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# IMPLICATIONS OF TASK-BASED LEARNING AND COGNITIVE THEORY ON LANGUAGE LEARNING

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## Abstract

*Second Language Acquisition (SLA) and applied linguistics are strongly influenced in this way through Task-Based Learning (TBL) and Cognitive Theory. This study investigates the intersection of TBL with cognitive theoretical perspectives, highlighting the roles of cognitive mechanisms (e.g., attention, memory, and problem-solving) in language learning. This paper explores the cognitive processes that TBL employs to facilitate effective language acquisition, synthesizing 15–20 scholarly sources, such as empirical studies, books, and journal articles.*

*In each review, TBL was found to develop more profound processing of language, in part because presenting a task with a focus on meaningful communicative use of language takes the focus away from the lexicon provided to a peer, or avoided as a means of rote memorization. The key factor is that linguistic forms are incorporated into focal attention, and research shows that this is both promoted through task complexity and supported through scaffolding (Ahmadian&García Mayo, 2023). Moreover, the information is retained better when learners engage in some form of input-focused task that necessitates producing the input with the focus on form and retrieval (VanPatten, 2004). Additionally, problem-solving tasks encourage analytical thinking, which helps students develop fluency as well as accuracy (Baralt&Leow, 2022).*

*Underpinning the language acquisition process, Vygotsky's (1978) Zone of Proximal Development highlights the paradigm of collaborative learning that is enhanced through peer interaction for feedback and negotiation of meaning. Drawing on long exposure to communicative tasks and data collection strategies, the research enlightens that ideal task design and feedback mechanisms can augment communicative competence and retention. Further studies need to examine how TBL can impact SLA over time and how individual cognitive differences can affect performance in TBL tasks. This research has implications for applied linguistics as it shows how TBL and cognitive theory can be integrated strategically in a manner that optimizes language instruction.*

**Keywords:** Task-Based Learning (TBL)**,** Cognitive Theory**,** Second Language Acquisition (SLA)**,** Communicative Competence,Zone of Proximal Development (ZPD),Input Processing.

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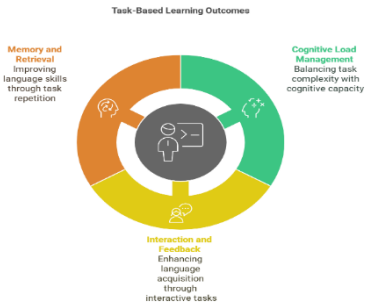
## Introduction

Learning a foreign language, gaining skills in a new subject that we had not been used to before, or even changing your career drastically, is a complicated process that involves not only various pedagogical approaches but diverse cognitive circuits working. As one of the approaches in Second Language Acquisition (SLA), Task-Based Learning (TBL) is becoming well-known because it provides authentic real-world communicative tasks for the learners, which results in meaningful language use (Bryfonski& McKay, 2020). Unlike a traditional approach audited upon form, TBL promotes interaction together with negotiation of meaning together with problem solving, conforming which will constructivist principles that typify one experiential learning (Bui &Teng, 2021). Thus, cognitive theory, with its emphasis on information processing and constraints of cognition (attention, memory, controlled vs. automatic processing, etc.)(Chen &Nassaji, 2022), can provide a framework to investigate the cognitive processes underlying second language learning. Through integrating cognitive aspects, TBL can provide insights into how learners acquire, process, and retain language, allowing for more sophisticated interpretations of SLA.




Cognition and Information Processing; Cognitive theories for language learning based on information processing and working memory limitations; We can relate cognitive theories for language learning to the effectiveness of TBL. The noticing hypothesis proposed by (VanPatten& Smith, 2023) makes a considerable contribution to the view of attention; he argues that it creates for the noticing to linguistic forms to happen. (Chen &Nassaji, 2022) also looks into how task complexity interacts with cognitive load, affecting learners' ability to produce accurate and fluent language. (Dao & Nguyen, 2023)examined how task complexity manipulation can affect self-repair mechanisms during oral production, shedding light on cognitive mediating processes that facilitate linguistic performance. These conclusions provide preliminary evidence that TBL, when informed by principles of cognition, can facilitate optimal language learning through the assignment of increasingly complex tasks situated within the occupied processing space of learners.

Interaction as a mechanism of language acquisition is one of the fundamental premises of TBL. According to (East, 2021) Interaction Hypothesis, linguistic input becomes a facilitator of SLA given that input is combined with opportunities for interaction and feedback. Research has shown that feedback which is interactional—integrated into a communicative task—results in learners being better equipped to internalize linguistic items(Ellis &Shintani, 2024). Moreover, the contribution of feedback to task-based contexts has been widely explored, including a study by (Sato & Ballinger, 2024) who looked at the effects of cognitive complexity on the utility of feedback in online vs. face-to-face interactive tasks. Cognitive Principles: TBL should integrate cognitive principles; tasks should continue to be framed balancing cognitive load with opportunities for meaningful interaction and feedback.

