



<sup>1</sup> Master's Degree in Language Studies from the Graduate Program in Language Studies at the Federal Center for Technological Education of Minas Gerais (CEFET-MG). Belo Horizonte, MG.

<sup>2</sup> Master's in Professional Education from the PPGE at UNIARP - Caçador-SC.

<sup>3</sup> PhD in Philosophy from PUC-PR. Professor at the Graduate Program in Basic Education (PPGEB-UNIARP).



## BRAZILIAN TEACHERS IN THE PDPI-USA: A COMPLEX AND TRANSCULTURAL PERSPECTIVE

*PROFESSORES BRASILEIROS NO PDPI-EUA: UM OLHAR COMPLEXO E TRANSCULTURAL*

*DOCENTES BRASILEÑOS EN EL PDPI-EUA: UNA MIRADA COMPLEJA Y TRANSCULTURAL*

Daiane Patrícia Lopes LIMA <sup>1</sup>  
daianellima@gmail.com  
Fabiana Dalila BECKER <sup>2</sup>  
fabianadalila35@gmail.com  
Joel Cezar BONIN <sup>3</sup>  
joel@uniarp.edu.br



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**ABSTRACT:** This article analyzes the formative impacts of the Professional Development Program for English Teachers (PDPI), promoted by CAPES in partnership with the U.S. Embassy and the Fulbright Commission. Situated in the field of Education, with emphasis on teacher education and additional language teaching, the study investigates how academic and cultural immersion in the United States contributes to the development of intercultural and transcultural awareness among Brazilian public school teachers. The research adopts a qualitative approach, grounded in Bakhtin's enunciative-discursive theory, Kramsch's perspective on transculturality, and the complexity paradigm proposed by Larsen-Freeman and Cameron. Data were collected through a questionnaire applied to PDPI 2023 participants and analyzed using content analysis techniques. The findings highlight identity and pedagogical resignifications, revealing the classroom as a complex, dynamic system influenced by multiple cultural interactions.

**KEYWORDS:** Interculturality. Transculturality. Complex Paradigm.

**RESUMO:** Este artigo analisa os impactos formativos do Programa de Desenvolvimento Profissional para Professores de Língua Inglesa (PDPI), promovido pela CAPES em parceria com a Embaixada dos Estados Unidos e a Comissão Fulbright. Inserido no campo da Educação, com ênfase na formação docente e no ensino de línguas adicionais, o estudo investiga como a imersão acadêmica e cultural nos Estados Unidos contribui para o desenvolvimento da consciência intercultural e transcultural de professores da rede pública brasileira. A pesquisa adota abordagem qualitativa, com revisão teórica baseada na teoria enunciativa discursiva de Bakhtin, na perspectiva de transculturalidade de Kramsch e no paradigma da complexidade proposto por Larsen-Freeman e Cameron. Os dados foram obtidos por meio de questionário aplicado aos participantes do PDPI 2023 e analisados por meio da técnica de Análise de Conteúdo. Os resultados evidenciam ressignificações identitárias e pedagógicas, revelando a sala de aula como um sistema complexo e dinâmico, influenciado por múltiplas interações culturais.

**PALAVRAS-CHAVE:** Interculturalidade. Transculturalidade. Paradigma da Complexidade.

**RESUMEN:** Este artículo analiza los impactos formativos del Programa de Desarrollo Profesional para Profesores de Inglés (PDPI), promovido por CAPES en colaboración con la Embajada de los Estados Unidos y la Comisión Fulbright. Se enmarca en el campo de la Educación, con énfasis en la formación docente y la enseñanza de lenguas adicionales, y examina cómo la inmersión académica y cultural en Estados Unidos contribuye al desarrollo de la conciencia intercultural y transcultural de docentes de escuelas públicas brasileñas. La investigación adopta un enfoque cualitativo, basado en la teoría enunciativa discursiva de Bakhtin, la perspectiva de la transculturalidad de Kramsch y el paradigma de la complejidad propuesto por Larsen-Freeman y Cameron. Los datos se recogieron mediante un cuestionario aplicado a los participantes del PDPI 2023 y se analizaron mediante análisis de contenido. Los resultados evidencian resignificaciones identitarias y pedagógicas, revelando el aula como un sistema complejo influido por múltiples interacciones culturales.

**PALABRAS CLAVE:** Interculturalidad. Transculturalidad. Paradigma de la Complejidad.

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## INTRODUCTION

The Professional Development Program for English Language Teachers in the United States (PDPI) is a project developed in partnership with the U.S. Embassy and the Fulbright Commission of the U.S. government, under the responsibility of the Coordination for the Improvement of Higher Education Personnel (CAPES). It offers English teachers from Brazil's public basic education system the opportunity to take part in a six-week intensive course at American universities, involving academic and cultural activities. One of the program's goals is to provide immersion in the daily life of an English-speaking country, thereby expanding the teachers' ability to contextualize the historical and cultural aspects of language instruction (Brasil, 2024).

