

# From Inbox to Insight: Materials Design for Global Business Email Communication

**NAVINDA SUJINPRAM**  
**ANCHALEE WANNARUK\***

*School of Foreign Languages, Institute of Social Technology, Suranaree University of Technology, Thailand*

**\*Corresponding author email: wannaruk@sut.ac.th**

<b>Article information</b>	<b>Abstract</b>
<p><b>Article history:</b>            Received: 21 Feb 2025            Last revised: 25 Mar 2026            Accepted: 30 Mar 2026            Available online: 8 Apr 2026</p> <p><b>Keywords:</b>            Business email writing            Genre-based pedagogy            ELF-aware pedagogy            Data-Driven Learning (DDL)            ESP materials design            Design and Development            Research (DDR)</p>	<p><i>Existing English for Specific Purposes (ESP) materials for business communication often rely on standardized, decontextualized models that fail to reflect the linguistic diversity and pragmatic demands of real workplace email exchanges. To address this gap, the present study designed and evaluated ESP teaching materials for business email writing that integrate genre-based pedagogy, English as a Lingua Franca (ELF)-aware principles, and data-driven learning (DDL). The materials incorporated authentic business emails from ELF professionals and scaffolded writing tasks that guided learners from genre awareness to independent corpus-informed production. The study involved 30 Thai undergraduate EFL students (CEFR A2–B1) enrolled in an English for Business Email Writing course over 11 sessions. Quantitative data from pre- and post-writing tests were analyzed using paired-sample t-tests, revealing statistically significant improvement across four email genres (<math>p &lt; .01</math>) with large effect sizes (Cohen’s <math>d = 1.72–2.80</math>). Qualitative reflections from semi-structured interviews further illuminated how authentic input, guided DDL practice, and teacher and peer mediation fostered learners’ confidence, genre control, and intercultural sensitivity. The study contributes a replicable model for developing authentic, needs-responsive ESP materials, offering practical implications for educators and materials designers seeking to prepare learners for multilingual workplace communication.</i></p>

## INTRODUCTION

In today’s globalized workplace, one of the most pressing challenges for professionals is composing effective business emails that balance clarity, politeness, and intercultural appropriateness. Misunderstandings and perceptions of unprofessionalism often stem not only from linguistic errors but also from unfamiliarity with genre conventions and differing cultural expectations that shape communication. Increasingly, such communication is conducted through ELF, where professionals from diverse linguistic and cultural backgrounds rely on English to achieve shared goals. In these contexts, English for Specific Purposes (ESP) instruction plays a crucial role in moving beyond generalized language study to address the genres and discourse practices that underpin workplace interaction.

ESP teaching materials, however, have not always kept pace with these demands. Many commercially produced resources are designed for broad audiences and adopt one-size-fits-all approaches, limiting their ability to capture contextual variation in workplace practices and genre conventions (Caleffi & Poppi, 2019; Hyland, 2013). Moreover, they frequently present Standard English norms as the default model of communication, underrepresenting non-native speakers and rarely portraying effective ELF interactions among them (Bayyurt & Sifakis, 2017). Such practices fail to reflect the linguistic diversity of global workplaces and risk leaving learners unprepared for the variability of international business communication. This reveals a gap in existing ESP pedagogy. Authentic and context-sensitive materials are urgently needed, yet many available resources continue to present generalized, standardized models that overlook the realities of global business communication.

Moreover, ESP research emphasizes that workplace literacy is shaped by certain genres that fulfill particular communicative functions within specific settings. Students preparing to join workplace communities must, therefore, be knowledgeable about those genres in order to communicate successfully. As Hyland (2004) notes, genre analysis highlights the discourse structures, rhetorical moves, and lexicogrammatical patterns characteristic of professional texts. Without explicit instruction in workplace genres, inexperienced workers may struggle to meet employers' expectations, leading to dissatisfaction with language programs that privilege accuracy over communicative effectiveness.

To address the aforementioned gaps, this study developed contextually relevant ESP teaching materials for business email writing by integrating three complementary frameworks: genre-based pedagogy, ELF-aware pedagogy, and data-driven learning (DDL). Genre-based pedagogy provides learners with explicit models of communicative purpose and structure, enabling them to recognize how discourse conventions achieve professional goals. ELF-aware pedagogy exposes learners to authentic business emails from diverse cultural backgrounds, sensitizing them to pragmatic strategies and intercultural variation. DDL empowers learners to explore authentic corpus data, discover linguistic and rhetorical patterns, and apply these insights to their own writing, fostering learner autonomy. Together, these frameworks operationalize the study's central aim which is to transform *inbox data* (authentic emails) into learner *insight* (genre awareness, pragmatic adaptability, and communicative competence).

The study was conducted within a business email writing course for undergraduate EFL students. While business email communication is widely taught across educational and professional contexts, EFL learners often face additional challenges because they must simultaneously develop genre knowledge and the linguistic resources needed to express professional intentions in a second language. In many cases, these learners also have limited exposure to authentic workplace communication, which makes it difficult to connect classroom practices with the communicative demands of real business contexts (Sujinpram & Wannaruk, 2024). To address this gap, the study adopted a Design and Development Research (DDR) approach (Richey & Klein, 2007), which emphasizes the systematic design, implementation, and evaluation of instructional materials to meet practical needs in ESP education.

The research aimed to (1) design and develop of ESP teaching materials informed by genre-based pedagogy, ELF-aware pedagogy, and DDL, and (2) evaluate the materials' effectiveness

and learners' perceptions after their use in the target ESP course. Accordingly, the study was guided by the following research question:

What are the effects of the developed materials on learners' business email writing performance and their perceptions of using the materials within the course?

## LITERATURE REVIEW

### ESP materials design and workplace communication needs

ESP pedagogy positions materials design as both a methodological and pedagogical process, requiring practitioners to base syllabi and instructional decisions on an informed understanding of target discourse practices. In this case, needs analysis (NA) becomes a defining feature of ESP, guiding the teaching objectives to reflect linguistic and communicative competencies required in specific workplace contexts rather than generalized linguistic goals (Anthony, 2018). Materials developed from such informed foundations contribute substantially to the success of language programs and enhance learners' engagement (Batsila & Shrestha, 2022; Zaman, 2024). For this reason, many ESP practitioners create tailor-made resources for groups with homogeneous professional needs, as commercially available coursebooks tend to target broad audiences and lack the disciplinary depth necessary for specialized communication (Hyland, 2013).

