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## Exploring information-seeking behavior in second language learning: a preliminary study

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### ABSTRACT

Grounded in Proactive Language Learning Theory (PLLT, Papi, M., and P. Hiver. 2025a. "Proactive Language Learning Theory." *Language Learning* 75 (1): 295–329. doi:10.1111/lang.12644), this study examines how adult ESL learners engage in proactive information-seeking behaviors (InfoSBs) to support English language acquisition. Semi-structured interviews with eleven international university students in the United States were analyzed thematically, revealing three interconnected dimensions of information seeking: *Elicitation*, involving purposeful efforts to obtain linguistic information from various resources; *Monitoring*, encompassing ongoing evaluation of information against learners' knowledge, goals, and task demands; and *Use*, reflecting the deliberate integration of information into current or future learning tasks. The primary aim of the study was conceptual and exploratory: to clarify the construct of InfoSBs and identify its core subdimensions in second language learning. Findings highlight information seeking as an agentic and strategic process and underscore the value of fostering learners' proactive engagement with linguistic information. The study provides a preliminary framework for future research and pedagogical practices to support information-seeking behaviors in second-language contexts.

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### KEYWORDS


Information-seeking behavior; proactive language learning theory; metalinguistic information; learner agency; adult ESL learners; second language learning

## Introduction

Explicit information about the target language, often referred to as metalinguistic information, has long been a central topic of inquiry in second language acquisition (SLA). Early and influential work examined the role of explicit knowledge and conscious awareness in L2 learning, particularly in relation to how learners acquire and use linguistic forms (e.g. DeKeyser 2007; Long 1996). Much of this research has been situated within the broader framework of form-focused instruction (FFI), which emphasizes either focus on the instruction of language forms (focus on forms) or drawing learners' attention to linguistic forms while maintaining a primary focus on meaning (focus on form) (Goo et al. 2015; Kang, Sok, and Han 2019; Webb, Yanagisawa, and Uchihara 2020).

Within this body of work, a substantial number of studies have investigated the effects of different types of instructional practices, most notably explicit versus implicit

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instruction, on a range of learning outcomes (Goo et al. 2015; Kang, Sok, and Han 2019; Norris and Ortega 2000; Pawlak 2021a). These outcomes have included measures of grammatical accuracy, vocabulary knowledge, pronunciation, pragmatic competence, and learners' ability to use language forms in free production (Mackey and Goo 2007; Nassaji 2016; Webb, Yanagisawa, and Uchihara 2020). Researchers have also examined how the effectiveness of explicit instruction may vary depending on contextual and learner-related factors, such as learners' proficiency level, instructional setting (e.g. laboratory versus classroom), and whether learning occurs in a second-language or a foreign-language environment (Li and Sun 2024; Li, Hiver, and Hiver 2022).

Despite these contributions, much of the existing research has remained predominantly instructional in orientation and has focused largely on discrete learning techniques. Within this body of work, learners are often positioned primarily as recipients of pedagogical input, with comparatively limited attention given to their active role in independently seeking out and using linguistic information. Consequently, although the effectiveness of explicit instruction has been well established, less is known about how learners themselves proactively access, engage with, and mobilize explicit L2 information as a resource for learning beyond or alongside formal instruction.

Studies on language learning strategies have traditionally aimed to highlight the role of the learner in explicit learning of metalinguistic information. Researchers have documented learners' use of grammar learning strategies, pronunciation learning strategies, vocabulary learning strategies, and strategies for acquiring pragmatic competence (e.g. Oxford 2017). This line of inquiry has contributed valuable insights into the techniques learners employ to notice, process, and internalize metalinguistic forms, as well as how individual differences such as beliefs, motivation, and other learner characteristics may influence engagement with explicit L2 information (e.g. Kim and Nassaji 2018; Loewen et al. 2009).

Despite these contributions, the dominant orientation of much of this research has remained instructional, and it has largely focused on specific techniques. Learners are often conceptualized primarily as recipients of pedagogical information, with less attention paid to their active role in independently seeking and using linguistic information. As a result, while the effectiveness of explicit instruction has been well documented, comparatively less is known about how learners themselves proactively access, engage with, and utilize explicit L2 information as a learning resource beyond or alongside formal instruction.

To bridge this gap, the present study examines InfoSB as a distinct form of proactive L2 learning behavior. By focusing on learners' agentic engagement with explicit linguistic information, both within and beyond instructional settings, this study aims to extend Proactive Language Learning Theory (PLLT) and contribute to a more learner-centered understanding of how explicit knowledge resources function in second language development.

## **Proactive language learning theory**

Proposed by Papi and Hiver (2025a), PLLT foregrounds the agentic and strategic behaviors learners employ to learn an additional language. At its core, PLLT rejects the portrayal of learners as passive recipients of instruction or input and instead conceptualizes them as

proactive agents who deliberately shape their own learning contexts and experiences. From this perspective, language learning is not something that happens to learners as a result of exposure or instruction; rather, it is something learners actively do through purposeful engagement with the affordances of their environment. As PLLT emphasizes, without the learner and their engagement in learning, there is no language learning process (Papi and Hiver 2025a).

PLLT emerged in response to the dominant cognitive and psycholinguistic orientations in SLA, which have traditionally prioritized the nature of linguistic knowledge or the internal mental processes underlying language learning. For example, generative approaches have focused on the restructuring of linguistic representations and constraints (e.g. Hopp 2022), while usage-based approaches have examined how learners acquire language through exposure, frequency, and associative learning mechanisms (Ellis 2019). Similarly, skill acquisition theory has examined how declarative knowledge becomes proceduralized through practice (DeKeyser 2007; Suzuki and DeKeyser 2017), and cognitive-interactionist perspectives have investigated how input, interaction, and corrective feedback facilitate noticing and form–meaning connections (Gass 2018; Long 1996; Schmidt 1995). Although these approaches have substantially advanced our understanding of SLA, they tend to reduce learners to computational systems that process linguistic input, thereby offering a limited account of learners as intentional agents (Atkinson 2011; Larsen-Freeman 2015). Even socially oriented theories, while foregrounding context and interaction, often depict learners as reactive to environmental affordances rather than as individuals who actively shape those affordances in pursuit of their learning goals (Duff and Talmy 2011; Lantolf 2011). Consequently, despite growing attention to individual differences and learner psychology, including motivation, engagement, self-regulation, and emotion, SLA research has yet to provide a fully integrated account of how learners behave in ways that systematically drive their language development (Hiver and Papi 2019; Li, Hiver, and Hiver 2022).