The motivation to develop this study arose during the PDPI program in 2023, in the city of Austin, Texas, sparked by the reflections of two researchers who, at the time, were master's students and participants in the program. These researchers engaged in discussions about their academic investigations and connected them with the ongoing course. During one of many informal academic conversations, questions emerged regarding the group's experiences, particularly about how Brazilian teachers in training at the University of Texas (UT) in 2023 applied the theories of Transculturality and Complexity.

From this perspective, the central research question of this study is: to what extent did PDPI 2023 contribute to English language teacher training from a transcultural standpoint, and what complex adaptive movements made by the course instructors were perceived by the program participants? Thus, this article aims to analyze the formative impacts of the Professional Development Program for English Language Teachers (PDPI), promoted by CAPES in partnership with the U.S. Embassy and the Fulbright Commission. It also seeks to reflect on the co-adaptive movements experienced by the PDPI participants in 2023, through the lens of the paradigm of complexity.

These analyses are grounded in theories that align with the objectives of the PDPI: Enunciative-Discursive Theory—Bakhtin (2017), Additional Language Teaching for the Development of Transculturality—Kramsch (2016), and the paradigm of complexity by Larsen-Freeman and Cameron (2008).

As for methodology, this is a qualitative study that includes a literature review to conceptualize the aforementioned theories. Data were collected through a questionnaire applied to the teachers participating in the PDPI at the University of Texas at Austin in 2023, using Google Forms.

The analysis of the data was based on Content Analysis as established by Bardin (1977), whose goal is to infer knowledge related to the conditions under which the texts were produced, considering them as possible indicators for interpretation.

The results indicate that intercultural experience can bring new linguistic and cultural insights to those involved. Inter- and transcultural training for language professionals can significantly contribute to the meaning-making processes of their pedagogical practice. Furthermore, complex and co-adaptive movements in the classroom occur constantly and are essential to the teaching and learning process. It is, therefore, the language teacher's responsibility to be prepared to operate within such a context.

*In an increasingly globalized and interconnected society, learning additional languages has become a necessity*

From this reality, Bakhtin explains language acquisition (whether first or additional language) by framing language as a discursive practice, intrinsically linked to the linguistic and cultural group to which the individual belongs. This makes his enunciative-discursive theory both relevant and contemporary. According to Zakir (2016):

It is through language that society and culture are constituted. [Thus], the Bakhtinian perspective allows us to reflect precisely on social issues, on the interactive dimension of the notion of culture, because culture exists within the social. It is not, therefore, a matter of thinking about culture apart from language, but of recognizing that culture and society exist within language. (p. 149)

Hence, by viewing language learning as an instrument for meaning-making and social transformation, it becomes clear that forming linguistic subjects also means forming cultural and social subjects. In this sense, the appropriation of a new language is not merely a matter of translating from one language to another, but involves a process of identity re-signification for learners engaged in that process.

The authors Remerson Bezerra Menezes, Guilherme Mariano Martins da Silva, and Ludmila Andreu Belotti Funo argue that:

Culture can only be grasped through language, since all relationships are mediated by it—even bodily, visual, or nonverbal rhythmic interactions—making it impossible to disconnect human understanding from language and, consequently, culture from language. Furthermore, because cultural forms of representation are understood through linguistic awareness, their production and dissemination are also linguistic (Menezes et al., 2022, p. 9).

Therefore, cultural awareness is deeply intertwined with linguistic awareness. This allows us to state that an individual who is capable of perceiving language in its uses, nuances, variations, and contexts is also capable of perceiving and interpreting the cultural manifestations associated with the contexts in which that language is produced and used. In other words, language and culture can be understood as interrelated dimensions of human experience and, as such, are shaped by it.

From this perspective, language—understood here as a tool for interaction—operates within the field of dialogism. My words (language) can only take shape through the language of the other, and this is built upon their experiences, which in turn shape their unique worldview. It is through language that the subject is socially and culturally formed, acquiring the habits and ways of thinking and acting of the social groups to which they belong.

Thus, when considering the Bakhtinian logic of language learning, it becomes evident that the process of language acquisition begins with understanding the word within the cultural context of the other. Circumstances differ, and therefore, words spoken in different cultural contexts acquire meanings that may differ, even if the language of interaction (the code) is the same.

By another's word (utterance, discursive production) I mean any word spoken or written by another person, whether in my own language or in another—any word that is not mine. In this sense, all words... besides my own, are words of the other. I live in a world of others' words. And my entire life is an orientation within this world; it is a reaction to the words of the other..., starting with their assimilation... and culminating in the assimilation of the riches of human culture... The other's word places before the individual the specific task of understanding it (Bakhtin, 2017, p. 37–38).

