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**“COGNITIVE STIMULATION TECHNIQUES  
MEDIATED BY ACCELERATED LEARNING IN  
FOREIGN LANGUAGE TEACHING”**

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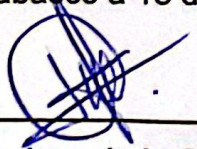
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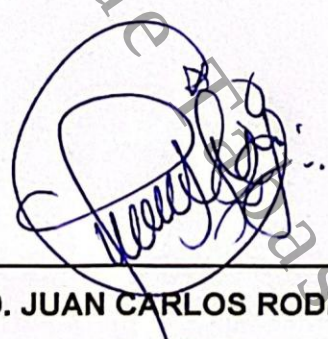
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## ABSTRACT

This thesis analyzes the influence of cognitive stimulation techniques, mediated by accelerated learning, in the teaching of foreign languages at the Instituto Universitario de Yucatán (IUDY). The main purpose is to determine their impact on foreign language acquisition. To achieve this, a mixed-methods approach is employed, integrating both quantitative and qualitative perspectives, which allows for a more comprehensive understanding of the educational phenomenon. The results show that cognitive stimulation techniques generate significant improvements in students' attention, memory, and overall learning experience. These advances promote a more dynamic, student-centered learning process, contributing to the development of key cognitive skills for language acquisition. However, the study also identifies certain limitations, including limited classroom time and some resistance to the adoption of innovative methodologies. These factors highlight the importance of providing ongoing teacher training and strategically planning implementation. In conclusion, the research argues that the incorporation of these techniques represents a valuable resource for optimizing foreign language teaching in higher education. Beyond their immediate benefits, their application aligns with current educational trends focused on innovation, student engagement, and pedagogical adaptation. In this way, the study demonstrates the potential of cognitive stimulation not only to strengthen language teaching, but also to enhance the overall quality of education in Mexico.

**Keywords:** Cognitive stimulation, accelerated learning, neurolinguistics, foreign languages, higher education.

## RESUMEN

Esta tesis analiza la influencia de las técnicas de estimulación cognitiva, mediadas por el aprendizaje acelerado, en la enseñanza de lenguas extranjeras en el Instituto Universitario de Yucatán (IUDY). El propósito central es determinar su influencia en la adquisición de lenguas extranjeras. Para ello, se emplea un enfoque de métodos mixtos que integra perspectivas cuantitativas y cualitativas, lo cual permite obtener una visión más completa del fenómeno educativo. Los resultados evidencian que las técnicas de estimulación cognitiva generan mejoras significativas en la atención, la memoria y la experiencia de aprendizaje de los estudiantes. Estos avances favorecen un proceso formativo más dinámico y centrado en el alumno, contribuyendo al desarrollo de habilidades cognitivas clave para la adquisición de lenguas. No obstante, el estudio también identifica limitaciones, entre ellas el tiempo reducido en el aula y cierta resistencia hacia la adopción de metodologías innovadoras. Estos factores resaltan la importancia de brindar capacitación constante al profesorado y planificar la implementación de manera estratégica. En conclusión, la investigación sostiene que la incorporación de estas técnicas representa un recurso valioso para optimizar la enseñanza de lenguas extranjeras en la educación superior. Más allá de sus beneficios inmediatos, su aplicación se alinea con las tendencias educativas actuales, orientadas hacia la innovación, el compromiso estudiantil y la adaptación pedagógica. De esta manera, el estudio evidencia el potencial de la estimulación cognitiva no solo para fortalecer la enseñanza de lenguas, sino también para elevar la calidad educativa en México.

**Palabras clave:** Estimulación cognitiva, aprendizaje acelerado, neurolingüística, lenguas extranjeras, educación superior.

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## INTRODUCTION

Learning a foreign language has been a constant challenge for students in Mexico due to various individual factors that affect their language learning development. Higher-level institutions across the country have slowly been responding to these problems by integrating foreign language programs into their curricula, recognizing the need for students to acquire linguistic and cultural competencies. As a result, English remains the most widely taught language due to its global dominance in business, technology, and academia. However, other institutions must pay attention to the methodologies and approaches they select to teach English to professional students enrolled in foreign language programs such as the case of Instituto Universitario de Yucatán (IUDY) in Tabasco.

Recent advances in neuroscience and neurolinguistics have provided education with a deeper understanding of the mechanisms behind learning, offering practical tools to design more effective and personalized educational strategies. By incorporating practical and dynamic activities in the classroom, neurolinguistic methodologies can effectively leverage brain plasticity to promote deeper, more lasting learning while enhancing knowledge retention and application. This is why this research oversees determining the impact of cognitive stimulation techniques mediated by accelerated learning methodology in foreign language teaching and evaluating their effectiveness in language learning process. The research is conducted at IUDY Comalcalco campus, seeking to provide a deeper understanding of how cognitive stimulation techniques in the process of teaching and learning a foreign language influence the development of cognitive strategies to overcome barriers commonly faced by students in language classrooms in higher education.

The study is developed based on a mixed approach, combining quantitative and qualitative methodologies to obtain a comprehensive view of the phenomenon. Among its objectives, the following stands out to analyze how cognitive stimulation techniques influence the speed and efficiency of foreign language learning. Also to

identify the most effective cognitive stimulation techniques for improving foreign language learning outcomes.

Regarding the structure of this document, the thesis is organized into five chapters. The first chapter establishes the foundation of the problem, the justification of the study, and the objectives set. The second chapter presents a theoretical framework that contextualizes the research, addressing key concepts and relevant backgrounds at the international, national, and local levels. The third chapter describes the methodological framework, including the research paradigm, study design, and data collection and analysis techniques. In the fourth chapter, the results obtained are analyzed and discussed, linking them with the objectives set and the reviewed background. The fifth and final chapter concludes with recommendations and the implications of the research.

Therefore, this thesis aims to contribute to the development of innovative methodologies that promote better integration of cognitive stimulation techniques in the process of teaching and learning English at the university level, consolidating an educational model that responds to the demands of the current era and strengthens the quality of higher education in universities. Moreover, the research highlights the importance of integrating language programs into curricula, recognizing the need for linguistic and cultural competencies in a globalized world. Main results underscore the urgency of adopting innovative approaches based on advances in neuroscience and neurolinguistics.

## CHAPTER I. PROBLEM STATEMENT

### 1.1 Research problem statement

When it comes to learn English as a foreign language it is constant challenge for students as several individual factors affect their language development. Regarding the educational level students are enrolled at, there are common aspects to consider while instructing such learning outcomes, motivation, multiple intelligences, student's learning styles or even the fact the English is required for employment and need to be aligned with the market necessities. Whether these aspects are considered in teaching or not, they are still phenomenon that haven't completely been taken into consideration in academic formation.

Higher level institutions across the country have slowly been responding to these problems by integrating innovative foreign language programs into their curricula, recognizing the need for students to acquire more than linguistic and cultural competencies. English, for instance, remains the most widely taught language due to its global dominance in business, technology, and academia. However, other languages such as French, German, Chinese, Japanese or Portuguese are becoming demanded for specific industries and international labor market that emphasizes the student needs to domain these languages.

Equally important, it is estimated that the time it takes for learners to achieve proficiency in language such English can vary. In private universities, for instance, students may reach a strong fluency in the language in few months, while others may never attain it. This normally happens to the adequacy of curriculum and syllabuses as students are conscious that their academic performance depends on their responsibility to meet the instructional criteria of learning. Besides this, developing language skills such listening, writing, reading, listening and speaking in a second language (L2) classroom setting also presents its own challenges, which are often difficult compared to learning the language in an immersive or natural environment.

In the same manner, motivation has been a current factor for students to learn a foreign language. Private universities generally have more resources to invest in foreign language instruction, offering a broader range of languages, smaller class sizes, and cutting-edge technology. These institutions often integrate foreign language learning as a core component of their curricula, encouraging fluency and cultural competence. The students may feel motivated to achieve their goals of speaking another language because of the importance they set while receiving academic instruction. Nevertheless, some students may think consolidating English understanding can improve their professional development while others may consider it is not important. However, one of the main issues connected to the aforementioned factors that appear in different settings of education (public or private institutes) are the methodologies intended to be used to reach foreign languages skills in students.

During decades, the methods and approaches that have been prioritized in public institutions are aligned to grammar-based instruction, that seek for memorization and repetition. In the outline of the approach for language teaching adopted by the Secretaría de Educación Pública (SEP) launched in 2009 is not yet mature enough to be properly assessed and measured against its central aim to teach English in throughout the public education system (British Council, 2015, p. 56). The program was developed to prepare students for contemporary society that demands citizens with the necessary competencies to face and incorporate into a globalized, constantly changing world but seems to have low results with the wrong implementation of their political practices.

The focus on grammatical issues and vocabulary input has not improved bilingualism in public institutions up to nowadays. Many approaches for teaching in schools have placed heavy emphasis on explicit grammar instruction without considering important development of cognitive skills nor communicative competence development. Consequently, the lack of communicatively proficient English teachers have is due to several factors, including the type of English training given at the university level (Borjian, 2015, p. 164). Because of this, standardized

traditional models of teaching languages, especially in universities, often prioritize passive forms of learning rather than encouraging active language use. In the same way, the teacher's image in the process of learning a foreign language has also created a strong impact on how learners perceive the language formation.

On the other hand, teachers' approach plays a pivotal role in how students experience grammar learning. By focusing on making grammar more interactive, contextual, and engaging, teachers help students build confidence and motivation, fostering a more positive and productive learning environment (Cabascango et al., 2024). Furthermore, effective language learning requires more than just memorizing rules; it involves developing the ability to think and reason in the target language. Cognitive skills such as contextual understanding, adaptation to different linguistic registers, and language processing are not always cultivated by traditional methods. Recognizing that every learner has unique needs is essential to adopt differentiated teaching strategies that cater to diverse learning styles, aptitudes, and motivations. Because of this, the challenges faced by higher educational institutions in achieving their bilingualism goals can be closely linked to the continued reliance on traditional, ineffective teaching methods.

Although current language teaching methodologies have begun to integrate technology, real-life communication, and experiential learning, the degree and coherence of this integration vary widely. This reality points to the need for instructional approaches that more deliberately and effectively unify these elements, such as accelerated learning, to support second language development. Without addressing the deficiencies of conventional approaches, the efforts to improve English proficiency in this country will likely continue to yield limited success. Thus, with the recent advances in neuroscience and neurolinguistics, education has gained a deeper understanding of the mechanisms behind learning, while also acquiring practical tools to design more effective and personalized educational strategies.

The brain's ability to reorganize itself and form new neural connections in response to learning experiences highlights the importance of creating environments

that provide varied stimulation and encourage active student participation in language learning experiences. By incorporating practical and dynamic activities in the classroom, neurolinguistic methodologies can effectively leverage this plasticity to promote deeper, more lasting learning while enhancing knowledge retention and application.

In this understanding, incorporating neuroscience into foreign language education offers a pathway to overcome the limitations of traditional methods. By aligning teaching practices with how the brain learns best, higher-level institutions can improve English proficiency, fostering more effective and sustainable bilingual education systems. Neuroscience supports what successful teachers have been able to do and to apply ideas and actions that the differentiation of apprentices to use as many strategies and approaches as possible in the teaching of foreign languages (Cañas & Chacón, 2015, p. 52). Since knowledge of development and operation the brain helps the language teacher in this case English, to achieve more efficient in its pedagogical function. The orientation towards a brain-friendly teaching environment highlights that appropriate stimulation adapted to biology of the brain allows to increase the growth of neural networks and brain interconnectivity to boost the potential of apprenticeship.

This is what established the need of researching about approaches related to neurolinguistics to improve the teaching practice and the learning of foreign languages with methodologies that include the attention on brain-based learning to develop strong skills in a foreign language setting. Therefore, this research seeks to provide a deeper understanding of how cognitive stimulation techniques in the process of teaching and learning a foreign language influence the development of cognitive strategies to overcome barriers that commonly students face in language classroom in higher education.

## **1.2 Research questions**

This research holds a general question which is:

- How do cognitive stimulation techniques influence the Accelerated Learning process in the context of foreign language learning?

### **Specific questions:**

There are two subsidiary questions, which are:

- How does the accelerated learning approach mediated by cognitive stimulation improve the learning of a foreign language in students?
- What types of cognitive stimulation techniques are most effective in enhancing foreign language acquisition in learners?

## **1.3 Research objectives**

### **1.3.1 General Objective**

To determine the influence of cognitive stimulation techniques mediated by accelerated learning methodology in foreign language teaching.

### **1.3.2 Specific Objectives**

1. To analyze how cognitive stimulation techniques influence the speed and efficiency of foreign language learning.
2. To identify the most effective cognitive stimulation techniques for improving foreign language learning outcomes.

## **1.4 Significance of the study**

The importance of establishing non-traditional teaching models in the teaching and learning of foreign languages in higher educational institutions is vital for addressing educational gaps and fostering global competitiveness. Traditional methods often fail to engage learners or meet the diverse needs of students, limiting language proficiency. Non-traditional teaching models, such as technology integration, gamification, and neurolinguistics, are revolutionizing classrooms, making language acquisition more accessible, dynamic, and effective. Recent research in second language acquisition suggests that technology-supported instruction can facilitate learner engagement, interaction, and feedback across various language skills. In particular, gamification has been examined as an

instructional approach that incorporates game-like elements into language learning activities. Studies indicate that gamified learning environments often involve structured tasks such as vocabulary practice, reading and listening comprehension exercises, short quizzes, and interactive challenges delivered through digital platforms. These activities are typically accompanied by elements such as points, levels, progress indicators, and immediate feedback, which are intended to support learner motivation and sustained participation. Empirical findings show that such environments can have a positive effect on learner motivation and learning outcomes in second language contexts (Shen, Lai, & Wang, 2024). Additionally, insights from neurolinguistics highlight the cognitive processes involved in language learning, offering a theoretical foundation for instructional approaches that align learning activities with attention, memory, and engagement. Together, these findings support the use of learner-centered and technology-mediated approaches, such as accelerated learning, that seek to integrate cognitive, motivational, and experiential elements in second language instruction (Detken et al. 2025). This may lead to embrace instructional practices that can empower learners, bridge linguistic barriers, and strengthen their position in international education in public or private institutions.

The integration of cognitive stimulation techniques mediated by accelerated learning offers a transformative approach to foreign language teaching. This study's significance lies in its potential to address persistent challenges in language acquisition, including learner motivation, retention, and proficiency. By leveraging accelerated learning principles such as multisensory engagement, relaxation techniques, and the use of music, instructional activities can be designed to support both cognitive and affective aspects of language learning. Multisensory engagement involves presenting linguistic input through visual, auditory, and kinesthetic channels, such as combining images, spoken language, and physical interaction during vocabulary or comprehension tasks; research shows that multisensory approaches in language learning can promote deeper understanding, increased motivation, and improved skill development across language domains (Zebiniso, 2025). Relaxation techniques such as brief guided breathing or mindfulness

practices can reduce learner anxiety and enhance focus, creating an emotional environment that is more conducive to language processing. Music can be incorporated through songs, chants, or rhythmic repetition to support memory, pronunciation, and communicative skills; empirical evidence suggests that musical activities, particularly singing, can facilitate recall and oral production in a second language, while classroom activities guided by music have been associated with stronger communicative competence and affective engagement (Thompson, Salig, & Slevc, 2025). That is why this research underscores instructional practice methods to enhance both teaching effectiveness and learning outcomes.

The study of cognitive stimulation techniques in the context of accelerated learning in foreign language teaching represents a groundbreaking intersection of neuroscience and enhancement in language education. With the growing demand for effective and efficient language acquisition, Non-traditional models offer promising potential revolutionizing traditional language learning practices. Accelerated learning, on the other hand, focuses on making the learning process more efficient. It does so by drawing on the latest research findings about how the brain works (neuroscience) and creating a positive environment in which students are active and learn together (Lucas, 2005, p. 7).

As revealed by the ANUIES (2017) higher education institutions are essential for Mexico to integrate favorably into the scenarios of a transforming world, under conditions of high competitiveness and technological innovation that serve to eradicate inequalities, expand development opportunities, and promote an indispensable and equitable social modernization. Therefore, strengthening English language programs at the university level not only enhances linguistic competence but also aligns with national policies aimed at achieving educational quality, equity, and international projection. Despite these efforts, recent evaluations indicate that challenges remain in the implementation of effective teaching methods and in the continuing training of teachers.

It is well known that traditional methodologies focus solely on teaching grammar deductively, leaving aside the process of internalizing knowledge and the

comprehensive development of students' individual skills. Traditional language teaching is based on a traditional approach to the target language, which regards the language as a body of grammatical rules and an enormous number of words that are combined according to the rules (Boumová, 2008, p. 18). This limitation has contributed to a decrease in the quality of English learning, reflected in a low percentage of students who manage to achieve mastery of the language.

Thanks to scientific advancements, the integration of neuroscience principles into education has proven to be a powerful tool for addressing individual differences and maximizing learning potential, while adapting to diverse cultural contexts. The relationship between second language learning and neuroscience is based on understanding how the brain processes, stores, and utilizes multiple languages. Gülpinar (2005) alludes to the fact that neuroplasticity enables the brain to adapt and reorganize continuously in response to changes, enhancing its capacity for learning and memory (p. 300). This lifelong process involves structural and functional modifications in neural connections, facilitating the acquisition of new knowledge and skills. In the teaching and learning of foreign languages, it enriches the environments support brain development by stimulating the formation of new neural connections and the generation of neurons in the hippocampus. These settings reduce spontaneous cell death, protect against age-related memory decline, and enhance cognitive and emotional abilities. Conversely, factors such as chronic stress and social deprivation increase cell death in the hippocampus and decrease neurogenesis, negatively impacting learning and information retention (Gülpinar, 2005, p. 301).

On the other hand, Cognitive techniques play a key role in second language learning by engaging learners' mental processes to enhance memory, attention, and the manipulation of linguistic information. For example, strategies such as repetition, lexical inference, and the organization of new language material have been shown to improve long-term retention of vocabulary by encouraging learners to deliberately process and internalize lexical information (Zavala et. al., 2018). Attention-focused techniques that direct learners toward relevant linguistic features can also support

deeper processing of input, enabling more effective encoding and usage of the target language, as attention has been identified as a central cognitive mechanism in language acquisition (Roussel, 2025). Together, these cognitive techniques support more effective processing, storage, and retrieval of language, which are foundational for successful second language acquisition. By boosting these essential abilities, Cognitive stimulation has the potential to significantly accelerate the learning process, empowering students to achieve linguistic proficiency more efficiently and at a faster rate than traditional methods alone. This groundbreaking strategy not only enhances existing teaching methodologies but also sets a new standard for improvement, efficiency, and excellence in language education.

The necessity of promoting stimulating techniques in language scenarios to immerse university students into a natural environment is feasible due to the availability of essential resources in higher level institutions, including financial support, social support, and access to credible information sources. Although Applied Neuroscience is still an emerging field, it is crucial to incorporate it into the training programs for second or foreign language teachers, by providing educators with practical insights into how attention, memory, emotion, and cognitive load influence learning. This knowledge enables teachers to design lessons that align with learners' attentional capacities, reduce anxiety through supportive classroom environments, and promote long-term retention through spaced and multisensory learning activities. For example, neuroscience-informed instruction may involve presenting language input in manageable segments, encouraging low-stress communicative practice, and integrating visual, auditory, and kinesthetic elements to strengthen memory. By understanding how the brain processes and retains language, teachers can make informed pedagogical decisions that enhance learning efficiency and teaching effectiveness (Filipini & Pedroso, 2020, p.57). Moreover, the topic's relevance and alignment with current academic and societal needs also ensure engagement from stakeholders, making its successful implementation highly achievable. Also, it aims to explore and highlight the benefits of introducing an innovative approach to teaching English within the national program, leveraging

brain stimulation techniques to promote accelerated English learning and brain-based methodologies.

Therefore, this study seeks to propose a groundbreaking model that integrates cognitive stimulation to enhance proficiency in English, offering a transformative solution for educational settings. By doing so, it aspires to revolutionize traditional teaching methods and provide students with a more effective path to language mastery. It is methodologically significant as it explores the increasingly prominent areas of accelerated learning and brain stimulation in second language acquisition, topics that have recently gained considerable attention from researchers. From a disciplinary perspective, the study aims to contribute to and align with emerging models of foreign language teaching in higher level institutions. Additionally, it seeks to advance research on accelerated learning techniques, which have been applied across various fields, by describing existing knowledge and deepening our understanding of their functions in diverse contexts. This research has the potential to address gaps in current methodologies and drive innovation in higher educational institutions in language teaching.