PLLT addresses this theoretical gap by recentering the learner as the primary driver of the language learning process. Drawing on work in self-regulated learning, agency, and proactivity, Papi and Hiver (2025a) conceptualize L2 learners as self-regulated agents who strategically manage their cognitive, emotional, and behavioral resources to achieve language learning goals (Zimmerman 2000). From this standpoint, proactive learning is not merely a response to instructional demands but an intentional and goal-directed mode of engagement through which learners identify learning needs, set goals, act, monitor outcomes, and adapt their behavior accordingly (Parker and Wang 2015; Teng and Zhang 2020). Rather than importing generic notions of self-regulation into SLA, PLLT theorizes language learning by placing the learner at the center while remaining grounded in decades of SLA research on input, interaction, feedback, and form-focused instruction.

Central to PLLT is the assumption that input, interaction, corrective feedback, and metalinguistic information function as resources rather than causal forces in L2 development. While these affordances are widely recognized as necessary components of language learning (DeKeyser 2007; Gass 2018; Leow 2015; Swain 1985), PLLT argues that their effectiveness depends fundamentally on how learners engage with them. In this view, learning does not occur simply because instructional opportunities or linguistic data are available; rather, it is the learner's proactive engagement with these resources

that determines whether and how learning takes place (Little, Dam, and Legenhausen 2017; Papi and Hiver 2025a).

PLLT articulates four interrelated dimensions of proactive language learning behavior: input-seeking, interaction-seeking, feedback-seeking, and information-seeking behavior (Papi and Hiver 2025a). Together, these behaviors constitute the core mechanisms through which learners strategically engage with their learning environment. These dimensions are not isolated; they are dynamic and interrelated and may co-occur within the same learning episode, with their effects accumulating and interacting over time (Papi and Hiver 2025a). Among the four behaviors, information-seeking behavior involves learners' strategic engagement with explicit linguistic information. Importantly, PLLT proposes that variation in learners' engagement with these proactive behaviors leads to qualitative differences in L2 development. Learners differ not only in how frequently they engage in proactive behaviors but also in how strategically and purposefully they do so. As a result, proactive learning behaviors are hypothesized to differentially contribute to specific aspects of L2 knowledge and skill development. For instance, interaction-seeking behavior is expected to play a central role in the development of productive skills, whereas information-seeking and feedback-seeking behaviors are anticipated to be particularly relevant for the development of explicit L2 knowledge (Norris and Ortega 2000; Papi and Hiver 2025a; Suzuki 2023), which may subsequently support both receptive and productive language skills through processes of proceduralization and automatization (McManus and Marsden 2019; Suzuki and DeKeyser 2017). From this view, learners vary not only in how much they engage in proactive learning but also in *how* they engage – by prioritizing different proactive behaviors depending on their goals, motivational orientations, and contextual constraints (Papi and Khajavy 2021; Teimouri, Papi, and Tahmouresi 2022). In this way, PLLT provides a unifying theoretical framework that links learner behavior to variation in L2 outcomes while remaining compatible with multiple SLA traditions.

More relevant to this study, by explicitly theorizing learners' intentional engagement with (meta)linguistic information as a form of proactive language learning, PLLT provides a principled framework for examining learners' engagement with explicit linguistic knowledge beyond instructional settings. It allows researchers to move beyond questions of whether explicit instruction is effective (Goo et al. 2015; Kang, Sok, and Han 2019; Webb, Yanagisawa, and Uchihara 2020) and instead investigate how learners themselves actively seek, interpret, and use metalinguistic information as part of their ongoing language development (Papi and Hiver 2025a). Drawing on PLLT, this study deems InfoSB as learners' intentional, agentic, and strategic efforts to seek, engage with, and use explicit metalinguistic information about the target language, such as grammar, vocabulary, pronunciation, pragmatics, and cultural usage, in order to improve their L2 knowledge or performance. Conceptually, InfoSB is related to self-regulated learning in that both perspectives emphasize learners' active management of their learning processes and strategic engagement with learning resources (Zimmerman 2000). However, InfoSB is narrower than general strategy use and self-regulated learning, as it focuses specifically on proactive engagement with metalinguistic information rather than broader learning processes. It is also different from general help-seeking and feedback-seeking: help-seeking may involve broader assistance with learning or task completion, whereas feedback-seeking concerns corrective information on one's L2 output. Accordingly, in this

study, only behaviors that involve proactive engagement with metalinguistic information about the target language itself, rather than information directed at learners' L2 performance, are classified under InfoSB.

Although information-seeking behaviors (InfoSBs) may appear to overlap with constructs commonly examined in L2 learning strategy research, the two are not synonymous. L2 learning strategy research has traditionally focused on the cognitive, metacognitive, social, and affective techniques learners employ to facilitate language learning. However, this line of research has been criticized for persistent conceptual ambiguity, including difficulties in defining strategies, distinguishing them from general learning behaviors, and establishing consistent units of analysis (Pawlak 2021b).

There are at least two distinctions between learning strategies and InfoSB. The first difference is in scope. Learning strategies models often include various dimensions, such as affective (e.g. relaxation) and social strategies (e.g. help-seeking), which may support learning indirectly but cannot be considered learning behaviors. By contrast, InfoSBs are restricted to behaviors gathering and use metalinguistic information about the target language, which are hypothesized to enhance L2 learning (Papi and Hiver 2025a). Another major difference between InfoSB and learning strategies is in their function. Research on L2 learning strategies has often focused on specific techniques that vary widely across different learners. Such a microscopic perspective commonly leads to the development of detailed but sometimes unwieldy classifications and measurement tools that lack rigor, theoretical coherence and practicality for research purposes (Pawlak 2021b). This is why some researchers have called for examining more general patterns of behavior, such as self-regulated learning, rather than specific techniques (Dörnyei 2005). Not unlike self-regulated learning, InfoSB also focuses on behavioral patterns aimed at seeking and using metalinguistic information rather than specific techniques.