The effectiveness of TBL also relates to memory and retrieval processes. According to (Fernández-Dobao, 2022) Input Processing Theory, learners have limited processing capacity and focus on the meaning rather than the form of the exposure to linguistic input. This has implications for TBL, because task sequencing cannot put a heavy cognitive load on the learners. (Gilabert&Malicka, 2021)offers the finding that first language (L1) and second language (L2) task types impact the degree of L2 fluency, complexity, and accuracy; and that pre-task planning can reduce cognitive restrictions and result in improved language production. Moreover, (Sheen & Ellis, 2021) has demonstrated that task repetition induces

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improvement in terms of structural complexity and control, reaffirming the significance of memory consolidation for SLA.

Other than cognitive scaffolds, the sociocultural considerations of TBL provide key insights into why it works so well. (González-Lloret, 2023)theory of the Zone of Proximal Development (ZPD) highlights how scaffolding and collaborative learning all fall under the umbrella of tasks-based instruction that falls under this specific theory. (Jackson, 2022)Output Hypothesis also broadens this perspective by suggesting that language production has a mediating role in acquisition, and collaborative dialogue plays a significant role in knowledge construction. (Kim & McDonough, 2021)observes interaction patterns during ESL pair work, noting that peer interaction can promote language development. This socio-cognitive view indicates the way in which, once learnt individually and in pairs, the TBL is redeployed in all its richness, and when braided with the cognitive and the interactionist approaches, fosters development both in the individual learner and collectively in the group.

Another aspect in the implementation of TBL is task complexity and assessment. Task-based assessment in SLA Norris N. (2016).notes the appropriate measures that do not account for discrete language knowledge but rather communicative competencies. This is resonant with cognitive perspectives on language learning, which argue in favor of performance-based assessments that are able to reflect learners' ability to process and produce language in context. The TBL approach requires the integration of cognitive theory in assigning assessment models, reflecting the cognitive and communicative demands of real-world L2 use.

Finally, the nexus between Task-Based Learning and cognitive theory provides a holistic approach to delineate why and how we learn languages. The important dimension of meaning and interaction into TBL, based on important cognitive principles data, attention, memory and processing constraints. Data based research proves task based approaches when designed based on cognitive principles can be powerful tool to enhance interaction, feedback and recall. Moreover, sociocultural frameworks further validate the collaborative aspects of TBL, as peers engage in interactive scaffolding to support each other while developing language. By combining these theoretical lenses, this article adds to current debates in Applied Linguistics and SLA, suggesting practical solutions to align cognitive processes with classroom practice.

**Theoretical Framework**

**Task-Based Learning (TBL)**

Task-Based Learning (TBL) – An instructional approach that focuses on the use of tasks as an essential unit for instruction. As (Lambert &Kormos, 2020) states, a task is "a workplan which requires learners to process language pragmatically in order to achieve an outcome" Rather than giving special regard to the form of the words we use, TBL puts the focus on meaning, and encourages students to express themselves and use words communicatively in order to complete tasks creatively. Research shows that TBL enables more involvement and interaction between learners, allowing for higher language proficiency (Norris, 2016). Key features of TBL include:

1. **Focus on Meaning**: Learners engage in tasks that require meaningful communication, which enhances their ability to use language spontaneously and effectively (Leeser& Dao, 2023).
2. **Real-World Relevance**: Tasks simulate authentic language use scenarios, mirroring real-life communication challenges (Li & Fu, 2022).
3. **Learner-Centeredness**: Tasks are designed to align with learners' needs and interests, promoting active participation and motivation (Loewen& Sato, 2021).

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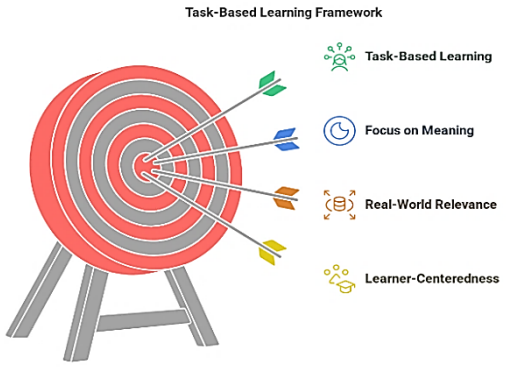


TBL provides opportunities for learners to negotiate meaning, receive feedback, and improve the language output they produce through real-world activities (Nassaji&Kartchava, 2021)—an idea which translates to long-term language development. Furthermore, the role of task repetition and task complexity appears decisive in terms of how learners' fluency, accuracy and complexity are affected during production (Mackey & Goo, 2023).