### **1.5 Hypothesis**

The use of cognitive stimulation techniques positively influences accelerated learning in foreign language teaching by enhancing cognitive functions in university students. This relationship suggests that integrating brain stimulation activities can significantly improve language acquisition speed compared to conventional teaching methods.

### **1.6 Variables of the study**

For this research, the following variables were considered:

**Variable 1 (dependent). Cognitive stimulation techniques:** Cognitive stimulation techniques encompass a variety of activities and strategies designed to enhance students' cognitive functions, such as memory, attention, problem-solving, and language skills. These techniques include Brain Gym activities, physical movement integrated into language tasks, emotional connection with learning

content, music stimulation, and situated learning scenarios. Each of these approaches aligns with neuroscience principles by promoting neural activation, attention, and meaningful engagement in foreign language learning.

aim to create engaging and interactive learning environments that promote active participation and mental engagement. (Reina et al., 2023, p. 2)

**Variable 2 (independent). Accelerated Learning in Foreign Language Teaching:** Accelerated Learning in foreign language refers to any attempt to speed up the teaching and learning process and achieve the desired learning outcomes faster and more efficiently than through more traditional arrangements and approaches (Lucas, 2005). It also combines aspects of established learning theory with brain-based approaches. It does so by drawing on the latest research findings about how the brain works (neuroscience) and creating a positive environment in which students are active and learn together (p. 5).

### **1.7 Delimitation of the study**

The investigation was carried out at Instituto Universitario de Yucatán (IUDY) Comalcalco's campus which is part of a private development system university that emphasizes social and ethical responsibility in delivering educational services in students. It enhances educational research aimed at creating a contemporary model that addresses the needs of educational reforms and the challenges of a global society, all within a socio-formative framework that fosters critical and complex thinking.

The study was especially focused on the bachelor's degree in foreign Languages, which main professional objective is train students with mastery of the linguistic skills of the foreign languages (English, French, Italian, Portuguese and German) addressing competences model of teaching for the benefit of students in the working field. These objectives pave the way for innovative second language learning methodologies, enabling students to enhance their acquisition of various aspects of the language and achieve significant benefits in mastering it.

Therefore, foreign language graduates at IUDY are expected to possess strong communicative and linguistic competences in their professional languages necessary for their academic formation. It also emphasizes that graduates apply their linguistic and pedagogical knowledge in educational settings as teachers, advisors, and bilingual programs related to foreign language instruction.

Because of this, leveraging insights from neuroplasticity methodologies, educators in universities such IUDY can develop effective approaches that create pathways in the brain's cortex to facilitate language learning. Key principles for fostering neuroplasticity such readiness, coherent construction and consolidation, are supported by cognitive stimulation techniques that strengthen neural connections, accelerate learning, and promote cognitive development in language learning.

If cognitive stimulation techniques and brain-based approaches were implemented in professional foreign language teaching in private universities such IUDY, graduates would emerge with a significantly enhanced skill set based on communicative competence in the language they domain. These methodologies, rooted in neuroplasticity and modern learning strategies, will equip students with advanced linguistic proficiency, including technical English relevant to professional contexts, and foster cognitive growth in areas such as memory, attention, and problem-solving. Graduates therefore will engage in in-depth language studies and produce educational and linguistic research to enhance their professional life career.

### ***1.7.1 Contextual delimitation***

The work is oriented towards determining the impact of cognitive stimulation techniques on accelerated learning in foreign language teaching and evaluating their effectiveness in enhancing language acquisition processes in the process of teaching and learning foreign languages at Instituto Universitario de Yucatán, with the objective of analyzing how brain stimulation techniques influence the speed and efficiency of foreign language learning compared to traditional teaching methods and

identifying the most effective brain stimulation techniques for improving foreign language learning outcomes.

From a correlational perspective, it is proposed to evaluate pedagogical strategies using brain stimulation techniques that can serve as a basis for other related studies related to the variables, as they are of vital importance for teachers training and the use of accelerated techniques as a disruptive methodology in foreign language teaching.

### **1.7.2 Spatial Delimitation**

The research was carried out at the Instituto Universitario de Yucatán (IUDY) Comalcalco campus located in Calle Comales, Rancheria Occidente 3ra sección, C.P. 86650 in Comalcalco, Tabasco.

### **1.7.3 Temporary Delimitation**

The analysis was carried out during the four-month period 2025-1, which included the months of January to April of 2025. The above, since it was the academic cycle where the cognitive stimulation techniques were implemented in the foreign language subjects of the bachelor's degree in foreign languages at IUDY.

## CHAPTER II. THEORETICAL FRAMEWORK

### 2.1 Contextual Framework

In today's globalized world, the ability to speak multiple languages has become a highly valued skill. Especially in universities, it is crucial to prepare students to thrive their linguistic competences for obtaining better job positions after finishing their academic programs. Nonetheless, proficiency in foreign languages goes beyond linguistic ability; it cultivates cultural awareness, critical thinking, and adaptability. For students, learning languages, especially in Bachelor's Degree in Foreign Languages programs, it enhances their ability to collaborate across borders, access global knowledge, and develop as global citizens.

In the labor market, positive change can be seen in greater opportunities for employment and promotion to new positions, especially in some sectors and enterprises, such as software and technology development, financial services, tourism, national and transnational trade. (Cely & Stanton, 2023, p. 48)

As companies are increasingly seeking bilingual or multilingual professionals, giving them a competitive edge in the job market, the development of communicative competences in a foreign language must be taken as a prior benefit extend beyond professional opportunities, as it also opens doors to new cultures, enriching personal experiences and communicative skills. Conversely, the Mexican education system does not have a common legal framework that comprehensively regulates the higher education system. In the absence of national guidelines or targets to guide the teaching of English in higher education, institutions set their foreign language policies according to their needs and context, but with mixed results (p. 35).

On the other hand, La Ley General de Educación Superior (2023) states that learning a second language is a part of the fundamental content of educational plans and programs (art. 30, p.21). While the institutions are seeing more clearly every day the need for English for different purposes such as mobility, internationalization, research, international partnerships or publications, each institution (public or

private) regulates its own English policies. Many universities do not have institutional English programs and do not centralize the assessment of their students' English levels (British Council, 2015).

English has not commonly seemed like a necessary part of the curriculum mesh of programs and students often must pay extra to meet established English level requirements, either inside or outside the institution. Although these ideas tend to be overly pessimistic, global evaluations show us serious results. Nevertheless, in public education institutions students are expected to reach an A2 language proficiency level by the end of secondary education. Nonetheless, official reports indicate that Mexico ranks 88th out of 111 countries evaluated in terms of English language proficiency (Education First [EF], 2022). Likewise (Ramirez, 2023) mentions that in 2023 ranks 89th out of 113 countries in English proficiency, making it the second-to-last country in Latin America in this ranking (p. 2). Because of this, higher educational institutions have the challenge of enhancing the level of a foreign language because of the lack of knowledge students bring from middle and high school programs.

In Higher Education a comparable situation occurs, especially because some institutions ask for students to obtain a B2 proficiency level according to Common European Framework of Reference at the undergraduate level but lack of foreign language educational programs to reach this goal (Ramirez et al., 2017, p. 18). Consequently, in postgraduate programs students experience the same. They are asked to obtain a minimum English language competency requirement for admission and graduation, but the requirements are much more stringent for programs that teach English as a second or foreign language (p.17).

University programs then need to be better aligned with the changing needs of the economy. Employers for industrial and commercial companies emphasize low English proficiency in their sector and consider that the education and training of job seekers is no communication in English in higher education requires a public policy with goals, objectives, evaluation and certification, a common approach and intersectoral work between upper secondary education, higher education, training

for work and the world of work. In contrast, important institutions revealed the results that in Mexico a significant part of English teachers are not really trained to teach this language.

According to Ramirez (2023), in 2009, 5,203 teachers were assessed by (CENNI) and less than 1% reached the required C1 level and only 48% obtained level B1 or higher, around 25% of English teachers possess an A1 proficiency level, equivalent to that of a fourth-grade student. Additionally, 12% of teachers reach an A2 level, which aligns with the expected proficiency for a first-year secondary school student. Alarming, one in seven English teachers has no knowledge of the language at all (p. 4).

Therefore, since students lack access to trained teachers, their learning is significantly impacted and their proficiency in a language that is essential to their academic and professional growth is limited. This underscores the nation's need for qualified teachers in foreign language instruction. It also emphasizes how vital it is to train current educators in modern methodologies of teaching languages to guarantee the development of competences required for the labor market.

The evolution of teaching methods in second language (L2) acquisition highlights the critical need for innovative and research-backed approaches in higher education. The traditional operant conditioning model has been largely replaced by modern strategies that incorporate advancements in neuroscience and cognitive psychology, such as Accelerated Learning and Brain-Based Learning (BBL). These methods emphasize engagement, physical activity, and the creation of supportive social and cognitive environments (Jensen & McConchie, 2020, p.2). Accelerated learning leverages neuroscience insights to optimize the learning process by engaging students actively and collaboratively. Techniques like Brain Gym and relaxation exercises foster improved attention, information retention, and bilateral coordination, offering practical ways to enhance cognitive processing. Examples of Brain Gym activities include cross-lateral movements (e.g., touching the right hand to the left knee), "lazy eights" exercises to support visual tracking, and brief breathing

or hydration pauses to promote mental readiness before language tasks (Dennison & Dennison, 1994).

Recent developments in cognitive neuroscience have created extraordinary opportunities for a modern knowledge of the neural underpinnings of second language (L2) acquisition. Studies of the anatomy and physiology of the brain have significantly advanced biological theories of language acquisition in addition to behavioral research and contributions that enhance language learning (Filipini & Pedroso, 2020, p. 44).

On the other hand, Wilson et al., (2023) used brain-based learning strategies to speed up second language acquisition. It was demonstrated that the study was successful in encouraging a change in classroom instruction from conventional teacher-centered approaches to more engaging, dynamic, and significant ones. Its effectiveness, however, hinges on educators' capacity to get past linguistic obstacles and promote a supportive social atmosphere. To overcome these obstacles and maximize brain-based learning in settings, it is advised that educators undergo further training (p. 8).

Therefore, this study emphasizes the necessity of training aspiring foreign language instructors at higher education institutions to use new, more strategic, and practical approaches, as well as the significance of tailoring instructional tactics to the unique demands of students and situations. Ultimately, integrating these advanced methodologies into L2 instruction not only enriches the educational experience but also equips learners with tools for long-term success. To fully realize these benefits, teacher training programs must prioritize equipping educators with the knowledge and skills needed to implement these strategies effectively in real-world scenarios.

## **2.2 Research Background**

This section examines the literature collected to analyze what has been disseminated and publicized about Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Acquisition, which were taken from

various sources of information international, national and in local context. The bibliographical references are arranged from a macro view, which encompasses all research communities in different countries, then following the meso vision that refers to the research that have been published in the Mexican republic and finally, the micro vision that encompasses the background that exists of the state of Tabasco.

### **2.2.1 International background**

There have been published diverse perspectives of international researchers on neuroscience-based methodologies for second language acquisition (SLA). These studies highlight how innovative, non-traditional approaches can enhance learning by addressing challenges like motivation, anxiety, and engagement. Researchers emphasize the role of educators in implementing these strategies, aligning teaching methods with the brain's natural learning processes. By fostering effective, meaningful learning environments, these methodologies have the potential to accelerate SLA, improve fluency, and enhance retention, while underscoring the importance of teacher training for successful applications.

For instance, Almanza (2006) conducted a study in Cuba named “Accelerated Learning: Proposal for a Methodological Alternative for Improving Oral Expression of the English Language” after realizing that traditional instruction was not helping students improve and achieve their oral expression success in English; in higher education students weren’t with the knowledge requested even if primary and higher school courses were taken. The study's goal was to improve the oral expression of students in higher education by offering a methodological alternative for the accelerated and developed learning of the English language. (p. 8)

It also implemented activities like role-playing games, simulations, roundtables, and small group discussions as tools to improve oral expression. Incorporating techniques such as jokes, tongue twisters, and riddles to promote an uninhibited and participatory learning environment (Almanza, 2006, p. 208). As a result, the applied methodological alternative significantly improved the teaching-

learning process of English as a foreign language in higher education. It fostered creativity, independence, and responsibility, motivated students, especially in oral skills and strengthened emotional engagement. Higher education students reported improved pronunciation, intonation, and confidence, overcoming traditional barriers. Additionally, the method enhanced self-awareness and metacognitive regulation, contributing to both academic and personal growth, though the method demonstrated substantial effectiveness and motivational benefits addressing the noted resource and time limitations would further enhance its impact (p. 266).

Likewise in Israel Passing et al., (2024) made a studio named “Technological Interface Components That Support Accelerated Learning in the Acquisition of Foreign Language Vocabulary”. This study investigated the impact of computer-assisted language learning (CALL) on foreign language acquisition, focusing on both cognitive and emotional engagement. Specifically, it examined two key factors: the duration and scope of the learning process, as well as the depth of internalization of the newly acquired language. The learning system employed in this study promotes a practical pedagogical experience that integrates the background stimuli of measured breathing, binaural frequencies, alpha waves, and music (p.15). One hundred native French speakers, averaging 47.5 years of age and with no prior knowledge of the target language, took part in the study. Participants were randomly assigned to one of two groups: a traditional 2D learning environment or a virtual reality (VR) setting. Over the course of five days, they studied 550 words in the new language, dedicating 30 minutes each evening and 15 minutes each morning to their learning sessions (p.1).

Approximately one month after the learning experience, a knowledge retention test was administered to participants. The results showed that the learned material had been successfully retained. Additionally, background variables such as age, gender, and prior knowledge of the target language had no significant impact on the learning outcomes. Overall, the findings suggest that computer-assisted language learning (CALL), when incorporating both cognitive and emotional stimuli across different learning environments, effectively accelerates the learning process,

expands vocabulary acquisition, and supports long-term retention. (Passing et al., 2024, p.1)

### **2.2.2 National background**

Regarding the role of alternative methodologies in enhancing the learning process in Mexico, limited research has been conducted. The country faces significant challenges due to insufficient empirical evidence on brain-based and cognitive-focused approaches. Additionally, the current strategies and learner autonomy in second language acquisition often fall short of their potential. Accelerated learning techniques could play a pivotal role in addressing these gaps, providing learners with effective strategies to enhance their knowledge and achieve tangible results in acquiring a second language.

Silva (2010) in her master's degree thesis named *"Propuesta Metodológica para la Aplicación de Técnicas de Aprendizaje Acelerado en el Aula del Nivel Superior"* (made in México City) presents a methodological proposal aimed at higher education, with the purpose of teachers can carry out a systematic educational intervention that facilitates students' learning of accelerated learning techniques and strategic learning. The main objective was for students to have intellectual and social tools that allow them to learn not only in the classroom but also throughout life to better prepare university students to face challenges and succeed in the professional world (p. 15).

This means that private university institutions often go beyond merely providing career-specific knowledge. These institutions aim to cultivate autonomous skills that enable students to navigate the complexities of the modern workplace effectively. This underscores the importance of private universities adopting accelerated learning techniques to help students develop these vital skills.

The research results were highly positive, demonstrating that students were able to grasp the content quickly and effectively. Moreover, when combined with strategic learning, they developed metacognitive awareness more easily. Over five years of practice of the author, it was also observed that accelerated learning fosters

the acquisition of essential generic skills, such as creativity; verbal and written communication; the ability to abstract, analyze, and synthesize information; problem-solving and decision-making skills; interpersonal abilities; leadership and motivation toward common goals; and the capacity for autonomous work (Silva, 2010, p. 132).

Likewise, certain challenges were observed during the study. While many students adapted readily to the implemented pedagogical strategies, others required more time to adjust, indicating a gradual adaptation process. Similarly, teachers face challenges in implementing these strategies, as they demand meticulous planning and execution, which can increase workload particularly in educational contexts where teachers juggle multiple responsibilities. These findings highlight the importance of providing adequate support and training for both students and educators to maximize the effectiveness of these techniques (Silva, 2010, p. 8).

On the other hand, Marín (2021) conducted a study named *“Estrategias de aprendizaje de vocabulario en inglés mediadas por tecnología en contextos universitarios”* in Xalapa Veracruz to describe English vocabulary learning strategies in university settings. The research involved 205 English language students from a southeastern Mexican university who completed an online survey. The results showed that notetaking was the most frequently mentioned strategy among participants, closely followed by using dictionaries and other reference sources (p. 54).

Practicing new words through conversations and writing, as well as using repetition and memorization techniques, were reported less frequently. Additional strategies, ranked by frequency, included watching videos and movies, listening to songs, and reading to expand vocabulary. In contrast, strategies like making word associations and consulting others were mentioned less often; while listening to audiobooks, playing games and video games, and using English-learning apps accounted for less than 1% of the responses (Marín, 2021, p. 66). The significant impact of traditional methodologies on second language acquisition in higher education settings.

These investigations reveal a lack of learner autonomy in consolidating vocabulary through diverse strategies. Instead, students tend to rely heavily on traditional tools, such as dictionaries, without actively engaging with or immersing themselves in the language. This dependency on repetitive and conventional stimuli limits opportunities for deeper vocabulary acquisition and practical application, underscoring the need for more dynamic and innovative approaches. Prioritizing then accelerated learning techniques mediated by cognitive stimulation strategies could be a disruptive approach for overcoming these barriers in language instruction.

### **2.2.3 Local background**

Finally, in the local context, there have been a few investigations made into cognitive stimulation techniques in language teaching. However, due to the limited availability of information in this area, it was not possible to explore its application in different areas of knowledge. Despite this restriction, it is considered relevant to examine how music can influence learning and pave the way for future research that delves into its benefits in various educational environments.

Dzib Moo et al., (2023) made a research in Tabasco named “*La música y su importancia en el aprendizaje significativo de estudiantes de educación básica de Tabasco, México*”, where music was exposed and its importance in meaningful learning. The objective of the research was to reflect on the importance of the relationship that music has as a motivation for the development of meaningful learning in adolescents (p.2). This means that music in schools supports children’s emotional development by fostering positive attitudes, enhancing emotional regulation, and promoting self-awareness.

Beyond its role in learning, music also serves as a therapeutic tool, aiding in the rehabilitation of children with learning difficulties or cognitive development disorders. This highlights music’s multifaceted value in both education and personal growth (p. 6). Additionally, it was pointed out that music affects students' academic performance and promotes a more pleasant work environment that favors learning. As a result, the study concluded that music plays a crucial role in motivating

adolescents to stay engaged with their studies, serving as a powerful factor in promoting academic persistence. It encourages students to complete school activities both inside and outside the classroom, fostering curiosity and supporting meaningful learning. And suggested that incorporating music, teaching can shift away from traditional, rigid methods, creating a more enjoyable and stimulating environment for both educators and learners. Therefore, it is essential for teachers to remain open to innovative teaching strategies that leverage music's potential to enhance the learning experience (p.17).

## **2.3 Conceptual Framework**

The following section outlines the conceptualization of the variables Cognitive Stimulation Techniques Mediated and Accelerated Learning in Foreign Language Acquisition and explains the importance in relation to the problem posed. The terms are shown according to various author's definitions emphasize cognitive stimulation as a critical skill in facilitating the development of a foreign language.

### **2.3.1 Definition of Cognitive Stimulation Techniques**

Cognitive stimulation consists of structured techniques intended to strengthen cognitive abilities in language learners. Such techniques may include spaced repetition, mnemonic strategies, attention-training tasks, problem-solving exercises, metacognitive monitoring activities, and multisensory learning approaches aimed at enhancing memory, attention, and perception. In addition, Cognitive stimulation acts on those capabilities and abilities that are still preserved, proposing activities and programs that promote improvement and potentializing through brain neuroplasticity mechanisms (Bitbrain, 2018). Equally important, Tapia & Duñabeitia (2021) mention that focuses on improving a wide range of cognitive capacities, including attention, reasoning, memory, abstraction, language, and praxis (p. 1). These lead to stimulating the brain to acquire languages rapidly when students are involved in a dynamic environment.

Moreover, Akdeniz (2024) highlights that cognitive stimulation in the learning process involves implementing activities and strategies aimed at strengthening and

improving cognitive functions and memory retention (p. 493). This approach is rooted in the concept of neuroplasticity, which describes the brain's ability to reorganize and create synaptic connections in response to learning and new experiences. Consequently, Neuroscientific research has shown that neuroplasticity plays a crucial role in learning, as it enables the brain to build knowledge by forming new neural pathways.

Neurons can create and reorganize connections, and through this process, knowledge is gradually constructed and reinforced. This dynamic adaptability of the brain allows for the continuous expansion and strengthening of cognitive pathways, facilitating learning and the retention of new information (Filipini Cearon & Pedroso de Moraes Feltes, 2020, p. 48).

