units on campus (such as the university intensive English program) to identify possible scenarios for course projects in order to help participants with contextualizing their work (e.g., exploring linguistic needs of pathway students in introductory engineering or business courses). Finally, instructors also incorporated additional in-class lab and progress report sessions during which students had an opportunity to work on their projects (especially those who worked in pairs/small groups) and to receive immediate formative feedback from both their peers and the instructor.

Some participants' feedback on course readings and activities, including those focused on corpus-based analyses, indicated that more time or support was needed. This input also instigated substantial revisions. In addition to dedicating more time to adequately train students on how to use corpus-based applications as well as to offer guided practice in class, the focus of such activities shifted to demonstrating more programs and tools which can be used for material development and to facilitate student data-driven learning during classroom activities (rather than for research purposes). Since the majority of course participants indicated an interest in curriculum development, course readings were adjusted appropriately to highlight practice-oriented work, while participants interested in conducting a research study were guided on an individual basis. Participants' satisfaction with the course (including their evaluation of instructional materials and practices) increased over time and after the revisions to classroom practices and materials, which emphasized the applied aspect of the course.

Conclusions and Future Outlook

In this paper we have addressed a major challenge related to teacher education in the field of ESP, namely the lack of discussion about preparing the next generation of ESP professionals in both teaching and research. Because none of the existing standards utilized in TESOL teacher preparation programs at US institutions address the specific knowledge and skills needed for planning and delivering ESP instruction, we outlined three essential competencies – ability to conduct needs analyses; ability to explore authentic professional/discipline-specific discourse

and to develop authentic pedagogical materials and tasks; and ability to utilize corpus-based tools to examine specialized language—which were subsequently targeted in a graduate teacher training course in ESP. While the list of the instructional targets that can be effectively treated in one course is rather restricted, we offer our thoughts below on additional topics that require further consideration in teacher education in ESP/LSP, as well as directions for research in this field.

One additional valuable focus area in ESP pedagogy is the development of authentic assessment practices that target the language used to perform authentic tasks identified in the target language use domain. Such assessment practices would also factor in the localized settings in which the ESP instruction is being carried out, as those reflect "unique cultural and institutional demands and expectations" (Bolton & Jenks, 2022, p. 500) that often dictate the goals and the implementation of ESP instruction. Regarding teacher education, previous research has reported the need of in-service teachers to develop their assessment literacy, citing their limited knowledge of such practices due to inadequate training (Estaji, 2024; Grosse & Voght, 2012). Training in assessment techniques for ESP/LSP classrooms, including providing information that deals with the planning, development, implementation, and evaluation of assessments, will help to ensure that in-service teachers are able to develop more effective and useful assessment practices.

To address the previously mentioned issues regarding assessment practices in ESP contexts, we believe that all language teacher preparation programs must provide extensive language assessment literacy training. At a minimum, such training should target what Coombes et al. (2020) deem to be six essential themes in language assessment: (1) assessment to promote language learning; (2) classroom assessment; (3) integrated language assessment; (4) content assessment; (5) multilingual assessment; and (6) multimodal assessment. Teachers can see practical applications of these themes in ESP contexts in Knoch and Macqueen's (2022) book, *Assessing English for Professional Purposes*. Specifically related to authenticity in language assessment practices, teachers-in-training should become familiar with how to identify and describe language and task characteristics for real-world ESP tasks. In addition, teachers-in-training can participate in simulated assessments, whereby they construct, implement, and score authentic assessment tasks that mimic a real-world situation, such as conducting a mock business negotiation or delivering a technical presentation. (For a reader-friendly textbook outlining the assessment development process, see Brown and Abeywickrama, 2019). They could then follow up this activity by reviewing outcomes in group discussion to reflect on the development process and refine assessment techniques. Finally, teachers-in-training can engage in hands-on rubric development activities, whereby they compare different types of rubrics, evaluate the features of existing rubrics, identify digital tools for constructing rubrics, and create their own detailed rubrics for one or more authentic ESP tasks (e.g., presenting medical diagnoses, drafting legal memos).