In other words, our language is constituted through our experiences in the world, which are established through interactions with others. It is through these interactions that our experiences shape both our language and our culture. In this context, the “other” does not refer only to a casual conversation partner, but to a constant presence that shapes our worldview, our ideas, and even our identity.

By recognizing that our language is dialogically constituted, meaningful learning of additional languages can only occur through a process that takes context into account, by valuing the cultural complexity in which utterances are produced. This implies that language education aimed at transculturality understands the learner as a subject in constant identity (re)construction, endowed with the ability to comprehend and navigate the multiplicity and instability of cultural boundaries. From this viewpoint, language learning, in addition to enabling interaction in a globalized world, can also become a tool for fostering critical and ethical subject formation.

Kramsch (2019) advocates for the need to teach additional languages with a focus on the development of transculturality, which she defines as the result of the intersection between diverse cultures, shaped by intercultural interactions and experiences. This leads the individual to a third perspective of understanding reality—an “in-between” space. Transculturality goes beyond the mere coexistence of different cultures, as it involves exchange, adaptation, and the reconfiguration of cultural elements in a continuous process of mutual influence.

She also argues that language learning cannot be separated from the language/culture relationship, as learning a language implies becoming aware of the cultural values embedded within it. Furthermore, the complexity of this learning process goes beyond the mere exchange of words with speakers, since discourses can only be understood and interpreted in light of the social and cultural context in which they are produced (Kramsch, 2016).

Because of the multiplicity of meanings inherent in any stretch of speech, contexts are not stable; they are constantly changed and recreated by individual speakers and hearers, writers and readers. The dominance of any established 'culture' is alternately adopted and contested, adapted and ironized, by the emergency of new meanings. In the creation of spoken and written texts, individuals manipulate and shape-imposed contexts to fit their own individual needs and bring to the fore their own meanings. (p. 67)

Supporting Kramsch's ideas, Becker (2023) argues that the interactive process to which an individual is exposed throughout language learning inevitably places them in a transcultural position, since “learning a new language is one of the components that involves gaining knowledge of and becoming familiar with the cultural aspects of the people who speak that particular language. Language is the most important vehicle of social interaction and is closely tied to the culture of a social group” (p. 38).

Through intercultural experience, individuals are given the opportunity to learn new worldviews, values, and customs. Therefore, the development of cultural awareness and transculturality can serve as a tool for education aimed at understanding and accepting differences and reducing conflicts and misunderstandings caused by the strangeness of certain behaviors from others.

Sousa (2017) highlights the term “intercultural competence,” which can be defined based on several elements present in a subject's language, such as: 1) the recognition that there are other values, beliefs, and behaviors that are accepted, correct, or natural; 2) knowledge about how social groups and identities function, as well as how others likely perceive us; 3) the ability to interpret an idea, document, or event from another culture(s) and, based on that, explain, relate, and compare them to our own ideas, documents, or events; 4) the ability to discover new knowledge about cultural practices and integrate it with already established



knowledge; and 5) critical awareness of our own values and practices and how they function when viewed through the lens of the values and practices of other cultures.

Considering that language learning can foster intercultural experiences—and that interculturality is a premise for transcultural training—this text presents the additional language teacher as a mediator of these experiences. It is the teacher's responsibility to foster meaningful pedagogical practices so that the language classroom moves in this direction, contributing to the identity construction and transcultural development of those involved in the interaction process.

Aligned with the notion of transculturality, the next section focuses on the developments and recognition of the classroom as a dynamic, complex, and unpredictable system, full of intercultural experiences—sometimes unexpected and unusual.

### *The Complexity Paradigm for Understanding Additional Language Learning Processes*

The principles of Larsen-Freeman (1997) characterize and explain the process of learning additional languages as nonlinear. According to the author, the learning process opposes a cause-and-effect system, challenging much of the existing theory that portrays the classroom merely as a space inhabited by a teaching teacher and a learning student, without considering the broader context surrounding the teaching and learning process. The author presents the Complex Adaptive System (CAS) as chaotic, unpredictable, and sensitive to initial conditions. Larsen-Freeman and Cameron (2008), in contrasting a simple system with a complex one, offer a practical example: a traffic light with clearly defined colors—green, yellow, and red—indicating the actions to be taken, with no behavior expected other than what each color designates. This behavior reflects a linearity that does not align with the movements observed in the classroom, which are marked instead by the unpredictability of actions.

Braga (2007), in conceptualizing the Complexity Paradigm, defines it as involving numerous interactions with interference from a wide variety of units. Human interactions are repeatedly cited to explain the complexity and the movements that constitute it. On one hand, we have the cause-and-effect system as a Newtonian legacy; on the other, contemporary thought based on complexity theory helps explain certain human behaviors.