Therefore, this perspective underlines the multidimensional nature of cognitive stimulation, highlighting its application in learning, brain training, and therapeutic interventions to optimize mental functions. Furthermore, cognitive stimulation consists of a set of techniques aimed at preserving cognitive performance at standard levels or enhancing it to its fullest potential, strengthening the cognitive abilities and skills that are still functioning at typical levels. This category encompasses commercial terms such as mental gym, brain gym, and mental fitness, among others (Bitbrain, 2018).

However, According to Gülpinar (2015), effective teaching strategies should be based on three key principles. First, relaxed alertness means creating a learning environment that is both emotionally supportive and intellectually stimulating challenging students without causing stress or fear. Second, orchestrated immersion involves providing learners with rich, real-life learning experiences that encourage deep thinking and reflection. Finally, active processing requires students to continuously reflect on and make sense of their experiences, helping them build lasting understanding (p. 302). Similarly, Lucas (2015) explains that effective learning happens when emotional, social, and thinking processes work together. This approach is built on three main ideas. First, positive emotions students learn best when they feel safe, happy, and free from stress. Second, engagement active

involvement helps students understand and remember better. Third, connection learning becomes more meaningful when new ideas are linked to what students already know, to other subjects, or to real-life situations (p. 1).

### **2.3.2 Definition of Accelerated Learning in Foreign Language Teaching**

Accelerated Learning is a multidimensional and multisensory instructional method designed for the acquisition and retention of information in a quick and easy manner. This method incorporates various techniques that stimulate both the body and mind, enhancing learning outcomes. Moreover, this approach was designed to make learning a second or foreign language faster, easier, and more effective. According to Lucas (2005), it draws on the latest findings from neuroscience about how the brain learns best. One of its main goals is to create a positive and supportive learning environment where students feel safe, motivated, and confident. This emotional safety allows learners to take risks, make mistakes, and stay engaged without fear or stress (p.1).

Another key feature of accelerated learning is active and collaborative participation. Rather than relying on passive memorization, students are encouraged to work together, communicate often, and learn from one another. This interaction not only boosts motivation but also deepens understanding through shared experiences. In addition, this method uses multisensory learning involving sight, sound, movement, and even emotion to reinforce new language skills. By engaging in different senses, students are more likely to remember vocabulary and grammar, and apply them naturally in real-life situations (Lucas, 2005, p.2).

Furthermore, it emphasizes leveraging the brain's potential, utilizing different sensory channels, learning styles, and the influence of emotions to integrate newly learned material with prior knowledge. It allows students to absorb, retain, and apply new information more effectively (Diaz, 2005, p. 70). Overall, accelerated learning helps learners absorb and retain language more effectively by combining brain-based strategies with emotional support, active participation, and varied sensory

experiences. This results in more fluent, confident communication and a richer, more meaningful learning journey.

## **2.4 Theoretical Framework**

### ***2.4.1 Previous studies related to Cognitive Stimulation Techniques***

Cognitive stimulation typically refers to all those techniques and strategies that aim to improve the cognitive functioning of different capacities and cognitive functions such as attention, reasoning, memory, perception, abstraction, language, or praxis (Tapia & Duñabeitia, 2021, p. 2). However, there are three key factors that contribute to effectiveness in cognitive training interventions, validity, timing, and adaptability furthermore for an intervention to be valid, it must target specific cognitive abilities while also being engaging enough to keep people interested and motivated to continue. Even though timing is crucial, as well as frequent and repeated, adaptability also ensures optimal benefits by dynamically adjusting difficulty based on the people's performance, rather than following a fixed progression, consequently it strengthens neural circuits by promoting synaptic growth and reorganization (Cognift, 2021, p. 13).

On the other hand, Reina et al., (2023) demonstrated that these tools allow the stimulation of five different domains (namely, reasoning, memory, attention, coordination, and perception). Moreover, the findings confirm cognitive stimulation programs showed improvement in reading comprehension and supported the effectiveness of cognitive training not only in adults but also in adolescents (p.7). Similarly, Sharmin et al. (2024) highlights that brain activity particularly in the lateral prefrontal cortex indicates a higher level of cognitive engagement during learning besides it suggests that using different cognitive tools to acquire new knowledge can offer valuable insights into how the brain processes information. In short, such insights not only help us understand the cognitive impact of various learning strategies but also contribute to enhancing instructional design and the development of more effective and engaging educational games (p.1).

Likewise, Pratama et al. (2022) also supported this view by demonstrating that brain exercises can effectively improve cognitive abilities. In their study, 12 out of 14 participants who took part in brain gym activities showed measurable improvements in cognitive performance, as indicated by comparisons between their pretest and posttest scores. These results provide promising evidence that brain gym exercises can serve as a valuable tool for enhancing cognitive skills, particularly in children. In addition, it suggests that integrating such exercises into educational environments could contribute to more engaging, stimulating, and developmentally beneficial learning experiences.

#### ***2.4.2 Cognitive Stimulation Techniques used in L2 teaching***

Learning a second language (L2) is a highly valued skill in many cultures, societies and business environments due to L2 acquisition is more difficult for adults compared to children; a situation that has fostered the development of numerous L2 learning aids (Kang & Williamson, 2013).

Thanks to current research, it has been possible to find different ways to address difficulties in learning second languages. Among them the benefits of cognitive stimulation, Tapia & Duñabeitia (2021) state that cognitive functions play a key role in language learning, as well as in reading and writing (p.1). This means that any new cognitive effort, such as acquiring a new language, may produce a change in the neural system and pathways (e.g., increasing the number of synapses, generating new dendritic spines, or strengthening neural connections) related to this learned skill. Taking together the above findings recommend that musical training and experience may boost language learning skills and that this effect might be most clearly seen in a language tone, where accurate perception and production of pitch contours is crucial to comprehension (Kang & Williamson, 2013, p.3).

In real-world learning environments, Kang & Williamson (2013) explored the effects of background music on language acquisition. Their findings revealed that low-complexity background music can improve the retention of a second language during the early stages of learning, regardless of an individual's musical background.

Additionally incorporating music into language learning may offer cognitive benefits that not only support memory but also comprehension (p.2). Also, Besson et al. (2007) emphasizes that musical expertise enhances pitch processing in music and speech. Their research demonstrates a transfer of training between these two domains, indicating that musical training can positively influence linguistic skills, particularly in perceiving pitch, which is crucial for mastering the prosody and intonation of a new language (p. 399). Together, these studies highlight the potential of music-based approaches in second language acquisition and underscore the importance of further investigating the cognitive mechanisms that link music and language learning.

In addition to music-based strategies, other cognitive techniques have also been shown to support language learning. One such approach is the technique of Multi-Modal Enhancement, which has been found to effectively facilitate input enhancement (Kieu, 2023). This method emphasizes the use of multiple sensory channels such as combining auditory and visual stimuli rather than relying on a single sense to help learners 'notice' important language input. Engaging multiple senses simultaneously increases the chances of capturing learners' attention and reinforcing their understanding. A rich, multi-sensory experience not only creates stronger and more lasting impressions but also contributes to a more immersive and dynamic learning environment. By fostering deeper cognitive engagement furthermore Multi-Modal Enhancement can play a valuable role in improving language acquisition and making the learning process more effective and enjoyable.

As well as gestures that have been widely used in L2 classrooms to enhance the effects of pronunciation instruction. According to Lizuka et al. (2020) Several experimental studies indeed have appeared to confirm the benefits of gestures for L2 learners' pronunciation of suprasegmental features (p.3). Based on these findings they demonstrated that handclapping may enhance memory retention of phonological features, supporting the dual-coding theory and the enactment effect, which emphasizes the benefits of multimodal encoding in L2 learning (p. 28).

Overall, the strong connection between domain-general cognitive skills, such as executive functions, and language learning suggests that cognitive stimulation programs may enhance language acquisition. In other words, just as learning a second or foreign language can lead to improvements in non-linguistic cognitive abilities, targeted cognitive training could not only strengthen the cognitive processes underlying language control but also support language learning and linguistic development (Tapia & Duñabeitia, 2021, p. 3).

#### **2.4.2.1 Brain Gym.**

Brain Gym, created by Dr. Paul E. Dennison in the 1960s, is a method aimed at enhancing concentration and improving attention by engaging both hemispheres of the brain, in addition it involves performing body movements designed to strengthen abilities, refine skills, and overcome blockages, thereby fostering the development of new neural connections and activating different areas of the brain (Pérez, 2023).

However, According to Psicoactiva (2023) this method involves three distinct regions in the brain, each corresponding to different stages of development, first the Reptilian Brain which governs basic survival functions such as heart rate regulation, breathing, and body temperature control. Above it, the Limbic System plays a crucial role in emotional processing, motivation, and memory formation, acting as the center of human emotions and behavioral drives and finally, the Neocortex, the most evolved and complex structure, is responsible for higher cognitive functions, including abstract thought, logical reasoning, problem-solving, and language. Also, brain Gym is a valuable educational tool that promotes students' cognitive, emotional, and behavioral development through purposeful physical movements designed to stimulate neural activity and enhance brain function.

Siroya et al. (2021) pointed out that Brain Gym exercises enhance key cognitive abilities such as concentration, focus, and information processing. This is achieved through neural remodeling, a process that strengthens communication between the brain's hemispheres, resulting in improved cognitive performance and

memory retention (p. 3637). Additionally, specific exercises like the 'Thinking Cap' and 'Brain Button' have been shown to elevate mood, accelerate learning, and reduce emotional tension factors that are essential for maintaining an effective and supportive classroom environment (p. 3638).

Furthermore, Brain Gym supports the holistic development of learners by addressing not just cognitive, but also social and emotional growth. Elswerky et al. (2021) found that participation in Brain Gym activities leads to improvements in both interpersonal and intrapersonal intelligence, fostering greater self-awareness and social understanding skills that are fundamental for effective communication and collaboration in educational settings (p. 1594). These exercises also enhance kinesthetic intelligence, helping students develop better coordination and motor control, which benefits classroom engagement and fine motor tasks such as writing. Furthermore, Brain Gym has been shown to assist in overcoming learning difficulties and in establishing better study habits as well as emotional well-being, boosts self-confidence, and improves students' overall social skills (p. 1596).

Beyond these cognitive and physical benefits, Brain Gym plays a crucial role in addressing learning difficulties and establishing positive study habits. The authors emphasize that these activities not only enhance academic performance but also improve emotional well-being and self-confidence (p. 1596). As a result, students are better equipped to handle challenges, stay motivated, and maintain a positive attitude toward learning. By promoting emotional balance, stronger communication skills, and personal growth, Brain Gym helps create a more supportive, engaging, and effective classroom environment where all students can thrive.

#### **2.4.2.2 Physical Movement and the Brain**

Active physical movement refers to Physically Active Learning (PAL), where physical activity is integrated into lesson time to enhance engagement, focus, and academic outcomes (Bacon & Lorde, 2021). This method involves incorporating movement into traditional teaching practices, such as standing, walking, jumping, or gesturing while learning math, language, or other subjects (p. 372).

From the point of view of Pacheco & Casquete (2023), active breaks are short periods during the school day when students engage in physical or relaxation activities. These breaks aim to improve students' overall well-being both physically and mentally by helping them recharge and refocus. As a result, students are more prepared to return to their learning tasks with better concentration and energy (p. 1024).

Building on this idea, Petrigna et al. (2022) highlights the broader academic and developmental benefits of physical activity in schools. Their review of various studies shows that children who are physically active tend to have better motor skills, cognitive development, and academic performance compared to those who lead more sedentary lifestyles. Importantly, they found that incorporating movement into academic lessons not only increases the amount of physical activity students get throughout the day but also improves their motor skills and academic outcomes (p. 2).

Another research shows that adding movement into the school day can greatly benefit students' learning, behavior, and focus. For example, Physically Active Learning (PAL) has been shown to significantly increase student engagement. Bacon and Lorde (2021) found that students in PAL lessons spent 97% of their time on tasks, compared to 87% in traditional seated lessons (p. 366). PAL also helps improve important mental skills like working memory, self-regulation, and cognitive flexibility by encouraging students to switch between moving and learning, which strengthens their attention and focus (p. 370). This approach even helps reduce distractions and supports better classroom behavior. Also, these breaks can last three to five minutes multiple times a day, or about ten minutes once or twice a day, and may include light exercise, fun games, or calming techniques. These activities not only activate the body's musculoskeletal and cardiovascular systems, but also stimulate the brain, helping students return to class more focused and ready to learn (Pacheco & Casquete, 2023, p. 1024).

### **2.4.2.3 Emotional Connection**

According to the Oxford Dictionary, emotion is defined as “a strong feeling deriving from one’s circumstances, mood, or relationships with others.” Emotions are biological responses to significant internal and external events, impacting learning outcomes by enhancing or hindering cognitive functions (Smidt, 2022).

As indicated by Tyng et al. (2017) The amygdala is responsible for processing emotional arousal and modulating memory encoding and storage. It interacts with memory-related brain structures such as the hippocampus, caudate nucleus, and nucleus accumbent. Activation of the basolateral amygdala has been linked to the strengthening of long-term memory consolidation, particularly for emotionally arousing experiences (p.7). On the other hand, emotions play a dual role in learning, either enhancing or hindering the process depending on their nature. They are also contagious, as strong positive or negative emotions can influence others within the learning environment. Whether in face-to-face or online settings, the emotional states of both learners and educators interact and shape the overall learning experience (Osika et al., 2022).

Emotions play a powerful role in learning. On one hand, negative emotions like anxiety, stress, sadness, and fear are natural and can even be useful for survival (Smidt, 2022). However, when these emotions take over, they can make it harder for students to learn by lowering motivation and disrupting focus (Osika et al., 2022).

Research shows that this happens because of how the brain processes emotions. Tyng et al. (2017) explain that the amygdala, hippocampus, and prefrontal cortex work together to store and retrieve emotional memories. When a student feels chronic stress, this system doesn’t work as well, which can weaken memory and thinking skills (p. 16–17). On the other hand, positive emotions like curiosity, joy, interest, and creativity help activate the brain’s reward system, making learning more enjoyable and improving attention and memory (Osika et al., 2022). More specifically, the hippocampus helps form and store long-term memories, and it connects with other brain regions to support learning. Emotional events strengthen

memory through the interaction between the amygdala and hippocampus, which is why emotionally meaningful experiences are often easier to remember (Tyng et al., 2017, p. 9). Additionally, when people feel emotionally stimulated whether by excitement or stress the body releases chemicals like epinephrine and glucocorticoids. These hormones, triggered by the amygdala, help the brain better consolidate those memories (Tyng et al., 2017, pp. 7–8).

Altogether, these findings show that while negative emotions can be harmful to learning, positive emotional experiences support better memory, focus, and long-term academic success (Smidt, 2022; Osika et al., 2022; Tyng et al., 2017).

To conclude, Smidt (2022) pointed out that emotions guide our learning by signaling what is important; when a learning experience evokes emotion, it becomes more relevant and memorable if no emotion is involved, the mind perceives the content as unimportant. Understanding this, educators can design learning experiences that engage emotions, enhancing student engagement, comprehension, and retention.

#### **2.4.2.4 Music Stimulation**

Humans have difficulty learning when they are stressed, as both the brain and body need to be in a calm state to optimize learning. According to Debell (2022), the use of background music in the classroom fosters a positive and calming environment, reducing anxiety, frustration, and aggressive behavior. By creating this sense of calm, music enhances students' emotional well-being, ultimately improving their ability to focus, engage, and absorb new information. Furthermore, In the field of education, music has been shown to offer a wide range of benefits across different stages of student development. According to Schempp (2024), music plays a key role in supporting self-regulation, cognitive and intellectual growth, as well as the development of literacy and language skills. These benefits are not limited to early childhood students of all ages can continue to gain from musical engagement, as it contributes to enhanced academic performance and deeper learning experiences (Schempp, 2024, p. 2).

Music can be a highly effective tool in educational environments, not only for supporting learning but also for enhancing students' emotional well-being. Vigl et al. (2023) found that when students listen to self-selected music, it can significantly improve their mood, motivation, and concentration. While the direct impact on learning is moderate, the overall benefits are clear music helps create positive, energizing emotions, increases focus, and provides valuable moments of rest and routine between lessons (p. 1). Meanwhile, Schempp (2024) emphasizes that the type of music matters. He suggests that choosing the right kind of music such as instrumental or ambient music can help students tune out distractions, improve focus, and sustain attention during study sessions (p. 13).

Music memory is stored in the hippocampus, centrally located in the brain. Therefore, music memories are less likely to be negatively impacted by age or disease. Additionally, it activates memories and reminds us of places, events or people. A familiar tune may elicit the emotions associated with those memories (Hoffer et al. 2022). This means that music impacts emotions and can be used to influence students' mental states while studying. It has been emphasized that selecting music that maintains a focused or positive mindset is essential for effective learning. Additionally, music has been proven to evoke nostalgia, which can be utilized to enhance motivation and enjoyment during study sessions (Schempp, 2024). On the whole Conti and Sloan (2024) mentioned that when music is present throughout the day and across subject areas, students have more opportunities for social, emotional, and academic success. Experience of listening to and engaging with music in school can enhance students' overall mental health, fostering five specific growth areas: emotional self-regulation, social integration and belonging, identity formation and confidence, global citizenship and open-mindedness, and creative thinking and optimism about the future.

#### **2.4.2.5 Situated Scenarios**

This is a teaching method based on a real and concrete situation that aims to enable students to solve problems in everyday situations. Therefore, the social context in which it occurs is a key component for students to acquire skills and

competencies. But so is cooperation and teamwork, as well as the use of analytical methods in collaboration. This learning model is based primarily on Lev Vygotsky's Sociocultural Theory, which highlights the importance of the social environment and collaboration in the acquisition of culture (Universidad internacional de Valencia, 2023).

This method is based on sociocultural constructivism and experiential perspective, promoting strategies such as problem-based learning, the case method and teaching through projects. Its aim is to transform traditional teaching to connect learning with authentic and practical experiences in the real world. (Learning and action are inseparable, which implies that school education should allow students to actively participate in meaningful activities that are consistent with the practices of their culture (Díaz Barriga, 2006, p. 7). Similarly to Benavides et al. (2009) that also mentions "it is an effective strategy for higher education, as it allows students to connect what they have learned with real-world situations". However, its implementation requires adjustments in teaching planning and institutional support to maximize its impact.

Benavides et al. (2009) found that situated learning was highly effective. Their study showed that 94.2% of students met the expected learning outcomes, with a few even going beyond expectations. This approach helped students develop key skills, especially in decision-making. However, results were mixed for communication skills, and self-direction remained a challenge. The study also emphasized the important role of teachers, with 87.35% of students expecting teachers to take an active, guiding role throughout the learning process. Despite its success, there were some logistical barriers, such as limited space, tight schedules, and transportation issues. To improve implementation, the researchers recommended extending the duration of learning activities, increasing institutional support for real-world learning environments, and encouraging stronger teacher involvement in both planning and delivery (Benavides et al., 2009, p. 11).

### **2.4.3 Accelerated Learning in English Language Teaching**

The teaching and learning of the English language have gained widespread recognition worldwide, largely due to its pivotal role in the globalization era. English serves as a cornerstone in business, politics, education, and social interactions, making its mastery essential. Over the years, educators and researchers have explored various methods to improve how English is taught and learned, aiming to make the process more effective and engaging. This ongoing search has led to the development of different approaches, methods, and techniques designed to enhance language acquisition (Waziri et al., 2019, p. 262).

One such approach is Accelerated Learning (AL), which has gained attention for its innovative and brain-based strategies. According to Serdyukov (2008), AL aims to speed up and improve the learning process by using techniques grounded in neuroscience, student involvement, and active learning. This approach responds to the growing need for faster, more efficient education due to rapid changes in society, technology, and the economy (p. 36).

Expanding on this, Waziri et al. (2019) describe AL as a multi-dimensional and holistic approach that helps learners absorb and retain information through multisensory and natural methods (p. 263). It focuses on engaging the whole learner emotionally, intellectually, and physically by activating multiple areas of the brain. The roots of AL go back to Dr. Georgi Lozanov, who introduced a method called Suggestopedia. His goal was to help learners learn faster and more effectively by using both brain hemispheres through a multi-sensory, brain-compatible teaching method, which later evolved into what we now call Accelerated Learning.

Accelerated Learning is characterized by its compressed course duration, reducing traditional educational timelines by condensing semester-long courses into a few weeks without compromising content quality. It adopts a learner-centered approach, emphasizing active student participation through multisensory experiences, collaborative activities, and contextual learning. By integrating cognitive stimulation techniques such as music, movement, and emotional

engagement, AL enhances retention and comprehension, making learning more efficient. Additionally, AL leverages neuroplasticity, demonstrating that the brain adapts and reorganizes itself through cognitive engagement (Serdyukov, 2008, p.41-42). These methods are mind maps, Brain Gym or Edu Kinesthetics, concept texts, reading to music, multiple intelligences theory, various memory techniques, the use of music to influence the emotional and mental state of learners, state setting in a broader sense, the use of songs to aid learning, pattern spotting, the implementation of chunking, suggestopedia, Neuro-linguistic programming etc.