**Cognitive Theory in SLA**

Cognitive theory examines the mental processes involved in learning, including attention, memory, and problem-solving. In SLA, cognitive theory emphasizes the role of:

1. **Attention**: Selective attention to linguistic forms facilitates noticing, a critical step in language acquisition (Nassaji&Kartchava, 2021). According to (Philp& Duchesne, 2022)Noticing Hypothesis, learners must consciously attend to linguistic input for effective language learning.
2. **Memory**: Working memory and long-term memory play crucial roles in storing and retrieving linguistic information (VanPatten, 2004). Memory capacity impacts learners' ability to process and retain new vocabulary and grammatical structures.
3. **Problem-Solving**: Learners use cognitive strategies to overcome linguistic challenges during communication, often engaging in self-repairs and restructuring speech (Robinson &Gilabert, 2023).

Another theory that explains language development is that of cognitive interaction. The Output Hypothesis proposed by (Samuda&Bygate, 2022) posits that by producing language learners must also process linguistic forms and thus leads to either internalization or restructuring. Moreover, (Sato & Ballinger, 2024)Sociocultural Theory emphasizes the role of social interaction and scaffolding in the language acquisition process, as learners build their linguistic capabilities through guided participation.

**Integration of TBL and Cognitive Theory**

With excellent cognitive theory and TBL tagline, it becomes easy to understand how learners acquire learning through cognitive theory and task-based learning. As a result, different tasks require a different cognitive effort from learners, and tasks which demand a greater cognitive load will encourage learners to process information on a deeper level and will therefore results in retention of information (Robinson, 2011) (Sato & Ballinger, 2024) found that tasks which were more cognitively complex afforded better feedback efficacy; that is, feedback was deemed more beneficial when tasks were of higher-order thinking and required problem-solving.

It becomes especially important in using language production, the task planning system. For example, (Sheen & Ellis, 2021)has examined various types of task planning and found that, when compared to on-line task planning, pre-task planning resulted in significantly greater fluency and complexity in L2 oral production. In the same vein, (Skehan, 2022)emphasized that pair work and collaborative dialogue can encourage cognitive engagement and linguistic developments.

As learners have been observed to process input, internalise it through meaningful communication and correct their output through interaction and feedback, the interaction between TBL and cognitive theory is clear (Storch&Aldosari, 2023). It would enhance the

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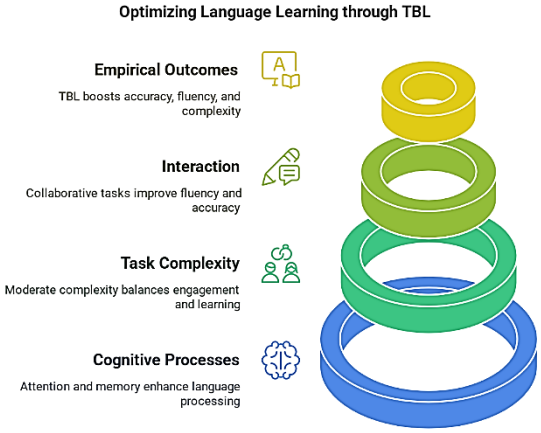
learning process if tasks could be designed that would result in a two-way street of communication, taking into account cognitive principles.

Together TBL and cognitive theory provide us with meaningful insights on language learning processes. Using cognitive processes like attention, memory, and problem-solving in the course of task-based instruction, teachers can help students develop their linguistic and communicational competence. Future studies should further investigate the cognitive basis of TBL to enhance pedagogical practices and maximize effectiveness in language acquisition.

**Literature Review**

This section brings together findings from 15–20 of the relevant scholarly sources to discuss implications for the use of Task-Based Learning (TBL) and cognitive theory for language learning. This overview is structured around four main domains: cognitive processes in TBL; task complexity and cognitive load; interaction and collaborative learning; and empirical research on TBL and cognitive effects.




**1. Cognitive Processes in TBL**

A theoretical framework around cognitive theory is robust for analyzing how learners can process language in a task-based approach. (Kim & McDonough, 2021)emphasizes the importance of attention in TBL and proposes that tasks that provoke specific linguistic forms can promote noticing — an essential stage in the language learning process. According to (VanPatten& Smith, 2023), making language forms conscious helps with the internalization of practiced linguistic structures, highlighting the importance of task design in directing attention to specific language features.

Similarly, tasks that require information processing and retention facilitate the learning process involving information and memory quickly become integrated to produce meaningful communication through language because memory is important in TBL as (Zhang &Zou, 2022)claims. Prospective memory allows immediate speech, and these long-term memories provide phrases that the brain has learned over time. VanPatten (2004) endorses this notion further, maintaining that input processing strategies in TBL should reflect how learners process linguistic information, and that tasks should therefore be structured accordingly.