Based on these reflections, this work also draws on the Complexity Paradigm to analyze English language learning processes. As Lima (2023) demonstrated in her work, English language classes exhibit complex characteristics that must be carefully considered. For this reason, this premise guides the description of the experiences of public school teachers from Brazil who participated in the PDPI, a setting conducive to intercultural experiences, especially when viewed through the lens of the complexity paradigm.

Previously, Larsen-Freeman (1997) had already classified additional language acquisition as a complex system. The studies on Second Language Acquisition by Larsen-Freeman

and Cameron (2008) present the Complexity Paradigm as a foundational element for understanding learning processes. For the authors, the system is disordered because it encompasses unpredictable situations. They relate this disorder to the system's initial conditions, suggesting that it is possible to alter these initial states in pursuit of readjusting the situation. At first glance, this process may appear to follow a cause-and-effect logic; however, the reality is that, by altering the initial conditions of an organized system, it tends to behave in random and unexpected ways, thereby revealing its inherently unpredictable nature.

However, the unpredictability of the system is exemplified by Davis and Sumara (2006) in their definition of emergence. For the authors, each individual is a complex subsystem, and everything that happens in the classroom results from the interaction among all subsystems. Learning can take diverse forms, with various elements of interaction. The authors emphasize the success of the collective. Emergence appears as something unpredictable, such as the interruption of a lesson, for instance, when subsystems are triggered and, through interactions, seek reorganization. Although the authors offer examples related to the classroom, the reflections presented here also extend to the multiple forms of learning experienced in different cultural contexts.

De Bot et al. (2013) also classify systems as complex and adaptive, in which variables affect one another. The authors consider these systems complex because they develop over time; they are nonlinear, but adaptive because their components interact continuously. The focus remains, over time, on the process rather than the product.

Larsen-Freeman and Cameron (2008) describe systems as dynamic, open, nonlinear, adaptive, and unpredictable regarding the transformations within the Complex Adaptive System, as these provoke changes throughout the entire network and can modify the initial state of the process. In their studies, the linguists show that after undergoing disturbances, the system tends to enter a phase of co-adaptation. According to them, the situation tends to remain, for a time, in an "attractor state,"<sup>4</sup> which represents temporary stability. However, it may be disrupted or triggered and, consequently, become destabilized, requiring change. As a result, the system moves into a phase of co-adaptation, and according to the authors, this instability contributes to the learning process, since situations are constantly reorganizing and adaptations are beneficial to learning.

Lima (2022) describes, in her work, a co-adaptive context experienced by a high school English teacher. The system was triggered when, after leaving a closed and linear environment in which no digital teaching resources were used, the teacher found herself challenged to engage in a new didactic proposal that incorporated multimodal elements, providing new

<sup>4</sup> The state in which a dynamic system eventually stabilizes. An attractor can be a single fixed point, a collection of regularly visited points, a loop, a complex orbit, or an infinite number of points. It doesn't have to be one or two-dimensional, and can have as many dimensions as the number of variables influencing your system.



teaching and learning experiences.

De Bot et al. (2013) also analyze changes in the individual through social interaction, in studies conducted over weeks and months. For the authors, human development occurs through interaction, and individual learning cannot be separated from social dynamics. Every use of language is associated with cultural contexts, material conditions, and accumulated products. De Bot et al. (2013) also describe several theories of language and highlight the human capacity for language learning.

For them, the theory of dynamic systems aligns closely with Vygotskian theory, which emphasizes the transformation of the individual through interaction. This view is relevant for sustaining activities through which individuals can learn by interacting with others—whether humans, materials, or digital and physical components. Parreiras (2020) shows that teaching must be grounded in three pillars: 1) the learner's interaction with the learning object; 2) interpersonal interaction; and 3) intrapersonal interaction. In this way, the learner and their learning processes are prioritized. Interaction is thus considered an integral part of the learning process, which justifies a deeper study of the profiles of all those who compose the complex dynamic system.

Miccoli et al. (2020), when presenting a framework of English language teaching and learning experiences, reaffirm that life is permeated by unpredictable and nonlinear experiences that redefine and reshape existing knowledge. According to the authors, when entering a classroom, students bring with them their personalities, individualities, temperaments, behaviors, and conceptions, which blend with the experiences of the teachers to produce either harmonious or dissonant relationships.

In this way, the authors add that the complexity of teaching merges with the heterogeneity of learning, characterizing the classroom as a complex system. That is, both students and teachers bring to the classroom their own traits, which together compose the entire system. When considering the experiences lived by each teacher during the PDPI, it becomes difficult to describe them without taking cultural context into account. Furthermore, Ushioda (2015) refers to the influence of context on the individual. Based on her principles, it is understood that circumstances can influence student motivation.

Therefore, this section aims to analyze the PDPI experience with a focus on the teachers' time at the University of Texas, in the United States, taking into account the elements that comprise their training. To this end, the analysis is based on previous research to support established theories and explore new possible findings, also considering the context and the changes it may provoke during the process, as well as the potential transcultural implications experienced during the stay in the U.S.

