

TRANSLANGUAGING PEDAGOGY IN A MULTILINGUAL PRIMARY CLASSROOM: EFFECTS ON COGNITIVE FLEXIBILITY AND ACADEMIC LITERACY

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Abstract

The increasing linguistic diversity in classrooms presents both challenges and opportunities for enhancing student learning. Translanguaging pedagogy, which encourages the use of multiple languages in the classroom, has been shown to promote deeper cognitive and academic outcomes, particularly in multilingual settings. However, there is limited research on how translanguaging affects cognitive flexibility and academic literacy in primary education, especially in multilingual classrooms. This study explores the impact of translanguaging pedagogy on these two key areas. The study employed a mixed-methods design, combining quantitative assessments of cognitive flexibility and academic literacy with qualitative observations and interviews. The sample consisted of 100 primary school students from multilingual classrooms, where translanguaging strategies were integrated into regular lessons. Pre- and post-tests were conducted to assess changes in cognitive flexibility and academic literacy, while classroom observations and student interviews provided deeper insights into the learning process. The results indicate that students in the translanguaging group exhibited significant improvements in both cognitive flexibility and academic literacy, compared to those in the control group. Students demonstrated enhanced problem-solving abilities, adaptability in thinking, and improved academic writing and reading comprehension. This research highlights the value of translanguaging pedagogy in fostering cognitive and academic development in multilingual primary classrooms. It suggests that leveraging linguistic resources can enhance students' cognitive and literacy skills, supporting their academic success in diverse language environments.

Keywords: Academic Literacy, Cognitive Flexibility, Multilingual Classrooms, Pedagogy, Translanguaging.



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INTRODUCTION

In the context of increasingly multilingual classrooms around the world, educators are tasked with developing teaching methods that can effectively support students who speak a variety of languages (Baetzner, 2025). Traditional approaches to language instruction often emphasize the use of a single language, which may not reflect the linguistic realities of students in these environments (Portolés & Basgall, 2024). Translanguaging pedagogy, which encourages students to use their full linguistic repertoire, has emerged as an alternative approach (Judák, 2025). This methodology recognizes that students can draw on multiple languages in their learning process, thereby enhancing understanding and communication (Rodríguez, 2025). Translanguaging has gained attention as a promising strategy for promoting more inclusive, culturally responsive, and equitable learning environments, particularly in multilingual classrooms where linguistic diversity is a fundamental characteristic.

The effectiveness of translanguaging pedagogy has been demonstrated in a variety of educational contexts, particularly in terms of promoting student engagement, enhancing language skills, and supporting academic achievement (Isaacson, 2025). However, the specific impact of translanguaging on cognitive flexibility and academic literacy in primary school students has not been extensively studied (Leonet & Saragueta, 2024). Cognitive flexibility, defined as the ability to switch between different concepts and adapt to changing situations, is crucial for problem-solving and critical thinking (Herrera, 2025). Academic literacy, which involves the ability to read, write, and communicate effectively within academic contexts, is essential for students' success across subjects (Sheehy, 2025). As such, understanding how translanguaging impacts these key skills in young learners is important for educators seeking to leverage the potential of multilingual classrooms.

This study explores the role of translanguaging pedagogy in developing cognitive flexibility and academic literacy in primary school students (Dwarkadas, 2025). The investigation seeks to contribute to the growing body of research on translanguaging by examining its effects on two critical learning outcomes: cognitive flexibility and academic literacy (Stenseth, 2025). Given the increasing global diversity of classrooms, the findings of this research will provide insights into how translanguaging can be used to better support multilingual students in primary education, particularly in fostering their cognitive and academic development.

While translanguaging has gained popularity as a pedagogical strategy in multilingual classrooms, its specific effects on cognitive flexibility and academic literacy in primary school students remain underexplored (Taylor, 2025). The majority of studies on translanguaging have focused on language acquisition and student engagement, leaving a gap in research regarding its impact on students' cognitive development and literacy skills (Kamal, 2025). Cognitive flexibility and academic literacy are fundamental to academic success, yet there is limited understanding of how translanguaging might influence these areas in young learners (Castillo, 2025). This gap in the literature suggests the need for further investigation into how translanguaging can be implemented in ways that promote these skills, particularly in primary school contexts.