Although all four components of PLLT are theoretically motivated, empirical research to date has focused primarily on feedback-seeking behavior, which has been shown to be associated with motivational and contextual variables and to predict learning outcomes above and beyond instructional input and feedback provision (e.g. Mahbodi, Papi, and Wolff 2025; Papi et al. 2019; 2020; Papi, Tabari, and Sato 2024). The remaining components, including InfoSB, have received comparatively little empirical attention within SLA despite their centrality to contemporary language learning contexts, particularly in technology-rich and self-directed learning environments. To bridge this gap, the present study is a preliminary attempt to explore how learners proactively seek, engage with, and use explicit linguistic information as a resource for L2 learning. This includes explicit information on the lexical, grammatical, phonological, pragmatic, and cultural aspects of the target language, whether provided by a teacher or accessed independently through other resources.

By examining learners' InfoSB, this study aims to identify emerging dimensions of InfoSB in SLA and to establish an empirical foundation for future research on proactive engagement with explicit L2 knowledge. In doing so, it contributes to a growing body of research that seeks to better understand how learners actively direct their language development through purposeful, self-initiated action.

## Research question

Given the limited empirical research on how language learners engage in information-seeking experiences through the lens of learner proactivity, the present study aims to address the following research question:

Research Question: How do language learners describe their experiences in seeking and using explicit (meta)linguistic information during the language learning process?

This question aims to capture learners' subjective experiences and meanings associated with information-seeking in language learning, with particular attention to how they engage in, navigate, and make use of information-seeking opportunities as part of their learning process.

## Methods

As a preliminary and exploratory investigation of learners' information-seeking behavior in second language learning, this study employed a qualitative research design. The study was intended not to test predetermined hypotheses, but to explore how learners experienced, interpreted, and used explicit (meta)linguistic information as part of their language learning process. To address this aim, semi-structured interviews were conducted with adult English learners, and the data were analyzed using inductive thematic analysis to allow themes to emerge from participants' accounts. In the sections that follow, we outline the participants, data collection procedures, research ethics and researcher positionality, and data analysis procedures.

## Participants

This study used convenience sampling to recruit 11 adult participants from a university-based Center for Intensive English Studies (CIES) in the United States. All participants were upper-intermediate to advanced English learners, as determined by CIES placement assessments and self-reported proficiency, and were able to communicate fluently in English. Participants ranged in age from 19 to 42 years ( $M = 28.5$ ) and include 5 females and 6 males from 10 countries: China, Colombia, Cuba, Iran, Italy, Saudi Arabia, South Korea, Switzerland, Uzbekistan, and Venezuela. Most had completed undergraduate degrees in their home countries or were current undergraduates in the U.S., and all reported plans to pursue graduate-level education. Recruitment was conducted via email, informed consent was obtained from all participants, and the study received IRB approval. Participants received \$30 for completing one interview. Demographic details are presented in [Table 1](#).

## Data collection

This study employed a qualitative research approach using semi-structured interviews to examine learners' information-seeking experience in depth. The flexible interview format allowed participants to describe their information needs, decision-making processes, and learning experiences in their own words, while enabling the researchers to ask follow-up questions to clarify responses and explore emerging ideas. This approach aligned with

**Table 1.** Summary of participant demographics.

Variable	N
Gender	
Female	5
Male	6
Age (years)	
19–26	4
27–34	5
35–42	2
Educational Status	
Completed undergraduate degree	7
Undergraduate student	4
Length of Stay	
Less than 1 year	8
1–5 years	3

Note: Total sample size = 11.

qualitative research principles emphasizing flexibility, depth, and participant-centered meaning-making (Cohen, Manion, and Morrison 2002; Rose, McKinley, and Briggs Baffoe-Djan 2019).

The interview protocol was developed to explore learners' experiences with information-seeking during second language learning within the conceptual framework of PLLT. The questions were designed to elicit participants' descriptions of how they seek, evaluate, and use metalinguistic information in their learning processes. The protocol consisted of open-ended questions organized around several broad domains, including learners' language learning experiences, the types of metalinguistic information they seek (e.g. grammatical, lexical, phonetic), the resources they use, their strategies for evaluating the reliability of information, and how they apply the information to support language development. Example questions included: 'Do you look for information about grammar, pronunciation, vocabulary, or other aspects of the language during your learning process?' and 'Where do you usually look for this information?' Participants were also asked questions such as 'What do you do with the information you find?' and 'How do you decide whether the information you find is reliable?' Follow-up prompts such as 'Can you give an example?' or 'Can you describe a specific situation?' were used to encourage elaboration. The semi-structured format allowed flexibility for probing questions and follow-up clarification to explore participants' responses in greater depth. The interview protocol was reviewed and refined by the research team to ensure alignment with the study's research question. The full interview protocol is provided in the Supplementary Materials.

Interviews began with broad questions about participants' general language learning and information-seeking practices and progressed to specific instances, including the sources used, challenges encountered, and how information was evaluated and applied. Each interview lasted approximately 40–65 min, totaling approximately 9.5 h of recorded interview data. This structure captured both what actions participants took and how and why these actions occurred.

To enhance comfort and expressive depth, interviews were conducted in participants' first languages when preferred and feasible (2 of 11 interviews). All interviews were audio-recorded with consent and transcribed verbatim. Non-English excerpts were translated into English by the researchers to preserve conceptual meaning and contextual

nuance. All data were securely stored, and identifying information was removed in accordance with ethical research practices.