Accelerated Learning has proven to be a highly effective approach for improving outcomes in second language learning. Unlike traditional methods that often rely on memorization, AL promotes deeper understanding and long-term retention of language concepts. Shams & Ahmed (2019) found that AL techniques help students go beyond surface level learning, allowing them to retain information more effectively and understand language concepts more meaningfully (p. 253).

In addition to boosting comprehension, Bancroft (1995) observed that AL strategies reduce learning anxiety and fatigue, which are common barriers in language learning. These techniques also enhance memory recall, active engagement, and even improve pronunciation and overall language acquisition, making learning both more enjoyable and more effective (p. 2). Further supporting this, Waziri et al. (2019) demonstrated that students taught using Accelerated Learning methods performed significantly better in reading comprehension and vocabulary retention compared to those taught with conventional techniques (p. 265). Their findings suggest that AL not only improves specific skills like vocabulary but also supports broader language development.

## CHAPTER III. METHODOLOGICAL FRAMEWORK

### 3.1 Research paradigm

The present research considered a mixed paradigm, which research designs involve the combination of qualitative and quantitative research methods in a particular study. Mixed-method designs offer many advantages for approaching complex research questions because they incorporate both postpositivist and interpretivist philosophical frameworks (Fetters, 2016).

The objective of the investigation was to determine the impact of cognitive stimulation techniques mediated by accelerated learning methodology in foreign language teaching and evaluate their effectiveness in language acquisition in students from the bachelor's degree in foreign Language at Instituto Universitario de Yucatán (IUDY) campus Comalcalco. Moreover, the intention was also to analyze how cognitive stimulation techniques influence the speed and efficiency of foreign language learning compared to traditional teaching methods as well to identify the most effective cognitive stimulation techniques for improving foreign language learning outcomes.

This paradigm was selected because of its ability to combine quantitative and qualitative methods. Thus, this approach allowed a more complete understanding of the phenomenon by integrating numerical data and subjective perspectives, which is essential in the analysis of complex competences such as brain stimulation techniques and the pedagogical use of accelerated learning approach in the teaching and learning of foreign languages.

To emphasize the above, it is mentioned that the quantitative methodology will provide the collection of measurable data on students' linguistic performance and communicative competence before and after applying accelerated learning strategies. Standardized survey designs will assess the development of cognitive techniques during the application of brain-based techniques in university language classes. This offered objective evidence on the impact of cognitive stimulation techniques on learning outcomes.

In qualitative terms, the mixed approach will provide a deeper understanding of students' experiences, perceptions, and cognitive engagement with accelerated learning techniques. Through tools like a semi-structured questionnaire, the study will explore learners' attitudes, motivation, and challenges, revealing aspects that numerical data might overlook. Thematic analysis of qualitative data uncovers patterns in how students interact with the techniques, their emotional responses, and how cognitive stimulation influences long-term retention and application of language skills.

The selected paradigm then contributes to a deeper understanding of the research problem by providing a contextualized perspective that includes the objective evaluation of the implementation of accelerated learning approach as the analysis of how based-learning techniques are applied in pedagogical practice. By generating knowledge that is applicable and relevant to education, the study lays the foundations for the development of current methodologies in the teaching of languages in bilingual university programs that strengthen neurolinguistic innovation in classrooms and improve the quality of teaching in the Southeast region of Mexico.

### **3.2 Type of investigation**

Since the present research was based on a mixed paradigm, the scope was exploratory-descriptive. Each of these approaches provides a different perspective on how to approach the variables of study Cognitive stimulation techniques and Accelerated Learning in Foreign Language Teaching in the classroom of teaching in Instituto Universitario de Yucatán, a more complete view of the problem investigated. Both approaches are useful in discovering both relational patterns and new phenomena within the field of education.

In the area of social sciences, it is essential to use approaches that help to obtain solid results to be able to describe the causality or relationship of the phenomena studied. Therefore, the following were brief characteristics of the types of research used in this study:

Exploratory studies are those used when the subject of research is little

known or when new ideas and possible hypotheses for future studies are sought. It focuses on exploring a phenomenon and is flexible in nature. They are rarely an end in themselves, setting the tone for research and to be more flexible in their methodology, they are more extensive and dispersed, involve greater risk and require patience, serenity and receptivity on the part of the researcher. (Supo & Caraveo, 2014, p. 44)

On the other hand, descriptive studies focus on systematically observing, recording, and analyzing phenomenon without manipulating variables. It aims to provide a detailed account of characteristics, behaviors, or trends within a specific context. This approach is a basic method to explain events and situations exactly during their status. By providing systematic research about phenomena, it aims to either explore the correlation between the phenomena using observations or define their attitudes.

Given that brain stimulation techniques are a constantly evolving phenomenon, it is necessary to have a flexible and dynamic understanding of how teachers are adapting their teaching practices to new neurolinguistic methodologies. Then, the exploratory and descriptive scope of this research offers a rich and complementary combination to understand the scope of IUDY teachers implementing these methods in the language classroom and how students are developing communicative competences through this teaching approach. While the mixed analysis will identify relationships between variables. Both approaches are essential to develop a comprehensive understanding of the phenomenon studied and to lay the foundations for future research and teaching methodologies in the institution where it is inserted.

### **3.3 Sample and population**

The population of this research is made up of students from the Instituto Universitario de Yucatán, a recognized institution for its humanistic approach to the training of bilingual professionals in the productive sector of Tabasco.

The subjects of research were those students who, during the period 2025-1

that is stable in the months of January-April 2025, were actively enrolled in the educational program of Bachelor's Degree in Foreign Languages on site modality, and that they have been given classes mediated by brain-based learning during learning process. As regards selection criteria, the selected candidates should comply with the following:

- They are students enrolled in the bachelor's degree in foreign Languages at IUDY.
- They are enrolled in the 2<sup>nd</sup>, 5<sup>th</sup>, and 8<sup>th</sup> four-month period.
- They have an A2-B1 English level according to the Common European Framework of Reference (CEFR) assessed by the EnglishScore test.
- Willingness to participate in the application of questionnaires.

The type of sampling used was not probabilistic for convenience, given that those students who met the established requirements and were available to participate in the study at the time of its completion were selected. Non-probabilistic sampling for convenience allows us to select those accessible cases that accept to be included. This, based on the convenient accessibility and proximity of subjects for the researcher (Otzen & Monterola, 2017, p. 230). In total, 60 students participated, representing approximately 100% of the total population.

The following table shows the total number of students participating in research over a four-month period:

**Table 1**  
*Sample of Research*

| Academic program                                                             | Modality             | Total of students |
|------------------------------------------------------------------------------|----------------------|-------------------|
| Bachelor's Degree in Foreign Languages (Licenciatura en Lenguas Extranjeras) | Mondays to Thursdays | 32                |
|                                                                              | Saturdays            | 28                |
| <b>Total</b>                                                                 |                      | 60                |

*Note.* This table represents the total sample of students who participated in the research.

In this sense, it was sought to ensure adequate representation of the students enrolled in the Foreign Language Degree at IUDY. The analysis of the sample allows a broad view of the application of brain-based techniques mediated by accelerated learning, as well as to identify areas for improvement in terms of the effective incorporation of neurolinguistics into bilingual education and higher education institutions.

### **3.4 Data collection instruments**

#### **3.4.1 Design**

For the research study, a data collection design has been implemented that includes a method of information collection: a semi-structured questionnaire on a Likert scale.

#### **Semi-structured questionnaire**

In the first instance, the questionnaire was used to obtain evidence on the study phenomenon. For the development of this analysis, the data collection tool was estimated to be carried out using the Google Forms platform. The main objective of this instrument was to analyze the impact of cognitive stimulation techniques on the acceleration of foreign language learning, assessing how different cognitive strategies and accelerated learning methods enhance language acquisition, retention, and performance among students from Instituto Universitario de Yucatán (IUDY). The study aims to identify effective techniques that improve cognitive competence and learning outcomes in foreign language education.

The questions for this instrument were closed-ended and each of the indicators to be evaluated were established using the Likert scale, that is, participants had to choose one of the options with which they felt identified according to the question they had to answer. It should be noted that the so-called «Likert scales» are a set of items presented in the form of statements or judgements, before which participants

are asked to react on a statement, item or reagent (Sampieri et al., 2018). The instrument followed the structure according to its dimensions (see Table 2): with response options of: Strongly Agree (5 pts.), Agree (4 pts.), Neutral (3 pts.), Disagree (2 pts.) and Never (1 pt.). With a total of 25 items to measure the student perspective on brain stimulation techniques mediated by accelerated learning in foreign language learning.

The following table illustrates the description of the questionnaire instrument as a data collection tool for this research.

**Table 2**

*Description of the Evaluation Instrument: Questionnaire*

|                                  |                                                                                                                                                                                                                                                                                                         |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name of the instrument</b>    | Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching                                                                                                                                                                                                          |
| <b>Author</b>                    | Loida Esmirna de la Cruz Hernández                                                                                                                                                                                                                                                                      |
| <b>Applied to</b>                | Students from the Bachelours Degree in Foreign Language                                                                                                                                                                                                                                                 |
| <b>Provenance</b>                | Instituto Universitario de Yucatán                                                                                                                                                                                                                                                                      |
| <b>Administration format</b>     | Individual                                                                                                                                                                                                                                                                                              |
| <b>Number of items</b>           | 25 items                                                                                                                                                                                                                                                                                                |
| <b>Dimensions to be assessed</b> | Dimension 1: Cognitive Stimulation Techniques in Teaching and Learning process (10 items).<br>Dimension 2: Accelerated Learning in Foreign Language Teaching and Learning (10 items).<br>Dimension 3: Techniques that improve cognitive competence in learning outcomes in foreign languages (5 items). |
| <b>Scale of valuation</b>        | Strongly agree (5 points)<br>Agree (4 points)<br>Neutral (3 points)<br>Disagree (2 points)<br>Strongly disagree (1 point)                                                                                                                                                                               |

*Note.* This table represents the dimensions to be evaluated in the questionnaire that was used for data collection of research.

This semi-structured data collection method will allow a comprehensive understanding of the effectiveness of the use of brain stimulation techniques mediated by accelerated learning by university teachers in the process of foreign language teaching and their relationship to students' academic performance. The combination of qualitative and quantitative data will enrich the validity and reliability of the results and contribute to the deepening of the analysis expected in this research used in IUDY.

### **3.4.2 Validation**

In relation to the semi-structured questionnaire mentioned earlier, which was used as a data collection instrument in this research, it is essential that it meet the criteria of validity and reliability. Reliability refers to the consistency of the instrument, meaning that its repeated application to a similar group of students from Instituto Universitario de Yucatán (IUDY) would yield comparable results. Validity, on the other hand, implies that the questionnaire accurately measures the variables established in the research hypotheses.

Whereas the data collection instrument presented was designed in accordance with the objectives of the research and the questions address the variables to be measured, the validation of these instruments is requested through the technical judgement of experts whose work is essential to identify criteria, conditions and estimates that give validity to the research. Expert judgment is a strategy with broad advantages; Escobar and Cuervo (2008) define it as "an informed opinion of people with a background in the subject, who are recognized by others as qualified experts in this field, and who can give information, evidence, judgements and assessments" (p. 29).

The process is usually carried out by writing a letter requesting the expert's collaboration and support for the validation of the instruments, who in turn submits the questionnaires to a checklist which checks whether the questions address the general theme, the objectives, hypotheses, variables, information to be obtained, etc., this check opens up for decisions on adjustment, elimination or approval of

questions, the expert obtains the "ivje" (index of validation of expert judgement) and exposes the results. Finally, the final questionnaires are designed considering the experience, observations and contributions of the experts in the line of research. The validation of this data collection instrument is shown in *Annex 1*.

The operationalization and conceptualization of the variables is presented below, to serve as a basis for the design of data collection instruments.

**Table 3**

*Operationalization and Conceptualization of Research Variables*

| Variable                                                 | Conceptual definition                                                                                                                                          | Operational definition                 | Dimensions                                                                            | Indicators                      | Measurement scale |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|-------------------|
| <i>Cognitive stimulation techniques</i>                  | Brain stimulation techniques use non-invasive methods to enhance memory, attention, and language acquisition, facilitating language learning (Madeiros, 2016). | Measuring scale consisting of 10 items | Cognitive stimulation techniques in teaching process                                  | Memory-training exercises       | Ordinal           |
|                                                          |                                                                                                                                                                |                                        | Cognitive stimulation techniques in the learning process                              | Attention-enhancing techniques  |                   |
|                                                          |                                                                                                                                                                | Measuring scale consisting of 2 items  | Techniques that improve cognitive competence in learning outcomes in foreign language | Creativity-enhancing techniques |                   |
| <i>Accelerated Learning in Foreign Language Teaching</i> | Accelerated language learning combines traditional methods and neuroscience to speed                                                                           | Measuring scale consisting of 10 items | Accelerated learning in foreign language teaching                                     | Emotional engagement            | Ordinal           |
|                                                          |                                                                                                                                                                |                                        | Accelerated learning in foreign language learning                                     | Critical thinking and reasoning |                   |

|                                                                                            |                                       |                                                                                       |                                                                                       |
|--------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| learning, promoting collaboration in a positive, brain-friendly environment (Lucas, 2005). | Measuring scale consisting of 3 items | Techniques that improve cognitive competence in learning outcomes in foreign language | Multisensory learning<br>Engagement and confidence<br>Accelerated learning Techniques |
|--------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|

Note. Own elaboration.

**Table 4**

*Evaluation Tools, Timing, Type and Form of Implementation*

| Variable                                                 | Instrument                    | Evaluation-Time                            | Type-Application                               |
|----------------------------------------------------------|-------------------------------|--------------------------------------------|------------------------------------------------|
| <i>Cognitive stimulation techniques</i>                  | Semi structured questionnaire | Fourth month period 2025-1 (January-April) | Likert -20 questions<br>Online by Google Forms |
| <i>Accelerated Learning in Foreign Language Teaching</i> | Semi structured questionnaire | Fourth month period 2025-1 (January-April) | 5 questions<br>Ordinal                         |

Note. Own elaboration.

### 3.4.3 Procedure

The instruments to be used are a semi-structured questionnaire with a Likert scale containing questions in relation to the variables to be measured in this research. The questionnaire first assesses aspects of brain stimulation techniques used during the foreign language teaching-learning process at university level. Any instrument used in the collection of data in scientific research must be reliable, objective and valid; if any of these elements are not met the instrument will not be useful and the results obtained will not be legitimate.

To obtain information, the students of the bachelor's in foreign Languages that make up the global sample of this study were provided with an online questionnaire prepared through the Google Forms platform, which consisted of 25 questions, 20 of them with a 5-point Likert scale and 5 opened questions. The online survey was distributed to students via a link, and they were asked to answer it in the classroom to resolve doubts or questions if they had anything. This instrument provides us with a series of statements related to the application of brain stimulation techniques in the classroom and the perception of their impact on the teaching-learning process.

The application of the assessment tool was aligned with the ethical principles of confidentiality and informed consent, ensuring that participants knew the purpose of the research and could decide whether to respond according to their interests. The following table shows the steps to implement the instruments and meet the objectives set out in this study.

**Table 5**

*General Procedure for the application of the Data Collection Instrument*

| Application dates | Type of instrument | Location | Sample      | Comments                                                                              |
|-------------------|--------------------|----------|-------------|---------------------------------------------------------------------------------------|
| 24-28 March, 2025 | Questionnaire      | On-site  | 60 students | Google Forms/ The schedule will depend on the availability of the students' schedule. |

Note. Own elaboration.

#### **3.4.4 Analysis procedure**

This section describes the procedures used to analyze the data obtained from the Likert scale questionnaire. To ensure a consistent and comprehensive interpretation of the information collected, quantitative and qualitative analysis techniques were applied, depending on the nature of the data. The methods of analysis used in this research are described below.

Data analysis integrates different operations in which the researcher or analyst subjects' certain data, either quantitative or qualitative, to a series of analyses, readings and interpretations, depending on the approach of your research or information requirement. (Peña, 2017, p. 30)

Microsoft Excel was used for the analysis of data obtained through the semi-structured questionnaire with Likert scale, as it is presented as a reliable and accessible tool for data management, organization and analysis. Its ease of use, wide availability and versatility make Excel a relevant option for processing and analyzing data collected through the questionnaire called "Cognitive stimulation techniques mediated by Accelerated Learning in foreign language learning" from Google Forms.

The Likert scale, being a technique that allows us to measure attitudes and perceptions in ordinal ranges or intervals, requires tools that enable precise tabulation of frequencies, calculation of statistical measures (averages, standard deviations) and the generation of graphical representations for the interpretation of results. Excel has features that allow you to perform these operations efficiently, such as dynamic tables, advanced statistical formulas and options for displaying data using custom charts.

In addition, the reliability of using Excel for this type of analysis lies in its ability to handle large volumes of data and perform repetitive operations through automation such as the use of macros. Although not compared with specialized

statistical programs like SPSS in terms of advanced multivariate analysis, Excel is more than sufficient for exploratory or correlative research such as the one addressed here. Their flexibility facilitates the interpretation of data and the achievement of meaningful results in social and educational research.

On the other hand, for qualitative analysis using data obtained through the open-ended questions of the semi-structured questionnaire, the software Atlas.ti will be used, a tool specialized in the analysis of textual data and other types of qualitative information. This program allows the organization, segmentation, coding and categorization of large volumes of data, facilitating the identification of patterns, recurring themes and relationships between concepts. So, this program facilitates data segmentation, allowing multiple responses to be analyzed systematically and without losing context. In addition, the ability to create networks and concept maps provides a visual and analytical advantage for understanding the interrelationships between different aspects of digital skills and their pedagogical impact. Finally, Atlas.ti ensures a rigorous and exhaustive analysis, which is essential to draw solid conclusions in qualitative research, allowing greater validity and reliability in the findings of this research.

## **CHAPTER IV. ANALYSIS AND DISCUSSION OF RESULTS**

### **4.1 Analysis of results**

Outcome analysis is a critical process that allows the interpretation of data obtained during an investigation to generate meaningful findings and answer questions raised in the study (Creswell, 2014). This analysis follows a systematic and rigorous methodology, in which data coding plays a fundamental role, since it facilitates the organization, categorization and interpretation of information (Saldaña, 2021).

In this research, the data was obtained through a main evaluation instrument; a questionnaire for obtaining quantitative and qualitative data surrounding the study phenomenon. The primary objective of the instrument was to assess the effectiveness of the use of cognitive stimulation techniques mediated by accelerated learning in the process of foreign language teaching and learning at Instituto Universitario de Yucatán.

The coding process was carried out with data collected through the questionnaire "Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching", designed in Google Forms with a Likert scale. This tool allowed the obtaining of structured answers which were subsequently exported to Excel for carrying out qualitative analysis. According to Miles et al. (2014), programs such as Excel are useful in qualitative research because of their ability to manage large volumes of data, apply filters and perform descriptive or categorical analyses quickly and accurately.

The coding process started with the export of data obtained from Google Forms to Excel, ensuring the preservation of responses and questionnaire structure. Subsequently, initial coding was carried out, assigning labels to the responses to identify patterns and organize participants' perceptions according to the dimensions of the study. Since the Likert scale generates ordinal data, these were organized to analyze frequencies and differences, facilitating comparison between categories. The choice of Excel as an analysis tool was based on its accessibility, ease of use

and ability to process qualitative data in an integrated environment. In addition, its compatibility with Google Forms enabled efficient data transfer, while its advanced features (such as pivot tables, filters and visualization tools) ensured a clear and structured interpretation of the results.

On the other hand, qualitative analysis is characterized by an iterative and systematic process that includes data reduction, coding, categorization and interpretation (Miles et al. 2024). In this study, an analysis of the qualitative data obtained through the same questionnaire was also carried out using *Dimension 3. Techniques that improve cognitive competence in learning outcomes in foreign language* through open questions. This facilitated in-depth exploration of participants' perceptions and experiences. The information obtained was analyzed through Atlas.ti, a platform widely recognized for its ability to handle large volumes of information and facilitate the identification of emerging patterns, themes and categories (Friese, 2019).

The choice of Atlas.ti as a tool for qualitative analysis responds to several specific advantages. On the one hand, its interface makes it possible to organize transcriptions efficiently and facilitate the coding process; on the other hand, it enables visual analysis of the connections between categories and dimensions, which enriches the interpretation of data. In addition, its use ensures systematic and transparent management of information, essential qualities in research seeking rigor and validity in their findings (Pope & Costa, 2023).