## **Methodological Design**

This article employed bibliographic research as its methodological approach to building the epistemological foundation, addressing the themes of cultural awareness, transculturality, and complexity in language teaching. From this perspective, the literature review was conducted in an interpretative and critical manner, seeking to correlate the theoretical contributions of Bakhtin, Kramsch, Larsen-Freeman, and other authors with the objective of analyzing the formative impacts of the PDPI, promoted by CAPES in partnership with the U.S. Embassy and the Fulbright Commission.

Additionally, the study aimed to identify the perceptions of participants in an international program for the professional development of English language teachers, promoted by CAPES in partnership with Fulbright and the U.S. Consulate. These perceptions were collected with regard to the aforementioned theories through a semi-structured questionnaire administered in 2024 (one year after the immersion course), titled “Transculturality and Complexity Involved in the Linguistic and Cultural Experience of the PDPI and Its Relevance for Pedagogical Practice.” The questionnaire consisted of 15 questions—3 closed, 6 semi-open, and 6 open—focusing on the impact of the intercultural experience on the participants’ transcultural training, the complexity involved in the classes they attended, and the implications observed in their pedagogical practice upon returning to Brazil. After the questions were developed and the form was created using Google Forms—with an accompanying informed consent statement for voluntary participation—the questionnaire was distributed via WhatsApp to a group of 32 potential respondents. A total of 15 teachers who participated in the 2023 PDPI at the University of Texas responded, yielding a response rate of 46.8%. It is also worth noting that the PDPI took place between January and February of 2023.

For data analysis, the principles of Content Analysis (Bardin, 1977) were used, aiming to identify lexical signifiers that would reveal the participants’ perspectives. Systematic techniques were applied, consisting of grasping the message and breaking down the questionnaire responses into fragments (keywords, specific terms, or meaningful phrases) capable of revealing the “voices of the participants.”

Additionally, the theoretical framework of Larsen-Freeman and Cameron (2008) was used to analyze learning experiences compatible with the Complex Adaptive System (CAS), thus considering context as an integral part of the process (Ushioda, 2015).

Finally, the study offered a reflection on the impact of intercultural immersion on the participants’ cultural re-signification and transcultural education, the applicability of complexity theory, and discussed the implications of this experience for the pedagogical practice of these professionals.

## RESULTS AND DISCUSSION

The phenomenon of cultural shock is a common experience in intercultural settings, where individuals are confronted with realities and practices different from those to which they are accustomed. In this regard, this section examines the cultural shock experiences of 15 participants in a foreign educational context, revealing the main difficulties encountered, such as food, local customs, and the educational system. It also analyzes how participants dealt with these situations and the perceptions they developed over time, highlighting the relevance of adaptation and cultural re-signification in learning processes and coexistence in new cultural environments.

In response to the first question: during your intercultural experience, did you experience any cultural shock, something that felt strange and that you simply had to adapt to?—40% of the participants reported difficulties with food, 13.3% with some local customs, and 26.7% with the educational system.

When asked how they dealt with the situation, the most relevant terms that emerged were: 1) adapting and eating whatever was possible and pleasant, appeared 4 times; 2) sad, 1 time; 3) overloaded, 3 times; 4) the course curriculum was very rigorous, 3 times; 4) the need to adapt to local customs, 5 times; 5) insecurity, 2 times; 6) curiosity, 2 times and 7) frustration with the education system in Brazil, only 1 time. Take a look at the responses compiled in the table below:

**Table 1:** Cultural shocks experienced by PDPI participants

**When asked how they dealt with the situation, the most relevant terms were:**

	Responses obtained	Occurrences
1-	Adapting and eating whatever was possible and enjoyable appeared	4 times
2-	Sad	1 time
3-	Overloaded	3 times
4-	The course curriculum was too rigorous	3 times
5-	Need to adapt to local customs	5 times
6-	Insecurity	2 times
7-	Curiosity	2 times
8-	Frustration with the education system in Brazil only	1 time

Source: the authors.

Regarding cultural shock, Novinger (2001) states that our perception of reality is the internal process through which we select, evaluate, and organize stimuli from the external world. Such perceptions are learned from the moment we are born and are, therefore, the result of our cultural experiences. Thus, “culture is the framework through which perception and the processes of verbal and non-verbal communication are developed” (p. 23). When we

come into contact with a new culture, we encounter people whose perceptions differ from ours, which can lead to conflict and stressful situations—until we find a way to deal with them.