Another relevant issue (particularly for the ESP field) is to consider the needs of diverse groups of language learners by going beyond academic contexts and shifting our attention to the needs of non-traditional students (e.g., immigrants, refugees, students in the workforce). While most published work in ESP still targets learners who study academic and often discipline-specific English at post-secondary institutions, there is a small (but growing) body of literature that examines other groups of learners (e.g., nurses, hotel staff, workers at call centers). With more non-traditional students seeking language instruction today, it is important that we teach future ESP instructors and course developers to be creative when analyzing the needs of different

types of learners and to offer various instructional formats (e.g., short-term customized programs, hybrid instruction, supplemental modules) that would meet those needs.

To address this issue, we again recommend that language teachers be adequately trained in how to conduct a needs analysis, including the basics of what a needs analysis is, how and what types of information to collect in a needs analysis, and how to interpret and apply information from a needs analysis. A good starting place for learning more about needs analysis is J.D. Brown's (2016) book titled, *Introducing Needs Analysis and English for Specific Purposes*. Once teachers are familiar with the various elements of needs analysis, it is important that teachers are then given opportunities to plan and carry out needs analyses for hypothetical ESP courses that might serve a variety of purposes and audiences, including courses in which students are learning English for professional or other purposes (e.g., citizenship).

One way to offer such opportunities is for teaching methodology courses to adopt a case study approach whereby teachers-in-training encounter different scenarios in which they must conceptualize, describe, and organize important elements of an ESP course that revolve around the needs of the local and/or national workforce and society. As part of that process, teachers could conduct a needs analysis to determine student learning outcomes, to identify the types of authentic tasks and the corresponding language requirements included within the courses, to select and create assessments, as well as to inform decisions for accommodating the diverse and cultural backgrounds of ESP learners. In addition, teacher training programs should also consider partnerships between educational institutions and industries to identify real-world needs and develop programs to address them, as well as encourage industry representatives to participate in the development of ESP curricula and teacher training programs. In this way, industry partners can begin to recognize the value of expertise in ESP teaching, leading to potential pathways for ESP professionals. Alternatively, community-based English language programs can serve as a viable substitute for industry partnerships.

In relation to ESP/LSP research, it has been previously noted that the bulk of empirical research has been conducted to address practical pedagogical concerns rather than to contribute to theory-building in the field (e.g., Doyle, 2012; Grosse & Voght, 2012). While this situation has changed in the past decade or so, and there are now professional journals dedicated to examining the discourse of specific communities (e.g., English for specific purposes), the existing body of literature that focuses on other research concerns (i.e., outside of discourse and genre analysis studies) is still rather limited. Training pre-service teachers to carry out corpus-based analyses might be a good starting point; however, there is still a need for longitudinal studies in ESP/LSP that explore the acquisition of specialized language by different groups of learners and how this process is impacted by contextual variables and individual differences among learners.

Another direction for research that may offer valuable insights about what it means to be an ESP/LSP educator is to explore teacher identity. In a more recent paper, Basturkmen (2022) observed that "when educational priorities change teachers not only need to gain new knowledge but they also need to construct new professional identities" (p. 515). With so many different roles that ESP/LSP teachers play in the education process and so many contextual factors that affect this process, there are important questions that practitioners must keep asking themselves that need to be explored empirically. For example: To what extent do ESP/LSP teachers possess (and believe it is important to possess) specialized knowledge? Should specialized content be taught in teacher training programs? If yes, then to what extent and in what manner? What is known about imagined communities of ESP/LSP teachers? How do ESP/LSP teachers acquire specialized knowledge and are they viewed more as "insiders" or "outsiders" by those operating

in the target domain (see Chen, 2011)? What collaborative models currently exist in the field that allow productive interdisciplinary practices? Such questions can provide the basis for a potential research agenda, outlined below, that contribute to important discussions and lines of inquiry in the field.