#### **4.1.1 Results of the evaluation instrument: questionnaire**

The data obtained by means of the evaluation instrument (questionnaire) called "Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching", designed in Google Forms with a Likert scale, are shown in the following table:

**Table 6**  
*Students' Perception of Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching*

|                          | Adjusted frequency | Percentage | Valid percentage | Cumulative percentage |
|--------------------------|--------------------|------------|------------------|-----------------------|
| <i>Strongly disagree</i> | 0                  | 0          | 0                | 0%                    |
| <i>Disagree</i>          | 0                  | 0          | 0                | 0%                    |
| <i>Neutral</i>           | 9                  | 15         | 15               | 15%                   |
| <i>Agree</i>             | 18                 | 30         | 30               | 45%                   |
| <i>Strongly agree</i>    | 33                 | 55         | 55               | 100%                  |
| <b>Total</b>             | <b>60</b>          | <b>100</b> | <b>100%</b>      |                       |

*Note.* This table illustrates the overall results of the evaluation instrument; a questionnaire applied to 60 students at Instituto Universitario de Yucatán.

#### **Analysis of results:**

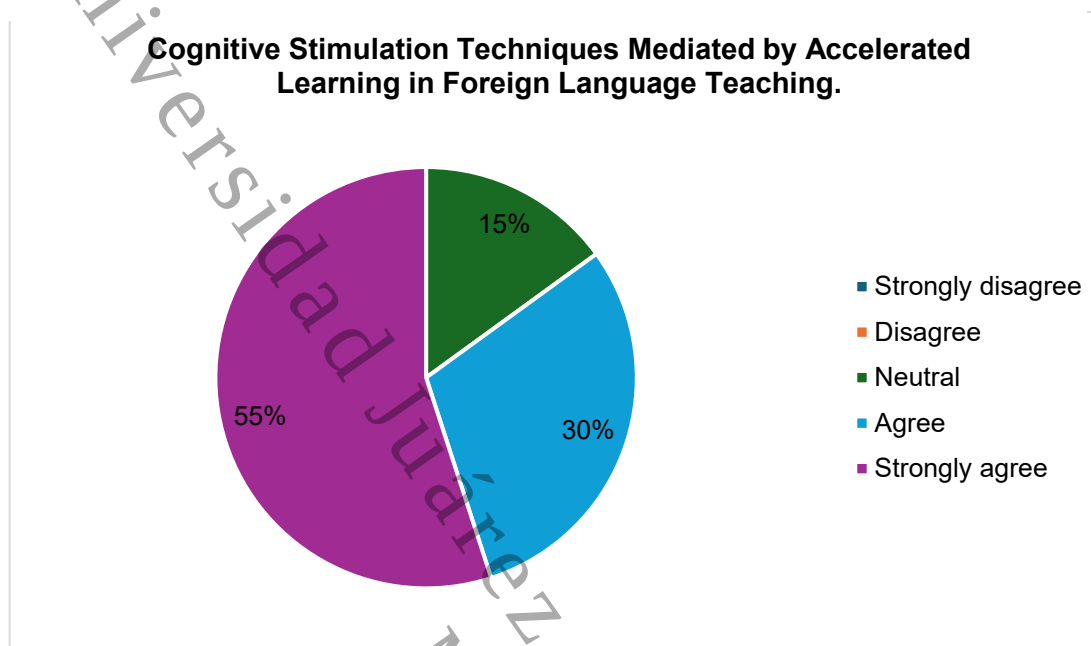
*Table 1* presents the distribution of responses from 60 students regarding the implementation of cognitive stimulation techniques mediated by accelerated learning in foreign language teaching.

The findings reveal a clearly positive tendency toward the use of these cognitive stimulation strategies in language classroom. Altogether, 85% of participants *agreed* or *strongly agreed* with their effectiveness in the language process, while 15% remained neutral. None of the respondents expressed disagreement.

These results suggest a high level of acceptance among students at IUDY campus Comalcalco, indicating that such techniques enhance motivation, engagement, and the perceived improvement in foreign language learning. The absence of negative responses reinforces the idea that accelerated learning when applied through cognitive stimulation constitutes a well-received and potentially effective methodology in language education contexts.

**Figure 1**

*Overall Results of the Evaluation Instrument: Questionnaire*



*Note.* This figure represents the level of frequency of results from the questionnaire evaluation instrument applied to 60 students at Instituto Universitario de Yucatán.

As shown in *Figure 1*, most of the foreign language undergraduate students assessed at IUDY (55%) consider brain stimulation techniques are beneficial to their language learning process, this is encouraging considering the current educational context, where these skills are essential for the development of communicative skills in English and indispensable at university level. 30% ("Agree" category) could benefit from extracurricular activities that allow them to use these techniques outside the classroom. Whereas 15% of pupils remain neutral in the face of this perception. Although this group is not majority, its strengthening could close gaps and ensure a more uniform implementation of brain stimulation techniques mediated by accelerated learning at IUDY.

Therefore, the high prevalence in the higher frequency categories (*strongly agree* and *agree*) indicates that brain stimulation techniques are attributed to an

integral part of teaching performance, which can have a positive impact on the learning experience of students.

**Table 7**

*Overall results of Dimension 1: Cognitive Stimulation Techniques in Teaching and Learning process*

|                          | <b>Adjusted frequency</b> | <b>Percentage</b> | <b>Valid percentage</b> | <b>Cumulative percentage</b> |
|--------------------------|---------------------------|-------------------|-------------------------|------------------------------|
| <i>Strongly disagree</i> | 0                         | 0                 | 0                       | 0%                           |
| <i>Disagree</i>          | 0                         | 0                 | 0                       | 0%                           |
| <i>Neutral</i>           | 9                         | 15                | 15                      | 15%                          |
| <i>Agree</i>             | 21                        | 35                | 35                      | 50%                          |
| <i>Strongly agree</i>    | 30                        | 50                | 50                      | 100%                         |
| <b>Total</b>             | <b>60</b>                 | <b>100%</b>       | <b>100%</b>             |                              |

*Note.* This table represents the frequency score obtained in the questionnaire results from Dimension 1: Cognitive Stimulation Techniques in Teaching and Learning process.

### **Analysis of results:**

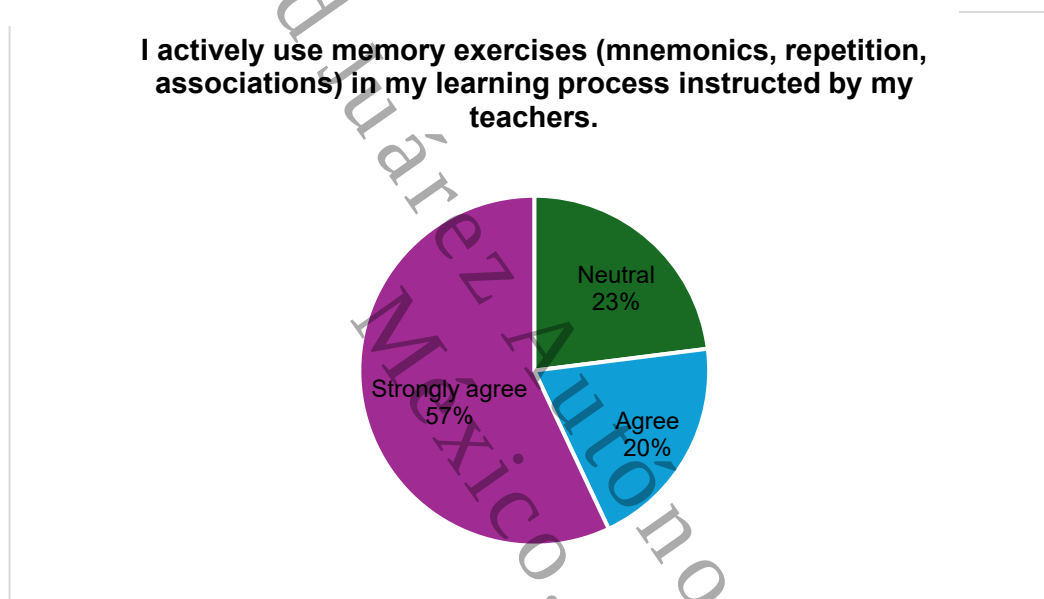
*Table 7* shows the overall results of Dimension 1, which assessed students' perceptions of *Cognitive Stimulation Techniques* applied in the teaching and learning process. The data indicates that 85% of the students (Agree and Strongly Agree) expressed positive views regarding the use of these techniques performed by teachers, while 15% maintained a neutral position. No respondents expressed disagreement.

These findings reveal a high level of acceptance and favorable perception of cognitive stimulation strategies as part of the accelerated learning process in foreign language students. The predominance of positive responses highlights the potential of these methods to enhance motivation and engagement in foreign language learning environments in private institutions such IUDY.

Moreover, the primary objective of this dimension was to examine the extent to which cognitive stimulation techniques influence the speed and efficiency of foreign language learning among students enrolled in the B.A. in Modern Languages at the IUDY Comalcalco campus. Accordingly, the following section presents the most relevant findings related to Dimension 1: Cognitive Stimulation Techniques in the Teaching and Learning Process of English.

**Figure 2**

*Item 1: Use of memory-training exercises in English learning process*



*Note.* This figure represents the overall results of item 1 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

The results obtained for this item suggest that memory stimulation techniques such as mnemonics, repetition, and associations are not only present in the teaching process but also appear to be highly valued and widely used by students. The fact that more than half of the participants (57%) selected *Strongly Agree* indicates a strong perception that these strategies constitute an integral part of their everyday learning.

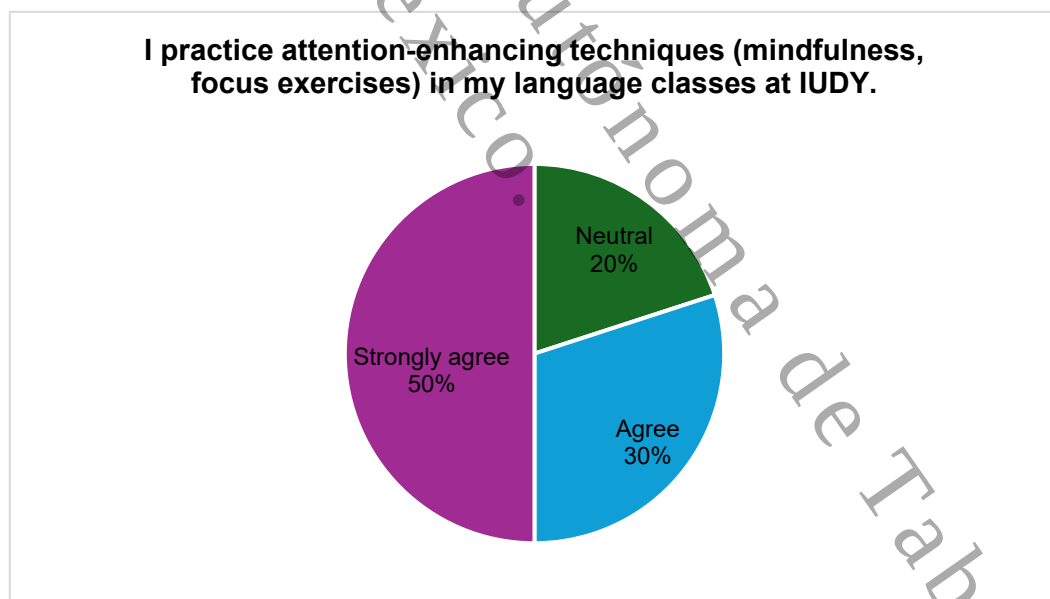
Likewise, the complete absence of responses in the *Disagree* and *Strongly Disagree* categories is particularly revealing, as it suggests that there is no

resistance or rejection toward this type of cognitive technique, even among those students who may not employ them with the same intensity. The presence of 23% neutral responses may be interpreted as a group that acknowledges the use of these techniques but perhaps without full awareness of their impact or without applying them systematically.

Similarly, the 20% of students who selected *agree* reinforces that memory-training techniques are widely accepted and considered beneficial for strengthening retention and supporting overall language development. Therefore, the results suggest an educational environment in which memory strategies constitute a consolidated component of pedagogical practice, with a highly favorable reception among students at IUDY campus Comalcalco.

**Figure 3**

*Ítem 2: Attention-enhancing techniques in English classroom*



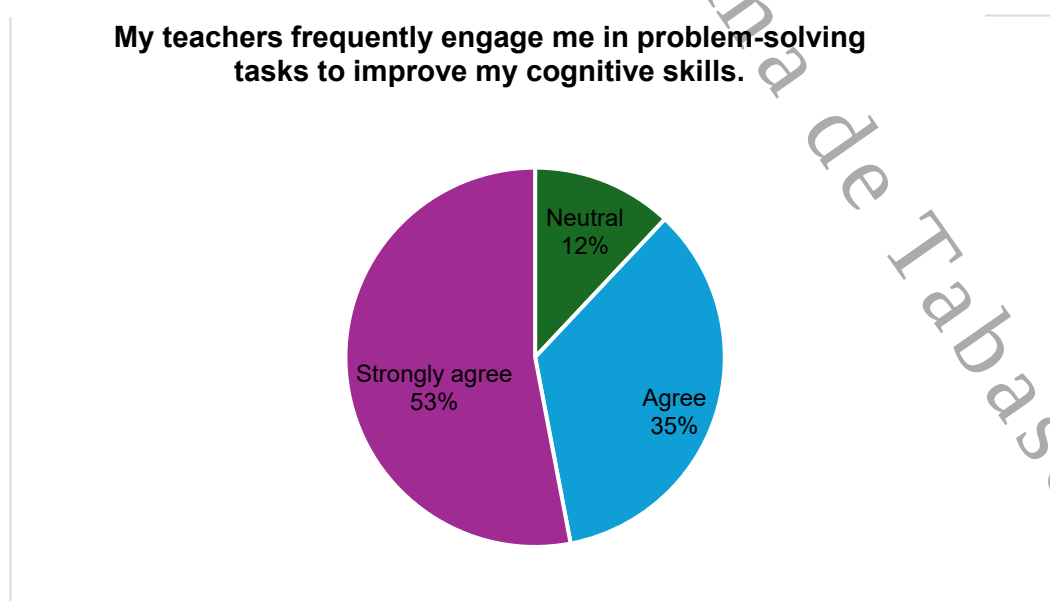
*Note.* This figure represents the overall results of ítem 2 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

The results of *figure 3* reveal a clearly favorable trend toward the use of the evaluated technique indicating that strategies designed to capture and maintain students' attention such as visual aids, interactive activities, classroom prompts, or short focused tasks are viewed as effective for supporting their learning. Half of the students (50%) selected *Strongly Agree*, and an additional 30% chose *Agree*, indicating that 80% of participants hold a positive perception of this strategy within their learning process. This proportion suggests not only acceptance but also a strong integration of the technique into students' regular academic practices.

The 20% of responses in the *Neutral* category may represent students who acknowledge the strategy but may not perceive it as a central component of their cognitive process or may apply it less frequently. Additionally, as observed in the previous item, the complete absence of responses in the *Disagree* and *Strongly Disagree* categories indicates no resistance or rejection toward this technique, reinforcing the notion that the cognitive strategies promoted by the institution are well received and aligned with learners' needs. It can be inferred that educational environment in which the strategy evaluated in this item is not only present but also consolidated and valued as an effective tool for foreign language learning.

**Figure 4**

*Ítem 3: Problem-solving tasks to develop cognitive skills*



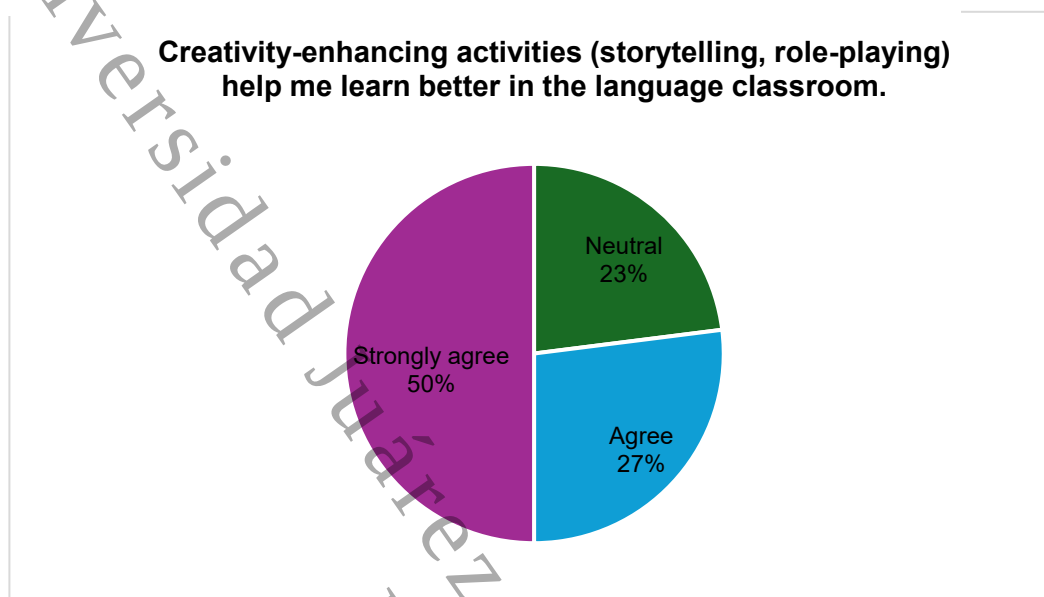
*Note.* This figure represents the overall results of ítem 3 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

To continue with this analysis, the results obtained for *Item 3* indicate that students generally have a favorable view of problem-solving tasks as part of the English learning process. More than half of the participants (53%) selected *Strongly Agree*, indicating a high level of perceived relevance or frequent use of the problem-solving tasks performed in classroom. Additionally, 35% of the students chose *Agree*, reinforcing the idea that activities such as analyzing situations, completing challenges, comparing options, or working through multi-step tasks are perceived as helpful for strengthening their cognitive skills in the study of English language.

The fact that no participants selected either *Disagree* or *Strongly Disagree* is particularly noteworthy. This absence suggests a complete lack of rejection or resistance toward the strategy assessed in this item. Even students who may not use it consistently do not view it negatively. Meanwhile, the 12% who chose *Neutral* may represent students who acknowledge the strategy but are either unsure of its impact or do not consciously engage with it, showing that problem-solving tasks are widely accepted and considered beneficial for stimulating thinking and supporting cognitive development in the classroom.

**Figure 5**

*Ítem 4: Creativity-enhancing activities in language classroom*



*Note.* This figure represents the overall results of item 4 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

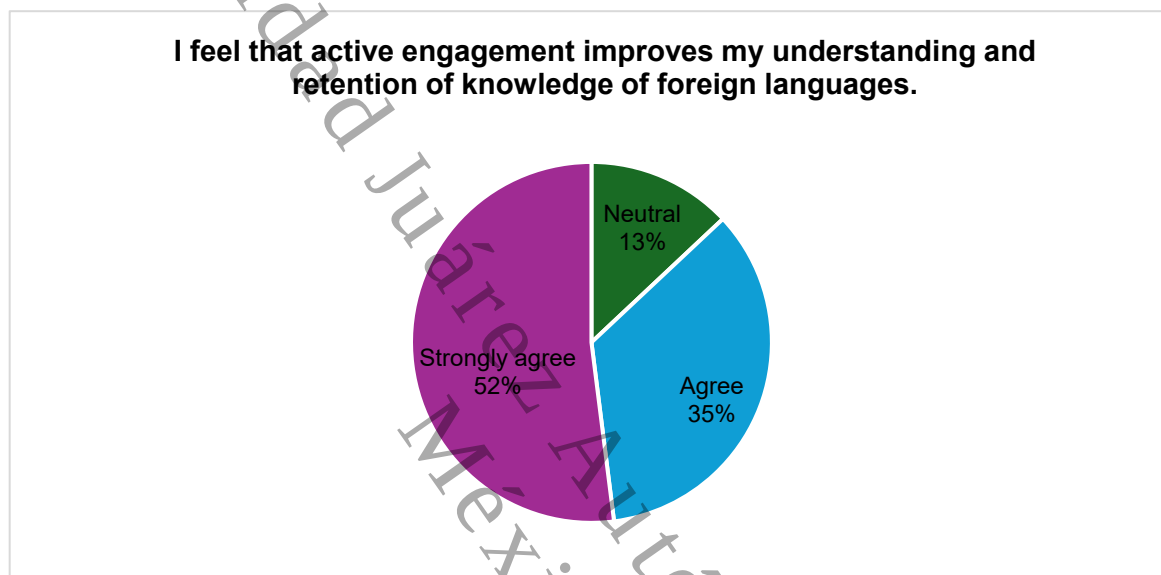
The distribution of responses for this category shows that students generally respond positively to creativity-enhancing activities in the language classroom. A total of 77% of participants selected *Agree* or *Strongly Agree*, indicating that they value activities that encourage imagination, original thinking, and creative expression such as open-ended tasks, creative writing, role-plays, or designing personal projects related to language content. This high concentration in positive categories suggests that most participants perceive the item as relevant, adequate, or effective. On the other hand, the 23% who selected *Neutral* represent a segment of the sample that does not take a clear position. This group may reflect participants who lack sufficient information, experience, or clarity regarding the item to form a definitive judgment in their learning performance.

