



A Needs Analysis of English Language Learning for Dental Students in Bangkok and Nearby Provinces

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Abstract

This study investigated (1) the scope of content required for an English for Dental Purposes (EDP) course, (2) students' prioritized learning needs, and (3) their opinions on assessing learning outcomes. Using a quantitative survey, 238 participants selected by purposive sampling from a total population of 587 students. Eligible participants were those who had completed a basic English course and had not previously enrolled in any dental English course. Data were analysed using mean (M), standard deviation (SD), and the Priority Needs Index (PNI_{Modified}).

Results showed that students prioritised clinically relevant EDP content, particularly oral anatomy (M = 4.69, SD = 0.57), types of teeth and functions (M = 4.63, SD = 0.72), oral examinations and ethics (M = 4.61, SD = 0.61), and cross-cultural communication (M = 4.61, SD = 0.69). Writing skills presented the largest learning gap (PNI_{Modified} = 0.67), especially in clinical documentation (0.77), followed by speaking (0.56) and vocabulary (0.54). Students preferred formative and reflective assessment methods, favoring self-evaluation (M = 4.61) and peer assessment (M = 4.57) over formal testing (M = 4.41).

Keywords: Dentistry; English for Specific Purpose; Needs

Introduction

Thailand remains one of the most popular tourist destinations globally, welcoming approximately 35.5 million international visitors in 2024, with projections estimating up to 37.5 million in 2025 (Kasikorn Research Center, 2024). A significant portion of these visitors includes long-stay travellers who come for leisure, residency, or medical and dental services. Beyond tourism, Thailand also hosts an increasing number of highly skilled



foreign workers who live, work, and raise families within the country. As of June 2025, there were 192,896 registered skilled foreign workers (Department of Employment, 2025).

In parallel, regional integration and the expansion of cross-border healthcare and dental services within the Association of Southeast Asian Nations (ASEAN) have heightened the need for English proficiency among dental and other healthcare professionals. The establishment of the ASEAN Economic Community (AEC) in 2015 has facilitated the mobility of medical and dental personnel across member states, making strong English language skills essential for effective communication and professional competency. As ASEAN countries continue to improve healthcare delivery and elevate clinical standards, English for Medical Purposes (EMP) and more specifically, English for Dental Purposes (EDP) has become an essential component of language education in dental programmes.

Today's dental professionals are expected to demonstrate strong English language skills in order to share clinical knowledge, participate in international conferences, and provide multilingual patient care. These developments underscore the growing necessity for Thai dental students and practitioners to acquire English proficiency so that they can interact effectively with the increasing foreign population residing in the country and engage in global dental collaboration.

In the realm of higher education, the Ministry of Higher Education, Science, Research and Innovation has established English proficiency benchmarks aligned with the Common European Framework of Reference for Languages (CEFR). University graduates are expected to attain at least a B2 level, while master's and doctoral graduates must achieve C1. These language requirements extend across a wide range of professional fields, including the civil service such as police officers, immigration officials, and educators and are particularly emphasised in the healthcare and dental sectors. Dentists, nurses, physicians, radiologists, and dental technologists are all required to meet minimum English language standards to ensure professional competence.

For dental students, English proficiency is emphasised throughout every stage of academic and professional development from admission to dental programmes, through graduation and postgraduate training, to licensure. Most dental faculties in Thailand require students to present proof of English language proficiency either for admission or as a graduation prerequisite (Thai Dental Council, 2022). This emphasis reflects the fact that the dental profession relies heavily on English-language resources, including textbooks, academic journals, research articles, and international scientific communication. Dentists must navigate a broad spectrum of English usage, ranging from chairside patient interactions to academic writing, research dissemination, and participation in global professional networks.

English for Dental Purposes (EDP) refers to specialised English instruction tailored specifically to the dental profession. It encompasses the four key language skills listening, speaking, reading, and writing through the use of profession-specific vocabulary, communicative



functions, and contextualised scenarios. EDP aims to equip dental students with the linguistic competencies necessary for professional communication, clinical accuracy, and international collaboration.