Specialized knowledge in ESP/LSP teaching. For this topic, three key questions could be addressed in research: (1) To what extent do ESP/LSP teachers possess specialized knowledge? (2) How essential do they believe specialized knowledge is for their teaching? (3) How do teachers acquire specialized knowledge? To answer these questions, researchers could develop and administer surveys and/or interviews among teachers to assess their current levels of specialized knowledge. Once responses are collected, they can be analyzed to ascertain teachers' perceptions of the importance of such knowledge and its impact on teaching efficacy. If resources permit, researchers could investigate the possibility of variation in teachers' perceptions across different domains (e.g., medicine, law, aviation). Finally, to determine how teachers acquire specialized knowledge, among other things, researchers could employ a case study methodology whereby pathways of learning are mapped to shed light on the ways in which teachers (attempt to) gain domain-specific expertise (e.g., via self-study, workshops, conferences, collaborations).

Imagined communities of ESP/LSP teachers. To investigate the question of *How do ESP/LSP teachers conceptualize their professional identities within imagined communities?*, we see two possible directions for inquiry. First, research studies can examine how teachers perceive themselves in relation to their respective field, that is, as an "insider" or "outsider" within a given domain. Teachers' perceptions of their imagined-self can even be examined before and after they receive domain-specific training. Second, research in this area could study the role of these imagined communities in shaping teaching practices and professional growth. Relatedly, studies could also examine the extent to which these imagined communities interact with other factors that have also been shown to shape teaching practices (e.g., cultural background, language proficiency, professional experiences).

Collaborative and interdisciplinary models of teaching. While there are many ways to investigate the question, *What productive collaboration models currently exist in ESP/LSP teaching?*, we offer a few suggestions for research here. For example, studies could analyze the prevalence and efficacy of existing partnerships between language teachers and subject matter experts to better understand the innerworkings of such partnerships. Based on the outcomes of this line of research, recommendations for those seeking to establish such partnerships could be developed. Subsequently, once different frameworks of collaboration have been developed by researchers, those frameworks can be tested through both qualitative and quantitative (and mixed methods) approaches to determine the extent to which they enhance both content and language instruction. Relatedly, research could also explore the influence of ongoing collaborations and mentorship on, among other topics, teacher identity and job satisfaction.

We end our paper with these recommendations in the hopes that they will contribute to important discussions and lines of inquiry that are currently taking place (and which have yet to take place) in the field about ESP/LSP teacher education and the need for a more principled approach to training the next generation of LSP professionals.

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Appendix A

Description of a project proposal assignment

Select a real/hypothetical group of L2 English learners (think about an ESP class you are likely to teach or a class that you would love to develop and teach one day) and develop a needs analysis to identify the needs of this population (as well as other groups of stakeholders, if appropriate) that should be addressed in an ESP course. Using class readings, lectures, and discussions as guidelines, you will develop procedures for collecting information on learner needs (5-6 pages).

Describe your targeted group of L2 learners/occupational domain by defining the parameters listed below. The context, as you describe it, should influence all other proposal decisions.

1. Location of course/target occupation (EFL/ESL, where specifically)
2. A (real-world/hypothetical) description of the content which needs to be acquired (consider types of knowledge and skills/competencies)
3. A (real-world/hypothetical) description of the target student population
4. A general goal of the ESP course and 2-3 specific course objectives
5. Identify at least 3 types of procedures/instruments that you might use to conduct a needs analysis
6. Include a brief discussion of at least 3 resources that might help you with this project (e.g., previous needs analyses, methodological pieces targeting your student population, empirical studies).

A progress report template

Group members:	
What type of information were you able to collect for your NA? How many resources were you able to include?	
Do you have any difficulties with collecting data?	
What additional data do you need to elicit? According to your estimates, will you be able to finish your data collection in time for the report?	
What questions do you have for me?	
Additional comments/ concerns/etc.	

Appendix B

ESP Curriculum Development: Key Considerations

1) Who is your target audience?

2) What is the nature of your (pedagogical) development?

3) What type of course design will you adopt in your (course) development? Why?

4) Based on the results of your NA, which (3-5) needs will you target in your (pedagogical) development?
   - _____
   - _____
   - _____
   - _____
   - _____

5) What type of content will you include in the (pedagogical) development?
   - _____
   - _____
   - _____
   - _____
   - _____

6) What (authentic) source materials (texts) might be useful for your purposes?
   - _____
   - _____
   - _____
   - _____
   - _____

7) Notes on sequencing the content:
   - simple > more complex;
   - independent skill > integrated skills;
   - perception > production;
   - more pedagogical > more authentic;
   - process approach (including multiple steps);
   - project-based learning;
   - new skill/ literacy > fluency development;
   - topical/ situational;
   - other:

8) How would you evaluate the effectiveness of the course?