In relation to the question: how would you describe the experience(s) of culture shock(s) today, one year on? Do you have the same perception, or has something changed in you?, we obtained the following set of relevant expressions: 1) I analyzed the experience more clearly, 3 times; 2) it's still the same, 3 times; 3) it reframed teaching practice, only 1 time; 4) it reframed the stigma of American people as "reserved," only 1 time; 5) you're grateful for the experience, only 1 time; 6) it reframed the Brazilian reality, only 2 times and 7) you miss some flavors, only 1 time. Take a look at the table below:

**Table 2** – Reframing of cultural shocks experienced one year after the program

**How would you describe the experience(s) of culture shock(s) today, one year on? Do you have the same perception, or has something changed in you? We obtained the following set of relevant expressions:**

	Responses obtained	Occurrences
1-	I analyzed the experience more clearly	3 times
2-	It's still the same	3 times
3-	It reframed teaching practice	1 time
4-	It reframed the stigma of American people as "reserved"	1 time
5-	It's grateful for the experience	1 time
6-	It reframed Brazilian reality	2 times
7-	It misses some flavors	1 times

Source: the authors.

Kramsch (2019) clarifies the above results by explaining that transculturality lies in the idea of constructing a new perception through the learning of a new cultural reality, mediated by language. Regarding whether, during the intercultural experience, any particular aspects from cultures other than the American one were observed, 80% of the respondents reported having noticed elements of Mexican culture, and 13.3% mentioned aspects of Indian culture.

When clarifying these aspects in detail, the participants highlighted that: 1) the cuisine is spicy—appeared 5 times; 2) Spanish as a second language—3 times; 3) Mexicans allocated to underemployment or performing elementary functions—2 times; and 4) Mexicans are very kind—only 1 time.

On this point, Novinger (2001) notes that between 1981 and 1986, official U.S. agencies recorded the arrival of 1.1 billion Mexican immigrants. According to the author, an immigrant child will hold entirely different cultural premises from those of their parents, as they are influenced both by their family's culture and by American culture, becoming a cultural hybrid: "Although immigrants are usually completely acculturated in two generations, they also influence the culture into which they assimilate" (p. 79). Regarding whether their perception

of their cultural origin (Brazil and its respective states) had changed after the intercultural experience, 80% of the respondents answered “yes,” and 20% said “no.”

When asked to specify which aspects of their own culture they felt needed to be re-defined, those who had answered “yes” to the previous question reported the following: 2 reported wanting to travel more and learn more about the world; 1 said that the intercultural experience had changed their teaching practice; 4 said that their attitude as a citizen and teacher had changed, and they began to value their own culture more significantly; 2 reported having developed more empathy with people, especially foreigners; and 3 realized the need to value school education in Brazil.

In this regard, Bakhtin (1986) argues that consciousness is not something that forms in isolation within the individual, but rather something that emerges through dialogue, in interaction with others and the surrounding culture. For the author, this process of developing new perceptions is called cultural consciousness, which evolves through a dialogic process in which continuous interaction with others and with cultural contexts plays a fundamental role.

Regarding the fact that they had incorporated some different cultural aspects into their experience, 73.3% said yes, and 26.7% said no. The participants who answered “yes” described the change as follows: 1) getting to class earlier and organizing everything in advance, only 1 time; 2) some dietary changes, only 1 time; 3) more frequent use of the words “sorry” and “excuse me”, 5 times; 4) started to dislike having their personal space invaded, 1 time; 5) started to give preference to pedestrians when driving, 1 time; 6) started to respect other people’s personal space more, 1 time; 7) greets people more often, 1 time; and 8) holds the doors of public spaces open for those coming up behind them, 1 time.

Kramsch (2019) explains these behaviors by arguing that language is an essential means through which we conduct our social lives, and that, when learning a language, we absorb the values, beliefs, and worldviews of its associated culture.

Bringing the intercultural experience into classroom practice, when asked whether they were able to share distinct aspects of American culture in their English classes to highlight cultural and linguistic differences—and whether they had ever done so—100% of participants responded affirmatively. Specifically, 60% said they used texts; 46.7% used music; 40% used films; 33.3% used audio materials; and 40% reported using materials other than those previously mentioned.

In describing these classroom experiences, 8 participants said they used slides with photographs of traffic, schools they visited, university-organized trips, maps of the U.S. and Texas; 3 discussed places and customs; 1 spoke about traffic education; 1 gave a presentation on dietary differences; 1 presented cultural elements, the Texas flag, and local symbols; 1 used their experience report to explain the present perfect tense; 4 used self-recorded videos; 1 used a university newspaper article about a basketball player to discuss cultural