This approach aligns with the perspective of Rongsaat (1985) and Otnagam (2022), who emphasised the significance of English in the medical and dental fields, particularly due to the extensive volume of English-language scientific literature. Rongsaat also identified writing as the most challenging skill for healthcare professionals, especially for those intending to pursue education abroad, where writing assessments are commonly required. Her findings highlight the varying linguistic demands of different healthcare and dental professions.

To foster effective learning, learner-centred pedagogy plays a crucial role. Reeve and Cheon (2021) argue that placing learners at the centre of instruction enhances satisfaction and intrinsic motivation principles rooted in Self-Determination Theory (SDT). Similarly, Basturkmen (2022) emphasises curriculum development based on learners' specific needs, integrating the language of specialised disciplines through discourse, genre, and vocabulary analysis.

A comprehensive needs analysis framework guides this process and includes three major components: Target Situation Analysis (TSA), Learning Situation Analysis (LSA), and Present Situation Analysis (PSA). These components are used to identify required language skills, investigate learners' motivations and learning needs, and assess current language proficiency and prior knowledge. This framework continues to be widely applied in contemporary ESP research (Watanapokakul & Sitajalabhorn, 2023), building on the foundational work of Dudley-Evans and St. John (1998).

In addition to these, the Priority Needs Index (PNI Modified) offers a data-driven approach for educators to rank and prioritise learners' specific language needs, enabling more targeted and effective instructional planning.

Given Thailand's increasing integration with global and ASEAN dental health systems, it is imperative that English language instruction for dental students be tailored to their specific academic and professional contexts. The outcomes of this study aim to inform the design of a more relevant and effective English for Dental Purposes curriculum one that ensures Thai dental students are equipped with the linguistic tools needed to navigate a complex and interconnected dental care environment confidently and competently.

Literature Review

The researcher reviewed conceptual and empirical studies related to needs analysis in English for Dental Purposes (EDP). The review was based on the learner-centred framework proposed by Dudley-Evans and St. John (1998), which emphasises that learners should participate in identifying course content in order to ensure that English instruction



corresponds to their academic and professional needs. This perspective is consistent with the views of Robinson (1991) and Rahman (2015), who argue that English for Specific Purposes (ESP) courses should incorporate profession-oriented content to enhance practical communication skills.

At present, many English courses in higher education rely heavily on commercially produced textbooks and learning materials imported from foreign contexts. Although these materials may provide general language practice, they may not adequately reflect the real communicative situations encountered by dental students in Thailand. In actual clinical settings, dental students and future dentists are required to communicate with international patients from diverse cultural and linguistic backgrounds, particularly in areas related to patient interaction, treatment explanation, appointment management, and clinical procedures. Consequently, existing materials may not fully address the specific language needs required in Thai dental contexts.

To develop a more relevant and context-sensitive course, the researcher conducted a needs analysis focusing on dental students' target needs, learning needs, and present language abilities. Data were collected directly from dental students in order to identify the English skills and communicative tasks most relevant to academic study and professional dental practice. The study also considered students' expectations, motivations, and previous learning experiences.

In addition, the researcher reviewed approaches to course design, content selection, and survey-based research methodology. Statistical measures including the mean (M), standard deviation (SD), and the PNI-modified index were employed to analyse the data and prioritise the most important learning needs. The findings were subsequently used to develop learning outcomes, communicative tasks, and assessment methods aligned with a task-based learning approach. A structured questionnaire was also designed to validate and refine the proposed course content for the target group.

Research Methodology

This research employed a survey-based approach to investigate and analyse the English language learning needs of dental students in Bangkok and neighbouring provinces. A semi-structured questionnaire was administered to the sample group. Quantitative data were analysed using basic statistical methods, including percentage, mean (M), standard deviation (SD), and the modified Priority Needs Index (PNI_{Modified}) by Nonglak Wiratchai and Suwimon Wongwanich (Suwimon Wongwanich, 2007). The development and validation of the research instrument followed several key steps: A review of relevant literature to guide the design of the questionnaire; The development of the questionnaire and an assessment of content validity through the Item-Objective Congruence (IOC) method, incorporating feedback from five experts. The version of the questionnaire used with key informants



achieved an IOC score of 0.95, while the version administered to the sample group attained an IOC score of 1.00. A pilot test was conducted with 30 non-sample dental students to ensure clarity and eliminate potential ambiguities in the questionnaire items. The internal consistency of the instrument was measured using Cronbach's alpha (Cronbach, L.J., 1951), which yielded a coefficient of 0.902. This high level of reliability confirmed that the questionnaire was both appropriate and dependable for use with the target sample.