### ***Research ethics and researcher's positionality***

Ethical standards were strictly followed throughout the study. Participants received detailed information about the study purpose, procedures, and voluntary nature of participation, and were informed of their right to decline, pause, or withdraw, at any time without consequence. Written informed consent was obtained prior to data collection. With participants' permission, interviews were audio-recorded, and participants could refuse recording or request it be stopped at any point.

To ensure confidentiality, identifying information was removed and pseudonyms were used in reporting. No personally identifiable data were included in analysis or dissemination. All audio recordings and transcripts were securely stored and accessed only by the research team in accordance with institutional ethical guidelines.

Regarding researcher positionality, the first and second authors are former learners of English with Chinese and Farsi as their first languages, respectively. Their experiences informed sensitivity to participants' challenges and supported empathetic engagement during interpretation. To address potential bias, reflexivity was applied throughout the study. Credibility was strengthened through member checking, peer debriefing, collaborative coding, and triangulation across multiple data sources. Regular discussions of coding and interpretations helped ensure analytic consistency and minimize individual bias.

### ***Data analysis***

Data were analyzed using inductive thematic analysis following Creswell and Poth (2016) to examine learners' InfoSBs and allow patterns and themes to emerge from the data. The unit of analysis was one speaking turn. Analysis proceeded iteratively across phases. First, researchers conducted close readings of transcripts and generated data-driven codes grounded in participants' language and descriptions. During this initial coding stage, speaking turns were assigned descriptive codes that captured learners' actions, strategies, and reflections related to information seeking, such as asking teachers for clarification, searching online resources, comparing multiple sources, and applying information in writing or speaking. These initial codes were then reviewed and grouped based on conceptual similarity. Through constant comparison across participants and data sources, related codes were clustered into broader subthemes representing recurring patterns in learners' information-seeking experiences. The subthemes were subsequently synthesized into three overarching themes – Elicitation, Monitoring, and Use – which captured the core stages of learners' proactive engagement with linguistic information. An example of the coding scheme illustrating the progression from codes to subthemes and themes is provided in the Supplementary File.

Because the data were multilingual, interviews conducted in participants' first languages were first analyzed in the original language prior to translation. To preserve linguistic nuance and contextual meaning, the researcher proficient in the respective language initially identified and preliminarily coded relevant speaking turns in the

original transcript. These selected segments were then translated into English for further analysis. The translated excerpts were reviewed by all the authors during regular analytic meetings to ensure that the conceptual meaning of the original responses was faithfully preserved.

To enhance trustworthiness, two coders independently coded all transcripts and then met regularly to compare coding decisions, resolve discrepancies, and refine the coding framework, subthemes, and themes. Color coding was used throughout the analytic process to map relationships among codes, subthemes, and themes, helping to ensure internal coherence and clear distinctions across categories. Peer debriefing was also conducted through discussions to ensure that coding decisions and thematic interpretations remained aligned with the focal construct and guiding theoretical framework. During these discussions, emerging codes, subthemes, and thematic interpretations were critically examined to challenge initial assumptions, consider alternative explanations, and ensure that interpretations remained grounded in the data. In cases where participants' intended meanings were unclear, follow-up emails were sent to invite clarification of their interview responses. Triangulation was achieved, when available, by comparing participants' interview accounts with their ChatGPT or other online browsing histories to examine convergence between reported and observed information-seeking behavior. Reflexivity was maintained throughout analysis, with ongoing reflection on how the researchers' backgrounds as former L2 learners might shape interpretations, ensuring findings remained grounded in participants' perspectives.

## **Findings**

To ensure confidentiality, all participant names reported in the findings are pseudonyms. This research investigated how adult ESL learners actively engage in information seeking in English-dominant environments. Drawing on thematic analysis of data from 11 semi-structured interviews, the study identified three core dimensions that capture learners' proactive engagement with information: Elicitation, Monitoring, and Use. These dimensions are reflected in consistent behavioral patterns, exemplified through learners' situated experiences, and illustrated with direct excerpts from the interviews. The discussion that follows situates these findings within the broader body of SLA literature and theoretical frameworks.

### ***Information elicitation***

The first salient theme concerns language learners' intentional efforts to elicit information from their surrounding environment or from other people. All eleven participants in this study consistently engaged in active searches for language-learning-related information across a wide range of situations, including online platforms and interactions with people around them, as repeatedly evidenced in their interviews. This pattern reflects a core principle of PLLT, namely that learners' motivation, agency, and proactivity are translated into observable learning behaviors. Information does not emerge spontaneously; it has to be provoked by the learner's agency. In this study, all participants demonstrated an awareness of the need to move beyond incidental exposure and made deliberate efforts to seek information across multiple contexts, such as digital resources, interpersonal interactions,

and physical materials, for diverse language-learning purposes, and by exercising autonomy and strategic seeking behaviors in the process.

Learners' proactivity in information elicitation is first reflected in the kinds of information learners aim to elicit. In this study, all learners sought a wide range of information related to language learning. One prominent focus was grammar. For instance, Ryan explained, *'Grammar is very confusing and hard for me ... I have to read explicit information about it in order to understand.'* Similarly, Mitch recalled using ChatGPT to clarify the distinction between gerunds and infinitives: *'ChatGPT made me a table ... I didn't find that in class, but in ChatGPT I found it. That is so great. Very, very detailed.'* Another frequently elicited type of information concerned vocabulary. For example, Ray said:

When you use Google Translate or ChatGPT, they can give you the translation, but for me, what is important now is knowing when to use a word. For example, is it possible to use this word everywhere? ChatGPT can explain that this is a very academic word, and that native speakers do not usually use it in daily conversation.

Beyond grammar and vocabulary, learners in this study articulated clear and purposeful goals, including expanding their lexical knowledge (e.g. new words, synonyms, phrases, expressions, slang, sample sentences, and usage patterns), improving grammatical accuracy, refining pronunciation, deepening cultural understanding, and developing the four core language skills. These findings indicate that learners proactively elicit information across multiple dimensions of the target language, guided by specific learning needs and developmental goals.