Recent studies further emphasize the need for ESP materials that are empirically grounded in authentic workplace communication. Cheng et al. (2019) analyzed four workplace English textbooks and found that key interpersonal linguistic features such as vague language, emotive verbs, and humor were largely absent. These omissions are significant because such expressions perform crucial interpersonal functions, including softening directives, maintaining politeness, and strengthening rapport in real professional exchanges. Similarly, Si (2019) analyzed business coursebooks in China through the ELF lens and found that ELF communication and ELF-informed activities were absent. Chan (2021), in a study on students' perceptions of Work-Integrated Learning (WIL), found that learners valued authentic and task-based materials that mirror the communicative realities of the workplace. Azhar & Masyi'ah (2023) likewise demonstrated, through a needs analysis of airport ground-handler trainees, that ESP materials must incorporate domain-specific content distinct from general English resources. Stakeholders in that study highlighted authentic materials as more relevant, practical, and cost-effective for job-specific training. In a healthcare context, Horváth et al. (2025) reported that ESP materials designed for health visitors should capture real-life multilingual interactions to prevent miscommunication and improve service quality. Collectively, these findings reveal a growing consensus that authenticity must be central to ESP materials design, ensuring that instructional content reflects the linguistic, pragmatic, and intercultural demands of real workplace discourse.

Despite growing attention to authenticity, ESP instructional materials often prioritize grammatical accuracy and politeness formulae over authentic discourse features such as negotiation strategies, pragmatic variation, and intercultural accommodation. As Si (2019)

observed, business English coursebooks often emphasize accuracy-oriented instruction while giving limited attention to how English is used in diverse international communication contexts. Batsila and Shrestha (2022), in their analysis of a business English textbook, found that instructional materials tend to focus on grammatical forms and decontextualized vocabulary while providing limited opportunities for students to engage with authentic communicative practices relevant to professional communication contexts. In addition, Luo (2018) and Santoso et al. (2025) argued that English instructional materials emphasize linguistic accuracy based on native-speaker norms, even in contexts where English functions primarily as a lingua franca. As a result, learners are often not fully prepared for the dynamic, interactive nature of workplace email communication, making it difficult for them to navigate linguistically and culturally diverse exchanges in global contexts. These shortcomings underscore the needs for instructional resources that better reflect real-world practices.

The design of ESP teaching materials is closely linked to needs analysis, which bridges the gap between learners' current abilities and the communicative demands of their target situations. As proposed by Hutchinson and Waters (1987), this process involves identifying Target Situation Analysis (TSA), which specifies the linguistic and communicative competencies learners will require, and Learning Needs Analysis (LNA), which examines how learners acquire the requisite skills. Building on these principles, Hyland's (2013) framework for ESP writing materials highlights four interrelated components: input, content focus, language focus, and task design, which ensure pedagogical coherence and contextual relevance. Effective input should expose learners to authentic linguistic and rhetorical models representative of their target genres, while the content and language focus guide them to analyze and apply those features meaningfully. Task design, in turn, should integrate realistic, goal-oriented activities that simulate workplace communication. By combining needs analysis with Hyland's principled design framework, ESP practitioners can develop teaching materials that move beyond decontextualized instruction, enabling learners to engage with authentic, genre-informed, and pragmatically rich models of business correspondence.

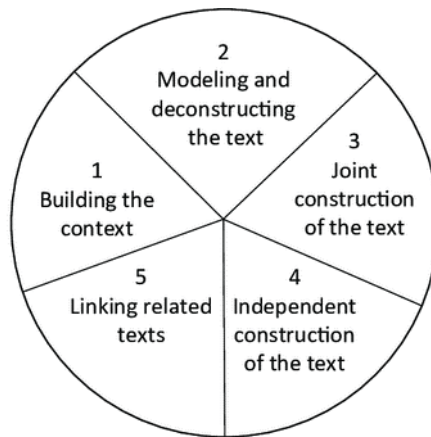
### **Pedagogical frameworks for ESP materials design**

The present study integrates three interrelated pedagogical frameworks: genre-based pedagogy, ELF-aware pedagogy, and DDL to design instructional materials that transform authentic business emails into effective learning resources and provide learners with tools to facilitate their writing. These frameworks were applied sequentially to scaffold learners' understanding of business email communication. First, the genre-based pedagogy was employed to raise students' awareness of conventional textual structures and communicative purposes. Next, authentic business emails representing diverse linguistic and cultural backgrounds were incorporated in line with ELF-aware pedagogy, sensitizing learners to pragmatic variation and intercultural diversity. Finally, during the writing phase, DDL was implemented to enable students to explore corpus data independently, identify recurrent linguistic patterns, and apply these insights to their own writing.

**Genre-based pedagogy**

Within the integrated framework of the present study, genre-based pedagogy provides the initial scaffolding for developing learners’ awareness of how professional communication achieves its purposes. Genre knowledge, defined as an understanding of the conventions, structures, and linguistic resources that characterize a given genre, is central to achieving communicative effectiveness in specific contexts (Bhatia, 1993; Hyland, 2007). A lack of such knowledge can hinder professional correspondence and reduce communicative clarity (Chen & Ge, 2021). According to Tardy (2009), genre knowledge comprises four interrelated dimensions: format, rhetorical, subject-matter, and process knowledge. These dimensions interact dynamically; for instance, rhetorical awareness of audience expectations influences textual format and content choices, while process knowledge supports the strategic organization of discourse.

Informed by these principles, the present materials adopt the Teaching-Learning Cycle (TLC) proposed by Feez and Joyce (1998) as the instructional framework (Figure 1). The TLC guides learners through five progressive stages: building the context, modeling and deconstructing the text, joint construction, independent construction of the text, and linking related texts to develop genre control gradually. Previous studies (e.g., Irawansyah, 2016; Thongchalerms & Jarunthawatchai, 2020) have demonstrated the effectiveness of the TLC in enhancing learners’ genre knowledge.