The population consisted of 587 dental students from dentistry faculties in Bangkok and nearby provinces. A total of 238 students were purposively selected from Thai Dental Council-accredited programmes offered during the 2023–2025 academic years. Eligible participants had completed a basic English course and had not previously studied dental English.

Research Results

According to research objective 1, in terms of the learning content addressed by key informants through the questionnaire, the items were categorised into 16 distinct topics, ranked by their mean values according to a 5-point Likert scale. The results revealed that the highest-rated content need was: 1) Anatomy of the Oral Cavity ($M = 4.69$, $SD = 0.57$), followed closely by 2) Types of Teeth and Their Functions ($M = 4.63$, $SD = 0.72$). The next most important areas, both receiving the same mean score, were: 3) Oral Examinations ($M = 4.61$, $SD = 0.61$) and 4) Ethics and Cross-Cultural Communication ($M = 4.61$, $SD = 0.69$). This was followed by: 5) Paediatric Dentistry ($M = 4.56$, $SD = 0.68$) and 6) Communication Skills in Dentistry ($M = 4.51$, $SD = 0.78$). The seventh most important topic was: 7) X-rays and Dental Imaging ($M = 4.50$, $SD = 0.66$), followed by 8) Case Presentation and Report Writing ($M = 4.48$, $SD = 0.82$). Slightly lower but still highly rated were: 9) Introduction to Dental English ($M = 4.47$, $SD = 0.48$) and 10) Common Dental Diseases ($M = 4.47$, $SD = 0.77$). Next in order were: 11) Dental Treatment Procedures ($M = 4.42$, $SD = 0.79$) and 12) Dental Emergencies ($M = 4.40$, $SD = 0.77$), followed by 13) Dental Instruments and Materials ($M = 4.39$, $SD = 0.67$). The three lowest mean scores, though still within the “High” range, were: 14) Patient Interview and Medical History ($M = 4.30$, $SD = 0.81$), 15) Oral Hygiene Instructions ($M = 4.29$, $SD = 0.79$), and 16) Pain and Anaesthesia ($M = 4.19$, $SD = 0.83$).

These findings indicate that while all topics were considered important, foundational knowledge areas and communication skills were prioritised more highly than procedural and pain management topics, as detailed in Table 1.

Table 1 Needs for learning content

Content Needs	(M)	(SD)	Opinion Level
1.1. Introduction to Dental English	4.47	0.48	High
1.2. Anatomy of the Oral Cavity	4.69	0.57	Very High



Content Needs	(M)	(SD)	Opinion Level
1.3. Types of Teeth and Their Functions	4.63	0.72	Very High
1.4. Dental Instruments and Materials	4.39	0.67	High
1.5. Oral Examinations	4.61	0.61	Very High
1.6. Common Dental Diseases	4.47	0.77	High
1.7. Patient Interview and Medical History	4.30	0.81	High
1.8. Dental Treatment Procedures	4.42	0.79	High
1.9. Oral Hygiene Instructions	4.29	0.79	High
1.10. X-rays and Dental Imaging	4.50	0.66	Very High
1.11. Pain and Anesthesia	4.19	0.83	High
1.12. Dental Emergencies	4.40	0.77	High
1.13. Pediatric Dentistry	4.56	0.68	Very High
1.14. Communication Skills in Dentistry	4.51	0.78	Very High
1.15. Case Presentation and Report Writing	4.48	0.82	High
1.16. Ethics and Cross-Cultural Communication	4.61	0.69	Very High

According to research objective 2, the Priority Needs Index (PNI_{Modified}) analysis revealed that the most urgent learning need was Writing skills (PNI_{Modified} = 0.67), indicating a significant gap between the existing (M = 2.65, SD = 0.62) and desirable conditions (M = 4.40, SD = 0.58). Specifically, 2.2.1) the ability to accurately write patient records in English showed the highest individual PNI_{Modified} score (0.77), followed by 2.2.2) composing formal emails to dental professionals (PNI_{Modified} = 0.55).