Participants mainly mentioned three types of resources they rely on: online platforms such as ChatGPT, Google Translate, Duolingo, Instagram, YouTube, online dictionaries, and mobile applications such as WordHippo; people around them, including teachers, peers, family members, and spouses; and physical resources such as textbooks. These learners were not passive recipients of information. Instead, they actively explored different resources for language-related information. For example, Grace stated that *'I use Microsoft Word. When I write my essays or other texts, I use it to find synonyms. If I do not know a word or its synonyms, I usually use this system.'* Mitch added that

For example, ChatGPT is very important for me because sometimes I do not fully understand the knowledge in my classes. After class, I search for information on this platform. It is amazing how AI can explain everything clearly in one place.

Despite the popularity of technology, real people, especially teachers, peers, and family members, remain highly valued sources. For example, Wendy stated that

if the teacher is around, I ask the teacher directly. When the teacher asks, *'Are there any words you don't know?'*, we ask him. Because he invites questions, I don't feel shy. If I have a question, I just ask.

From these examples, we can see that learners' proactive elicitation of information is first demonstrated by their use of diverse resources. Additionally, learners also make informed decisions about which platforms or tools are best suited to their specific information needs. For instance, Grace noted:

For example, I just want to look up a specific vocabulary word. I usually just search on Google. But if I want a more specific definition of the word, or if I want to know how to translate Korean to English – for example, if I don't know the English word – then I prefer to use ChatGPT.

Elicitation of information occurs across both online and real-life contexts, reflecting learners' proactivity in selecting platforms and resources that best support their language learning. This demonstrates that learners actively seek out knowledge rather than relying solely on incidental exposure.

Elicitation of information is characterized by learners' strategic retrieval. When learners proactively seek information, they deliberately employ various techniques to secure it. For example, as generative AI tools such as ChatGPT are commonly used by learners in this study, some participants reported developing skills for writing effective prompts. One participant, Grace, noted, *'I try to concrete my questions, because sometimes ChatGPT's answers are a little bit weird and strange, you know. So in that situation, I should try to make my questions more specific and more concrete.'* Nancy added, *'You can learn how to ask a question step by step, from A to Z.'* These strategies reflect knowledge acquired through learners' repeated experiences of proactively seeking information online using tools such as ChatGPT. Similarly, when seeking information from people, learners demonstrated strategic adaptation. For instance, to make himself understood, Ron engaged in repeating or rephrasing his questions:

You repeat your questions, or you change the way you ask them. Sometimes I change how I phrase my question, because I know we don't always speak the same way in different places. So I just adjust. Maybe it's too formal, or maybe I need something a bit more casual, more chill.

Adjusting the wording, tone, or specificity of a question was viewed as a useful strategy when seeking information from real people. Taken together, these examples show that information elicitation involves not only initiating a request for information but also strategically managing how that request is formulated and delivered. Learners actively plan, refine, and adapt their elicitation strategies to increase the likelihood of obtaining useful responses, which further illustrates their proactivity and agentic engagement in the language learning process.

In sum, learners in this study sought diverse types of information across multiple linguistic domains, including grammar, vocabulary, pragmatics, and pronunciation. They drew on a wide range of resources, including digital platforms, interpersonal sources, and physical materials, and strategically selected tools that matched their learning needs, actively engineering access to information across online and real-life contexts. Finally, information elicitation emerged as a strategic process, with learners developing and employing multiple strategies to secure information, providing empirical support for PLLT by illustrating how learners actively transform perceived knowledge gaps into intentional learning actions. From a self-regulated learning perspective (Zimmerman 2000), information elicitation reflects learners' forethought and performance processes, in which learners identify specific linguistic needs, plan information-seeking actions, and adjust information-seeking strategies. Similarly, from a proactivity framework (Parker and Collins 2010), learners' elicitation practices exemplify anticipatory and self-initiated behavior aimed at improving future learning outcomes rather than merely responding to immediate instructional demands. Consistent with PLLT's assumption that input and explicit information function as resources rather than causal forces (Papi and Hiver 2025a), learners deliberately engineered access to linguistic information across contexts instead of relying on incidental exposure. Overall, the findings show

that information elicitation operates as a regulated and proactive learning mechanism through which learners purposefully initiate and engage with explicit L2 knowledge, thereby extending InfoSB theory into SLA and substantiating PLLT's learner-centered account of language development.

### **Information monitoring**

The second theme focuses on how learners cognitively monitor the information they obtain. Rather than treating access to information as an endpoint, participants engaged in further stages of information seeking by actively processing and evaluating information from two complementary dimensions: information-focused monitoring, which concerns the evaluation of the information itself, including its source, accuracy, and adequacy; and self-knowledge monitoring, which concerns the evaluation of one's own understanding, including comprehension checks and the identification of knowledge gaps. This theme highlights learners' ongoing assessment of incoming information in relation to their existing understanding, learning goals, and task demands, among others. Such cognitive monitoring occurs during or immediately after elicitation and plays a crucial role in regulating the effectiveness of information seeking.

Nine learners engage in cognitive monitoring, employing different cognitive strategies to facilitate their acquisition of the target language, as reported in their interviews. For example, Wendy described her cognitive monitoring experience in detail:

I still do this (search for more information), because I think sometimes if I only look at the English explanation, for example, if I go to Cambridge (dictionary), what I see is just the English definition. If I think that word is strange, like I've never seen it before – because some words I feel like maybe I've kind of known that word before, and then we have a test, and the teacher will ask, like, if you see this definition, you have to tell me what vocabulary word it is referring to. And then – Then I'll think, okay, these I can understand. But if a word shows up that I don't know – like "entity" – I'll feel like, okay, I read the English, and I can kind of get it, but I still feel confused. I still want to look it up in Chinese. Sometimes, checking the Chinese makes it even more confusing. I just feel like the English translated into Chinese is still very unreasonable. I think people wouldn't say it like that in Chinese ... Then I thought, it seems like this kind of expression just isn't typically used in Chinese.