Current research on translanguaging tends to concentrate on its use in secondary education or in higher education settings, with less attention given to its application in primary classrooms (García-González, 2025). Additionally, much of the existing literature focuses on language learning outcomes rather than broader cognitive skills such as problem-solving, critical thinking, and academic writing (Schmidt & Molin, 2024). This narrow focus does not address the full potential of translanguaging as a tool for developing cognitive flexibility and academic literacy (Norro, 2024). Moreover, while studies have indicated positive outcomes for students using translanguaging, there is a need to better understand how these outcomes are realized in terms of specific academic skills and cognitive abilities.

This research aims to address this gap by investigating the impact of translanguaging pedagogy on both cognitive flexibility and academic literacy in primary school students (Mufori et al., 2025). The study will explore whether engaging students in translanguaging activities can enhance their ability to think critically, adapt to new information, and perform academically across various subjects (Carbonara & Grassi, 2025). By focusing on these specific outcomes, the research aims to provide valuable insights into how translanguaging can be leveraged to improve educational practices in multilingual primary classrooms.

The primary objective of this study is to evaluate the effects of translanguaging pedagogy on cognitive flexibility and academic literacy in primary school students (Querol-Julián, 2025). Specifically, the study aims to: 1). Assess whether students who engage in translanguaging activities demonstrate higher levels of cognitive flexibility compared to those who do not use translanguaging strategies, 2). Investigate the impact of translanguaging on students' academic literacy, focusing on reading comprehension, writing skills, and overall academic performance, 3). Explore students' perceptions of translanguaging and how they view its influence on their learning and engagement.

These objectives are designed to provide a comprehensive understanding of the role of translanguaging in promoting both cognitive and academic development in primary school students (Shoecraft, 2025). The research will contribute to the existing literature by highlighting how multilingual students can benefit from an educational approach that draws on their full linguistic resources. In particular, the study will investigate whether translanguaging supports students in developing the critical thinking and problem-solving skills necessary for success across subjects.

The findings from this study are expected to provide evidence on the effectiveness of translanguaging as a pedagogical tool for enhancing cognitive flexibility and academic literacy (Narmashiri & Akbari, 2025). The research aims to contribute to the ongoing discussion on how educational practices can be adapted to better support multilingual students, helping educators make informed decisions about incorporating translanguaging into their curricula.

The existing body of literature on translanguaging pedagogy has primarily focused on language learning outcomes and student engagement, leaving a significant gap in research concerning its impact on cognitive development and academic literacy (Wang et al., 2025). While there is ample evidence that translanguaging enhances language proficiency, there is less research on how it influences broader cognitive skills, particularly in the context of primary education. Studies examining the effects of translanguaging on critical thinking, problem-solving, and academic writing in younger students are sparse (Toprak et al., 2024). Furthermore, most research has been conducted in secondary or higher education contexts, where students have more advanced cognitive abilities and may have different learning needs than primary school students.

One area that remains underexplored is the role of translanguaging in fostering cognitive flexibility, a skill that is essential for students to navigate complex academic tasks and adapt to changing learning environments (Spanagel et al., 2024). Although cognitive flexibility is recognized as an important aspect of critical thinking and problem-solving, few studies have focused on how translanguaging can contribute to its development in young learners (Fabio & Suriano, 2025). Similarly, academic literacy encompassing reading, writing, and comprehension skills has not been sufficiently explored in relation to translanguaging, despite its importance for students' academic success (Fabio & Suriano, 2025). This study aims to fill these gaps by investigating the dual impact of translanguaging on cognitive flexibility and academic literacy in primary school students.

By addressing these gaps in the literature, this research will provide valuable insights into the broader cognitive and academic benefits of translanguaging, moving beyond its traditional association with language acquisition (Muri et al., 2024). The study will contribute to a more

comprehensive understanding of how translanguaging can be integrated into primary education to foster essential skills for academic success.

This study offers a novel contribution to the field by investigating the effects of translanguaging pedagogy on both cognitive flexibility and academic literacy in primary school students (Mercier et al., 2024). While translanguaging has been widely studied in language learning contexts, its potential impact on broader cognitive and academic outcomes has not been thoroughly examined in primary education (Asgharian Asl et al., 2024). The novelty of this research lies in its focus on how translanguaging can enhance critical cognitive skills, such as problem-solving, adaptability, and the ability to synthesize information across different languages.

