and intercultural orientation, it could be further strengthened by adopting elements from international and Ukrainian peers, particularly in specialisation, technology, and experiential learning.

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Intellectual Chaos in using AI as a resource for language learners' decision-making

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ChatGPT has entered human life and has taken precedence over a person's mental activity in many ways. In the student environment, the various OpenAI (artificial intelligence) applications have proven to be effective mediators by

assuming the role of mainstream challengers in resolving dozens of learning tasks. The article discusses how the use of neural network-based language prediction models can cause intellectual chaos in the learner's brain, particularly for those inexperienced in training to communicate in a new language. Unlike a teacher, ChatGPT behaves as one of the parties in the educational process with immeasurable information parameters at its disposal and offers the learner either exhaustive or unverified content. In this regard, the question arises as to whether intellectual chaos is a factor that affects the management of academic workflow. The answer may appear straightforward: intellectual chaos provides resourcing for decision-making, but within a system of established certainty. Overcoming uncertainty lies in understanding that the scope of teaching extends to the need for additional instructional coaching on students' careful thinking of task-specific queries or prompts. Outlined in the paper, the attitudes pursue the ultimate goal of introducing learners to explicit algorithms for constructing a prompt mode that enables the most accurate fulfilment of a selected assignment.

Studying the role of intellectual chaos in foreign language learning when using AI requires a methodology that seeks to penetrate the dynamics of the information channel, indeterminacy and must-run transformation of the information transmitted. In this context, we relied on the following methods:

1. Theoretical and critical analysis – in connection with understanding the very idea of "chaos" as a cultural, philosophical, and pedagogical construct and, as the intention for employing the method, establishing a position in which chaos is not an error but a condition for transformation.

2. Analysis of student interaction with AI, which aims to map areas of chaos, its adaptation, and transformation.

3. Design-Based Research, which allows experimentation with educational environments and facilitates the study of how chaos can stimulate learning, metacognition, and linguistic flexibility.

4. Digital Trace Analysis: understanding the extensive range of learning data (from performance anomalies to patterns of engagement), generated by AI, is significantly facilitated by this analytical procedure. It also helps identify moments when chaos leads to accelerated learning or, conversely, frustration.

Dating back to ancient periods, the concept of chaos emerged within an explanatory paradigm of the world that was predicated on the tenets of harmony and the cosmos. Its essence is initially philosophical, preceding any mathematical characterization. Chaos theory investigates dynamic systems, with the objective of comprehending the implications arising from initial conditions.

It was James Clerk Maxwell who primarily stressed the importance of initial conditions, and he is regarded as one of the first individuals to articulate ideas related to chaos theory through his efforts in the 1860s and 1870s [2; 3]. Following this, in the 1880s, Jule Henri Poincaré's studies of the three-body problem revealed the potential for orbits to be nonperiodic yet not indefinitely expanding or approaching a static point [4]. Poincaré was the first to discover a mathematical description of a chaotic system.

L. Smith presents in precise terms the modern scientific interpretation of chaos: "chaos (C): A computer program that aspires to represent a chaotic mathematical system. In practice, all digital computerized dynamical systems are on or evolving towards a periodic loop; chaos (M): A mathematical dynamical system which (a) is deterministic, (b) is recurrent, and (c) has sensitive dependence on initial state; chaos (P): A physical system that we currently believe would be best modelled by a chaotic mathematical system" [6, p. 164]. From a philosophical standpoint, according to L. Smith [6, pp. 154–163], chaos is a concept that questions conventional ideas of determinism and indeterminism. Chaos in philosophy represents a recognition of the inherent complexity and unpredictability of the world, emphasizing the need to embrace uncertainty and limitations in our pursuit of knowledge. In education systems, exploration of chaotic tendencies commonly relates with dissecting the properties of fractals [1].

Frequently subject to misconception, chaos theory endeavors to reveal patterns (or underlying order) within processes that appear stochastic. Within the domain of AI, its principles might enable the construction of systems proficient in prospering amidst inherent unpredictability, thus empowering them to effectively navigate the complexities of real-world environments. Consider an AI entity exhibiting the adaptive and emergent qualities observed in weather systems, capable of accumulating insights from each shift and development in its operational context.

Intellectual chaos, or cognitive overload, refers to a state of mental confusion, where ideas lack organization or excessive accumulation of information, i.e., infobesity, results in thoughts that are scattered, contradictory, or poorly structured, making it difficult to think straight and come to decisions. Thus, intellectual chaos usually tends to emerge naturally when the mind processes several pieces of information simultaneously. Intellectual chaos contrasts with essential data, and the students' task is to extract this data from the informational clutter. Essential data is evidence that is pertinent and necessary to understand a situation or make a decision. In other words, it is the key knowledge, stripped of the superfluous, that gets right to the point.

The main difference lies in the fact that intellectual chaos is a problematic state where everything seems mixed up and random, but essential data represents targeted clarity – what one really needs to keep moving forward.

In a sense, identifying and targeting essential data is a technique for avoiding intellectual chaos. So, it is like sorting through a cluttered attic to keep only what truly matters.

In this article, we will substantiate this idea by focusing on a few examples of resolving controversial or chaotic issues in the study of English grammar, which, in turn, leads to a reduction in cognitive dissonance.