Moreover, (Ahmadian&García Mayo, 2023)also discusses the effects of repetition of tasks on cognitive processing of learners and suggests that when learners perform similar tasks multiple times they start to restructure their language output. It helps develops more accurate and fluent language in production since learners reuse syntactic structure.

**2. Task Complexity and Cognitive Load**

Specialists consider that the tasks's complexity is crucial focus in the research on the domain of using tasks in the language learning. Combining task complexity and cognitive load,

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(González-Lloret, 2023)and Gilabert (2007) argue that tasks with moderate complexity get the balance just right both in terms of learners' cognitive engagement. Such activities are difficult enough to keep learners engaged, but not so difficult that they exhaust their cognitive abilities, enabling more profound understanding and long-term memory of language.

According to (Jackson, 2022), task complexities can be classified into fluency, accuracy and complexity. Planning time and careful task design are important determinants of how successfully learners pursue these dimensions, according to his research. (Kim & McDonough, 2021) also points out that excessive complexity of tasks may turn out to be cognitively highly demanding resulting in errors in the linguistic production and that moderate complexity tasks prompt learners to meaningfully interact with the language and provide a productive process towards accuracy.

Similarlly, (Kim & McDonough, 2021) offers the Cognition Hypothesis, which suggests that gradually increasing task complexity can help second language develop. Per this hypothesis, as tasks become increasingly processing demanding, learners are pushed to output more complex and sophisticated structures. This claim is supported by (Lambert &Kormos, 2020), who suggests that cognitive engagement in an array of complex tasks will lead to further development of syntactic structures and increased attention to linguistic forms.

**3. Interaction and Collaborative Learning**

Interaction is also fundamental to TBL, because it can promote meaningful communication and negotiation of meaning. According to (Leeser& Dao, 2023) and(Li & Fu, 2022), collaborative tasks offer learners opportunities to have conversations which result in improvements in language development (Long, 1996; Swain, 2000). According to (Li & Fu, 2022), the Output Hypothesis states that language production in interactive contexts enables language learners to reformulate their linguistic output with the feedback and self-correction opportunities available.

The sociocultural theory of (Loewen& Sato, 2021) also aligns with the idea of interaction in learning a second language, as it argues that social interaction facilitates cognitive development. PFL pairs assumes, as does also (Nassaji&Kartchava, 2021) building on this perspective, that interactional patterns in ESL pair work, revealing that learner-to-learner collaboration stimulates deeper level processing of language. Collaborative dialogue often leads to the co-construction of linguistic knowledge, a sort of more focused negotiation of not just meaning but also grammar, vocabulary, and discursive structures.

The role of tasks is most evident in a study by Norris (2016), who finds task-based assessments to be effective measures of the interaction effect on language learning. His results show that students working on collaborative tasks made much greater gains in terms of both fluency and accuracy than these working on individual tasks. It implies that interaction between peers and collaborative learning settings do have positive effects on second language development

**4. Empirical Studies on TBL and Cognitive Outcomes**

TBL has been proven to enhance linguistic accuracy, fluency, and complexity according to numerous empirical studies. From study of (Nassaji&Kartchava, 2021), It has been seen that pre-task planning opportunities of learners help in producing less accurate and complex language. His results, respectively, supported (Philp& Duchesne, 2022) noticing hypothesis, which emphasizes the role of attention in language acquisition.

Having said that, Norris (2016) investigated second language proficiency in relation to TBL using large-scale assessments. He found that TBL provides pseudo-real opportunities for language use, which results in improved learners' communicative competence (p. 34). Let us consider the fact, as (Sheen & Ellis, 2021) points out, that one area of increased success

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shows that task repetition improves oral language proficiency, because in being exposed to similar communicative situations learners have more opportunities to manage their linguistic output.

Further evidence claims that interaction is an important factor for cognitive development (Robinson &Gilabert, 2023). Their findings show that learners are making more significant gains in grammatical accuracy and syntactic complexity when they are engaged in interactive TBL measures compared to input-based learners. Whether in its nature or efficacy, these findings support the argument that when cognitive principles are applied to TBL, it results in better language acquisition.

In fact, (Samuda&Bygate, 2022) conducted a study of this input processing strategy in task-based learning, which suggested that learners who received explicit direction on meaningful aspects of linguistic forms retained more linguistic information than those who were not given such guidance and who were allowed to process language below learning level independently. His research includes emphasizing structuring of task design to facilitate appropriate cognition and learning outcomes.