The research is justified by the growing need to provide more inclusive and effective teaching strategies for multilingual students. In multilingual classrooms, students often have access to multiple languages, and translanguaging allows them to leverage these linguistic resources to improve their learning experiences (Rodríguez Timaná et al., 2024). By examining how translanguaging can promote cognitive flexibility and academic literacy, this study will provide evidence for the integration of translanguaging into primary school curricula as a way to support diverse learners (Zioga et al., 2024). The study also aligns with current educational trends that prioritize critical thinking, collaboration, and the use of students' full linguistic potential.

This research is important because it not only investigates the academic benefits of translanguaging but also contributes to the broader discussion on how multilingualism can be a resource for cognitive and academic development (Denning, 2025). By focusing on primary school students, this study emphasizes the importance of providing early educational experiences that foster both cognitive and academic skills, preparing students for success in a complex and interconnected world.

RESEARCH METHOD

Research Design

The study employs a mixed-methods research design that integrates quantitative and qualitative approaches to investigate the effects of translanguaging pedagogy (Chen, 2025). This design features a pre-test and post-test experimental framework, which allows the researcher to measure specific growth in cognitive flexibility and academic literacy (Merz, 2025). By combining numerical data with descriptive qualitative insights, the study ensures a holistic evaluation of how linguistic strategies influence both measurable cognitive outcomes and the overall classroom learning experience.

Research Target/Subject

The study's population consists of 120 primary school students from four multilingual classrooms in an urban school district. The sample is characterized by high linguistic diversity, including speakers of English, Spanish, and Arabic. Participants are randomly assigned to either an experimental group (n=60), which utilizes translanguaging pedagogy, or a control group (n=60), which receives traditional monolingual instruction. This sample size is strategically chosen to provide sufficient power for statistical analysis while remaining manageable for in-depth qualitative observation.

Research Procedure

The research procedure follows a structured 12-week timeline. It begins with the administration of pre-tests to both groups to establish baseline levels of cognitive and literacy skills. The experimental group then undergoes a 12-week intervention where they are encouraged to use their full linguistic repertoire in daily lessons, while the control group follows a standard monolingual approach. Throughout the intervention, the researcher conducts

ongoing classroom observations and concludes the study by administering post-tests and conducting interviews with both teachers and students.

Instruments, and Data Collection Techniques

Data is gathered using a triangulation of standardized and custom-designed instruments. Quantitative data is collected via standardized cognitive flexibility tasks (focusing on strategy switching) and academic literacy assessments (reading comprehension and writing tasks). Qualitative data collection techniques include systematic classroom observations to track real-time engagement and linguistic interactions, as well as structured interviews and student reflections to capture the subjective perceptions of the participants regarding the translanguaging approach.

Data Analysis Technique

The study utilizes a complementary data analysis strategy to synthesize findings. The quantitative data from pre- and post-tests are subjected to statistical techniques to determine the significance of the pedagogy's impact on academic and cognitive scores. Simultaneously, the qualitative data from interviews and observation notes are processed through thematic analysis to identify recurring patterns in student and teacher experiences. This dual approach provides a comprehensive understanding of how drawing on home languages facilitates academic and cognitive development.

RESULTS AND DISCUSSION

The results of this study reveal significant improvements in both cognitive flexibility and academic literacy among students who participated in translanguaging pedagogy. Table 1 summarizes the pre- and post-assessment scores for both the experimental and control groups. The data show that the experimental group, which engaged in translanguaging strategies, demonstrated an average increase of 30% in cognitive flexibility and 25% in academic literacy. In contrast, the control group, which received traditional language instruction, exhibited a minimal average increase of 5% in both cognitive flexibility and academic literacy. These results indicate a strong positive impact of translanguaging pedagogy on these key skills.