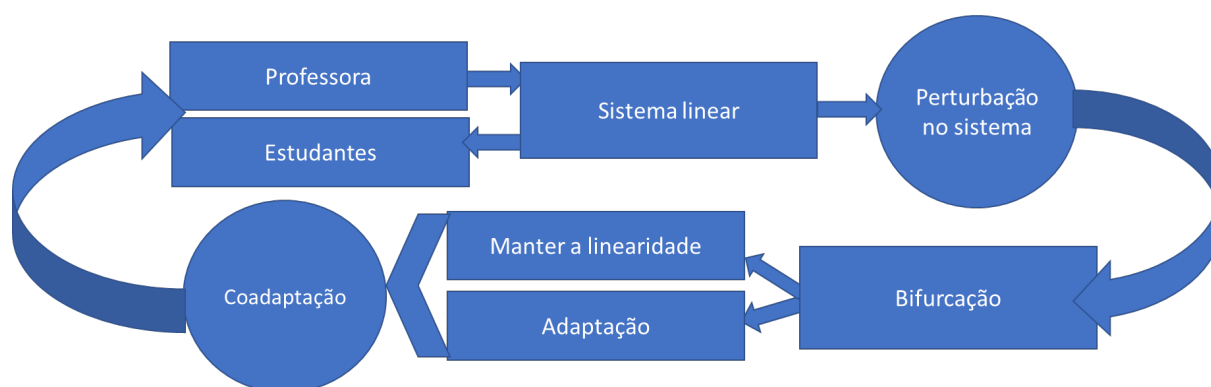
aspects of American universities, such as athletic scholarships; and 1 used texts provided by the course instructors.

Kramsch (2016) argues that cultural learning should not be considered a complement to language learning, but rather an integral part of it, as language is essentially a social and cultural phenomenon. From this perspective, intercultural immersion becomes fundamental to the teacher training process for additional language instructors.

At the end of the questionnaire, we asked the teachers: With regard to the classroom in the USA, did you notice any adaptability on the part of the American teachers in relation to the Brazilian students? 33.3% of the interviewees answered that there was no adaptability on the part of the American teachers in relation to the class of Brazilians; 66.7% of the teachers described some adaptability on the part of the American teachers in relation to the class. When describing adaptability, we obtained the following responses: a) 2 participants highlighted a specific teacher as a great example of adaptation; b) 8 participants reported, in general, that the teachers were helpful, showed interaction, interest, or, in some way, made an effort to adapt to the Brazilian way of living and learning.

Larsen-Freeman and Cameron (2008) describe the co-adaptation movement as a phase in which the system, after being disrupted, tends to become destabilized. They argue that this is a natural process that leads the system toward adaptation. According to the authors, this movement is cyclical and inherent to the teaching and learning process, being essential for sustaining both language instruction and acquisition.

**Figure 1:** Coadaptation in the Complex Adaptive System



Source: prepared by the authors.

The diagram above illustrates how the teaching and learning process operates, highlighting a linear system in which it is assumed that the teacher's sole role is to teach and the student's is to learn. After the system experiences a disruption (external or internal factors influencing the classroom context), a bifurcation point arises, as presented by Miccoli et al. (2020). According to them, students exposed to grammar in the classroom may face dilemmas



that represent a bifurcation point, which has the potential to offer them new experiences and opportunities for new behaviors, thereby creating space for alternative forms of learning.

Thus, the diagram explicitly presents the opportunities available to the system's agents, who can either choose to maintain the traditional, teacher-centered linear model of teaching or adapt to a nonlinear teaching and learning system, offering students meaningful learning opportunities. Coadaptation occurs when quality teaching opportunities align with significant learning experiences.

By understanding the classroom as a complex system, Larsen-Freeman (2016) notes that the arrangement of chairs in the room, the way the lesson is conducted, and how each element of the system responds to disruption are all variables that contribute to the learning process. The author also explains that the physical environment ceases to be merely a backdrop and instead plays a more prominent role, alongside other elements of the system.

When this questionnaire was proposed to the teachers participating in this research, it became possible to outline, in practical terms, how the complexity paradigm operates in the training process of these educators. Consider the following account by one program participant regarding the attitude of an American professor. It is worth noting that Americans are often described as more rigid, punctual individuals who strictly follow their class schedules, aligning with a more linear teaching system:

Only one professor helped us in this sense by trying to show us more culture beyond the classroom. She invited us to watch a water polo competition and offered an online class on days when, due to low temperatures and rain, we couldn't go to the university. She then adapted the class to American culture by teaching us how to make cookies and even gave us some of these typical American treats as gifts (Participant 1, 2024).

Participant 1's account reflects a deep sense of appreciation and clearly indicates that the complexity present in the classroom demands co-adaptation from its agents. The respondent described a professor who, in most responses collected, was portrayed as particularly empathetic and stood out as a key figure in the classroom's co-adaptation process.

The PDPI 2023 classroom system experienced a disruption due to a rare but regionally typical weather phenomenon in Texas: freezing rain, which forced students to remain isolated in their apartments, halting the weekly lesson plan. As can be inferred, a bifurcation point emerged in which the instructors could either wait for classes to resume or adapt, as the professor in the account above did. She chose not to interrupt the students' learning process and invited them to a virtual, hands-on class to learn how to make cookies—a traditional American treat. After the class, she personally delivered the cookies to the students, thereby creating a learning environment reshaped by the local weather conditions.