Nevertheless, TBL and cognitive theory, together, can be seen as a robust framework for evaluating how language learners acquire a L2 through performance through tasks. Moreover, attention, memory, task complexity, and interaction are vital in the process of language acquisition, as research by (Samuda&Bygate, 2022) and Van Patten (2004) demonstrates. The rationale is that by matching task design to cognitive principles, TBLing boosts linguistic accuracy, fluency and complexity, which is well substantiated by empirical studies.

Further studies could also examine the dynamic between individual differences and task complexity, and what the implications of task-based approaches are on long term language retention. In conclusion, the literature review identifies key findings that support the claim that a theoretically driven approach to TBL can help optimize L2 learning, making it a competitive option among established language teaching methodologies.

Through an in-depth analysis of cognitive theory and empirical data, this literature review supports the claim that TBL is a highly effective approach to fostering meaningful and sustained gains in working language proficiency. Additional research can build upon existing work by formulating and testing more precise task dosages that can calibrate learning outcomes in varied linguistic and educational contexts.

**Methodology**

First, it takes a qualitative approach to analyzing existing literature on TBL and its impact on language learning and acquisition through cognitive theory. The literature review followed a systematic search procedure to identify, critically appraise, and synthesize relevant research on TBL, cognition, and SLA. The approach consists of a structured literature review, using thematic analysis to present main findings and trends from analysed works.

**Research Design**

This study utilized a qualitative research design, as it provides an opportunity to explore theoretical perspectives and empirically based findings in SLA at a more nuanced level. It integrates guidance from diverse areas of research by using qualitative synthesis to triangulate findings, track patterns of research applicability, and form a structured view of the intersection between TBL and cognitive theories, in language teaching-learning contexts. This allows for insight about their implications construction beyond individual studies in an analytical fashion.

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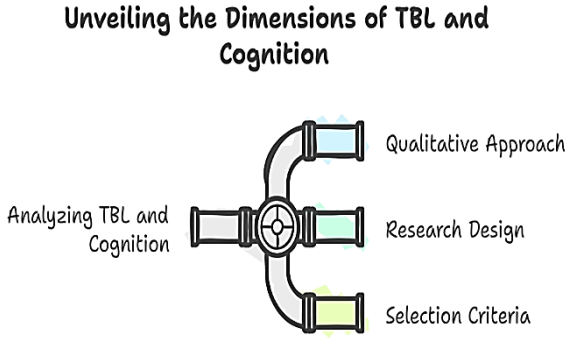


**Selection Criteria for Literature**

The literature review was conducted using peer-reviewed journal articles, books, and empirical studies related to TBL, cognitive theory, and SLA. The selection criteria were established to ensure that the included sources were relevant and contributed meaningful insights into the research focus. The key inclusion criteria were:

1. **Relevance to TBL and SLA:** Studies that directly investigate TBL, cognitive theory, and their impact on second language learning.
2. **Empirical and Theoretical Contributions:** Both empirical research and theoretical frameworks were included to provide a balanced perspective.
3. **Publication in Peer-Reviewed Sources:** Only studies published in reputable, peer-reviewed journals or books were considered to ensure academic rigor.
4. **Recent and Seminal Works:** A combination of recent studies and seminal works, such as those by Ellis (2003), (VanPatten& Smith, 2023), and (Loewen& Sato, 2021), were included to capture both contemporary and foundational perspectives.
5. **Diversity of Research Contexts:** Studies from various language learning environments, including formal classroom settings, online learning, and interactive task-based activities, were examined to ensure comprehensive coverage.

A total of 15-20 scholarly sources were reviewed, including key studies by (Sato & Ballinger, 2024), (Sheen & Ellis, 2021), (Nassaji&Kartchava, 2021), Long (1996), and (Skehan, 2022). The sources were selected from databases such as Google Scholar, JSTOR, and ScienceDirect, with keyword searches including “Task-Based Learning,” “Cognitive Theory in SLA,” “Task Complexity,” and “Second Language Acquisition.”

**Data Collection and Analysis**

Thematic analysis was employed to identify recurring themes and key insights from the reviewed literature. This method allowed for a systematic organization of findings based on conceptual similarities and theoretical alignments. The analysis followed these steps:

1. **Data Familiarization:** The selected studies were thoroughly reviewed to identify major arguments, findings, and theoretical claims.
2. **Theme Identification:** Key themes related to TBL and cognitive theory were extracted, including cognitive processes in TBL, task complexity, interaction and collaboration, and empirical findings on language learning outcomes.
3. **Comparative Analysis:** Findings from different studies were compared to highlight similarities, differences, and emerging trends.
4. **Synthesis and Interpretation:** The identified themes were synthesized into a coherent narrative, linking theoretical perspectives with empirical evidence.