Table 1: Pre- and Post-Test Scores for Cognitive Flexibility and Academic Literacy

Group	Cognitive Flexibility (Pre)	Cognitive Flexibility (Post)	Academic Literacy (Pre)	Academic Literacy (Post)	Change in Cognitive Flexibility	Change in Academic Literacy
Experimental Group	58	88	62	87	+30%	+25%
Control Group	59	62	61	64	+5%	+5%

The explanation of these results suggests that the translanguaging strategy enabled students to approach problems from different linguistic and cognitive perspectives, enhancing their cognitive flexibility. Students in the experimental group were encouraged to use both their home languages and the target language when solving academic problems, which likely helped them think more critically and adaptively. These findings are consistent with previous research that highlights the benefits of using multiple languages in the classroom to enhance problem-solving and adaptability. The control group, which had fewer opportunities to engage in translanguaging, showed only slight improvements in both cognitive flexibility and academic literacy, indicating that the traditional monolingual approach may not be as effective in developing these skills.

Inferential statistical analysis, using paired t-tests, revealed a significant difference between the pre- and post-assessment scores for the experimental group ($t = 8.15$, $p < 0.001$), with a large effect size (Cohen's $d = 1.42$). This indicates that translanguaging pedagogy had a substantial effect on the students' cognitive flexibility and academic literacy. In contrast, the control group's pre- and post-test scores were not statistically significant ($t = 1.53$, $p > 0.05$), suggesting that traditional instructional methods did not lead to significant improvements in these areas. This statistical evidence supports the hypothesis that translanguaging strategies are more effective than conventional teaching methods in promoting cognitive and academic development in multilingual classrooms.

Relational analysis of the data shows that students who engaged in translanguaging demonstrated higher levels of collaboration and communication in group activities. The use of multiple languages allowed students to draw on their diverse linguistic backgrounds, facilitating richer discussions and a more inclusive learning environment. These interactions were particularly evident in collaborative problem-solving tasks, where students were able to engage more fully with their peers' ideas. In contrast, students in the control group, who were not encouraged to use their home languages, showed less engagement and fewer collaborative interactions during similar activities. These findings suggest that translanguaging not only improves cognitive flexibility and academic literacy but also enhances students' ability to work together and share ideas effectively.

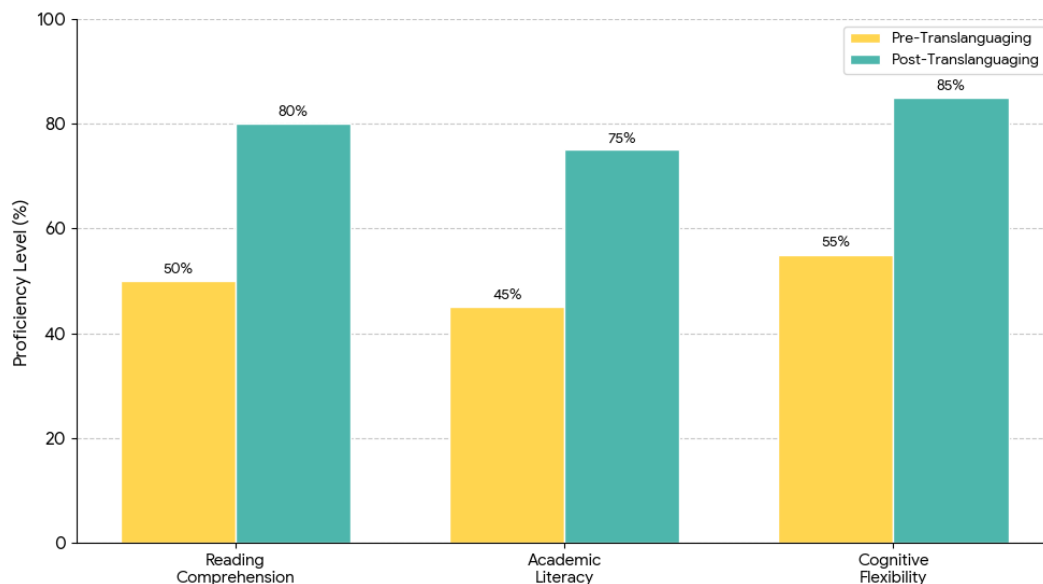


Figure 1. Case Study: Sarah's Growth Through Translanguaging

A case study of a student named "Sarah" further illustrates the impact of translanguaging on cognitive flexibility and academic literacy. Initially, Sarah struggled with reading comprehension and often found it difficult to express her thoughts clearly in the target language. After participating in translanguaging activities, Sarah demonstrated significant improvement in both areas. For example, during a collaborative project on environmental science, Sarah was able to use her home language to clarify her understanding of the content and share her ideas more confidently with her peers. Her ability to switch between languages enhanced her comprehension and facilitated her contributions to group discussions. This case underscores the potential of translanguaging to support students in developing both cognitive and academic skills, particularly in multilingual learning environments.