**Figure 1** Teaching-Learning Cycle framework (Feez & Joyce, 1998)

In this study, genre instruction was not limited to native-speaker norms but was expanded to ELF email communication, ensuring that learners not only recognized conventional genre features but also understood how these conventions vary across linguistic and cultural contexts. After analyzing model texts, students examined authentic business emails written by professionals from diverse linguistic backgrounds. Through guided comparison and discussion, they identified linguistic variations and communicative strategies that facilitate successful communication in global workplaces.

To connect between genre instruction and production, the independent construction stage in the TLC was explicitly linked to DDL tasks implemented during the writing phase of the course. This progression, from modeling and guided deconstruction to independent corpus-supported writing, illustrates the transition from teacher-led, awareness-raising activities to learner-led discovery and production.

### ***Data-Driven Learning (DDL)***

DDL, a corpus-based inductive approach to language learning, originates from the pioneering work of Johns (1991), who proposed that learners act as *linguistic researchers* by directly engaging with authentic linguistic data. The central assumption of DDL is that effective language learning arises from independent discovery: learners observe real usage, identify patterns, and generalize rules through analysis (Johns, 1991). This learner-centered, evidence-based approach promotes autonomy and deep engagement with language form and meaning (Pérez-Paredes, 2019).

Empirical research strongly supports DDL's pedagogical value. A meta-analysis by Boulton and Cobb (2017) of over 200 classroom-based studies confirmed its effectiveness across proficiency levels and learning contexts. More recent investigations have emphasized that DDL enhances learners' ability to validate or challenge their linguistic intuitions using authentic evidence, fosters self-directed learning, and enables personalized exploration of language use (Crosthwaite et al., 2020; Tsai, 2021). However, its success depends on pedagogical mediation and the learning environment; effective facilitation and task design remain crucial (Mizumoto & Chujo, 2016).

While previous studies affirm DDL's advantages, its implementation in classroom practice remains challenging. Given its inductive nature, DDL can be time-consuming and often requires explicit training for both teachers and learners (Boulton, 2016; Dolgova & Mueller, 2019). Moreover, engagement with DDL demands a willingness to adopt new techniques and digital tools, which can pose difficulties for those with limited corpus experience (Mizumoto & Chujo, 2016).

Johns (1991) outlines a three-stage DDL process of identification, classification, and generalization. In the identification stage, learners are presented with a linguistic problem or communicative need and then explore corpus examples related to it. During classification, they examine concordance lines to categorize patterns of use, and in generalization, they discuss findings collaboratively to formulate rules or stylistic insights. Throughout these stages, the teacher functions as a facilitator, guiding inquiry and interpretation rather than transmitting predetermined knowledge.

In the present study, these principles were applied during the writing phase of the business email course, following genre-based and ELF-aware instruction. After analyzing model and authentic business emails, students moved to hands-on corpus exploration, using a corpus of authentic emails to investigate linguistic features relevant to their communicative goals such as hedging, request strategies, and closing expressions. Through guided identification and discussion, learners classified recurring language patterns and generalized how these could be adapted in their own writing. This integration of DDL into the TLC enabled students to transform exposure to authentic input into personalized insight.

In conclusion, despite well-established frameworks, no prior research has combined TLC-based genre instruction, DDL and authentic ELF email input in ESP course. In other words, existing materials often treat genre-based instruction, corpus use, and intercultural awareness as separate elements, which limits their potential to address the full range of learner needs in global workplace communication. The combination of these frameworks can address the needs for ESP materials that (1) provide explicit instruction in the rhetorical and structural features of workplace genres, (2) reflect the linguistic and cultural diversity of global business communication, and (3) promote learner autonomy through corpus-assisted language exploration.

Table 1 summarizes how the three pedagogical frameworks complement one another in the design of ESP materials, showing their sequential role in scaffolding learners' development from genre awareness to autonomous corpus-supported writing.

**Table 1**  
**Conceptual integration of genre-based, ELF-aware, and DDL frameworks for ESP materials design**

Phase	Framework	Learner focus	Purpose
Stage 1 – Awareness	<i>Genre-Based Pedagogy</i>	Understand the communicative purpose and rhetorical organization of business emails.	Establish foundation for recognizing textual structure and genre moves.
Stage 2 – Authentic Exposure	<i>ELF-Aware Pedagogy</i>	Analyze how diverse English users realize these genres in real contexts.	Build pragmatic, intercultural, and flexible competence.
Stage 3 – Autonomous Exploration	<i>DDL</i>	Use corpus tools to identify linguistic patterns and lexical choices supporting communicative intent.	Develop linguistic awareness, noticing, and self-directed writing ability.

## METHODOLOGY

### Research design

This study employed a Design and Development Research (DDR) approach (Richey & Klein, 2007), which emphasizes the systematic design, implementation, and evaluation of instructional materials to address practical needs in educational contexts. DDR is suited to applied linguistics research aiming to bridge theory and practice, as it allows for iterative refinement of pedagogical designs based on both theoretical principles and empirical feedback. Informed by DDR approach, the present study was structured in three key stages: (1) design and development, (2) implementation, and (3) evaluation. The design and development stage involved creating business email writing materials grounded in genre-based, ELF-aware, and DDL pedagogies. The implementation stage involves piloting the materials in an undergraduate ESP course, while the evaluation stage focused on assessing the materials' effectiveness and learners' perceptions through quantitative and qualitative analyses.

### Participants and context

The study involved 30 undergraduate students from diverse academic disciplines. The majority were from engineering (n = 15), followed by medicine (n = 3), science (n = 3), public health (n = 3), agriculture technology (n = 2), social technology (n = 2), and digital technology (n = 2).

Their English proficiency levels ranged from A2 (n = 13) to B1 (n = 17), as determined by the Common European Framework of Reference for Languages (CEFR). The cohort included nine first-year, seven second-year, nine third-year, and five fourth-year students. All participants had studied English as a foreign language for at least ten years but had no prior full-time work experience and limited exposure to professional email communication.

A convenience sampling technique was employed: an open announcement was posted at the university's language center inviting interested students to participate. The course was implemented across 11 sessions: one session for pretesting, nine sessions for training and another one session for individual semi-structured interviews. One of the researchers in this study also served as the course instructor, facilitating all instructional activities and data collection procedures.