Students responded favorably to activities that allow them to explore multiple solutions rather than follow predetermined steps. No one expressed disagreement, suggesting that creativity-based practices are widely accepted and viewed as

beneficial for making learning more engaging and meaningful, which may be reflected in high agreement levels at university English programs.

**Figure 6**

*Item 5: Active engagement in foreign language learning*



*Note.* This figure represents the overall results of item 5 regarding dimension 1: cognitive stimulation techniques in the teaching and learning process.

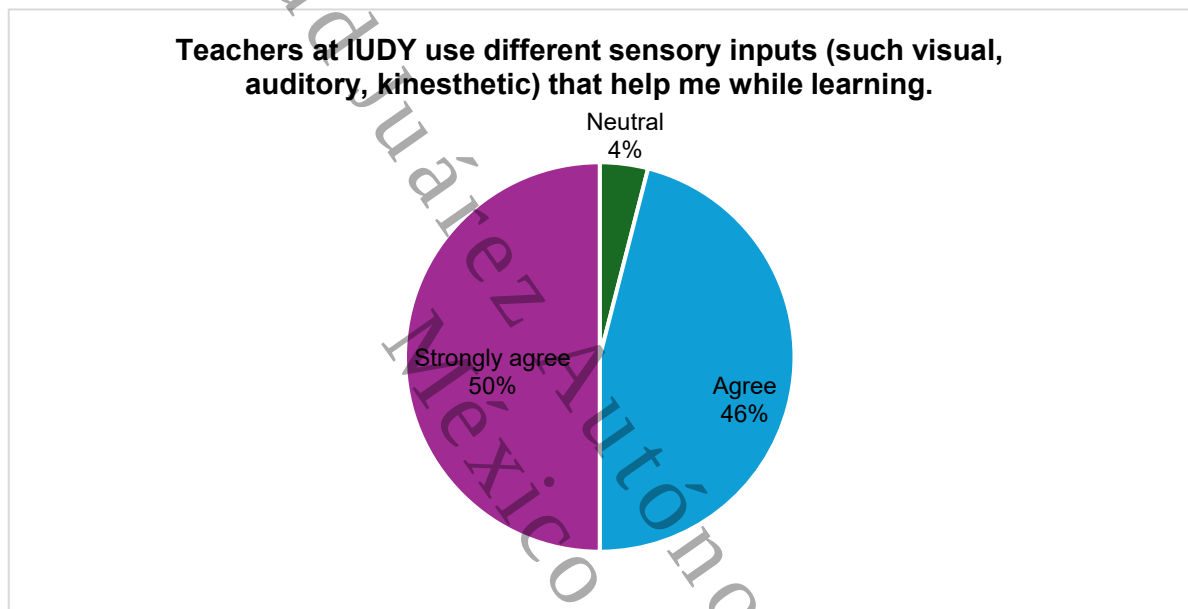
The responses for this category demonstrated a notably strong positive inclination among the participants regarding their perception of active engagement in foreign language practice. A total of 87% expressed agreement or strong agreement with the statement, with *Strongly Agree* representing the largest proportion. Only 13% selected the *Neutral* option, and no participant reported any level of disagreement. This distribution indicates that students at IUDY value learning activities that require participation, interaction, and hands-on involvement such as group discussions, collaborative tasks, practice-based activities, and real-life communication scenarios.

A smaller portion of students who chose the *Neutral* option may reflect varying levels of comfort or familiarity with active learning approaches. The presence of

neutral responses, though limited, may reflect varying degrees of familiarity or confidence with such practices rather than dissatisfaction. Beyond this, the results imply that the aspect assessed in this category resonates strongly with students that widely recognize the benefits of active engagement for improving comprehension, retention, and overall language proficiency.

**Figure 7**

*Ítem 6: Sensory input to improve language proficiency*



*Note.* This figure represents the overall results of item 6 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

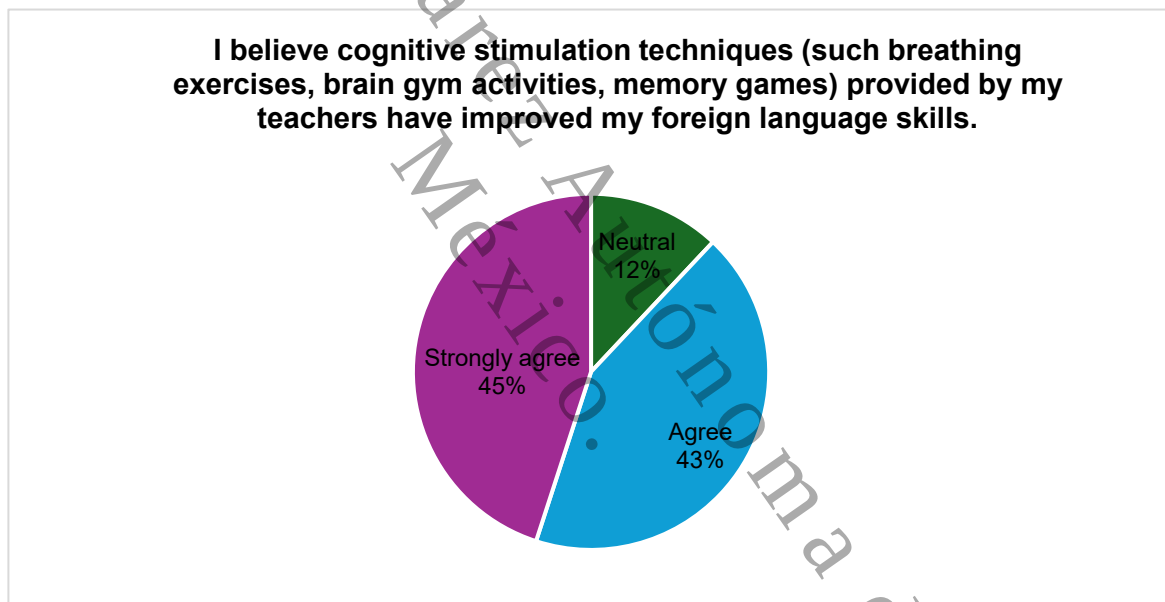
The results for this category state an overwhelmingly positive perception of sensory input as a facilitator of language proficiency. With 96% of participants selecting *Agree* or *Strongly Agree*, the data reveal not only acceptance but a near-unanimous endorsement of multisensory strategies in language instruction. The predominance of *Strongly Agree* responses (50%) suggests that many language learners at IUDY perceive sensory input as not just helpful but essential for effective language acquisition.

The minimal *Neutral* response rate (4%) implies limited uncertainty or hesitation regarding this instructional approach, while the complete absence of

disagreement indicates that negative perceptions toward sensory-based methods are virtually nonexistent within the sample. This distribution strongly infers that learners consistently experience tangible benefits from sensory input, such as improved comprehension, heightened engagement, and strengthened memory retention. This perception suggests that sensory input is not merely appreciated but is regarded as a highly impactful component of the teaching–learning process, reinforcing its relevance as a core pedagogical practice for enhancing foreign language proficiency nowadays.

**Figure 8**

*Ítem 7: Cognitive stimulation techniques performed by teachers at IUDY*



*Note.* This figure represents the overall results of item 7 regarding dimension 1: cognitive stimulation techniques in the teaching and learning process.

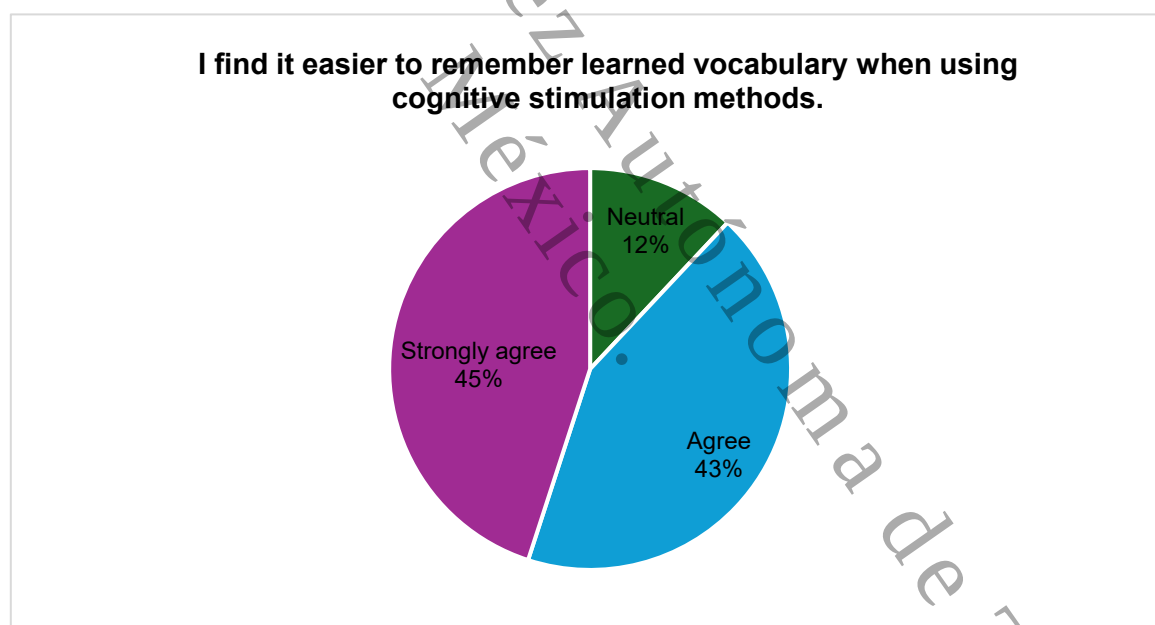
Regarding this category there is a strong positive perception of the cognitive stimulation techniques implemented by teachers at IUDY. A combined 88% of participants selected *Agree* (43%) or *Strongly Agree* (45%), indicating a high level of approval of the teachers' use of cognitively stimulating strategies in the language-learning classroom. The presence of 12% *Neutral* responses suggests that a small

portion of students remains uncertain about the consistency or impact of these techniques, though this does not reflect disagreement.

From an inferential standpoint, the distribution suggests that learners perceive teachers' cognitive stimulation practices as effective, supportive, and adequately implemented. The nearly equal split between *Agree* and *Strongly Agree* further implies that students not only acknowledge these strategies but often regard them as a significant contributor to their learning process. The lack of negative responses reinforces the idea that cognitive stimulation is well integrated into instruction and aligns with the academic expectations and needs of the learners in this university.

**Figure 9**

*Ítem 8: Vocabulary awareness and cognitive stimulation methods*



*Note.* This figure represents the overall results of item 8 regarding dimension 1: cognitive stimulation techniques in the teaching and learning process.

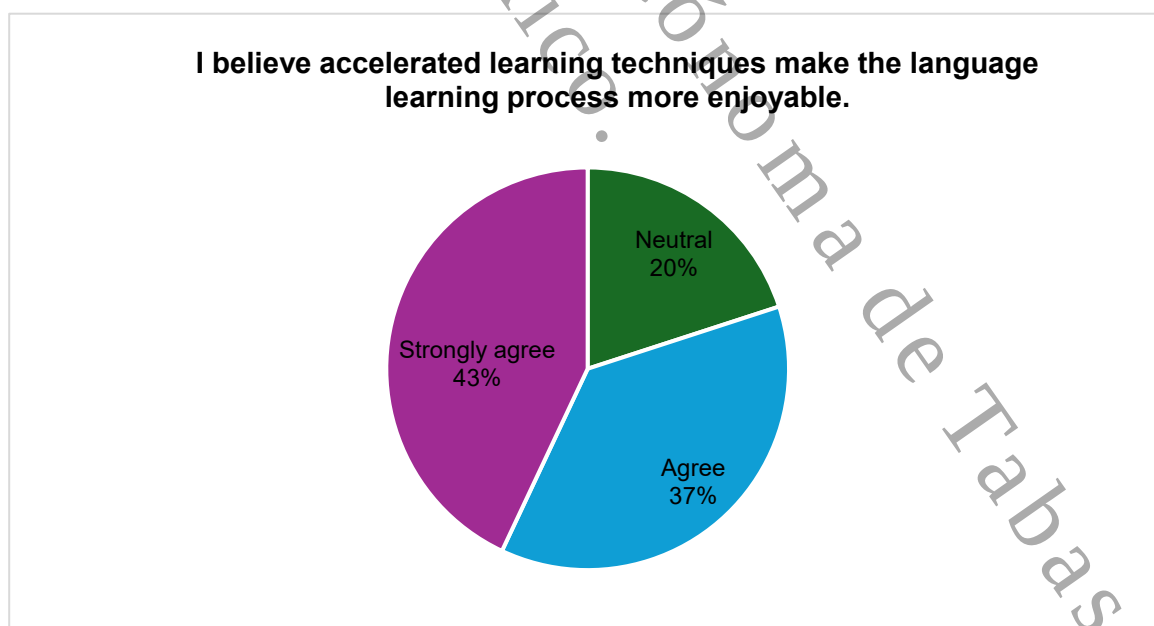
In this case this category which examined learners' perceptions of vocabulary awareness within the context of cognitive stimulation methods reveal a distinctly positive trend like item 7. Many students indicated either *Agree* or *Strongly Agree* (43% and 45%, respectively), demonstrating a strong collective endorsement of the

strategy's effectiveness. The concentration of responses in these upper categories suggests that learners at IUDY not only recognized the presence of vocabulary-enhancing activities but also perceived them as beneficial to their linguistic development.

A smaller portion of the participants (12%) selected *Neutral*, indicating a degree of uncertainty or limited ability to assess the method's impact. This neutrality may stem from varying levels of engagement, inconsistent exposure to the techniques, or individual differences in learning styles. The distribution reflects a strong alignment between the instructional approach and learners' expectations. The dominance of positive responses suggests that the cognitive stimulation methods implemented likely involving interactive, meaningful, and cognitively engaging vocabulary tasks were effective in promoting awareness and acquisition of new lexical items.

**Figure 10**

*Item 9: Accelerated learning techniques and motivation in language classroom*



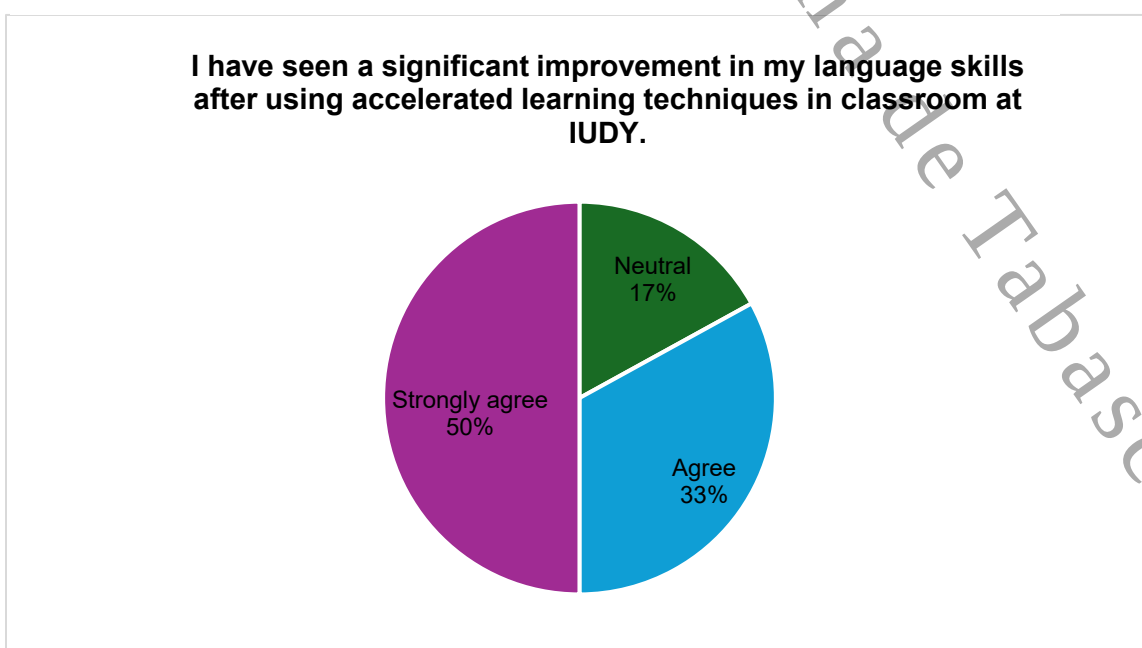
*Note.* This figure represents the overall results of item 9 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

The results for this category indicate a predominantly positive perception of accelerated learning techniques and their impact on motivation within the language classroom. A combined 80% of participants selected either *Agree* (37%) or *Strongly Agree* (43%), suggesting that the majority of learners viewed these techniques as effective in enhancing their motivation to learn a new language. This strong endorsement reflects the perceived relevance and usefulness of accelerated learning strategies such as multisensory activities, task-based learning, and rapid engagement exercises.

A notable portion of respondents (20%) selected *Neutral*, which indicates that a fifth of the participants were either uncertain about the methods' effect on their motivation or experienced the techniques to a lesser degree. This neutrality may be attributed to individual differences in learning preferences, varying levels of classroom engagement, or limited familiarity with accelerated learning approaches. The overall distribution of responses characterized by a strong shift toward affirmative evaluations suggests that accelerated learning techniques were not only well-received but also perceived as beneficial in sustaining learner interest and motivation towards the learning of a foreign language.

**Figure 11**

*Item 10: Language improvement towards accelerated learning techniques*



*Note.* This figure represents the overall results of item 10 regarding the dimension 1: cognitive stimulation techniques in the teaching and learning process.

Finally, the results for Item 10 reveal a strong positive perception among participants regarding the extent to which accelerated learning techniques contributed to their language improvement. A significant majority of respondents 83% selected either *Agree* (33%) or *Strongly Agree* (50%), indicating that learners overwhelmingly believe these techniques have positively influenced their language development. This high level of endorsement underscores the perceived effectiveness of accelerated learning strategies in fostering progress in language proficiency.

A smaller segment of respondents (17%) chose the *Neutral* option, suggesting that while these participants did not express dissatisfaction, they may have experienced the effects of the techniques less clearly. This neutrality could be attributed to varying degrees of engagement, differences in learning styles, or a need for longer or more consistent exposure to the strategies before perceiving measurable improvement. The distribution of responses, with half of the participants strongly affirming the benefits of these techniques, illustrates a robust belief in their instructional value. The predominance of agreement suggests that activities commonly associated with accelerated learning such as rapid-cycle practice, multisensory input, contextualized tasks, and immediate feedback are perceived as instrumental in reinforcing language skills. The absence of negative evaluations further validates the suitability and effectiveness of these methods within the language classroom.

On the other hand, and in line with the objectives of the study, it was essential to evaluate the role of accelerated learning within the context of foreign language teaching and learning at IUDY campus Comalcalco, specifically focusing on English language instruction. Given that accelerated learning frameworks emphasize multisensory input, cognitive stimulation, and active engagement, the following results seeks to determine the extent to which these principles are perceived and applied in the instructional practices observed. Accordingly, the next results present

participants' responses regarding the implementation and effectiveness of accelerated learning strategies in the English language classroom.

**Table 8**

*Overall results of Dimension 2: Accelerated Learning in Foreign Language Teaching and Learning*

|                          | Adjusted frequency | Percentage  | Valid percentage | Cumulative percentage |
|--------------------------|--------------------|-------------|------------------|-----------------------|
| <i>Strongly disagree</i> | 0                  | 0           | 0                | 0%                    |
| <i>Disagree</i>          | 0                  | 0           | 0                | 0%                    |
| <i>Neutral</i>           | 7                  | 12          | 12               | 12%                   |
| <i>Agree</i>             | 18                 | 30          | 30               | 42%                   |
| <i>Strongly agree</i>    | 35                 | 58          | 58               | 100%                  |
| <b>Total</b>             | <b>60</b>          | <b>100%</b> | <b>100%</b>      |                       |

*Note.* This table represents the (grouped) frequency score obtained in the questionnaire results from Dimension 2: Accelerated Learning in Foreign Language Teaching and Learning.