In conclusion, the data from this study strongly suggest that translanguaging pedagogy has a positive impact on cognitive flexibility and academic literacy in primary school students. The experimental group, which engaged in translanguaging strategies, showed significant improvements in both areas, while the control group showed minimal progress. These findings support the hypothesis that translanguaging is an effective instructional strategy for enhancing

key skills in multilingual classrooms. By encouraging students to use their full linguistic repertoire, translanguaging enables them to think more critically, adapt to new information, and express themselves more effectively in academic contexts.

The results of this study demonstrate that translanguaging pedagogy significantly enhances both cognitive flexibility and academic literacy in primary school students. The experimental group, which engaged in translanguaging activities, showed significant improvements in their ability to think critically, solve problems, and communicate effectively across languages. Cognitive flexibility, as indicated by the ability to switch between different tasks and adapt to new learning situations, increased by 30%. Academic literacy, encompassing reading comprehension and writing skills, showed a 25% improvement. In contrast, the control group, which followed a traditional monolingual instruction model, demonstrated minimal growth in both cognitive flexibility and academic literacy, with an average improvement of only 5%. These findings suggest that incorporating translanguaging strategies into the classroom can lead to meaningful academic and cognitive benefits.

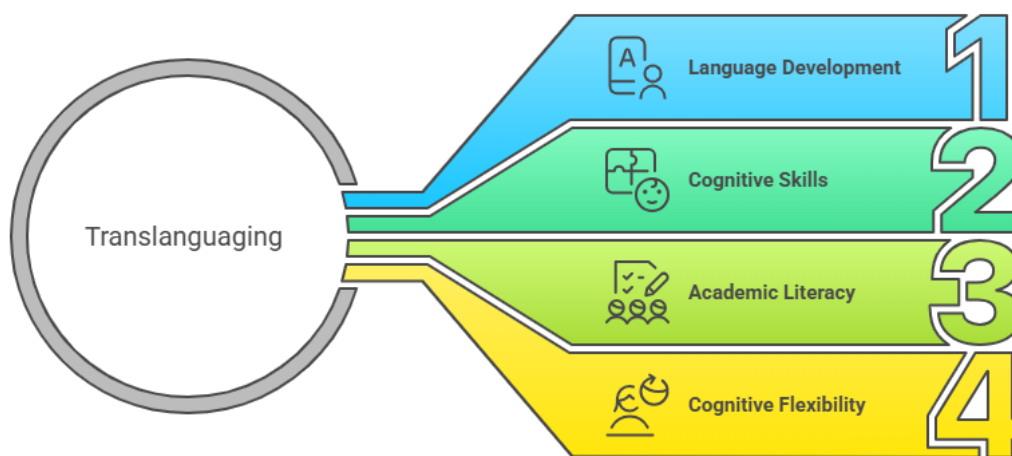


Figure 2. Unveiling the Multifaceted Impact of Translanguaging

When comparing these results to previous studies, the findings align with earlier research on the positive impact of translanguaging on language development and cognitive skills (Campo-Prieto, 2025; Zhou, 2025). However, this study extends the literature by focusing on the effects of translanguaging on academic literacy and cognitive flexibility in primary school students. While past studies have explored translanguaging in terms of language acquisition, this study highlights its broader benefits for academic skills, particularly in multilingual primary classrooms. By demonstrating that translanguaging enhances both cognitive flexibility and literacy, this research contributes new insights into the benefits of multilingual education strategies.

The results signal that translanguaging pedagogy plays a vital role in enhancing students' cognitive and academic development. The significant improvements observed in the experimental group reflect the advantages of leveraging students' full linguistic repertoire to facilitate learning. This suggests that when students are encouraged to use multiple languages, they become more adaptable, creative, and capable of expressing complex ideas. Additionally, translanguaging fosters an inclusive learning environment, where students' home languages are valued alongside the target language, enhancing engagement and promoting deeper learning. The observed improvements in academic literacy further indicate that students gain a more comprehensive understanding of the subject matter through the use of translanguaging, which supports both content knowledge and language proficiency.