In this excerpt, the participant demonstrates multiple forms of cognitive monitoring during her information-seeking process. She compares new information with prior knowledge to assess her understanding and recall by reflecting on whether she has '*kind of known that word before*' when encountering an unfamiliar vocabulary item, allowing her to gauge which words are already familiar and which require further attention. She also evaluates comprehension of new information and assesses whether English definitions alone are sufficient for understanding, noting '*I read the English, and I can kind of get it, but I still feel confused,*' indicating her ongoing assessment of whether the information is clear and usable. The participant further identifies knowledge gaps, recognizing instances where her understanding is incomplete or uncertain, such as encountering a word like '*entity*' which prompts her to seek further clarification. In addition, she evaluates information sources by assessing the adequacy and reliability of translations, observing that checking the Chinese equivalent can sometimes increase confusion and is '*unreasonable,*' reflecting her ability to appraise the usefulness of different resources.

Finally, she engages in metacognitive reflection on language use, considering the appropriateness of expression in her first language. She concludes that certain English expressions *'just aren't typically used in Chinese,'* showing her awareness of cross-linguistic differences and pragmatic context of language use. One insight from her monitoring behavior is that monitoring can trigger continued elicitation, such as follow-up inquiries, when comprehension remains incomplete. When she realizes that she does not fully understand a word based on the English explanation alone, she turns to her first language to seek clarification, thereby returning to the elicitation stage. This pattern indicates that elicitation and monitoring are dynamically interconnected and recursive rather than linear stages of InfoSB. Together, these activities illustrate that cognitive monitoring in information seeking is a strategic, reflective, and goal-directed process through which learners actively assess, compare, and evaluate information to regulate their learning and address gaps in understanding.

In this study, other learners also demonstrated various forms of information monitoring, such as checking the accuracy of information, evaluating the depth of their understanding, and assessing whether new information aligns with or conflicts with prior knowledge. These findings make it clear that cognitive monitoring is another indispensable component of InfoSB. Learners proactively process the information they obtain at a cognitive level, which aligns with PLLT's view that learners not only seek information but also actively engage with it through ongoing cognitive regulation (Papi and Hiver 2025a).

The findings on information monitoring illustrate how learners actively evaluate and regulate the information they obtain, extending both self-regulated learning and proactivity frameworks. Consistent with Zimmerman's (2000) self-regulated learning model, participants compared new information with prior knowledge, assessed comprehension, and identified gaps, using these evaluations to guide further InfoSB. From a proactivity perspective (Parker and Collins 2010), monitoring reflects self-initiated, goal-directed evaluation that informs anticipatory adjustments to support future tasks. Wendy's account exemplifies how learners assess clarity, accuracy, and cross-linguistic appropriateness, often triggering renewed elicitation, highlighting the recursive nature of information seeking emphasized in PLLT (Papi and Hiver 2025a). Overall, cognitive monitoring emerges as a strategic, reflective mechanism through which learners regulate and enhance the effectiveness of their InfoSB in second language learning.

### **Information use**

The third and final theme focuses on how learners critically use information to support continued L2 development. This stage refers to learners' deliberate and purposeful application of information that has been elicited and cognitively monitored to immediate learning tasks or future language performance. It represents the enactment phase of InfoSB, in which information becomes functional only when learners actively integrate it into their ongoing language learning practices. Through use, learners transform information from external input into personally meaningful and actionable knowledge. Without this enactment, information seeking remains superficial or passive, whereas active use reflects proactive engagement and sustained learner agency in the language learning process.

Ten learners in this study mentioned, multiple times in their interviews, that they used information in a variety of ways. Some learners use information to enhance their own learning. For example, Grace stated, *'I mostly use Apple Intelligence for, like, fixing my grammar mistakes, and then rewriting my sentences, and it can also change my sentences to, like, more friendly tones or more professional tones, like that.'* She uses this information to refine her writing, and as a result, her writing skills improved. Similarly, Michael stated:

I would ask ChatGPT to give me phrases to learn, using certain words, so that I would. We all have different expressions that we use all the time in our native language. I would translate them to Spanish (another target language), because it's only normal to me to use these expressions, and I would learn them by heart, and then I would just replace individual words.

He mainly used information obtained online to improve his speaking skills by using fixed phrases with certain words replaced. Similarly, Mitch stated, *'When I find the vocabulary and the meaning, so I can pronounce it, and I can listen, and I can interpret that information.'* After acquiring information about vocabulary, he applies it in his speaking and listening by pronouncing the words and listening to capture the new vocabulary.

Some learners use information in interpersonal scenarios. For example, Mitch states:

So after I understand the meaning, I use it in a sentence or try to look for it in another context. I search it on that platform, and I find that information. And after, I can teach that information to other people if this person or that person has any questions about it.

He not only uses newly learned vocabulary in sentences for his own learning but also shares information with others who have the same questions.

Similarly, Ryan described seeking information about appropriate pragmatic expressions and accent and then applying the knowledge when interacting with native English speakers in everyday social settings. As he noted, *'Sometimes I pay attention to how native speakers with different accents say things at the local store, and when I talk with them, I try to use similar expressions, so it sounds more native-like.'* These examples illustrate how learners not only acquire explicit linguistic information but also actively apply it to support language application in authentic social contexts.

Additionally, Aaron mentions:

If the information is very important for me, say, I will use it or explain it to other people, or I will share it with other people, then the accuracy is very important for me. But if I will not use it – if, for example ... to help me do something, or to support an idea – I just need some details to support the idea, and I already wrote the main idea. So that is okay for me. But if it's something that I will use or share with others, then I have to check the accuracy of that information.

Aaron's statements highlight two points. First, he uses information from both personal and interpersonal language-learning experiences. Second, how he uses a piece of information determines whether he returns to the monitoring stage to check its accuracy, which further demonstrates that the three core elements of InfoSB do not occur in isolation.

The third theme highlights learners' active use of information to support ongoing L2 development through both individual and interpersonal applications, with the former directed toward enhancing their own learning and the latter toward facilitating peer learning and interpersonal communication. Learners apply information not only to

enhance their own learning, such as improving writing, speaking, listening, and vocabulary skills, but also in interpersonal scenarios, sharing knowledge, and assisting others. This dual use demonstrates that information becomes functional and meaningful only when integrated into personal and social language learning practices. Moreover, learners' intended use of information can influence whether they return to the monitoring stage for accuracy, or even the elicitation stage, to gain more information, illustrating that elicitation, monitoring, and use are interconnected elements of proactive InfoSBs.