The second priority was Speaking skills (PNI_{Modified} = 0.56), with the current mean score at M = 2.91, SD = 0.71 and the desired condition at M = 4.56, SD = 0.52. Within this category, 2.1.2) accurately responding to questions regarding toothache symptoms in English was rated slightly higher in priority (PNI_{Modified} = 0.57) compared to 2.1.1) confidently explaining dental check-up procedures (PNI_{Modified} = 0.55).

Ranking third, Vocabulary skills had a PNI_{Modified} value of 0.54, reflecting the need to strengthen both the correct usage of basic dental terms (PNI_{Modified} = 0.60) and the ability to infer meanings of unfamiliar terms from context (PNI_{Modified} = 0.49).

Reading skills ranked fourth (PNI_{Modified} = 0.46), with current performance at M = 3.08, SD = 0.50 and a desirable score of M = 4.53, SD = 0.56. The top reading need was understanding English-language manuals for dental instruments (PNI_{Modified} = 0.48), followed closely by comprehending articles on gum disease and root canal treatments (PNI_{Modified} = 0.45).

Finally, listening skills were ranked fifth (PNI_{Modified} = 0.45), with current performance at M = 3.08, SD = 0.77 and a desired score of M = 4.48, SD = 0.55. Within this skill, understanding English-speaking lecturers or dentists in academic/clinical settings (PNI_{Modified} = 0.49) was



a slightly higher need than understanding dental treatment discussions in multimedia formats ($PNI_{\text{Modified}} = 0.41$).

In summary, the greatest gap was found in writing skills, particularly in clinical documentation, followed by Speaking and Vocabulary. Reading and Listening skills, though important, showed comparatively smaller gaps but still required attention to meet the desired professional communication standards in dental practice as detailed in Table 2.

Table 2 Priority of Needs in English Language Learning for Dental Students

Statements	The desirable condition (I)		The existing condition (D)		PNI _{modified} (I-D)/D	Rank
	(M)	(SD)	(M)	(SD)		
2.1 Speaking	4.56	0.52	2.91	0.71	0.56	2
2.1.1) The student can confidently explain dental check-up procedures to foreign patients, showing readiness for international clinical settings.	4.53	0.50	2.91	0.79	0.55	
2.1.2) The student can accurately respond to questions regarding toothache symptoms in English, demonstrating effective communication skills in patient care.	4.59	0.54	2.91	0.63	0.57	
2.2 Writing	4.40	0.58	2.65	0.62	0.66	1
2.2.1) The student could accurately write patient records in English, reflecting competence in documenting clinical information.	4.39	0.63	2.47	0.66	0.77	
2.2.2) The student can compose formal emails to dental professionals, showing appropriate use of professional English in written communication.	4.41	0.54	2.83	0.58	0.55	
2.3 Vocabulary	4.58	0.53	2.96	0.65	0.54	3
2.3.1) The student can correctly translate and use basic dental terms such as "filling," "extraction," "cavity," and "plaque" in context.	4.62	0.56	2.88	0.66	0.60	



Statements	The desirable condition (I)		The existing condition (D)		PNI modified (I-D)/D	Rank
	(M)	(SD)	(M)	(SD)		
2.3.2) The student can infer the meanings of unfamiliar dental terms from context in English texts, indicating strong vocabulary acquisition skills.	4.55	0.50	3.05	0.65	0.49	4
2.4. Reading	4.53	0.56	3.08	0.50	0.47	
2.4.1) The student is able to read and comprehend articles related to gum disease and root canal treatments written in English.	4.57	0.57	3.15	0.58	0.45	
2.4.2) The student can understand English-language manuals or instructions on the use of dental instruments, supporting safe and informed practice.	4.49	0.55	3.02	0.43	0.48	5
2.5. Listening	4.48	0.55	3.08	0.76	0.45	
2.5.1) The student can follow and understand instructions given by English-speaking lecturers or dentists in academic or clinical settings.	4.47	0.55	2.99	0.58	0.49	
2.5.2) The student can understand dental treatment discussions in English presented through videos or podcasts, which supports ongoing learning through multimedia sources.	4.49	0.55	3.17	0.37	0.41	