Appendix C

Table C1

Major Assignments in the Electrical and Computer Engineering (ECE) Program

	Course assignments/tasks	Skills/competencies	Comments

ECE courses	• Course projects, often scaffolded in multiple steps
	  ○ Programming tasks - write a code and test it
	  ○ Simulation tasks - propose a simulation of a major concept (e.g., how to program a robot to move to avoid obstacles)
	  ○ Specific problem assignments, typically asked after discussing a concept (e.g., apply risk management methodology in a specific context; create a graph using a set of data)
	• Reading technical papers and developing half-page summaries
	• Class discussions (online forum)
	• Developing presentations with slide cast/group presentations
		• Understanding and writing a code (Java, Python)
		• Manipulating data/ building a robot/creating a graph
		• Developing a report which explains the method, procedures, testing
		• Interpreting data (quantitative, visual)
		• Ability to understand an equation, perform substitutions, derive a new equation
		• Ability to understand a visual/diagrams (concepts, the order, vectors, forces applied, a system of notations)
		• Ability to comprehend discipline-specific vocabulary and concepts in extended discourse
		• Ability to identify and summarize main concepts in a research paper (e.g., research question, method employed, results, implications)
			• Course content is typically presented with PowerPoint slides following a typical lecture format. The amount of interaction between the instructor and the students varies in each course.
			• Students interact with the primary course instructor as well as a TA or other graduate students who work with the instructor in a lab.
			• Students are invited to ask questions about the content at different points during the lecture.

Appendix D

Move analysis of tasks

Instructions: identify a typical discipline-specific task and analyze the sequence of moves. What sub-skills/ competencies are required to be able to complete the task? What language units do students need to master in order to be able to complete each sub-move?

Task: _____

A brief description of students are expected to do _____

_____

_____

Move structure:

Appendix E

Directions: Complete the following activities using the small English for academic purposes (EAP) corpus and the suggested software and/or website. The file that you will be using (i.e., General EAP Corpus [final]) is available in the Week 6 folder on Canvas.

A. Using AntConc, please create a general word list of the most frequent words. Write the 10 most frequent content words from the EAP corpus.

1. 6.
2. 7.
3. 8.
4. 9.
5. 10.

B. Using AntConc, please search for the five strongest collocates of the word ***language***. To aid in this search, you should reduce the window span in AntConc from 1L to 1R, and increase the minimum collocate frequency to a 5 count. To determine the strength of each collocate, you should make sure that the option "Sort by Stat" is selected (in the **Sort by menu**) and you should refer to the Stat column in the AntConc results table.

1.
2.
3.
4.
5.

C. Using AntConc, please look at the concordance lines for the phrase ***foreign language***. Then, answer the two questions below about this phrase.

1. How many times does this phrase appear in the corpus?
2. Which words precede the phrase in the corpus (list a few examples)?

D. Using the Keywords function on the Compleat Lexical Tutor website (located here: https://www.lextutor.ca/key/), create a keyword list for the EAP text file. To do this, first select the BNC_COCA_mixed_Sp_Wr_US_UK_10_million as your reference corpus. Then, upload the text file under the "Input mode B" section of the webpage. Be sure to select "Submit file".

1. What are the top five-most "key" words in this corpus?
2. How do you interpret the numerical values provided before the keywords in the list?

Appendix F

Data from course evaluations from four cycles are represented in Tables F1 and F2 below. N.B.: After the first two cycles, the university revised the general format for student evaluations, including changes in the wording of the questions and the type of numerical data collected.