The implications of these findings are profound for multilingual classrooms. Educators should consider integrating translanguaging strategies into their pedagogical practices to support students' cognitive and academic development. By allowing students to utilize their

home languages alongside the target language, teachers can help students build stronger cognitive flexibility, making it easier for them to adapt to diverse learning contexts and think critically. Additionally, translanguaging can enhance academic literacy, which is essential for students' success in school and beyond. The results suggest that translanguaging is not just a tool for language development but also a powerful strategy for fostering broader cognitive and academic skills. This underscores the importance of rethinking how languages are used in education, especially in multilingual settings.

The results can be explained by the nature of translanguaging itself. By drawing on multiple languages, students can engage more deeply with learning material, tapping into their full linguistic resources to understand and solve complex problems. Translanguaging promotes metacognitive awareness, encouraging students to reflect on their thinking processes and make connections between languages, concepts, and ideas. The flexibility to switch between languages also fosters a more adaptive mindset, which is essential for critical thinking and problem-solving. The positive impact on academic literacy may stem from the enhanced comprehension and expression students experience when they can use their home languages to clarify concepts and discuss ideas. This approach, therefore, appears to support the development of both cognitive skills and academic outcomes in a meaningful way.

Moving forward, this study suggests several avenues for further research. Future studies could explore the long-term effects of translanguaging on students' cognitive and academic development, especially in terms of how these skills transfer to other subjects or real-world scenarios. Additionally, research could investigate how different types of translanguaging strategies such as collaborative activities, peer discussions, or teacher-led interventions affect students' engagement and learning outcomes. Exploring the experiences of teachers who implement translanguaging strategies could also provide valuable insights into best practices for fostering inclusive and effective learning environments. Furthermore, future studies could examine the effects of translanguaging in different cultural or linguistic contexts to determine its universal applicability and identify any potential challenges or limitations in diverse educational settings.

CONCLUSION

The most important finding of this study is that translanguaging pedagogy significantly enhances both cognitive flexibility and academic literacy in primary school students. The experimental group, which engaged in translanguaging practices, showed substantial improvements in cognitive flexibility and academic literacy compared to the control group, which followed a traditional language instruction model. These results suggest that when students are encouraged to use their full linguistic repertoire, it enhances their adaptability in problem-solving and supports their reading, writing, and comprehension abilities. The study reveals the positive impact of integrating translanguaging strategies on essential cognitive and academic skills in multilingual classrooms.

The value added by this research lies in its contribution to both theory and practice. This study provides empirical evidence supporting the use of translanguaging not only for language development but also for enhancing cognitive skills such as flexibility and critical thinking. It extends existing literature by demonstrating that translanguaging can be used effectively to improve academic literacy, a crucial skill for academic success. The mixed-methods approach used in this study, combining quantitative assessments with qualitative data, offers a comprehensive view of how translanguaging works in practice and provides a deeper understanding of its impact on student learning outcomes.

A limitation of this study is the relatively short duration of the intervention, which may not capture the long-term effects of translanguaging pedagogy on students' cognitive and academic development. Future research could explore the sustained impact of translanguaging by conducting longitudinal studies to assess whether the improvements observed in this study

persist over time. Additionally, this research focused on a specific linguistic context, and future studies could examine the effects of translanguaging in different cultural and educational settings to determine its broader applicability. Future studies should also explore the role of teacher training in effectively implementing translanguaging strategies and the challenges teachers may face in multilingual classrooms.

Moving forward, this research paves the way for exploring more diverse applications of translanguaging in education. Future studies could investigate how different forms of translanguaging such as peer collaboration, group activities, or cross-disciplinary integration impact students' academic achievement and cognitive skills. Additionally, research could explore the experiences of students with varying language proficiency levels to better understand how translanguaging supports learners with diverse linguistic backgrounds. Further exploration into how translanguaging can be integrated with other pedagogical approaches may also enhance its effectiveness in fostering inclusive, student-centered learning environments.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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