Beyond Defensive Fixations: Using the Adult-Ego-Centric (ADEC) Model to Enhance Critical Thinking in L2 Speakers

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Abstract

Critical thinking (CT) is central to education, including EFL and EMI contexts, yet effectively fostering it in learners remains a challenge. CT is often assessed through multiple-choice tests or essay writing, but rarely within the context of spoken interactions, which are more challenging, as responses are not only more spontaneous in nature but can also be influenced by a need to defend self-face rather than seek optimal solutions, particularly during disagreements. Defensive fixations, driven by a desire to protect face, hinder active listening necessary for critical engagement by triggering emotionally charged responses. The Adult ego state (Berne, 1960s) refers to the aspect of individuals' personalities that enables accurate data processing and problem-solving using facts, reducing defensive fixations caused by prejudged thoughts (Parent ego) or reactive emotions (Child ego), which hinder CT in spoken interactions. This sequential explanatory mixed-methods design aimed to evaluate the effectiveness of the Adult-Ego-Centric (ADEC) instructional model on enhancement of CT in Burmese learners of English. A total of Sixty B2-level participants completed the four-week intervention. Quantitative analysis confirmed that the ADEC model significantly enhanced learners' CT in spoken interactions, with qualitative data from interview and post-test responses providing triangulated support. Furthermore, perceived delayed post-test data indicated that such improvements were sustained, with participants reporting confidence in applying CT ability in real-world settings weeks after the course. Overall, the findings have demonstrated that the ADEC model can effectively enhance CT in L2 speakers by specifically addressing the socio-cognitive barriers that impede critical engagement during spoken communication.

INTRODUCTION

The development of 21st-century skills, including critical thinking (henceforth CT), is increasingly vital in today's educational landscape. A rigorous study conducted by Butler et al. (2017) provides widespread evidence that CT ability is a better predictor of life decisions than intelligence, which makes educators focus more on fostering CT ability. Moreover, the transition from

Education 4.0 to 5.0 places human qualities like CT at the center of education, integrating them with advanced technologies (Ahmad et al., 2023). This shift significantly impacts English language education, not just general education. Moreover, CT is vital not only in mother tongue education but also in English-medium classes. This is because English communication classes are becoming common since English is increasingly prevalent as a global language, serving as a common medium for communication between cultures and nations, making it an essential tool in global interactions (Selvi et al., 2024).

The rapid shift from English as a Foreign Language (EFL) to English as a Medium of Instruction (EMI) is underscored by specific growth percentages, further highlighting its perceived status as a passport to the globalized world. In many countries, learning a second language is mandatory from as early as elementary school or even earlier (Mulalić, 2021). Consequently, there is a strong emphasis on English language teaching and learning at all educational levels, making it a compulsory subject in schools and universities. With the increasing number of English-medium classes and communication courses, the role of CT in education cannot be overlooked. If we ignore cultivating CT in these classes, students will have fewer opportunities to develop this key soft skill, which is essential in the current era.

Furthermore, ACTFL World-Readiness standards for learning languages define the goal areas namely 5Cs. In the goal area of connections, it is stated that learners build, reinforce, and expand their knowledge of various disciplines while using the target language to develop CT skills and creatively solve problems (American Council on the Teaching of Foreign Languages, 2011). This underscores the profound interdependence between CT and language learning. However, effectively fostering CT in L2 speakers remains challenging, particularly within the context of spoken interactions. These contexts are uniquely demanding for CT application, as responses are often influenced by a need to save face rather than seek optimal solutions, particularly during disagreements (Goffman, 1967). This triggers defensive fixations, characterized by cognitive rigidity and emotional reactivity, which hinder active listening essential for critical engagement.

While the influence of emotions on decision-making and higher-order thinking is well-established (Anticevic et al., 2011; Dwyer, 2023; Kahneman, 2011), pedagogical approaches specifically designed to mitigate defensive fixations and promote CT within L2 spoken interactions remain scarce. To address this gap, this study introduced the Adult-ego-centric (ADEC) model—a novel approach leveraging Berne's (1961) Structural model of Transactional Analysis theory. ADEC explicitly cultivates the rational, data-processing Adult ego state to counteract defensive reactions rooted in the Parent (prejudged) and Child (emotionally reactive) ego states. It integrates principles of input-based instruction (Renandya & Day, 2020) and exploratory talk (Mercer, 2002) as supporting elements. In doing so, the ADEC model proves valuable by helping learners regulate emotions, enabling them to engage in more objective dialogue through active listening, thereby enhancing CT.