The theme of information use highlights how learners actively apply elicited and monitored information to support L2 development, transforming it into actionable knowledge. Consistent with Zimmerman's (2000) self-regulated learning perspective, learners strategically use information to refine writing, speaking, listening, vocabulary skills, among others. From a proactivity perspective (Parker and Collins 2010), learners purposefully integrate information into immediate or future tasks and share knowledge with others, reflecting goal-directed agency. The findings also align with Swain's (1985) output hypothesis, arguing that language use forces learners to move from semantic processing to syntactic processing. PLLT further emphasizes the recursive nature of this process, as intended use often triggers renewed monitoring or elicitation to ensure accuracy. Participants' examples, such as Grace using AI to improve writing and Aaron verifying information before sharing, demonstrate that information only becomes meaningful when actively applied, linking elicitation, monitoring, and use into an integrated, proactive cycle of language learning.

## General discussion

Much of the existing work in this domain has been situated within the framework of form-focused instruction, which has consistently demonstrated the benefits of explicit instructional approaches for language learning (Goo et al. 2015; Kang, Sok, and Han 2019; Webb, Yanagisawa, and Uchihara 2020). Research adopting this perspective has largely concentrated on how different instructional conditions or learning practices (e.g. explicit versus implicit instruction) influence a variety of learning outcomes, including learners' grammatical knowledge as compared to their ability to produce language freely, affective responses such as anxiety and satisfaction, and differential probabilities of grammatical development (Pawlak 2021a; Spit et al. 2022; Stratton 2023). These studies have also examined a range of contextual and individual moderators, such as learners' proficiency levels, instructional settings (e.g. laboratory-based versus classroom-based instruction; whole-class versus collaborative formats), the timing of instructional support (before, during, or after tasks), the duration and intensity of instruction (brief interventions versus extended treatments), and broader educational contexts (e.g. second-language versus foreign-language environments) (Li and Sun 2024; Michaud and Ammar 2023).

Beyond instructional design, scholars have investigated strategies that support the acquisition of explicit linguistic knowledge, including grammar, vocabulary, pronunciation, and pragmatics (Oxford 2017), as well as how learner-related factors, such as individual differences in personality and beliefs, shape engagement with form-oriented learning activities (e.g. Kim and Nassaji 2018; Loewen et al. 2009). Although this body of research has generated valuable insights into the role of instruction in L2 development, it has paid comparatively less attention to the ways in which learners independently and routinely

engage in self-initiated information-seeking practices as part of their everyday language learning efforts. To address this underexplored dimension at the intersection of SLA and information science, the present study drew on the concept of InfoSB in L2 learning (Papi and Hiver 2025a) to offer preliminary empirical evidence to advance an initial conceptualization of this construct.

The findings of this study confirm that learners' infoSB comprises three intertwined behavioral patterns of elicitation, monitoring and use with the relationship among them being circular. For example, elicitation results in monitoring, the outcome of monitoring may prompt renewed elicitation, and the intended use of information can shape how learners monitor the information they obtain. These patterns demonstrate that information seeking involves closely connected stages and reflects a dynamic and iterative process. Overall, InfoSB follows a non-linear, learner-agentic trajectory that is guided by learners' immediate needs and overarching learning goals.

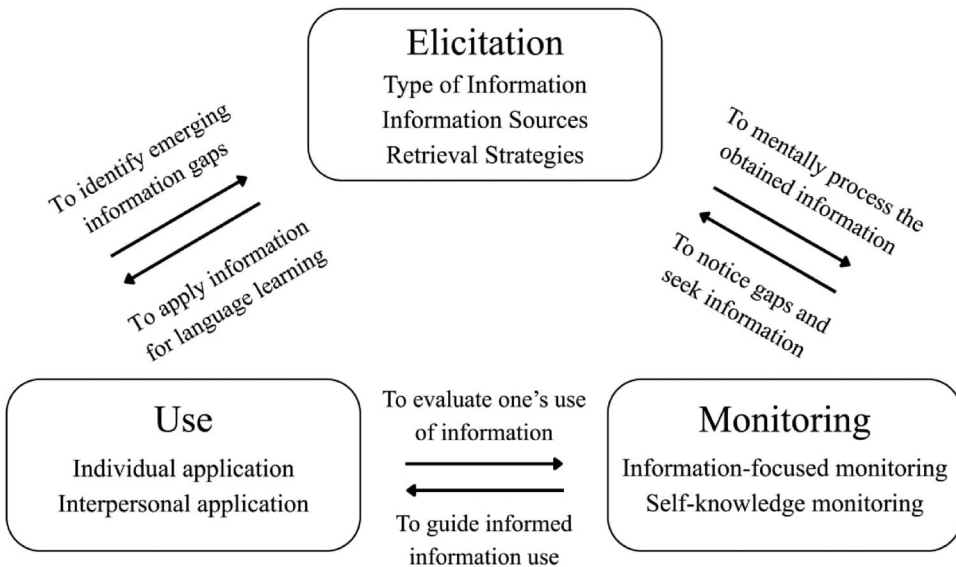
Our findings align with the classic models of information-seeking behavior in library and information science. For instance, our view of InfoSB aligns with Krikelas's (1983) conceptualization of information-seeking as a process motivated by information gaps and resolved through the purposeful engagement and application of the needed information obtained from internal and external sources. Our findings also support Bates's (1989; 2002) dynamic view of information-seeking behavior as an iterative, non-linear process in which learners progressively construct knowledge by gathering and integrating information from multiple sources. Our findings also confirm that L2 learners cycle recursively among elicitation, monitoring, and use, with each stage feeding back into the others. Wilson's (1997; 1999) revised information behavior model is also relevant because it conceptualizes information-seeking behavior as including identifying needs, seeking, searching, and using information within a broader person-centered framework. The main difference between our view of InfoSB and the classic models is not in our understanding of InfoSB mechanisms, but rather in the nature of the target information. Whereas the models address a broad range of information types used for general problem solving, the present study focuses specifically on metalinguistic information that learners seek and use to enhance their L2 knowledge and skills. Taken together, these comparisons suggest that the present framework aligns with established theories of information behavior but offers a more domain-specific account of how information seeking operates in L2 learning.