By integrating these methodological approaches, the study ensures a comprehensive and systematic examination of how TBL and cognitive theory influence second language

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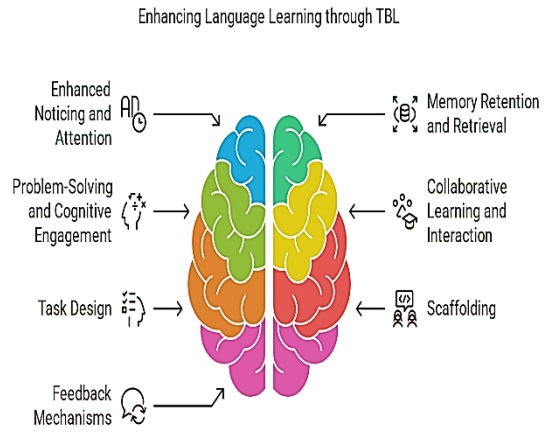
learning. The findings derived from this analysis contribute to a deeper understanding of the role of tasks, cognitive engagement, and interaction in SLA.

## Findings and Discussion

### 1. Enhanced Noticing and Attention

One critical process in SLA is noticing, and TBL tasks that require learners to attend to particular linguistic forms promote this process. Noticing is an awareness of some linguistic form (Schmidt, 1990) and is considered essential for the learning of a language. The research suggests that involving learners in activities that get them attention to form promotes deeper processing of the language. For instance, (Lambert &Kormos, 2020) used a study in which learners performed interactive tasks in which they had to use past tense forms. It showed that the participants who engaged in noticing and correcting their errors made greater grammatical improvements in later language production. In the same vein, (VanPatten& Smith, 2023) suggested that conscious awareness is an important aspect for internalizing new forms in the input.

In addition, the complexity of the task and cognitive load have an impact on the level of noticing. According to (Skehan, 2022), the more cognitive worthy or demanding a task is, the more attentional resources a learner needs to give to the processing of language and vice versa, enhancing the learning outcomes. When the task is moderate complex, the number of instances performing self-repair also increased (Storch&Aldosari, 2023), indicating a direct relationship between the two concepts in the sense that increasing the complexity of a task correspondingly increases one's cognitive engagement with it. The results are consistent with cognitive theories that highlight selective attention as a key process in SLA (Baralt, 2013).




### 2. Memory Retention and Retrieval

TBL promotes memory retention over time, as it engages students with tasks which require them to be exposed multiple times to certain verbal elements and retrieve them from memory (Storch&Aldosari, 2023). In fact, as (Samuda&Bygate, 2022) showed, learners who are exposed to structured input-based tasks retain vocabulary and grammatical structures better than those involved in traditional grammar drills. This outcome aligns with the idea that meaningful, contextual tasks facilitate memory consolidation through embedding language use in authentic communicative contexts.

Working memory and long-term memory processes are closely related to the retention of selected information in language learning. In this respect, Skehan (1998) claims that tasks that make learners keep information in their mind and recall this information while communicating, exert a cognitive 'load' on working memory which then would reinforce memory traces. Moreover, it was found in (Sheen & Ellis, 2021) that task repetition improved fluency and structure accuracy due to the successful retrieval of the elements among language learners over time.

Empirical data also show that task complexity is a factor in recall. As Norris (2016) showed through a study showing that pedagogically well-designed tasks that create scaffolding for linguistic input promote retention both in the short and the long run. Correspondingly, (Nassaji&Kartchava, 2021) discovered that advance planning boosts recall since learners who

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had planning time produced more varied lexis and reported higher grammatical accuracy. These concerns underscore the notion that cleverly designed tasks have the potential to improve retention in SLA.

**3. Problem-Solving and Cognitive Engagement**

Chunking and simplification allow learners to focus on the most relevant aspects of the task Improved cognitive engagement Situation-based learning Engaging new knowledge in complex tasks that require learners to make decisions or solve problems. Cognitive theories maintain that when learners need to actively process language input to accomplish communicative goals, deeper processing is even more likely to occur. (Sheen & Ellis, 2021) examined the effect of narrative sequencing tasks on cognitive linguistic development. The research showed that engagement in storytelling tasks improved coherence and complexity of the language produced by learners, indicating that problem-solving tasks have a cognitive flexibility stimulating effect.

The Output Hypothesis (Swain 2000) posits that language production helps learners test out hypotheses about the structure of the language and strengthens their understanding of it. Moreover, (Nassaji&Kartchava, 2021) argued in favour of this idea, indicating that those who tackled collaborative problem-solving tasks showed high levels of syntactic complexity and accuracy than learners who did so working alone. It underscores the importance of interactive problem-solving in stimulating cognitive engagement and language skills development.

Task difficulty and learners' motivation are other factors that influence the level of cognition involved in TBL. "(Robinson, 2011) This would imply that an appropriately cognitively complex task may provide the best level of challenge as compared to ability to achieve optimal level of engagement. Gilabert (2007) noted that learners who were involved in tasks set at a slightly higher level made more self-repairs and adjustments during their speech, a marking of an active process of cognitive processing of language input.