According to the research objective 3, to study opinions on the assessment and evaluation of learning outcomes in the EDP course. The analysis of opinions on measuring and evaluating learning outcomes revealed that the highest-rated item was awareness of periodically evaluating oneself during the learning process ($M = 4.61$, $SD = 0.49$), interpreted as Very High. This was followed closely by satisfaction with being evaluated by classmates in a peer assessment ($M = 4.57$, $SD = 0.56$), also at a Very High level. The lowest-rated item, though still interpreted as High, was satisfaction with doing the formal test as a learning measurement ($M = 4.41$, $SD = 0.60$). Overall, the section received a mean score



of $M = 4.53$, $SD = 0.55$ indicating that participants held a Very High level of agreement toward the importance and value of diverse evaluation methods in the learning process as detailed in Table 3.

Table 3 Opinions on measuring and evaluating learning outcomes

Opinions on measuring and evaluating learning outcomes	(M)	(SD)	Interpretation
3.1 Are you aware of periodically evaluating yourself during the learning process?	4.61	0.49	Very High
3.2 Are you satisfied with being evaluated by your classmates in a peer assessment?	4.57	0.56	Very High
3.3 Are you satisfied with doing the formal test as a learning measurement?	4.41	0.60	High
Total	4.53	0.55	Very High

Discussion

According to research objective 1, the results of this study highlight the urgent need for English for Specific Purposes (ESP) courses in Thai dental education that are tightly aligned with the professional domains students themselves regard as most critical. The highest-rated content areas anatomy of the oral cavity, types of teeth and their functions, oral examinations, ethics, and cross-cultural communication not only reflect foundational knowledge but also emphasise the communicative and ethical dimensions of dentistry. This finding is echoed by Hutchinson and Waters (1987) and agreed with Supunya (2023), who argue that ESP should be tailored to learners' academic and professional contexts rather than relying on generic English courses.

Thai dental students' prioritisation of both technical terminology and interpersonal communication indicates a dual need: to master precise professional vocabulary in the same way as to develop competence in case presentation, patient interaction, and cross-cultural dialogue. Similarly to Otngam (2022) and Boonsuk and Ambele (2021), who reported that Thai students prefer content integrated with real-world practice, these findings reinforce the view that English proficiency in dentistry is directly tied to clinical accuracy and patient safety.

Moreover, Thai learners' cultural profile characterised by high uncertainty avoidance, collectivism, and long-term orientation was highlighted by Hofstede (2011) and echoed by Fuangtharnthip et al. (2021), who suggest that students thrive in structured, predictable learning environments with collaborative tasks and clear professional goals. Instructional strategies such as role-plays, concept mapping of anatomical systems, and case-based



presentations therefore align well with this cultural orientation while enhancing both engagement and retention of dental English content. As Anthony (2018) said, these methods are consistent with ESP principles, which integrate content knowledge with language use through authentic tasks.

Alignment with the Thai Dental Council's educational standards is also crucial. As highlighted by the Council (2022), professional ethics, competency-based education, and global engagement are priorities for dental graduates. By incorporating high-priority topics such as paediatric dentistry, communication in clinical settings, and ethics ESP courses can directly reinforce these standards. In the same way, Boonsuk and Ambele (2021) noted that dentistry increasingly operates in multilingual, multicultural contexts where precise terminology and ethical communication are critical.

Despite these clear needs, ESP provision for dental students in Thailand remains underdeveloped. On the other hand, Piamsai (2017) and Supunya (2023) identified persistent gaps, including limited subject knowledge among ESP instructors, a lack of specialised materials, and insufficient facilities for interactive learning. Addressing these issues requires what was echoed by many researchers: closer collaboration between language specialists and dental faculty to co-develop curricula, train instructors, and design materials that integrate technical content with communicative practice.

According to research objective 2, the findings present a compelling case: output skills notably writing and speaking are significantly more urgent than traditional input-oriented skills such as reading and listening. Writing emerged as the top priority ($PNI_{Modified} = 0.67$), with the ability to write patient records in English reaching a critical $PNI_{Modified}$ of 0.77. Speaking ranked second ($PNI_{Modified} = 0.56$), reflecting acute needs in clinical communication.