### **Materials development (DDR Phase 1: Design and development)**

In alignment with the cyclical Design and Development Research (DDR) framework illustrated in Figure 2, this section describes Phase 1, Design and Development, which focused on creating instructional materials for business email writing. The course package consisted of five instructional units that progressively developed students' skills in genre awareness, intercultural communicative competence, and corpus-based language exploration. Unit 1 introduced students to the principles and techniques of DDL, training them to analyze authentic language data and recognize recurrent linguistic patterns. Units 2–5 focused on the writing of professional business emails, incorporating genre-based and ELF-aware activities supported by selective use of DDL tasks.

#### ***Unit 1: Introduction to DDL***

Given that DDL was new to all participants in this study, Unit 1 was designed to familiarize students with corpus tools and techniques as a linguistic resource for business email writing. The unit aimed to build learners' awareness of genre and genre variation in real-world communication such as vocabulary, collocation and grammar choice in authentic professional correspondence. Activities were informed by Johns' (1991) three-stage DDL model which includes identification, classification, and generalization. A summary of the DDL implementation sequence is presented in Table 2.

**Table 2**  
**Summary of DDL implementation stages and classroom activities**

<b>Stage</b>	<b>Activities</b>	<b>Responsible party</b>
<b>Identification</b>	1) Present students with the target context	Teacher
	2) Identify the target linguistic problem	Teacher
	3) Present students with corpus data that can be used to address the target linguistic problem	Teacher
<b>Classification</b>	4) Extract underlying patterns from the given data	Students
	5) Infer linguistic patterns	Students + Teacher
<b>Generalization</b>	6) Discuss the patterns with teacher and peers; confirm or modify the generated patterns	Students + Teacher
	7) Practice using the patterns through tasks	Students
	8) Get the target linguistic patterns from inference	Students

To ease cognitive load, the training began with hands-off DDL activities, in which the teacher guided learners through selected concordance lines extracted from the Enron Corpus, a large-scale database of authentic business emails. These activities focused on recognizing lexicogrammatical patterns typical of workplace correspondence, such as prepositional use for dates and expressions for ordering or requesting. Through teacher-led discussion and scaffolded analysis, students practiced identifying recurring structures and inferring usage patterns without operating corpus tools independently.

The Enron Corpus was selected in this study despite its age because it remains one of the most comprehensive and widely used open-access corpora of authentic workplace email communication. It offers specialized linguistic data that captures naturally occurring professional discourse. Moreover, the pragmatic and genre features of professional emails such as request strategies and formulaic expressions are relatively stable over time, ensuring the corpus remains pedagogically relevant for teaching workplace communication.

Once learners had developed confidence in interpreting concordance data, the training progressed to hands-on DDL activities using *AntConc* (Anthony, 2023). At this stage, students conducted simple corpus searches on target items (e.g., order, to order, an order), comparing results to distinguish relevant meanings and syntactic behaviors. The teacher demonstrated how search parameters such as context range, sorting, or multi-word queries could refine results and yield more precise insights. This transition from teacher-mediated to learner-initiated exploration marked the shift from guided noticing to autonomous pattern discovery, establishing the foundation for applying corpus-based inquiry in subsequent writing units. An example of DDL hands-off activities from this unit are illustrated in Appendix A.

### ***Units 2–5: Writing business emails***

Units 2–5 aimed to develop learners' ability to compose effective business emails in multicultural professional contexts. These four units focused on purchase order, response-to-order, payment, and interoffice memorandum emails. The selection of these subgenres was informed by both a preliminary communication needs survey and insights from relevant literature.

The online survey was distributed to business professionals across various fields who regularly use English in workplace correspondence, and 35 respondents completed it. The findings indicated that these four email types were among the most frequently used and the most challenging for less experienced employees. Prior studies also reported that these genres were common to professional business communication. Thus, the four subgenres were chosen for instructional focus because they represent distinct communicative purposes and recurring tasks in authentic workplace exchanges.

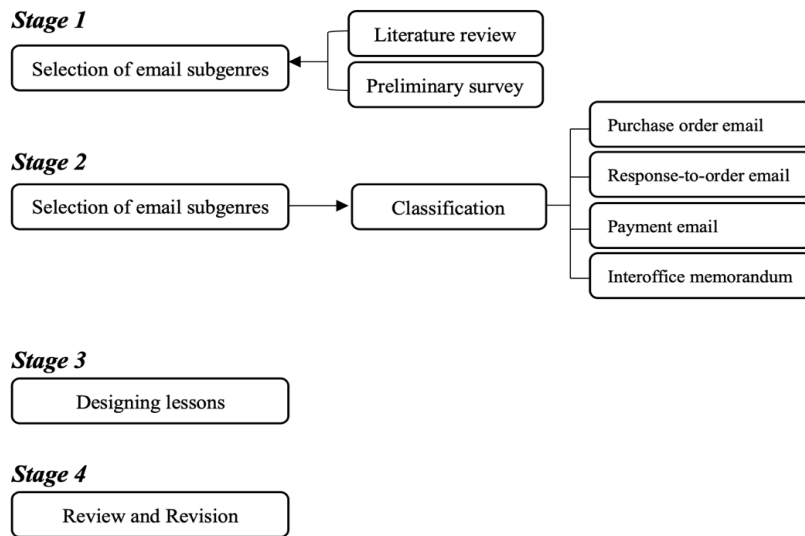
Additionally, 47 authentic business emails were collected from 14 ELF professionals. Participants were invited via a formal request letter and asked to submit emails they were comfortable sharing, with all personally identifying information removed. They were also asked to provide contextual details such as the status and relationship between the sender and recipient(s).

From these submissions, eight representative emails (two for each unit) were selected based on communicative function, clarity, and pedagogical relevance. In addition, native-speaker email samples covering the same four subgenres were included in the teaching materials, facilitating comparison between conventional and ELF-informed practices.

These authentic materials were then incorporated into the instructional design following the Teaching-Learning Cycle (TLC) framework, ensuring systematic scaffolding from awareness-raising to independent production. Writing prompts for pre- and post-tests were generated from the authentic workplace situations represented in the collected emails, allowing students to engage with realistic communicative contexts throughout the course. After the teaching materials were developed, they were reviewed by two experts for content validity and language appropriateness, and their feedback was used to refine and enhance the final version of the materials. Table 3 presents the organization of learning activities in Units 2–5, and Figure 2 illustrates the overall design and development process.