1. Chaos with Tenses: I have done vs I did. Source of chaos: Introduction of the present perfect tense after studying the past simple tense. Student's question: "Explain why you can't say I have done it yesterday? I performed the action in the

past, and the result is here now — well done me!" The essence of chaos: 1) The initial rule: The Past Simple tense is used for actions in the past when the time is specified (yesterday, last week). 2) New rule: Present Perfect – connection between the past and the present, experience, result. Dissonance: Student logically assumes that if they see the result of the action now (e.g., a repaired table), they should use Present Perfect, even if the action took place yesterday. Their mind refuses to accept that the magic word yesterday automatically switches the tense to Past Simple, cancelling the "connection to the present". Chaos ensues: "But then how do you show both the result and that it happened yesterday? Your system is illogical!"

2. Chaos with Articles: *the* vs *zero article*. Source of chaos: Abstract concepts and general categories. Student's prompt: "We say *I love literature* (without an article). But why then do we say *I love the literature I am studying*? It seems it is the same literature. And why is *Life is beautiful* (without an article), but *The life of a student is hard* (with an article)?" The essence of chaos: 1) The initial rule: *a* – one of many, *the* – specific, known. 2) The new rule: Zero article for generalizations (all literature, all life as a concept). Dissonance: The idea of specificity turns out to be vague. "The literature you study" is also a generalization, just a narrower one, right? Where is the line when the general becomes specific enough for *the*? The student begins to doubt every noun, and analysis paralysis sets in.

3. Chaos with Conditionals : Mixed Conditionals. Source of chaos: Attempting to express a complex thought that does not fit into the pattern. Student's prompt: "I want to say: *If I hadn't spent all my money yesterday* (past), *I could have bought this book today* (present). According to the rules, is this Conditional II (unreal present/future) or III (unreal past)? I have a condition in the past and a result in the present! I'm confused!" The essence of chaos: Initial rules: Conditional I (Real): *If I have money, I will buy the book.* Conditional II (Unreal Present): *If I had money, I would buy the book* (now). Conditional III (Unreal Past): *If I had had money, I would have bought the book* (yesterday). Dissonance: The student's mind refuses to break the past condition and present consequence, substituting it into ready-made but

inflexible templates. Chaos ensues: “So, do the British not think that way? Or do they think that way, but have different grammar for such thoughts?” (That’s right – Mixed Conditional: *If I hadn't spent the money yesterday, I would be able to buy the book now*).

4. Chaos with Gerunds and Infinitives: *I like to read* vs *I like reading*. Source of chaos: Verbs that can be followed by either, but with nuances. Or: Some verbs can be followed by both a gerund (*-ing*) and an infinitive (*to do*). Students often think that the difference is only in style, but in fact, it radically changes the meaning. Student’s prompt: “What is the difference between *I stopped to smoke* and *I stopped smoking*? These are completely different things! How can I remember this?” The essence of chaos: The initial rule: Some verbs are followed by a gerund (*enjoy doing*), while others are followed by an infinitive (*want to do*). Dissonance: Intellectual chaos arises here because the student is forced to move from simply memorizing lists of verbs (for example, “this verb is followed by *-ing*”) to the complex process of decision-making. They have to analyze context, nuances of meaning, and syntax. This breaks their initial perception of grammar as a set of rigid and simple rules and immerses them in the chaotic but rich world of living language, where nuance is everything.

The potential for intellectual chaos in language training with models like GPT underscores the need for careful development, responsible deployment, and ongoing monitoring. Accordingly, it stems from the following restrictive GPT properties:

1. Deficiency of Inherent Understanding: GPT lacks consciousness and does not understand language naturally. It relies on statistical patterns learned from vast amounts of data. The outcome may be responses that appear reasonable but lack genuine comprehension.

2. Bias and Ethical Issues: Used in models like GPT, training data can unintentionally reinforce or amplify biases. They may reflect societal biases, leading to potentially problematic or unfair outputs.

3. Limitations in Context Understanding: GPT is limited to taking along just a fraction of what was a prior text while generating responses because it only works

with a context window. This fact may result in misinterpretations or improperly contextualized responses.

4. Ethical Use: Both the designers and the consumers are held liable for their ethical feasibility with language models. It is significant to adhere to moral beliefs and clear expectations to prevent misuse, misinformation, and the creation of hazardous content.

5. Continuous Improvement: Models like GPT undergo continuous improvement. Alterations, analysis, and feedback are necessary to improve model functionality, resolve limitations, and guarantee responsible use.

6. Human-in-the-Loop: In many applications, it is essential to have a human to examine and approve outputs to make sure that the material generated complies with user expectations and ethical standards.

By extension, ethical considerations, transparency, and user education play core roles in mitigating any negative impacts and harnessing the benefits of these powerful language models.

In conclusion, intellectual chaos, which arises from the simultaneous processing of multiple pieces of information, can negatively impact decision-making, particularly in educational settings like language learning. This chaos is characterized by a lack of organization in thoughts and an overwhelming influx of information that leads to confusion. However, the context also emphasizes the value of identifying and targeting essential data amid this chaos. Doing so helps students clarify their understanding and avoid falling into intellectual disarray. The task of extracting essential data is akin to sorting through a cluttered space to retain only what is necessary for cognitive clarity and progression. Furthermore, diverse instances of chaos in grammar learning illustrate how intellectual chaos can lead to cognitive dissonance among students. The importance of instructional strategies that guide students through these complexities highlights the need for effective teaching methodologies that can address and transform chaos into productive learning experiences. In practice, embracing chaos in educational contexts, particularly in

language acquisition, can stimulate deeper engagement and learning when metacognitive strategies are applied effectively.

Overall, understanding and managing intellectual chaos can foster a clearer pathway to knowledge, enhancing both cognitive flexibility and linguistic proficiency.

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