This description exemplifies Larsen-Freeman and Cameron's (2008) assertion when studying the classroom as a complex system. They argue that changes in the system involve emergence and self-organization. According to the authors, the system is in constant adaptation. The learning process can be described as a sequence of adaptations by students and teachers who, through language, seek better pathways for language acquisition. The authors illustrate this by describing a native speaker trying to communicate with a non-native speaker: the native may employ strategies such as slowing down speech and adjusting intonation to help the non-native adapt and understand the conversation better.

Lima (2023) also describes a classroom scenario in which the teacher continually seeks, through instructional strategies, ways to help students adapt in order to consolidate learning. As such, both teacher and student engage in this ongoing process of co-adaptation. Consider the following additional account that allows reflection on this idea:

Some professors appeared very comfortable, showing affection and behaving in a relaxed manner, having been, in a way, influenced by our way of acting (Participant 2, 2024).

In another response, when Participant 2 describes the adaptation of American professors, elements become evident that illustrate how deeply we are shaped by systems. For Larsen-Freeman (2011), Complex Adaptive Systems (CAS) are nonlinear, meaning their effects are disproportionate to their causes. Changes in the system's initial conditions may have far-reaching implications for future actions and behaviors. The author also emphasizes that the behavior of a complex system emerges from the interactions among its components. Based on these ideas, one can infer that the PDPI classroom can also be viewed as a complex environment, where teaching and learning relationships do not depend solely on the agents involved—teachers and students—but also on all components of the system, which may introduce both external and internal factors that act upon and shape the system's conditions. The participants' perceptions of American professors' adaptations highlight aspects of both transculturality and the complexity paradigm.

Therefore, it is reaffirmed that the PDPI meets the necessary requirements outlined by Larsen-Freeman and Cameron (2008), as it is characterized by dynamism. To be considered complex, the agents involved in the training process must be dynamic, since their responses to stimuli triggered by the instructor or by external agents were varied and demonstrated this dynamic nature. Another noteworthy element was the non-linearity present in the PDPI. Although the teachers assumed the role of mediators in the student's learning process, unexpected situations occasionally emerged in the classroom. These episodes led the system toward a tendency for adaptability. At times, the system was disrupted by external factors, as was the case with the freezing rain. It is considered that, at that moment, the system was in an

attractor basin<sup>5</sup> and was triggered by an external agent, introducing unpredictability into the context, which subsequently returned to a state of self-organization.

Other factors also contributed to characterizing the PDPI as a CAS, such as the heterogeneity present in the classroom and the system's openness.

In summary, the analysis of the results revealed that the relationship between transculturality and classroom complexity is intrinsic and multidisciplinary. The cultural shocks demonstrated how the interaction between different cultures can challenge previously established perceptions and pedagogical practices. In other words, the constant need for adaptation reflects the concept of co-adaptation in complex systems, where adjustments in teachers' and students' actions are required in response to external and internal disruptions. Moreover, the intercultural experience reported by the research participants highlighted the importance of recognizing and valuing the complexity of intercultural interactions, enabling both teachers and students to become protagonists in the learning of additional languages.

## **FINAL CONSIDERATIONS**

This article explored the relevance of the PDPI in the intercultural and transcultural training of public school teachers in Brazil. The analysis was based on a combination of literature review and data collected through a questionnaire administered to teachers who participated in the 2023 edition of the PDPI. The results indicate that the immersion experience in everyday life in the United States provided participants with a significant expansion of their cultural understanding and a redefinition of their pedagogical practices.

The intercultural experience not only reinforced the importance of English language proficiency but also highlighted the need for a pedagogical approach that considers the complexity and unpredictability inherent in the teaching and learning process.

Moreover, the complexity paradigm, as discussed by Larsen-Freeman, was essential for understanding the unpredictable and nonlinear interactions that occur in the classroom. These interactions, often shaped by diverse cultural contexts, require teachers to develop adaptive and flexible skills to navigate the dynamics of instruction.

Finally, the study concludes that programs like the PDPI are essential for the continuing education of teachers, as they promote the development of intercultural and transcultural competencies that are vital for language learning in an increasingly globalized world. The teachers' experiences in the program not only expanded their linguistic skills but also contributed to the development of a more conscious and culturally sensitive pedagogical practice. Thus,

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<sup>5</sup> A region in phase space associated with an attractor. The basin of attraction is the set of all starting points (initial values) that converge on the attractor.

the continuation and expansion of initiatives such as the PDPI are strongly recommended, as they strengthen teacher education and foster the transformation of educational practices in multicultural contexts. Furthermore, the complex nature of teaching is reaffirmed within the PDPI perspective.

It is concluded that the principles of a complex teaching system are also present in professional development courses like the PDPI. In this context, the importance of such meaningful training processes for teacher education is emphasized, as they have shown a positive impact on public school classrooms in Brazil, particularly in terms of improving the quality of education and deepening student learning.

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