**Table 3**  
**Organization of activities in Units 2–5 following the Teaching-Learning Cycle (TLC)**

<b>Lesson</b>	<b>Teaching-Learning Cycle</b>	<b>Activities</b>
<b>Lesson 1</b>	Building the context	Present students with well-written email samples for practice in analyzing communicative purpose, roles, relationships, and contextual influences on email composition
	Modelling	Build students' knowledge about textual structure, common linguistic features, and other conventional features of the target email
	Joint construction	Engage students in classroom discussions on email conventions with the teacher's guidance
<b>Lesson 2</b>	Building the context	Present students with ELF email samples for practice in analyzing communicative purposes, roles, relationships, and contextual influences on email composition
	Modelling	Build students' knowledge about textual structure, common linguistic features, and other conventional features of the target email, focusing on the influence of both the email writer's and the recipients' linguacultural backgrounds
	Joint construction	Engage students in classroom discussions on email conventions and variations in ELF emails with the teacher's guidance
<b>Lesson 3</b>	Independent construction of text	Relate what students have learned to write emails independently with specific communicative purposes
<b>Discussion activity</b>	Linking related texts	Help learners make connections between the studied genre and other genres with the teacher's guidance.



**Figure 2** Overall design and development process

### Data collection (DDR Phase 2: Implementation)

Aligned with the Design and Development Research (DDR) framework adopted in this study, this stage corresponds to the Implementation Phase, which focuses on testing the developed materials in an authentic instructional setting to evaluate their practicality and effectiveness.

This study received approval from the Institutional Review Board (IRB) of a university in Thailand prior to data collection. Before the study began, participants were provided with a comprehensive overview of the research methodology. They were informed of their rights to participate voluntarily and to withdraw at any time without penalty. Anonymity and confidentiality were emphasized, and all participants signed informed consent forms before participation.

Data collection took place between August and September 2024 and was carried out in three main stages: before the intervention, during the intervention, and after the intervention. In the pre-intervention stage, students completed a pre-test that lasted two hours. They were asked to compose four types of business emails: a purchase order, a response-to-order, a payment, and an interoffice memorandum email based on prompts adapted from authentic business email data collected for this study.

The intervention stage spanned 18 instructional hours, divided across one pre-test session and five units. The first unit introduced students to DDL techniques and corpus tools. The remaining four units focused on business email writing across the four selected subgenres. Each unit consisted of two sessions lasting two hours each, for a total of eight sessions. A post-test was administered after the completion of each unit. These post-tests, along with the pre-test, were used for the main statistical analysis, rather than for formative assessment. All pre-tests and post-tests conducted after each instructional unit were included in the quantitative analysis. An overview of the training program schedule is provided in Appendix B. After the training, students' pre-test and post-test writings were evaluated independently by two raters to

ensure scoring reliability. The first rater was an experienced English teacher at the tertiary level, while the second was a business professional who regularly composes business emails in English. In the final stage, individual semi-structured interviews were conducted with all participants on a voluntary basis, and all participants willingly joined the interview sessions. The interviews, held in Thai, were recorded using a mobile application. The pre-determined interview questions are provided in Appendix C.

### **Data analysis (DDR Phase 3: Evaluation)**

In line with the Design and Development Research (DDR) framework, this stage corresponds to the Evaluation Phase, which examines the effectiveness of the developed materials through both quantitative and qualitative analyses.

#### ***Quantitative analysis***

To assess the effectiveness of the instructional intervention, students' pre-test and post-test scores were compared using a paired-sample *t*-test. Both tests were evaluated independently by two raters using the same Communicative Effectiveness Score Descriptors rubric, developed and validated specifically for assessing business email writing in ELF contexts. It is worth noting that the term *effectiveness* in this study refers to the extent to which the developed materials improved students' business email writing performance.

The rubric comprises two main dimensions: fulfilment of task and language use. The fulfilment of task dimension assesses the writer's ability to accomplish the communicative purpose, maintain business rapport, and convey messages appropriately to the context and relationship. The language use dimension evaluates grammatical accuracy, lexical choice, and clarity of expression, with emphasis on intelligibility and pragmatic effectiveness rather than strict adherence to native-speaker norms.

To verify inter-rater reliability, the two raters first jointly assessed a subset of students' writings (six emails per test for both the pre-test and post-test, totaling 48 emails, or 20% of all emails written by participants). Following this calibration, Pearson's correlation coefficient (*r*) was calculated for both the pre-test and post-test ratings. The results indicated strong positive correlations between the two raters, which are  $r=0.669$  for the pre-test and  $r=0.738$ , demonstrating high inter-rater reliability across assessments.

#### ***Qualitative analysis***

Interview data were analyzed thematically to triangulate quantitative findings and capture students' perceptions of the learning experience. A total of two coders (the researcher and an independent intercoder) were involved in the analysis to enhance reliability and consistency. Thematic analysis followed a systematic four-stage process of transcription, initial coding, axial coding and theme refinement. To ensure coding consistency, the two coders first coded a shared subset of transcripts independently, compared results, and discussed discrepancies until full agreement was reached before proceeding with the remaining data. The next section presents the quantitative and qualitative results derived from these procedures.

## FINDINGS

To answer Research Question 2, which asks about the effects of the developed materials on learners' business email writing performance and their perceptions of using the materials within the course, both quantitative and qualitative data were analyzed. The quantitative results examine students' improvement in business email writing performance, while the qualitative findings explore students' perceptions of the learning experience and their engagement with authentic materials.

Table 4 presents the results of the paired-sample *t*-test examining students' business email writing performance before and after the instructional intervention. The analysis indicates significant gains across all four email subgenres with  $p < .01$  in every category. Effect sizes (Cohen's  $d = 1.72$ – $2.80$ ) reveal large to very large practical effects, confirming that the developed ESP materials were effective in enhancing learners' business email writing performance.

These findings suggest that the integration of authentic email models, genre-based scaffolding, and DDL-supported writing tasks successfully helped students internalize key features of business correspondence. The strongest gains were observed in interoffice memoranda, which required a high degree of contextual adaptation, indicating that exposure to authentic ELF data and guided genre analysis enhanced students' pragmatic flexibility and sensitivity to workplace communication. This may also reflect a cumulative learning effect, as the task was completed at the end of the last unit in the training, when students had become more adept at using corpus tools and applying genre-based strategies.