Table F1. Data from Course Evaluations (Cycles 1 and 2)

Questions	Mean (out of 5)	
	Cycle 1	Cycle 2
How well did class sessions increase your understanding of the subject?	4.86	5.00
How well did other course assignments increase your understanding of the subject?	5.00	5.00
How well did reading assignments increase your understanding of the subject?	4.71	5.00
How well did other learning resources used in this course — such as related websites, software, study guides, and media — increase your understanding of the subject?	4.83	4.80

Extended Comments from Students:

Cycle 1:

“I really enjoyed this course and found it very applicable and useful to this program! The curriculum development was something I had really wanted more experience in and this course provided that. The only change I would make is to turn in assignments electronically through Canvas so all group members can get feedback from the instructor. Otherwise, we had to scan and email the papers to each other.”

“The primary assignment (broken up into multiple sub-assignments) requires a significant amount of work and in order to do the kind of analysis and to hone research processes, we need to be given time and scaffolded activities in class to work in constructive way toward that goal. However, I have to say that the content of this course and the fact that we completed a needs analysis is wonderfully interesting, helpful, and definitely something I will be doing time and again in my future. Thank you.”

“It would be helpful if projects were already set up rather than us finding something random in week 1. It’s hard to marry a topic when you don’t know about a course.”

Cycle 2:

“I really liked the course book that was used. Especially the case studies in it. Most of the supplementary articles were also good, but I don’t think that there needed to be as much

emphasis on corpus research. It would've been nice to read about more unusual projects and courses. But this class was great overall."

"Require IRB training prior to course. So that students can write proposal at the beginning."

"Having draft deadlines was stressful but very helpful. For a workshop course, more in-class work days would be helpful for insight."

Table F2. Data from Course Evaluations (Cycles 3 and 4)

Questions		% of student responses	
		Cycle 3	Cycle 4
Topics/activities impacted growth the most	Discussions:	78%	100%
	Assignments:	44%	100%
	Teacher:	56%	100%
	Classmate:	56%	100%
	Lectures:	78%	100%
Course workload	Reasonable:	50%	67%
	Challenging:	50%	33%
Class strengths	Environment:	56%	100%
	Materials:	33%	100%
	Teacher:	67%	100%
Needs improved on	Grading (timely feedback):	50%	17%

Extended Comments from Students:

Cycle 3:

"The workload is heavy but doable."

"The learning environment was very welcoming and I definitely feel like I learned a lot throughout this semester. I think this class is highly beneficial for anyone who wants to teach English and was very well done for a hands-on course."

"The course was very different from any other course we have taken in this program and offered a completely new set of challenges."

"Although it was difficult to find time to do some parts of the class project, I think that it offered us a great opportunity to learn and to say that we have experience in doing."

“The course was challenging but many things about it could be helpful to my future career, which is important to me.”

Cycle 4:

“I like that the final project is scaffolded with many steps along the way to keep us on track and keep us from procrastinating. Weekly readings and assignments were of reasonable length and all helped create a better understanding of course concepts.”

“The workload was really challenging, but I am happy to be near the end having learned, accomplished, and done so much. Assignments are nicely scaffolded to get us thinking about and doing projects/assignments that support our overall course project. Moreover, the professor provides really helpful feedback on those assignments that helps direct attention and process.”

“This course was fantastic and very beneficial for our/my professional development. The topics and readings discussed were very worthwhile as they were not only informative, but practically-oriented, and they provided great insights for real-life application. I also appreciated how we were given the freedom to explore our personal interests with our course project. Lastly, having an open forum to discuss our thoughts and to hear perspectives from others is also always great and very conducive to our/my learning.”

“I have deeply appreciated [instructor’s – name removed] encouragement to participate in professional development opportunities and to present our own work at conferences! It really helps elevate the learning of the material!”

“[Instructor – name removed] expects us to learn and always makes explicit connections between the course content and how we might use that knowledge and the products we create in our future careers.”

“I am really appreciative of this course and instructor. This semester was one of the hardest times in my life (and I don't think I've had a particularly easy life), but instructor support and feedback really helped me stay on task and able to complete this course. In some classes I have struggled to understand how certain content and projects support my actual needs as a teacher. This course is really applicable and transferable to my real world needs. I often found myself reflecting on past teaching experiences and wondering how I would change things after having taken this course. That is an encouraging and refreshing feeling. I really appreciate [instructor – name removed] and this course.