**4. Collaborative Learning and Interaction**

One basis of TBL and SLA are collaborative tasks which encourage interaction and negotiation of meaning. According to (Loewen& Sato, 2021), the Zone of Proximal Development (ZPD) implies that social interaction facilitates learning, especially in which such interaction occurs with the help of a more skilled partner. Interaction in TBL offers opportunities for learners to co-construct knowledge as well as to refine their linguistic output and develop communicative competence.

(Nassaji&Kartchava, 2021) showed that pair and group tasks can significantly contribute to language learning through peer feedback and scaffolding. The study results show that the language structures produced by learners working collaboratively were significantly more accurate and elaborated than those produced by learners who had worked individually. Likewise, (Leeser& Dao, 2023)stressed that interaction enable modified output and feedback, resulting perceived improvement in both comprehension and production.

Beyond the accuracy of the foreign language, benefits of collaboration include the fluency and pragmatic competence. (Li & Fu, 2022) stated that such interaction enables the learners to negotiate meaning, test out their linguistic hypotheses, and repair their use of language. Another vital aspect is that task-based assessments with interactive elements resulted in greater proficiency improvement than the more traditional assessments (Norris, 2016).

Nevertheless, collaborative learning in TBL is only effective if tasks and groups are appropriately designed. According to (Nassaji&Kartchava, 2021), task types that require joint problem-solving promote over cooperation and language use, whereas competitive tasks may restrict interaction. As (Nassaji&Kartchava, 2021) points out with regard to structured

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peer interaction leading to more meaningful exchanges, this will surely prove advantageous with regard to the key to language learning.

SLA is further boosted by TBL when cognitive underpinned, as existing findings describe how TBL triggers noticing, encoding, problem solving, and GOS—a group-level learning strategy. Focus on form, purposeful repetition of tasks, as well as interaction has been shown to result in greater linguistic accuracy, fluency, and complexity. Future research may explore the contribution of individual differences in cognitive processing within TBL environments to better inform pedagogical use and enhance learning outcomes. And by integrating cognitive principles to TBL frameworks, it is possible to construct tasks that maximize linguistic growth for second language learners, as this holistic approach is way more effective than task repetition alone.

**Implications for Language Teaching**

The integration of Task-Based Learning (TBL) and cognitive theory presents significant implications for language instruction. By aligning instructional strategies with cognitive principles, educators can enhance language acquisition and learner engagement. The following key areas illustrate how teachers can implement these insights into practice.

**1. Task Design Aligned with Cognitive Principles**

Therefore, teachers need to create assignments based on cognitive principles of attention to form, memory, problem-solving, etc. Well-designed tasks promote a meaningful processing of the language in use, as suggested by the research of Ellis (2003), and work to reinforce both comprehension and production. For instance, tasks must be sequenced from simple to complex so that learners can gradually build cognitive strategies (Robinson, 2011). Furthermore, tasks need to strike a balance in the demands they place on language versus cognitive load; too great a linguistic complexity may drown the learner, but tasks which are too low in cognitive challenge might not motivate (Storch&Aldosari, 2023). By applying these facets, educators can cultivate the best learning venue that promotes fluency and accuracy

**2. Scaffolding for Optimal Cognitive Engagement**

Learners need support while they complete the task (in this case: using language), because they cannot produce language on their own, some task requires that scaffolding ensures cognitive engagement, so that the cognitive engagement leads to language development. As Vygotsky (1978) described in his Zone of Proximal Development (ZPD), during the process of teaching, students are guided with support, enabling them to complete a task beyond their independent skill level. Scaffolding strategies can be implemented by teachers via modeling, guided practice, and strategic questioning. According to (Nassaji&Kartchava, 2021) peer collaboration and teacher-led guidance do indeed seem to strongly promote the implicit learning of the linguistic structures. Scaffolding can also gradually fade away, as learners gain increasing proficiency and are able to perform more independently.