**Table 4**  
**Paired-sample *t*-test analysis and effect sizes of students' email writing performance**

Email types	N	Pre-test		Post-test		Sig. (p)	Effect size (Cohen's d)
		Mean	SD	Mean	SD		
Purchase order	30	13.97	3.37	18.37	1.30	.001*	1.72
Response-to-order	30	15.00	1.85	18.69	.91	.001*	2.53
Payment	30	12.47	3.19	18.76	1.48	.001*	2.53
Interoffice memoranda	30	12.69	2.69	18.63	1.32	.001*	2.80

\*Significant level at  $p < .01$

To complement these statistical gains, students' reflections reveal how and why the designed materials and instructional process enhanced their learning. Thematic analysis of the interview data generated three interrelated themes: 1) learning genre and ELF awareness through authentic data, 2) opportunities and challenges of implementing DDL, and 3) teacher and peer mediation in developing writing competence.

### ***Learning genre and ELF awareness through authentic data***

According to the interview data, students reported that working with authentic business-email samples was one of the most valuable aspects of the course. They described the materials as "realistic" and "useful," noting that authentic emails helped them understand professional

communication conventions. For example, Student 19 noted, *“Incorporating authentic emails is essential to provide learners with a realistic picture of communication,”* and Student 20 remarked, *“Authentic email samples showed me how business professionals write their emails. They use simple vocabulary, sentence structures, and friendly tone with some grammatical errors, but the emails are still comprehensible and acceptable.”*

These reflections underscore the pedagogical power of authenticity. Authentic samples, unlike textbook-generated texts, represented genuine communicative purposes and exposed learners to the diversity of global business discourse. The inclusion of authentic texts within the Teaching-Learning Cycle (TLC) allowed students to move systematically from model deconstruction to guided construction and independent performance (Feez & Joyce, 1998). This scaffolding made authentic data accessible rather than overwhelming, transforming exposure into understanding.

Through the TLC framework, students developed greater genre awareness, recognizing that business emails follow conventional structures but remain adaptable to communicative contexts. As Student 14 explained, *“Step-by-step analysis and class discussions helped me understand how to structure messages flexibly but appropriately.”* Rather than treating genre conventions as fixed templates, students began to understand that tone and expression may vary depending on the communicative situation.

Students also learned to interpret language use through contextual and intercultural lenses. Before the training, many students reported focusing primarily on conveying the content of the message. After analyzing authentic emails, however, they became more aware that relational factors such as familiarity between interlocutors, organization, organizational hierarchy, and cultural background influence tone and phrasing. This awareness was particularly evident when students examined variations in greetings and opening expressions. While textbooks often present standardized openings such as *Dear Mr./Ms. + Surname* or *To whom it may concern*, some authentic emails between business partners contain culturally embedded greetings such as *Sawasdee ka*, *Dear Khun + Name* or relational openings such as *Long time not contact you, hope you are fine & all biz in going well* (sic). Although these forms deviate from prescriptive textbook models, students noted that they helped maintain rapport between communicators. As Student 5 reflected, *“I am more careful about openings and closings because they can support a good business relationship,”* while Student 8 observed that *“Understanding the relationship between sender and recipient influences communication effectiveness.”*

These perceptions align with the large quantitative gains observed across all four email subgenres. The significant improvement in organization, content, and appropriateness scores supports students’ accounts that authentic, TLC-based materials helped them internalize genre conventions and apply to their own email production.

### ***Opportunities and challenges of implementing DDL***

Students highlighted both the benefits and difficulties of working with DDL tools. They reported that the corpus provided rich linguistic input and encouraged discovery-based learning.

As Student 6 noted, *“The corpus gives me various useful sample sentences that I can use in my writing... While the output sometimes provides a large number of sentences, I use specific techniques to manage this.”* The corpus environment allowed students to explore authentic patterns of professional discourse, fostering analytical thinking and autonomy.

Despite these benefits, some students mentioned initial challenges, including query-making (the process of creating and entering search words or phrases to explore language data in a corpus.) and interpreting concordance lines. Others described DDL tasks as time-consuming and cognitively demanding, agreeing with Boulton (2016) and Dolgova and Mueller (2019). For example, Student 13 reflected, *“I didn’t know exactly how to use the technique at first, but I kept trying. By Unit 3, I got used to the tool and could fully use it in my writing.”* Several participants suggested that additional practice in early units could help future learners become familiar with corpus use sooner. These reflections highlight the importance of pedagogical mediation and training sequence, which could lead to comprehension rather than confusion.

These qualitative accounts clarify the quantitative pattern of cumulative learning. Students’ comments about gradually mastering the corpus mirror the statistically higher post-test scores in the later-taught subgenres, especially the interoffice memorandum task completed after full DDL training. The data suggests that as students became more proficient with corpus consultation, they produced more accurate and contextually appropriate texts.

### ***Teacher and peer mediation in developing writing competence***

Across reflections, students emphasized that collaboration and feedback were critical to their learning success. They valued opportunities to discuss corpus findings and email-writing decisions with peers, viewing these exchanges as intellectually stimulating. One participant shared, *“Classroom discussions help a lot with pattern hunting (the process of looking for repeated or common language patterns in real examples of use). We share our understanding of patterns, especially in context.”* These perceptions highlight that through collaborative discussion, learners co-constructed meaning and verified interpretations of corpus evidence, reinforcing both comprehension and confidence.

Teacher feedback played an equally crucial role. Student 11 stated, *“Teacher’s feedback is essential to ensure my patterns are correct and practical. I like when we discuss whether the patterns are appropriate in context.”* The teacher’s role extended beyond correction to facilitation, mediating between learner discovery and expert validation. Teacher and peer interactions helped students internalize not just language patterns but also pragmatic and rhetorical reasoning. They learned to assess writing from multiple perspectives including linguistic, functional, and intercultural, deepening their overall email-writing competence. The learning environment thus became a community of reflective practice where knowledge was constructed dialogically.

These collaborative learning processes provide a qualitative explanation for the large effect sizes reported in the quantitative analysis. The combination of peer exchange and instructor mediation likely strengthened students’ ability to apply genre knowledge accurately and confidently, contributing to the substantial post-test performance gains.