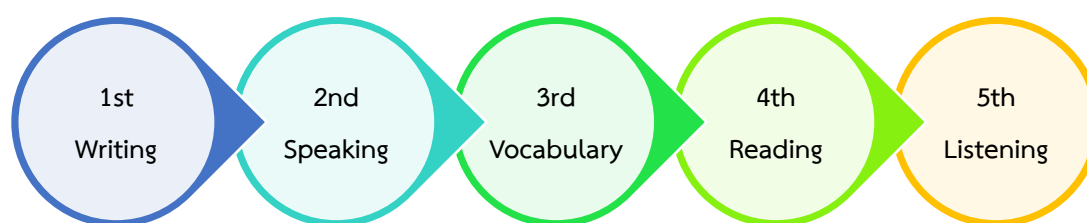


Fig. 1 Priority of Needs in English Language Learning for Dental Students

1) Target Situation Analysis (TSA): Defining Professional Output Demands

From a Target Situation Analysis (TSA) perspective, dental professionals are required to demonstrate effective written and spoken communication in clinical settings. This finding aligns with Nakkampan (2018), whose study revealed that writing summarisation was perceived as one of the most important English language needs among dentists in Ayutthaya Province, ranking second overall ($M = 4.50$). Such findings emphasise the importance of incorporating



profession-oriented writing activities, including patient record writing, case summarisation, and formal email communication, into ESP course development. Furthermore, speaking skills particularly those related to responding to toothache symptoms and explaining dental procedures should be treated as essential communicative competencies in dental contexts.

2) Present Situation Analysis (PSA): Highlighting Gaps in Output Proficiency

Current performance presents a stark contrast: mean writing ability stands at $M = 2.65$, $SD = 0.62$, and speaking at $M = 2.91$, $SD = 0.71$. These figures denote significant deficits compared with desired benchmarks (writing $M = 4.40$, $SD = 0.58$, speaking $M = 4.56$, $SD = 0.52$). As highlighted by these findings, input skills such as reading ($M = 3.08$, $SD = 0.50$) and listening ($M = 3.08$, $SD = 0.76$) show comparatively smaller gaps. This PSA echoes the misalignment between students' output abilities and clinical demands, necessitating an immediate pedagogical response.

3) Learning Situation Analysis (LSA): Thai Students' Motivations and Cultural Orientations

Understanding Thai learners' motivations is vital. As Hofstede (2011) and Fuangthamthip et al. (2022) highlighted, Thai students often favour structured and collaborative environments. Thus, ESP courses should integrate scaffolded, peer-supported writing (e.g., guided drafting of patient reports) and supervised speaking role-plays (e.g., symptom-response simulations). These activities agree with their motivational profiles and enhance linguistic acquisition.

4) Strategic Implications for ESP Curriculum Design

A curriculum rooted in ESP for Thai dental education must shift emphasis toward output-focused learning. Writing-intensive modules, such as composing clinical documentation and professional correspondence, should be front-loaded. Speaking activities should mirror real-life scenarios, such as patient interviews and case explanations, enabling authentic rehearsal. Input skills reading dental manuals and listening to lectures remain essential but should be reframed as support mechanisms. As highlighted by Anthony (2018), reading can provide frameworks for structuring reports, while listening can model consultation dialogues.

5) Alignment with Thai Dental Council Standards

This output-enhanced ESP approach directly aligns with the Thai Dental Council's emphasis on competency-based education, ethical communication, and global professionalism. By prioritising writing and speaking skills central to clinical practice and collaboration the ESP curriculum supports the Council's goal of producing communicatively competent practitioners for international contexts.

According to research objective 3, the study also shows that diverse, formative evaluation strategies resonate most with learners. Participants rated self-awareness of ongoing evaluation highest ($M = 4.61$, $SD = 0.49$), followed closely by peer assessment satisfaction ($M = 4.57$, $SD = 0.56$). Formal testing, on the other hand, came last ($M = 4.41$,



SD = 0.60), indicating a preference for reflective and collaborative evaluation over traditional examinations. As highlighted by Apridayani and Thoch (2023) and Chung et al. (2021), self-assessment enhances writing performance, metacognitive awareness, and autonomy. Similarly to findings by Prompan and Piamsai (2024), peer assessment fosters collaborative learning and boosts motivation. Digital peer feedback systems also echoed gains in writing proficiency and learner confidence (Pitukwong et al., 2023).