This study also supports the view proposed in PLLT that learners are not passive recipients of information; rather, they take an active role in seeking metalinguistic information, engaging with it, and using it creatively. This is evidenced by the substantial individual variation observed among learners in how they elicit, monitor, and utilize information for L2 learning. Such variation is reflected in learners' strategic and often automatic selection of information sources, diverse methods for securing information, differing purposes for initiating InfoSBs, multiple layers of cognitive monitoring, and both personal and interpersonal applications of information. These individual differences across learners suggest that information seeking is a critical skill that requires a high degree of self-direction and learner control over their own learning (Papi and Hiver 2025a). Moreover, the findings reinforce PLLT's assertion that learners are acutely aware of the impact of explicit L2 instruction and learning both within and beyond the classroom. Learners recognize that effective language development depends not only on

whether information is provided by teachers, but also on how proactively learners acquire, cognitively process (Leow 2015), and apply that information (Suzuki and DeKeyser 2017).

These findings contribute to ongoing theoretical discussions surrounding PLLT. In particular, the results corroborate PLLT's central claim that proactive learners are not permanently constrained by their environments (Papi and Hiver 2025b). Rather, learners actively shape, transform, and even create their social learning contexts. For example, they spontaneously select resources to secure needed information or adapt their strategies when initial attempts are unsuccessful, such as modifying the tone or approach when asking others questions. Instead of passively waiting for explicit instruction, learners take initiative when they perceive their existing metalinguistic knowledge to be insufficient for achieving their language-learning goals.

The findings further reveal that success in L2 learning is not a uniform construct but is instead shaped by learners' individualized aspirations and proactive behaviors (Papi and Hiver 2025b). This is evidenced by the fact that no two learners in the study followed identical information-seeking trajectories. Rather, learners demonstrated strategic flexibility and agency by engaging in varied sequences of elicitation, monitoring, and information use to meet their specific learning needs. This study advances the conceptualization of InfoSB by identifying three core components: elicitation, monitoring, and use. This tripartite framework (Figure 1) reinforces PLLT's argument that learners agentically and strategically seek, cognitively engage with, and enact explicit L2 information (e.g. lexical, grammatical, phonological, pragmatic, and cultural) to enhance their target language competence. In addition, as illustrated in Figure 1, there is a recursive relationship among elicitation, monitoring, and use, highlighting how learners proactively identify, evaluate, and apply metalinguistic information through continuous feedback loops.



**Figure 1.** A visual representation of the three dimensions of information-seeking behavior identified in this study.

Taken together, these findings help clarify common misconceptions about PLLT (Papi and Hiver 2025b) while simultaneously enriching the theoretical understanding of InfoSB in L2 learning.

## **Conclusion**

This study provides preliminary empirical evidence for conceptualizing InfoSB as a dimension of PLLT (Papi and Hiver 2025a). Analyses of the interview data identified three inter-related aspects of L2 InfoSB: Elicitation, Monitoring, and Use, highlighting the active role of learners in the process. The findings reinforce PLLT's claim that learners act as proactive agents, strategically seeking, engaging with, and applying metalinguistic information to support their L2 development. The study further illustrates how learners utilize a variety of resources in their social environment to address information needs, monitor both the information and the strategies used to obtain it, and integrate the information into their language learning. This three-stage model of eliciting, monitoring, and using information provides an initial framework for understanding L2 InfoSB and lays the groundwork for future empirical and theoretical exploration.

## ***Limitations and future directions***

This study was conducted at a single U.S. university with a relatively small sample of participants ( $n = 11$ ), which may limit the generalizability of the findings. Although qualitative research aims to provide in-depth insights rather than statistical generalization, the small sample size means that the patterns identified in this study should be interpreted as exploratory and preliminary. The findings, therefore, provide an initial conceptual understanding of InfoSB in L2 learning rather than definitive evidence of how widely these patterns occur across different learner populations. Future research could include learners from more diverse linguistic, cultural, and educational contexts to examine how contextual factors shape information-seeking patterns. As a qualitative study, interpretations were necessarily influenced by researcher subjectivity during coding and theme development; thus, future work could incorporate more objective methods to measure InfoSBs. The present study provides a qualitative foundation for understanding InfoSBs in L2 contexts and can inform the development of structured instruments (e.g. questionnaires) to examine their prevalence, frequency, and predictors in larger samples. Future research may also explore how individual differences and contextual factors interact to influence information-seeking practices and related learning outcomes.

## ***Pedagogical implications***

From a pedagogical perspective, teachers can support learners by providing guidance on how to seek, evaluate, and use information effectively. Raising awareness of available resources (e.g. dictionaries, corpora, AI tools, and online platforms) and the variable quality of online information can foster critical monitoring skills. Teachers can also model effective information-seeking practices, design tasks that require purposeful engagement with metalinguistic information, and enhance learners' ability to evaluate

and apply information in context. With appropriate guidance and scaffolding, instructional practices can foster proactive, goal-driven information-seeking behavior.

For learners, understanding InfoSB and its three dimensions can support more intentional and effective language learning. Effective information seeking can support multiple domains of L2 development, including grammar, vocabulary, and language use in communication (e.g. DeKeyser 2007; Hulstijn 2013). Engaging in InfoSB not only can contribute to L2 development but it can also reinforce learners' agency in managing their own learning and enhancing their information-seeking skills. Learners can take greater control of their learning processes by actively identifying gaps in their L2 knowledge, seeking relevant information, and critically evaluating and applying it in their L2 use.

### Author contributions

CRedit: **Mostafa Papi**: Supervision, Writing – review & editing.

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