#### **Analysis of results:**

As regards the perception of accelerated learning in the foreign language teaching-learning process by IUDY students, *table 8* presents the overall results for Dimension 2, which analyzed students' perceptions of Accelerated Learning in Foreign Language Teaching and Learning.

The findings reveal that 88% of the students (Agree and Strongly Agree) expressed positive opinions regarding the use of accelerated learning techniques, while 12% maintained a neutral stance. No respondents disagreed. These results demonstrate a clear tendency toward positive perception, suggesting that accelerated learning strategies are well-received by students and are perceived as effective in promoting engagement, motivation, and learning outcomes in foreign language instruction related to teacher's implementation and follow-up. Accordingly, the next chart presents the most relevant findings related to Dimension 2: Accelerated Learning in Foreign Language Teaching and Learning.

**Table 9**

*Languages students' perspectives of Accelerated Learning in Foreign Language Classroom at IUDY*

|    | Item                                                                                                                          | Strongly Agree | Agree | Neutral | Disagree |
|----|-------------------------------------------------------------------------------------------------------------------------------|----------------|-------|---------|----------|
| 11 | I feel more motivated to learn a foreign language when interactive methods are used in classroom.                             | 57%            | 30%   | 13%     | 0%       |
| 12 | Multisensory learning (such visual, auditory, and kinesthetic) helps me grasp new language concepts faster.                   | 65%            | 23%   | 12%     | 0%       |
| 13 | Repetition and practical exercises have helped me improve my vocabulary retention.                                            | 53%            | 36%   | 11%     | 0%       |
| 14 | I find that interactive learning methods (such group work, discussions, simulations) enhance my language skills.              | 62%            | 32%   | 6%      | 0%       |
| 15 | Emotional engagement (relating learning to personal experiences) helps me learn better.                                       | 65%            | 35%   | 0%      | 0%       |
| 16 | I use digital tools or mobile applications to accelerate my language learning.                                                | 43%            | 30%   | 27%     | 0%       |
| 17 | I feel more confident using the foreign language in real-life situations after active learning activities.                    | 46%            | 32%   | 20%     | 2%       |
| 18 | Music, storytelling, and role-playing improve my language comprehension and fluency.                                          | 58%            | 29%   | 13%     | 0%       |
| 19 | I believe accelerated learning techniques make the language learning process more enjoyable.                                  | 70%            | 30%   | 0%      | 0%       |
| 20 | I have seen a significant improvement in my language skills after using accelerated learning techniques in classroom at IUDY. | 63%            | 23%   | 14%     | 0%       |

*Note.* This table represents the overall results of items 11-20 regarding dimension 2: Accelerated Learning in Foreign Language Teaching and Learning.

The results presented in *table 9* reveal a consistently positive perception of accelerated learning strategies among language students at IUDY. Overall, the responses indicate a strong endorsement of interactive, multisensory, and

emotionally engaging methodologies as effective tools for enhancing foreign language acquisition in this institution.

Across the items, the highest levels of agreement were observed in statements related to motivational and affective dimensions of learning. For instance, Item 11 shows that 87% of students (57% strongly agree; 30% agree) feel more motivated to learn a foreign language when interactive methods are implemented. This pattern aligns with Item 14, where 94% of respondents perceive interactive activities such as group work, discussions, and simulations as contributors to the development of their language skills. These findings suggest that learner engagement is significantly strengthened by participatory approaches, supporting pedagogical models that emphasize active student involvement such as accelerated learning one.

Multisensory learning also appears as a factor in the accelerated learning process. In Item 12, 88% of students agree that visual, auditory, and kinesthetic strategies help them grasp new concepts more efficiently. Similarly, Item 13 demonstrates that 89% of the samples recognize the value of repetition and practical exercises in improving vocabulary retention. These patterns affirm the theoretical premise that multisensory stimulation increases cognitive processing efficiency and reinforces memory formation in language students at IUDY campus.

Moreover, affective engagement emerged as another influential factor. In Item 15, a perfect agreement rate of 100% (65% strongly agree; 35% agree) underscores the importance of connecting learning with personal experiences. This result indicates that emotional relevance not only enhances interest but also supports deeper comprehension, an outcome commonly associated with accelerated learning models. Regarding the integration of technology, Item 16 shows more moderate levels of agreement. While 73% of students report using digital tools to accelerate language learning, 27% maintain a neutral stance. This distribution suggests that although digital platforms are widely used, their integration may vary across learners depending on access, familiarity, or instructional emphasis.

Confidence and performance outcomes were also highlighted. In Item 17, 78% of students feel more confident using the foreign language in real-life contexts after participating in active learning activities, though a small proportion (2%) expressed disagreement. Complementing this, Item 20 shows that 86% of respondents perceive a significant improvement in their language skills due to accelerated learning techniques. These perceptions reflect the tangible impact of such methodologies on learners' self-efficacy and skill development. Finally, Item 19 exhibits the highest overall endorsement, with 100% agreement that accelerated learning techniques make the learning process more enjoyable. This suggests that enjoyment not only functions as an affective benefit but may also serve as a motivational catalyst that reinforces persistence and performance in language learning.

The data obtained indicates that accelerated learning strategies, particularly those involving interaction, multisensory activities, emotional engagement, and active participation are highly valued by students and perceived as effective in enhancing both motivation and language development. These findings support the incorporation of accelerated learning methodologies as a central component of foreign language pedagogy at IUDY.

Finally, the qualitative data obtained by the evaluation instrument: questionnaire (with 5 opened-questions) which evaluated Dimension 3: Techniques that improve cognitive competence in learning outcomes in foreign language in order to investigate the opinions of the students of the Degree in Foreign Languages at IUDY according to the accelerated learning and brain stimulation techniques they prefer, the type of activities they undertake to learn languages in an accelerated way, the emotional connection in language learning, the methods they consider effective during their learning and mediated by the university teacher. The results are as follows:

**Table 10***Matrix of Relationships Between Analysis Categories*

| <b>Dimension / Category</b>                             | <b>Relation with 1. Cognitive Stimulation Techniques</b>                                         | <b>Relation with 2. Accelerated Learning in FL Teaching</b>                                              | <b>Relation with 3. Techniques for Cognitive Competence in FL Outcomes</b>          |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Dimension 1. Cognitive Stimulation Techniques</b>    | -Critical analytical thinking development while learning a foreign language.                     | -The use of stimulation techniques enhances attention and memory, foundational for accelerated learning. | - Cognitive stimulation supports development of cognitive strategies                |
| <b>Dimension 2: Accelerated Learning in FL Teaching</b> | - Relies on active stimulation methods to boost engagement and retention.                        | -Improves language awareness through activities techniques and communicative competence                  | -Accelerated Techniques often integrate metacognition and problem-solving outcomes. |
| <b>Dimension 3: Techniques for Cognitive Competence</b> | - Techniques like scaffolding, mnemonics, and mind mapping originate from cognitive stimulation. | - Uses accelerated strategies to rapidly develop skills like comprehension and critical thinking.        | - Mediated didactics to improve superior cognitive skills in language learning.     |

*Note.* This table represents the relationships between the analysis categories according to dimensions: Cognitive Stimulation Techniques, Accelerated Learning in FL Teaching and Techniques for Cognitive Competence in language learning.

The relationship matrix between the three dimensions of analysis (Cognitive Stimulation Techniques in Teaching and Learning process, Accelerated Learning in Foreign Language Teaching and Learning and Techniques that improve cognitive competence in learning outcomes in foreign language learning at Instituto Universitario de Yucatán.

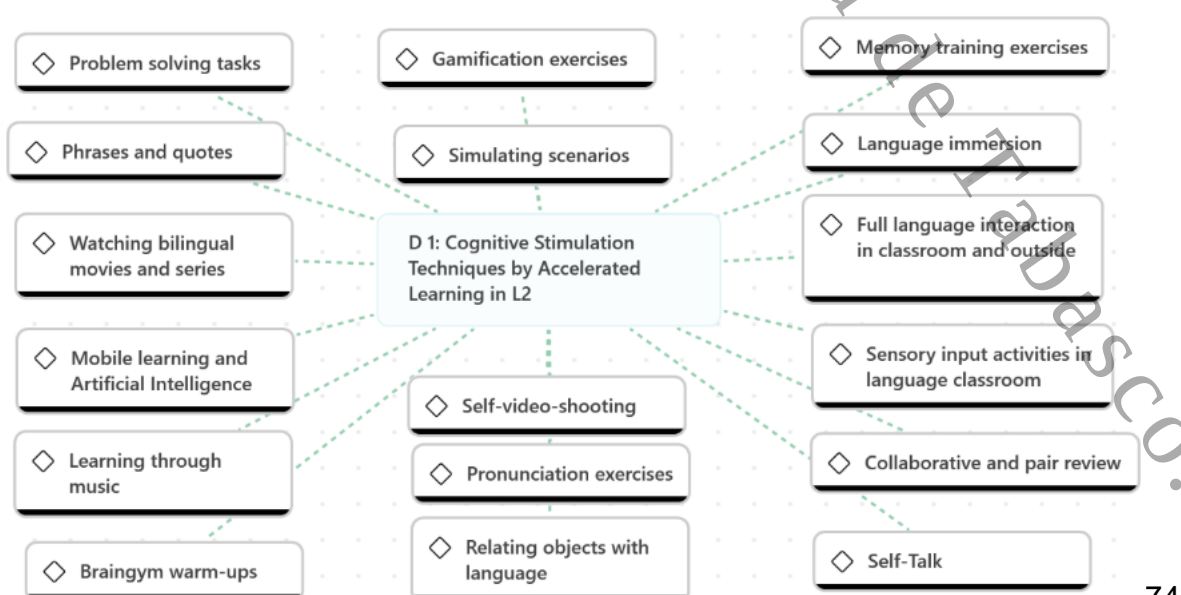
It shows how the brain stimulation techniques mediated by the accelerated learning methodology influence their foreign language learning process, which in turn enhance innovative didactic strategies in teaching practice. In turn, it highlights the synergy between these dimensions by improving personalization, motivation and development of advanced cognitive skills in students. Stresses the interdependence between neurolinguistic innovation and pedagogical effectiveness in communicative competences for the efficiency of the teaching-learning process.

#### 4.1.2 Qualitative Results of the Evaluation Instrument: Questionnaire

The qualitative results of the instrument entitled “Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching” are presented below. The data were obtained through the evaluation instrument (questionnaire) designed in Google Forms and analyzed using ATLAS.ti software. The qualitative section of the instrument consisted of ten open-ended questions aimed at exploring participants’ perspectives on the implementation of cognitive stimulation techniques in foreign language learning. The information collected was coded and categorized through qualitative analysis, and the results are presented in the following figures.

**Figure 12**

*Techniques that Improve Cognitive Competence in Learning Outcomes in Foreign Language Learning*



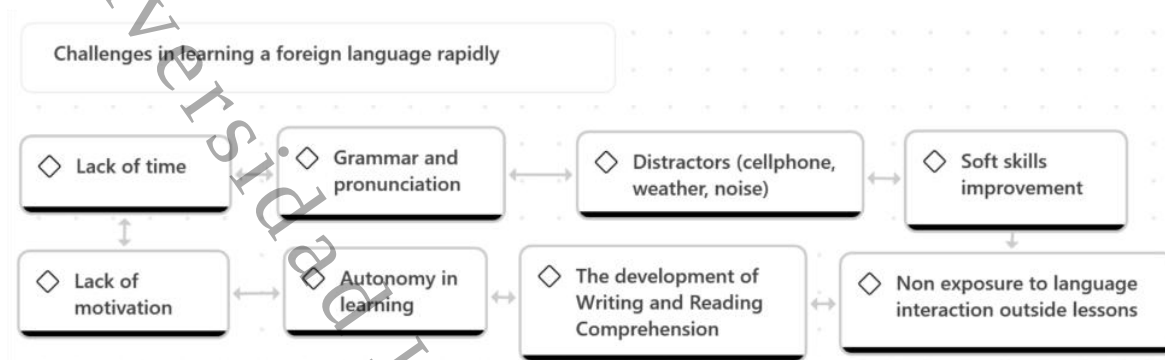
**Note.** This figure represents the results of Dimension 3: Techniques that improve Cognitive Competence in Learning Outcomes in Foreign Language Learning of students at IUDY.

The results of this dimension reveal a broad range of techniques employed to enhance students' cognitive competence in foreign language learning at IUDY. These techniques span various sensory, metacognitive, technological, and experiential domains, reflecting a comprehensive approach to accelerated learning. A prominent pattern observed is the emphasis on experiential and immersive practices, such as simulating scenarios, language immersion, and full language interaction inside and outside the classroom, which means that students are not looking for merely passive recipients of knowledge but active participants in meaningful interactions in language learning.

Another key cluster of techniques includes technology-enhanced learning tools, such as mobile learning and artificial intelligence, self-video-shooting, and watching bilingual movies and series. These activities reflect the growing impact of digital literacies in language acquisition and that language teachers must apply these strategies related to accelerating learning for overcoming students learning preferences. Furthermore, the presence of self-talk, collaborative and pair review, and phrases and quotes highlight the integration of self-regulatory and social learning strategies, fostering autonomy, reflection, and peer-mediated interaction cornerstones of learner-centered pedagogy in university programs. Overall, the results show that the diversity of techniques suggests that IUDY's approach to foreign language instruction is grounded in a multimodal, student-centered, and cognitively engaging framework.

**Figure 13**

*Challenges for Languages Students in Learning a Foreign Language Quickly*



*Note.* This figure represents the common challenges that Foreign Language Learning of students at IUDY address in learning languages rapidly.

According to the results, the figure illustrates a network of interrelated challenges that foreign language students at IUDY face in their attempt to learn a new language quickly. These challenges span cognitive, emotional, contextual, and methodological domains, indicating the multifaceted nature of language acquisition.

The findings reveal that students at IUDY face a complex web of interconnected challenges in their efforts to learn a foreign language rapidly. These challenges span both internal factors such as lack of time, motivation, autonomy in learning, and difficulties with grammar and pronunciation and external barriers, including environmental distractors and limited exposure to language use beyond the classroom. Furthermore, issues related to the development of writing and reading comprehension, as well as the need for soft skills enhancement, indicate that effective language acquisition requires more than traditional instruction. Addressing these challenges demands a comprehensive, learner-centered approach that promotes motivation, fosters independent learning strategies, minimizes distractions, and incorporates real-world interaction opportunities. Without such support systems, students are likely to struggle with sustaining

progress and achieving fluency within accelerated timelines in specialized programs for professionals in languages.

### 4.1.3 Hypothesis Testing

The hypothesis raised in this research stated that: “The use of cognitive stimulation techniques positively influences accelerated learning in foreign language teaching by enhancing cognitive functions in university students. This relationship suggests that integrating brain stimulation activities can significantly improve language acquisition speed compared to conventional teaching methods”

**Table 11**

*Chi-square Significance Test for Correlation Between Variables*

| Cross-tabulation: Cognitive Stimulation techniques* Accelerated Learning in Foreign Language Teaching |                |                                                   |       |                |        |
|-------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------|-------|----------------|--------|
|                                                                                                       |                | Accelerated Learning in Foreign Language Teaching |       |                |        |
|                                                                                                       |                |                                                   | Agree | Strongly agree | Total  |
| Cognitive Stimulation Techniques                                                                      | Agree          | Count                                             | 16    | 22             | 38     |
|                                                                                                       |                | Expected count                                    | 17.1  | 20.9           | 38.0   |
|                                                                                                       |                | % of total                                        | 26.7% | 36.7%          | 63.3%  |
|                                                                                                       | Strongly agree | Count                                             | 11    | 11             | 22     |
|                                                                                                       |                | Expected count                                    | 9.9   | 12.1           | 22.0   |
|                                                                                                       |                | % of total                                        | 18.3% | 18.3%          | 36.7%  |
|                                                                                                       | Total          | Count                                             | 27    | 33             | 60     |
|                                                                                                       |                | Expected count                                    | 27.0  | 33.0           | 60.0   |
|                                                                                                       |                | % of total                                        | 45.0% | 55.0%          | 100.0% |

*Note.* This table represents the results of the  $\chi^2$  significance test between the correlations of variables Cognitive stimulation techniques and Accelerated learning in foreign language teaching.

Therefore, this statistical analysis resulted in the following information when calculating  $\chi^2$  with the statistics obtained in the data collection instrument of this research:

**Table 12**

*Chi-square Hypothesis Testing Results*

| <b>Chi-square test</b>                  |       |    |                                         |                                    |                                    |
|-----------------------------------------|-------|----|-----------------------------------------|------------------------------------|------------------------------------|
|                                         | Value | df | asymptotic<br>significance<br>(2-sided) | exact<br>significance<br>(2-sided) | exact<br>significance<br>(1-sided) |
| <b>Pearson Chi-square</b>               | .351  | 1  | .554                                    |                                    |                                    |
| <b>Continuity correction</b>            | .104  | 1  | .747                                    |                                    |                                    |
| <b>Likelihood ratio</b>                 | .350  | 1  | .554                                    |                                    |                                    |
| <b>Fisher's exact test</b>              |       |    |                                         | .599                               | .373                               |
| <b>Linear-by-linear<br/>association</b> | .345  | 1  | .557                                    |                                    |                                    |
| <b>Number of valid cases</b>            | 60    |    |                                         |                                    |                                    |

**Footnotes**

<sup>a</sup> 0 cells (0.0%) have expected counts less than 5. The minimum expected count is 9.90.

<sup>b</sup> Computed only for a 2×2 table.

*Note.* The figure represents the results of chi-square hypothesis.

The results of the chi-square analysis indicate that there is a weak statistically significant association between the variables analyzed. The analysis means that the variables are independent, not significantly associated. This does not prove that the variables are unrelated, only that there is insufficient evidence in this sample. Furthermore, it only indicates that there is not enough statistical evidence to reject it, not that it has been shown to be true in a definitive way.

## 4.2 Discussion of results

The results obtained from the assessment instrument provide a clear picture of the use of cognitive stimulation techniques through accelerated learning in the process of language teaching and learning and their implementation in the educational context of University Institute of Yucatán (IUDY). The following is a

discussion of these findings, based on existing literature and compared with previous studies declared in this research.

In relation to *Cognitive Stimulation Techniques in the Teaching and Learning Process*, the results highlight that 85% of students strongly agree that cognitive stimulation techniques such as gamification, brainstorming, and mind mapping contribute significantly to enhancing student attention and participation (see figure 2). An additional 15% is neutral with this perspective. This demonstrates a clear trend toward the appreciation of active and student-centered teaching practices. This result is aligned with Reina et al. (2023), who reported that active methodologies supported by technology lead to higher levels of motivation and deeper cognitive engagement (p. 7). Likewise, Wong et al. (2023) confirm that such strategies are effective to enhance students' retention of information by fostering meaningful learning (p.14).

This finding also echoes the concerns highlighted by Salem (2017), who stress that without institutional planning and support, the sustainability of innovative practices is at risk (p.192). The results support the need for structured professional development programs focused on effective planning and classroom implementation of cognitive stimulation techniques.

On the other hand, *Accelerated Learning in Foreign Language Teaching and Learning* results show (see figure 3) that only 88% of language students regularly implement learning strategies such as inductive learning, gamification, visualization, and suggestopedia in their foreign language practices. 12% report neutral concern in such methods in the classroom. This uneven application highlights both a lack of formal training and institutional prioritization. These findings mirror those of Shams and Ahmed (2019), who argue that such strategies promote faster and more meaningful language acquisition, particularly when adapted to learners' cognitive styles (p. 253).

This underutilization trend is also observed in Moreta et al. et al. (2024), who attribute the limited spread of accelerated learning in foreign language teaching to

conventional class learning experiences and limited methodological innovation (p.10574). Therefore, these findings underline the importance of updating teacher's training curricula to include evidence-based accelerated learning strategies that align with modern language acquisition frameworks in L2 classrooms.

Moreover, and in relation to *Techniques that improve Cognitive Competence in Learning Outcomes in Foreign Language*, the findings highlight that students who engaged in metacognitive practices demonstrated better self-regulation and more strategic learning behaviors. These outcomes are consistent with the findings of Waziri et al. (2019), who identified metacognitive awareness as a cornerstone of digital and cognitive competence development (p.265-266). Similarly, passing et al. (2024) affirm that integrating digital tools into such strategies increases their effect on students' comprehension and problem-solving abilities (p.15-16).

Most of the challenges that students of foreign languages struggle while learning a language rapidly must be with imitations in their knowledge or confidence when applying these techniques, particularly in digital analytical formats. These challenges reflect the necessity of students to develop autonomy to practice out of classes and build their own way to learn the language significantly.