Overall, the section's mean ($M = 4.53$, $SD = 0.55$) confirms strong agreement on the value of varied, formative assessment methods. This aligns with modern ESP pedagogy, as Anthony (2018) said, which emphasises assessment for learning self- and peer-assessment practices that empower learners to reflect, regulate, and co-construct their development.

New Knowledge Emerging from Study

This study contributes several important insights into the fields of ESP curriculum design, dental education, and learner-center assessment:

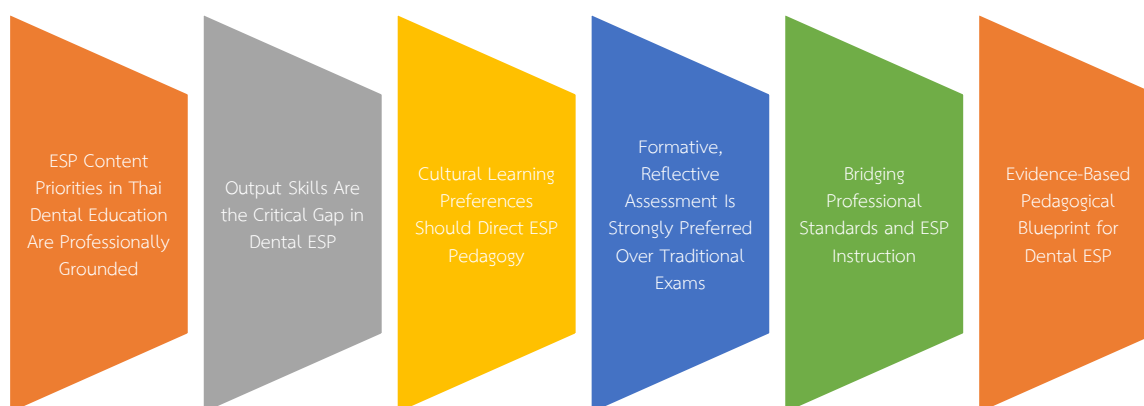


Fig. 2 New Knowledge Emerging from the Needs Analysis of English Language Learning for Dental Students in Bangkok and Nearby Provinces

1. ESP Content Priorities in Thai Dental Education Are Professionally Grounded

The research confirms that Thai dental students place high value on content directly tied to clinical practice such as oral anatomy, types of teeth, ethics, and cross-cultural communication rather than on generic English topics. This strengthens the case for profession-specific language instruction and shows that students can articulate their own learning needs with precision when guided by structured needs analysis.

2. Output Skills Are the Critical Gap in Dental ESP

By comparing Target Situation Analysis (TSA) and Present Situation Analysis (PSA), the study uncovers a substantial shortfall in writing and speaking proficiency, with writing reaching a critical PNI Modified score. This quantifies the urgent demand for output-oriented



curriculum design, challenging traditional input-heavy ESP approaches that emphasise reading and listening over productive skills.

3. Cultural Learning Preferences Should Direct ESP Pedagogy

The study demonstrates that Thai dental students characterised by high uncertainty avoidance and collectivism respond best to structured, collaborative, and goal-oriented learning tasks. This highlights the need to align instructional strategies (e.g., role-plays, scaffolded writing activities, supervised peer feedback) with cultural learning profiles rather than adopting a one-size-fits-all approach to ESP delivery.

4. Formative, Reflective Assessment Is Strongly Preferred Over Traditional Exams

Evidence that students rate self-assessment and peer assessment higher than formal testing shows a learner-driven shift towards assessment for learning. This indicates that future ESP programmes should integrate ongoing reflective practices and collaborative evaluation methods to improve metacognition, self-regulation, and learner engagement.

5. Bridging Professional Standards and ESP Instruction

The findings directly connect Thai dental students expressed needs with the Thai Dental Council's competency-based framework, providing concrete evidence that output-focused, ethics-oriented ESP instruction can meet both academic and regulatory expectations. This bridges a long-standing gap between language instruction and professional accreditation standards.

6. Evidence-Based Pedagogical Blueprint for Dental ESP

Combining TSA, PSA, and LSA data into a unified needs analysis provides a research-driven model for ESP course design. This approach demonstrates how to move beyond anecdotal curriculum planning to create tailored, measurable, and culturally responsive ESP programmes.

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