The findings above focus on learners' experiences and perceptions during the implementation phases of the study. In the following Discussion section, these insights are interpreted in relation to previous research, and how the present findings contribute to theory and practice in materials design for global business email communication.

## DISCUSSION

### Overview of learning gains

This study aimed to develop and evaluate ESP teaching materials for business email writing through the integration of genre-based pedagogy, ELF-aware principles, and DDL. The quasi-experimental results revealed statistically significant improvements in students' business email writing, confirming the overall effectiveness of the instructional design and its alignment with needs-based ESP pedagogy. The qualitative findings offered valuable insights into why and how these improvements occurred. Together, these data sources show that the materials effectively bridged the gap between theoretical frameworks and classroom practice, addressing the well-documented needs for authentic, context-sensitive ESP instruction (Chan, 2021; Cheng et al., 2019; Horváth et al., 2025).

### Authenticity, ELF awareness, and genre development

Students' reflections underscored the pedagogical value of authenticity in developing their understanding of professional communication across cultures. They also reported that exposure to authentic emails increased their confidence in their own language production. One possible explanation for this outcome is that authentic texts enabled learners to compare multiple emails that shared similar communicative purposes across different cultural contexts. Through such comparison, students observed that effective business emails consistently prioritize the achievement of communicative goals and the maintenance of professional relationships, even when writers employ linguistic variation that does not strictly adhere to native-speaker norms. In this sense, authentic texts and tasks allow learners to see genre conventions not as fixed templates but as flexible resources shaped by audience, context, and interpersonal considerations. This creates a form of situated learning in which learners approximate real-world professional practices despite their limited workplace experience. This finding directly corroborated previous studies emphasizing the need for ESP materials grounded in authentic workplace communication (Azhar & Masyi'ah, 2023; Chan, 2021; Horváth et al., 2025).

Since commercial textbooks rarely incorporate authentic samples of language use, texts are often constructed based on standardized forms of English, and tasks are largely based on stimulated situations with limited pragmatic variation (Batsila & Shrestha, 2022; Cheng et al., 2019; Si, 2019). As a result, students are typically positioned as reproducing model texts rather than exploring context-sensitive language use and negotiating appropriate expressions across diverse communicative situations. In this regard, the use of authentic ELF emails in the present study challenges long-standing pedagogical conventions that value grammatical correctness and standardized models of business communication.

Additionally, the incorporation of authentic ELF email revealed a wide range of pragmatic strategies, including the use of softeners, rapport-building openings, and relationally sensitive closing expressions. For instance, students noticed variation in salutations, such as the use of the Thai greeting *Sawasdee ka* in emails exchanged between Thai professionals, rather than the standardized “Dear Mr./Ms. + Surname.” They also observed openings such as *Long time not contact you, hope you are fine & all biz in going well (sic)*. in emails exchanged among ELF business partners from different linguistic backgrounds. While this form deviates from standard grammatical conventions, students discussed how such expressions still function effectively in maintaining rapport and conveying goodwill. This prompted reflection on how linguistic choices in ELF communication may focus on relational meaning and communicative effectiveness over strict grammatical accuracy, particularly in contexts where mutual intelligibility is not compromised. These forms further led to discussion of how language can reflect relational closeness rather than adherence to formulaic expressions such as *I hope this email finds you well*.

Despite its pedagogical value, authenticity should not be uncritically assumed. While exposure to authentic emails enables learners to engage with variation and complexity, it may also introduce cognitive and pragmatic challenges, particularly for those with limited experience in professional communication. Without appropriate pedagogical scaffolding, learners may struggle to interpret variation or may misgeneralize context-specific language use. Therefore, the effectiveness of authentic materials depends not only on their inclusion but also on how they are mediated to support learners’ understanding of how language choices relate to communicative purpose, audience, and context.

From a pedagogical perspective, the integration of authentic data within the Teaching-Learning Cycle (TLC) proved crucial. The TLC enabled students to progress systematically from analyzing model texts to jointly constructing and independently producing their own messages (Feez & Joyce, 1998). While previous research (e.g., Irawansyah, 2016; Thongchalem & Jarunthawatchai, 2020) has documented the benefits of TLC for EFL writing, this study extends the framework to business communication by demonstrating that authentic ELF models, rather than native-speaker exemplars, can scaffold genre learning effectively.

More importantly, the effectiveness of this integration appears to lie in how the TLC structures learners’ engagement with authentic input. Across the stages of TLC, learners participate in sequential scaffold activities. They first develop the background knowledge necessary to interpret the genre, analyze authentic email samples, negotiate appropriate linguistic and pragmatic choices with peers and teachers, and finally apply these insights when composing their own emails in context-sensitive ways. Throughout this process, the TLC not only provides procedural support but also creates conditions for learners to move from noticing to producing contextually appropriate emails.

These findings further support the earlier argument that authenticity alone is insufficient. The pedagogical value of integrating authentic ELF emails depends on how learning activities are sequenced and mediated within the cycle. Without structured guidance, learners may attend primarily to surface-level features or reproduce linguistic forms without fully understanding their contextual appropriateness.

## **DDL and learner autonomy**

The integration of DDL played a key role in promoting learner autonomy. Through these inductive activities, students functioned as language researchers (Johns, 1991), exploring authentic corpus data to verify or refine their intuitions about professional email language.

Students' reflections confirmed the dual nature of DDL: it is both empowering and cognitively demanding. They appreciated the analytical freedom provided by the corpus tools but initially felt overwhelmed by the volume of concordance lines. Several participants described the process as "time-consuming" or "confusing" during early units but reported that their efficiency improved once they received more systematic training. These experiences align with the findings of Boulton (2016), Dolgova and Mueller (2019) and Mizumoto and Chujo (2016), who observed that DDL's effectiveness depends heavily on learners' familiarity with search strategies and adequate practice time.

From a design perspective, the findings illustrate the necessity of logical training sequences and sustained support to transform potential difficulty into learning opportunity. The hands-off to hands-on training approach adopted in this study appeared instrumental in managing cognitive load (Boulton, 2016) and cultivating procedural fluency.