In reference to the research questions raised at the beginning of this investigation, *how do cognitive stimulation techniques influence the Accelerated Learning process in the context of foreign language learning?* Brain stimulation techniques enhance the Accelerated Learning process by activating specific brain areas related to attention, memory, and language processing. These techniques applied at IUDY optimal neurological conditions that facilitate faster assimilation and retention of new information. In the context of foreign language learning of university learners, specifically in *bachelor's degree in foreign Language Students*, stimulation techniques increase neuroplasticity making it easier for the brain to form new connections required for acquiring vocabulary and develop communicative competence. Stimulation also improves learners' motivation and concentration, key factors in effective language learning under accelerated learning implementation. •

In response to question two (specific), *how does the accelerated learning approach mediated by cognitive stimulation improve the learning of a foreign language in students?* Accelerated Learning, when combined with brain stimulation, optimizes the learning environment by synchronizing cognitive, emotional, and neurological processes in IUDY students. This approach with the implementation of situational scenarios (learning simulations) enhances memory consolidation, focus, and comprehension through multisensory strategies supported by stimulation techniques. It also reduces cognitive fatigue, making learning more enjoyable and efficient. In foreign language contexts, this means students can acquire new languages more quickly and with better retention, especially in vocabulary acquisition and oral comprehension.

And finally, in response to question three (specific), *what types of cognitive stimulation techniques are most effective in enhancing foreign language acquisition in learners?* The most effective techniques that improve cognitive competence in learning outcomes in foreign language learning according to the foreign language students at IUDY include:

- Multisensory and experiential learning techniques such as *watching bilingual movies and series, learning through music, sensory input activities, simulating scenarios, and relating objects with language* emphasize multisensory engagement. These techniques stimulate different sensory pathways (visual, auditory, kinesthetic), which is critical for neuroplasticity the brain's ability to form new neural connections necessary for learning new languages.
- Emotional and motivational engagement activities like *gamification exercises, phrases and quotes, and self-video-shooting* promote emotional involvement and learner autonomy, both key components of Accelerated Learning. Emotionally charged and personally relevant tasks are more likely to be retained in long-term memory due to enhanced cognitive encoding.
- Social interaction and communication techniques such as *collaborative and pair review, full language interaction in classroom and outside, and self-talk*

foster active communication and social language use, which are essential for contextual and functional L2 acquisition.

- Memory and metacognition techniques such *brain gym warm-ups*, and *pronunciation exercises target cognitive functions such as memory, attention*, and *phonological awareness*, all of which are foundational for building fluency in a new language. These exercises strengthen the brain's capacity to store and retrieve linguistic information more efficiently.
- Integration of technology and AI techniques like the inclusion of *mobile learning and Artificial Intelligence* illustrates the role of digital tools in personalizing and accelerating language learning. AI can adapt content to learners' needs, provide immediate feedback, and offer immersive environments, making it a potent stimulant in AL contexts.
- Real world simulation and language application techniques like *simulating scenarios*, *language immersion*, and *problem-solving tasks* may promote authentic language use, encouraging learners to apply their knowledge in context-rich environments. This enhances retention and prepares students for real communicative situations.

The main contributions of this study lie in identifying the synergy between the dimensions analyzed, which underlines the need to consider an integral approach for the design of foreign language learning through cognition. However, it is also important to highlight the constraints related to contextual conditions that prevent foreign language learners from learning the language in an accelerated way, such as time constraints, because little time is devoted to language learning in the classroom and lack of outside practice such as immersion in real situations to put into practice what has been learned in the school classroom. These difficulties underscore the need for adaptive strategies, such as curricular modification (teaching and learning methods, subjects and assessment models) and training focused on communicative competences. These difficulties can mitigate the positive impact of cognitive stimulation techniques and require adaptive solutions, such as the design of out-of-class activities and ongoing training for teachers.

In sum, the results show that while cognitive stimulation techniques can function as a single variable, they can be integrated into various teaching methods such as accelerated learning for the development of solid communicative skills in language teaching at higher level education. The importance of strategic planning and the use of contemporary teaching techniques to maximize impact on learning. While there are challenges, these also represent opportunities for the continuous improvement of teaching practices in the teaching staff of the Instituto Universitario de Yucatán.

The findings presented in this study can serve as a reference for the implementation of models of teaching and learning in the institution and its school extensions in Tabasco that promote the inclusion of cognitive techniques and the integral training of private education system.

## CHAPTER V. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

This research, conducted at Instituto Universitario de Yucatán Comalcalco campus, a private initiative university in the state of Tabasco aimed to determine the impact of cognitive stimulation techniques mediated by accelerated learning methodology in foreign language teaching. Also to analyze how cognitive stimulation techniques influence the speed and efficiency of foreign language learning and to identify the most effective cognitive stimulation techniques for improving foreign language learning outcomes.

The research is based on the premise that cognitive stimulation techniques are indispensable for non-traditional foreign language teaching and learning processes as emerging methodologies in contemporary education and addressing the challenges of Higher education, enabling teachers to design learning experiences that respond to the needs and demands of students. Through a rigorous analysis, the results of this study provide an integral view on strengths and areas of opportunity in the integration of these techniques mediated by the accelerated learning method into educational practices at the higher level.

The main findings of this scientific study are summarized below as a conclusion. By addressing the implications of these findings, this section seeks to provide practical recommendations and contribute to the development of a more inclusive pedagogy, focused on foreign language student cognition and effective in higher education.

1. Based on results, in which the calculated value  $\chi$  was 0.351 and the critical  $\chi$  was 3.841 for a 2x2 frame, null hypothesis is not rejected, indicating that the use of cognitive stimulation techniques does not have a significant effect on accelerated foreign language learning in university students, compared to conventional teaching methods. This means that the variables are independent, not significantly associated. Furthermore, it only indicates that

there is not enough statistical evidence to reject it, not that it has been shown to be true in a definitive way.

2. Based on the results, the integration of cognitive stimulation techniques into classroom teaching practices by stimulating the brain to learn faster than traditional methods. This study reveals that a significant proportion of the foreign language students at the Yucatán University Institute distinguish and consider these educational practices as beneficial for their learning. However, areas for improvement are also identified as some students have limitations in their ability to apply these techniques consistently.
3. Effective implementation of cognitive stimulation techniques in the classroom translates into a disruptive learning experience in university language teaching. The students of IUDY distinguish that in their classes have been incorporated pedagogical resources that enhance the participation and meaningful learning of foreign languages, using cognitive techniques mediated by accelerated learning facilitate the understanding of complex concepts and promote autonomous skills. However, the uneven application of these techniques by their teachers highlights the need for continuous training as well as a strategic approach to ensure their appropriate and relevant use.
4. Although the use of cognitive stimulation techniques is implemented in IUDY, there remain significant barriers that limit their effective implementation. The main challenges include lack of time in the language classroom, the overturning of traditional, previously established teaching models and the lack of specific training for teachers. In addition, resistance to change and fear of experimenting with new techniques also play an important role in their correct implementation.

## **5.2 Recommendations**

1. The results of this research work require that more extensive research be carried out in all academic units of IUDY where cognitive stimulation techniques are implemented to ensure that university students recognize

- these methods of learning foreign languages and are beneficial according to their perspective as the results of IUDY Comalcalco unit.
2. It is necessary to provide time and resources for teachers to design personalized educational strategies using cognitive stimulation techniques in the language classroom. This includes institutional support to allocate more hours of language learning and create spaces for continuous improvement and practice in language learning.
  3. It suggests the implementation of a foreign language teaching method and mechanisms for monitoring and evaluating student performance on communicative competences in the classroom.
  4. Language teachers at IUDY should be encouraged to adopt accelerated learning as a disruptive methodology in foreign language teaching and creative tools that foster interaction and meaningful learning through cognitive stimulation.

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## APPENDIX

### Appendix 1. Official Request for Research Permit

Comalcalco, Tabasco a 01 de Mayo de 2025.

ASUNTO: OFICIO DE SOLICITUD DE PERMISO PARA INVESTIGACIÓN

**MTRA. SELENE EDITH FALCON CANTORAL**  
**DIRECTORA OPERATIVA DE IUDY CAMPUS COMALCALCO**  
**P R E S E N T E**

Por medio del presente, me permito solicitar de manera atenta la autorización institucional para llevar a cabo la investigación titulada "**COGNITIVE STIMULATION TECHNIQUES MEDIATED BY ACCELERATED LEARNING IN FOREIGN LANGUAGE TEACHING**" la cual forma parte de la **TESIS** de la **LICENCIATURA EN IDIOMAS** de la **UNIVERSIDAD JUÁREZ AUTÓNOMA DE TABASCO** a cargo de una servidora, **LOIDA ESMIRNA DE LA CRUZ HERNÁNDEZ** bajo la dirección y codirección de los docentes.

**DRA. SARA MARGARITA ALFARO GARCÍA**  
**DR. JUAN CARLOS RODRÍGUEZ FLORES**

El objetivo principal de esta investigación es "*analizar el impacto de las técnicas de estimulación cognitiva en la aceleración del aprendizaje de lenguas extranjeras, evaluando cómo diferentes estrategias cognitivas y métodos de aprendizaje acelerado mejoran la adquisición, retención y aplicación del idioma en estudiantes del Instituto Universitario de Yucatán (IUDY), con el fin de identificar técnicas efectivas que fortalezcan la competencia cognitiva en los resultados de aprendizaje en la educación de lenguas extranjeras*".

Por lo que su desarrollo requiere la **aplicación de encuestas y observación de clases** de las asignaturas de inglés del programa de **Licenciatura en Lenguas Extranjeras de la IUDY, campus Comalcalco**. La investigación se realizará en las fechas comprendidas entre los meses de mayo y abril de 2025 garantizando en todo momento la confidencialidad, la protección de datos personales y el trato ético hacia todos los participantes, conforme a los lineamientos establecidos por IUDY y la normativa vigente.

Agradezco de antemano la atención prestada a esta solicitud y quedo a disposición para cualquier aclaración o documentación adicional que considere necesaria.

Sin otro particular, me despido cordialmente.

  
**C. LOIDA ESMIRNA DE LA CRUZ HERNÁNDEZ**  
**EGRESADA DE LA LICENCIATURA EN IDIOMAS, UJAT**  
**TEL. 9331000945**  
**CORREO: loidaa\_brasil@hotmail.com**

## Appendix 2. Response to Official Request for Research Permit



INCORPORADO A LA SECRETARÍA DE EDUCACIÓN DEL GOBIERNO DEL ESTADO DE TABASCO  
CON CLAVE DEL CENTRO DE TRABAJO: 27PSU0051Z

|             |                                                                      |                                                                      |                                                                      |                                              |
|-------------|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------|
| RVOE LIC:   | Acuerdo 1402347/2014<br>Acuerdo 1602503/2016<br>Acuerdo 1802680/2018 | Acuerdo 1402348/2014<br>Acuerdo 1602504/2016<br>Acuerdo 1802681/2018 | Acuerdo 1402351/2014<br>Acuerdo 1802679/2018<br>Acuerdo 1802682/2018 | Acuerdo 1504418/2015<br>Acuerdo 1802679/2018 |
| RVOE MTRIA: | Acuerdo 1404349/2014<br>Acuerdo 1604507/2016<br>Acuerdo 1604511/2016 | Acuerdo 1504417/2015<br>Acuerdo 1604508/2016<br>Acuerdo 1804684/2018 | Acuerdo 1604505/2016<br>Acuerdo 1604509/2016<br>Acuerdo 1804685/2018 | Acuerdo 1604506/2016<br>Acuerdo 1604510/2016 |
| RVOE DOC:   | Acuerdo 1405350/2014<br>Acuerdo 1605515/2016                         | Acuerdo 1605512/2016<br>RVOE ESPECIALIDAD:                           | Acuerdo 1605513/2016<br>Acuerdo 1803683/2018                         | Acuerdo 1605514/2016                         |

COMALCALCO, TABASCO, A 05 DE MAYO DE 2025.

ASUNTO: RESPUESTA A OFICIO DE SOLICITUD DE PERMISO PARA  
INVESTIGACIÓN

C. LOIDA ESMIRNA DE LA CRUZ HERNÁNDEZ  
EGRESADA DE LA LICENCIATURA EN IDIOMAS  
UNIVERSIDAD JUÁREZ AUTÓNOMA DE TABASCO

En atención a su oficio fechado el 01 de mayo de 2025, mediante el cual solicita autorización institucional para llevar a cabo la investigación titulada “**Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching**”, me permito informarle que, después de revisar los objetivos, alcances y metodología planteados, esta Dirección otorga la **AUTORIZACIÓN** correspondiente para que pueda realizar las actividades descritas en el documento recibido.

La investigación podrá desarrollarse en el **Programa de Licenciatura en Lenguas Extranjeras del IUDY, Campus Comalcalco**, específicamente en las asignaturas de inglés y otras lenguas que se imparten en dicho programa, autorizándose la aplicación de encuestas y la observación de clases, en las fechas comprendidas según lo solicitado.

Es indispensable que todas las actividades se lleven a cabo garantizando:

- La confidencialidad y protección de datos de los participantes.
- El uso ético y responsable de la información recabada.
- El respeto a las dinámicas académicas de cada curso y docente.

Reiteramos nuestro apoyo a proyectos que fortalezcan la investigación educativa y contribuyan al desarrollo de nuevas estrategias para optimizar el aprendizaje de lenguas extranjeras en esta institución.

Sin otro particular, reciba un cordial saludo.

ATENTAMENTE

**MTRA. SELENE EDITH FALCÓN CANTORAL**  
DIRECTORA OPERATIVA  
IUDY CAMPUS COMALCALCO  
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Instituto Universitario de Yucatán

### Appendix 3. Evaluation tool: questionnaire

#### QUESTIONNAIRE:

#### Cognitive stimulation techniques mediated by accelerated learning in foreign language teaching.

**Objective:** The objective of this questionnaire is to **analyze the impact of cognitive stimulation techniques on the acceleration of foreign language learning**, assessing how different cognitive strategies and accelerated learning methods enhance language acquisition, retention, and application in students from Instituto Universitario de Yucatán (IUDY) which aims to identify effective techniques that improve cognitive competence in learning outcomes in foreign language education.

**Importance of your participation:** Your opinion is key to knowing about the teaching-learning processes mediated by cognitive stimulation techniques in the institution. So, this questionnaire will provide evidence in relation to the topic at hand.

#### Instructions:

1. Carefully read each question before answering.
2. Respond in a clear and objective manner, based on your personal experience with the Flipped Learning model.
3. Select the most appropriate option in the multiple-choice questions.
4. In open-ended questions, provide details and examples that support your opinion.
5. Be sure to complete all questions before submitting the questionnaire.
6. Your participation is anonymous and confidential, so it is recommended to answer honestly.

**Submission:** Once completed, click the submit button to register your responses. Thank you for your cooperation!

**NOTE:** Answer each statement by selecting the option that best represents your opinion:

(1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree.

|   | Dimension 1. Cognitive Stimulation Techniques in Teaching and Learning process                                                                                              | 1 | 2 | 3 | 4 | 5 |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1 | I actively use memory exercises (mnemonics, repetition, associations) in my learning process instructed by my teachers.                                                     |   |   |   |   |   |
| 2 | I practice attention-enhancing techniques (e.g., mindfulness, focus exercises) in my language classes at IUDY.                                                              |   |   |   |   |   |
| 3 | My teachers frequently engage me in problem-solving tasks to improve my cognitive skills.                                                                                   |   |   |   |   |   |
| 4 | Creativity-enhancing activities (storytelling, role-playing) help me learn better in the language classroom.                                                                |   |   |   |   |   |
| 5 | I feel that active engagement improves my understanding and retention of knowledge of foreign languages.                                                                    |   |   |   |   |   |
| 6 | Teachers at IUDY use different sensory inputs (such visual, auditory, kinesthetic) that help me while learning.                                                             |   |   |   |   |   |
| 7 | I believe cognitive stimulation techniques (such breathing exercises, brain gym activities, memory games) provided by my teachers have improved my foreign language skills. |   |   |   |   |   |
| 8 | I find it easier to remember learned vocabulary when using cognitive stimulation methods.                                                                                   |   |   |   |   |   |

|    |                                                                                                                                                       |   |   |   |   |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 9  | I use critical thinking and reasoning exercises in my learning of foreign languages.                                                                  |   |   |   |   |   |
| 10 | I regularly engage in memory-training activities performed in my classes at IUDY.                                                                     |   |   |   |   |   |
|    | <b>Dimension 2. Accelerated Learning in Foreign Language Teaching and Learning</b>                                                                    | 1 | 2 | 3 | 4 | 5 |
| 11 | I feel more motivated to learn a foreign language when interactive methods are used in classroom.                                                     |   |   |   |   |   |
| 12 | Multisensory learning (such visual, auditory, and kinesthetic) helps me grasp new language concepts faster.                                           |   |   |   |   |   |
| 13 | Repetition and practical exercises have helped me improve my vocabulary retention.                                                                    |   |   |   |   |   |
| 14 | I find that interactive learning methods (such group work, discussions, simulations) enhance my language skills.                                      |   |   |   |   |   |
| 15 | Emotional engagement (relating learning to personal experiences) helps me learn better.                                                               |   |   |   |   |   |
| 16 | I use digital tools or mobile applications to accelerate my language learning.                                                                        |   |   |   |   |   |
| 17 | I feel more confident using the foreign language in real-life situations after active learning activities.                                            |   |   |   |   |   |
| 18 | Music, storytelling, and role-playing improve my language comprehension and fluency.                                                                  |   |   |   |   |   |
| 19 | I believe accelerated learning techniques make the language learning process more enjoyable.                                                          |   |   |   |   |   |
| 20 | I have seen a significant improvement in my language skills after using accelerated learning techniques in classroom at IUDY.                         |   |   |   |   |   |
|    | <b>Dimension 3: Techniques that improve cognitive competence in learning outcomes in foreign language</b>                                             |   |   |   |   |   |
| 21 | What cognitive stimulation techniques (e.g., memory exercises, problem-solving tasks) do you find most effective in your learning process, and why?.  |   |   |   |   |   |
| 22 | Can you describe a situation where cognitive stimulation techniques helped you retain or understand foreign language concepts better?                 |   |   |   |   |   |
| 23 | What types of activities or methods have significantly accelerated your ability to learn and use a foreign language?                                  |   |   |   |   |   |
| 24 | How does emotional engagement (such as personal connection to the content) impact your motivation and learning speed in foreign language acquisition? |   |   |   |   |   |
| 25 | In your opinion, what are the biggest challenges in learning a foreign language quickly, and how do you think they can be addressed?                  |   |   |   |   |   |

| <b>Alojamiento de la Tesis en el Repositorio Institucional</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <b>Título de Tesis:</b>                                        | Cognitive Stimulation Techniques Mediated by Accelerated Learning in Foreign Language Teaching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Autor de la Tesis:</b>                                      | Loida Esmirna de la Cruz Hernández                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>ORCID:</b>                                                  | <a href="https://orcid.org/0009-0005-2253-7954">https://orcid.org/0009-0005-2253-7954</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Resumen de la Tesis:</b>                                    | <p>Esta tesis analiza la influencia de las técnicas de estimulación cognitiva, mediadas por el aprendizaje acelerado, en la enseñanza de lenguas extranjeras en el Instituto Universitario de Yucatán (IUDY). El propósito central es determinar su influencia en la adquisición de lenguas extranjeras. Para ello, se emplea un enfoque de métodos mixtos que integra perspectivas cuantitativas y cualitativas, lo cual permite obtener una visión más completa del fenómeno educativo. Los resultados evidencian que las técnicas de estimulación cognitiva generan mejoras significativas en la atención, la</p> |

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|                                     | <p>memoria y la experiencia de aprendizaje de los estudiantes. Estos avances favorecen un proceso formativo más dinámico y centrado en el alumno, contribuyendo al desarrollo de habilidades cognitivas clave para la adquisición de lenguas. No obstante, el estudio también identifica limitaciones, entre ellas el tiempo reducido en el aula y cierta resistencia hacia la adopción de metodologías innovadoras. Estos factores resaltan la importancia de brindar capacitación constante al profesorado y planificar la implementación de manera estratégica. En conclusión, la investigación sostiene que la incorporación de estas técnicas representa un recurso valioso para optimizar la enseñanza de lenguas extranjeras en la educación superior. Más allá de sus beneficios inmediatos, su aplicación se alinea con las tendencias educativas actuales, orientadas hacia la innovación, el compromiso estudiantil y la adaptación pedagógica. De esta manera, el estudio evidencia el potencial de la estimulación cognitiva no solo para fortalecer la enseñanza de lenguas, sino también para elevar la calidad educativa en México.</p> |
| <b>Palabras claves de la Tesis:</b> | <p>Estimulación cognitiva, aprendizaje acelerado, neurolingüística, lenguas extranjeras, educación superior.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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