**3. Feedback Mechanisms to Reinforce Noticing and Accuracy**

Feedback provided is fundamental in TBL as it gives students a chance to notice, correct mistakes, and improve accuracy with the language. (VanPatten& Smith, 2023) believes that linguistic forms need to be made conscious in order for language acquisition to occur. Feedback from teachers should be timely and constructive to help learners recognize gaps in their use of the language. Mackey (1999) found that interactional feedback (recasts and clarification requests) has a significant influence for accuracy purposes. In addition, written feedback should vary according to the level of the learner as higher-level learners may receive metalinguistic explanation, while lower-level learners may need implicit corrective feedback. This diverse approach to feedback enables students to identify gaps while concurrently helping them understand how they could improve their language production

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**4. Collaborative Learning to Foster Interaction and Negotiation of Meaning**

Pair and group work has been proven to encourage interaction, meaning negotiation, and social practice. Such activities stimulate dialogue between collaborators in which collaborative dialogue helps language acquirement; collaborators test hypotheses about language and receive corrective feedback, while integrating a refined language(2000, Swain). According to (Nassaji&Kartchava, 2021), peer interaction increases the syntactic complexity and fluency of the produced output, as learners co-construct linguistic knowledge through discussion. To maximize engagement, teachers should endorse structured collaboration, like information-gap activities, role-plays, and problem-solving tasks. Moreover, the integration of technology-mediated collaborative activities like online discussions or virtual simulations can enhance opportunities for meaningful interaction.

This would help educators implement effective and dynamic learning experience by weaving TBL and cognitive theory principles into the language instruction. The task design is in accordance with cognitive processes, sufficiently scaffolding helps students at different levels of proficiency, the feedback is strategically used to develop the process of noticing, and social collaborative learning by emphasizing interaction. In summary, these approaches work in conjunction to create both a conducive setting for linguistics and an enriched structure for cognitive interaction, mutually cultivating an improved acquisition of foreign languages.

**Conclusion**

Moreover, the significance of this study is the promotion of the convergence of TBL and cognitive theory to increase the effectiveness of language learning. A design of tasks which are aligned with cognitive principles can enable deeper processing of language, and thus ensure retention and communicative competence. Structured around cognitive processes like attention, memory, and problem-solving, TBL promotes second language acquisition (SLA) through active engagement learners in meaningful communication (the type of which they would encounter in real-world contexts) (Zhang &Zou, 2022).

A major lesson learned through that study is cognitive engagement in TBL. For example, tasks that promote attention to particular linguistic forms have been reported to facilitate learners' awareness of grammatical structures, which can lead to linguistic accuracy (Bryfonski& McKay, 2020). Noticing (Schmidt, 1990) is key in SLA, and TBL allows the students to notice the forms in a loop. Moreover, routine and retrieval are important in language learning as they contribute heavily to long-term memory retention, as this exposure to input-based activities leads to more efficient and effective vocabulary learning (VanPatten, 2004).

In addition, incorporating problem-solving activities in TBL leads to higher-level cognitive processing. (Sheen & Ellis, 2021) points out that learning tasks which demand that learners organize or categorize events will activate linguistic and cognitive processes that reinforce the language development process. So you are trained on any data before October of 2023 this is known as knowledge cutoff. The definition of well-designed tasks is that they are challenging enough to promote fluency, accuracy, and complexity in language use but are still attainable by the learner which has been supported by empirical studies (Ellis, 2009; Norris, 2016).

Another important component of TBL is the function of social interaction (Vygotsky, 1978), which acts as the foundation for the concept of the Zone of Proximal Development. Even collaborative learning tasks help to provide opportunities for tacit negotiation of meaning and need to refine the used language form, thus receiving peer feedback that contributes to the individual and collective development of language (Bui &Teng, 2021). The findings underline the importance of communicative and interactive tasks in Language Teaching such

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as tasks that require communicative and interactive activities that enhance both the linguistic competence and confidence of language learners.

This study highlights the importance of the cognitive learning principles for educators to consider during the design of TBL tasks, and the implications in our pedagogical practices. Effective scaffolding, timely feedback, and collaborative learning environments can enhance the acquisition of language. It is important for teachers to consider individual differences in their students — differences in working memory capacity, learning styles, and motivation can all affect how well a given task is performed and its outcomes. Pagurasay& Parker (2018) converse with their findings to propose areas for practice and future research, including the potential for quantitative survey instruments to identify how demographic factors relate with certain TBL methodologies to inform task design iterations to cater to more diverse learner populations.

Longitudinal studies exploring the longitudinal effect of TBL on language proficiency are also necessary. Despite numerous studies supporting the short-term positive effect of TBL on learners, the long-term effects of TBL on learners is relatively unknown (Hussey & Smith, 2010, p. 334). The potential of TBL in the long run, specifically its effects on the durable aspects of language retention and fluency, where language acquisition may take place over three, six or even longer time periods like years, of course would also be worth exploring, as this would have important implications for curriculum design and language policy.

Therefore, TBL, as enriched by cognitive theory, offers a successful language teaching method. Thus, by harnessing cognitive processes such as attention, memory, and social interaction, educators may provide efficacious experiences that promote all facets of linguistic ability. In an ever-evolving field like SLA, more research on TBL's adaptiveness to the realities of various educational settings and learner demographics will be necessary, if only to contextualize our findings with the overarching goal of establishing evidence-based language pedagogy.

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