The quantitative results further substantiate this pattern. The strongest gains occurred in the latter half of the course, indicating a cumulative learning effect: as students became more competent in using DDL techniques, their writing accuracy and lexical variety improved significantly. The qualitative reports of gradual mastery ("By Unit 3, I got used to the tool and could fully use it in my writing") explain this trajectory, providing evidence that structured DDL exposure promotes incremental, data-driven refinement of language use.

## **Pedagogical mediation**

A central insight emerging from both quantitative and qualitative data was the indispensable role of teacher and peer mediation. Students consistently emphasized that classroom discussion and instructor feedback enabled them to evaluate corpus findings and confirm the contextual appropriateness of patterns. This social dimension of learning resonates with Vygotsky's (1978) sociocultural theory, which views knowledge construction as a collaborative process within the Zone of Proximal Development (ZPD). The teacher's facilitative stance, such as guiding, questioning, and validating, helped transform learners' tentative discoveries into pragmatic insight. Similarly, peer collaboration fostered a community of reflective practice, where learners compared interpretations and co-constructed understanding.

## **Implications for ESP pedagogy and future research**

The present study contributes to ESP pedagogy in several ways. First, it confirms that authentic, ELF-informed materials can effectively replace traditional native-speaker models in teaching professional writing. This finding supports recent calls (Albers et al., 2020) to realign ESP curricula with the realities of global communication. By exposing learners to linguistically

diverse but functionally successful email samples, educators can develop pragmatic flexibility and intercultural competence which are essential skills in contemporary workplaces.

Second, the study demonstrates that genre-based scaffolding within the TLC, when combined with corpus-informed exploration, produces measurable learning outcomes. This suggests that genre-based instruction should not end at awareness but extend into data-driven reinforcement, allowing learners to empirically test and refine their understanding of language use. Materials designers might therefore incorporate corpus-informed activities at the independent construction stage of the TLC to sustain learner autonomy.

Third, the TLC framework supports students' noticing by scaffolding their understanding step by step – from recognizing conventional patterns to identifying deviations in ELF email communication. This gradual progression provides a transition that enables learners to move beyond awareness toward applying both conventional and adaptive features in their own email production.

Fourth, the findings reaffirm the pedagogical importance of teacher and peer mediation in technology-enhanced language learning. While corpus tools provide authentic data, interpretive guidance remains essential for transforming raw examples into communicative competence. Professional development for ESP instructors should thus include DDL training and provide feedback on pragmatic appropriateness, not only on linguistic form.

Finally, this study illustrates the practical value of the Design and Development Research (DDR) framework for ESP materials innovation. The DDR cycle enabled iterative improvement grounded in empirical evidence and learner feedback. Future research could extend this approach to other genres (e.g., reports, proposals) or contexts (e.g., cross-disciplinary professional communication), exploring how authentic corpora and ELF pedagogy can be integrated to develop field-specific communicative competence.

## **CONCLUSION**

This study developed and evaluated ESP teaching materials for business email writing by integrating genre-based pedagogy, ELF-aware principles, and DDL within a Design and Development Research (DDR) framework. The quantitative findings confirmed significant improvements in students' email writing performance across four business subgenres, while qualitative evidence explained these gains through enhanced genre awareness, pragmatic sensitivity, and corpus-informed language exploration.

At a broader level, the study contributes to ESP pedagogy by offering a replicable model for integrating authentic ELF communication and corpus-based inquiry into genre instruction. The materials and approach are particularly effective for EFL university contexts where learners have limited workplace experience but must prepare for global communication. By situating learning within authentic business discourse, the model supports both linguistic development and intercultural communicative competence which are key outcomes for employability in internationalized professional settings.

Looking forward, the findings point to a future of ESP education that embraces authenticity, adaptability, and learner agency. The DDR-driven design process provides a blueprint for developing responsive, research-informed materials in other professional domains, such as healthcare, tourism, and engineering. Ultimately, this study reaffirms that transforming real-world inbox data into pedagogical insight not only improves writing ability but also reshapes how ESP materials can prepare learners for the fluid, multilingual realities of global communication.

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## THE AUTHORS

**Navinda Sujinpram**, PhD, is a lecturer in the School of Foreign Languages, Institute of Social Technology, at Suranaree University of Technology, Thailand. Her research interests include genre-based approaches and DDL, with a particular emphasis on their application in language instruction.

[navinda.su@sut.ac.th](mailto:navinda.su@sut.ac.th)

**Anchalee Wannaruk**, PhD, is an associate professor in the School of Foreign Languages, Institute of Social Technology, at Suranaree University of Technology, Thailand. Her academic expertise is grounded in discourse analysis and pragmatics, second language acquisition, and pragmatic competence in EFL contexts.

[wannaruk@sut.ac.th](mailto:wannaruk@sut.ac.th)

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## Appendix A

### Sample of DDL hands-off activity

...order...

Items	Examples
1.	If the demo plant achieves its target, ELCOM will place an order for 10 modules, ...
2.	Well, anyway, I would like to order some products. I would like the...
3.	I would like to order the IntelliMouse at a cost of \$23.
4.	I need to order Samantha a new desktop hard drive.
5.	I want to order the following with the attached design.

**Pattern:**



## Appendix B Outline of the training program

Stage	Session	Duration (hour)	Activities
<b>Before the intervention</b>	1	2	Pre-test
<b>Intervention</b>	2	2	Unit 1: Introduction to DDL
	3	2	Unit 2: Purchase order email
	4	2	Unit 2: Purchase order email and post-test
	5	2	Unit 3: Response-to-order email
	6	2	Unit 3: Response-to-order email and post-test
	7	2	Unit 4: Payment email
	8	2	Unit 4: Payment and post-test
	9	2	Unit 5: Interoffice memorandum email
	10	2	Unit 5: Interoffice memorandum email and post-test
	<b>After the intervention</b>	11	

## Appendix C

Pre-determined interview questions (Translated from the original version in Thai language)

1. In what ways do you think the course materials helped improve your business email writing?
2. Which parts of the materials or activities were most useful for developing your writing skills? Why?
3. Do you think genre awareness helps you adapt your writing for different communicative purposes or audiences?
4. How did you feel about learning from authentic business emails?
5. How did exploring language patterns through concordance lines or authentic examples help you understand how business emails are written?
6. How did using corpus tools or authentic email examples affect your confidence in evaluating language use on your own?
7. If you could design similar materials for other learners, what features would you keep or change? Why?