LITERATURE REVIEW

CT Instruction in EFL/EMI context

Educators in EFL and EMI settings frequently deliberate the intricate relationship between language proficiency and cultural context by questioning whether critical thinking is inherently rooted in Western cultural paradigms. Although some research studies suggest that stronger linguistic foundations can facilitate critical reasoning tasks (Ünaldı & Yüce, 2021), studies also show that CT is achievable in students regardless of their English proficiency (Tai, 2022). CT is more a function of instructional quality rather than language proficiency. In Chinese classrooms, for example, teacher questioning strategies significantly influence students' CT during English reading, irrespective of students' language proficiency (Quanqin & Cheong, 2023).

Atkinson (1997) argues that CT is an unconscious practice for Westerners, shaped by social constructs rooted in Western cultures. However, to equate these specific cultural practices with the entirety of CT is limiting. As Dwyer (2017) argues, CT, by its nature, must be a conscious, reflective process; when skills become automatic, they cease to be critical. Furthermore, Atkinson's association of CT with verbal assertiveness is problematic. As Ryan and Louie (2007) note, less vocal students should not be presumed to lack CT ability, as depth of thought can be demonstrated in diverse ways, including through reflection, writing, or attentive listening.

Therefore, a more productive view is to see critical thinking not as a Western monopoly, but as a universal human potential whose expression is channeled by cultural and educational contexts. The core cognitive processes of analysis, inference, and evaluation are fundamental to human reasoning across cultures. The student-centered education systems in the West, which tend to minimize rote memorization, are one such cultural channel, promoting CT expression, but they do not represent the only path to developing CT. Both individualism and collectivism can either constrain or enhance CT, since each cultural orientation carries distinct advantages and limitations.

In regards of teaching CT in EFL/EMI contexts, CT has often been taught primarily through debate instruction, as it is the most prevalent strategy used to promote CT. Debate instruction is widely adopted as one of the most frequently used strategies for promoting CT among teachers (Zhang et al., 2020). However, traditional debate instruction is criticized for its limitations in fostering CT. It is argued that the traditional debate model typically focuses on presenting and understanding two opposing sides of an argument, which tends to promote binary black-and-white thinking. Researchers suggest that this approach oversimplifies complex issues and fails to encourage students to explore the nuanced layers of complexity that underlie them. Rather than merely understanding and debating two opposing sides, students should be encouraged to recognize the intricacies and complexities that contribute to any given topic (Wendland et al., 2015).

Building upon the limitations of traditional debate instruction, it is important to examine various pedagogical approaches to CT instruction. Scholars have identified four distinct approaches: the general approach, the infusion approach, the immersion approach, and the mixed approach. The general approach means the term CT is used throughout the lesson while the constructs

of CT ability are taught explicitly in a separate course, with a focus on developing these skills independently of a specific subject matter. The infusion approach is in-depth instruction in a subject matter that occurs alongside explicit instruction on general CT principles. In other words, CT instruction is embedded within the context of specific subjects.

The immersion approach means students engage in deep subject-matter instruction where CT ability is implicitly taught within the content. CT instruction is not explicitly addressed but is expected to be acquired naturally through engagement with the subject matter. The mixed approach combines elements of both the general and subject-specific approaches. Teachers provide exclusive instruction on CT principles in general while also applying CT skills within the context of specific subjects. Explicit instruction in CT skills can be integrated into both components (Sanavi & Tarighat, 2014).

In this study, CT is enhanced through an immersion approach, recognizing that explicit teaching of CT may potentially pose challenges for Asian students, particularly given the prevailing negative connotations associated with CT among Asian students (Akhter, 2019). These negative perceptions are evident in the views of some educators and students, who tend to perceive CT primarily as a process focused on criticism (Mok & Yuen, 2016).

Defensive fixations in interactive communication

The defensive mindset as defined by Dodge (2024) refers to a condition in which a person is always alert, hypervigilant, and ready to detect and respond to threats. The defensive-minded person is perceptually ready to encode even the ambiguous provocation cues as hostile and to experience emotions of fear and anxiety. Even individuals who do not typically have a defensive mindset can become defensive when placed in conditions that heighten feelings of opposition. For example, in a debate setting where participants are divided into opposing groups, the competitive and polarized atmosphere can trigger defensive responses. In such situations, individuals may perceive challenges to their beliefs or identity as personal attacks, leading to defensive behavior. This defensive behavior then causes defensive listening, which can further reinforce the cycle of defensiveness.

When individuals become defensive, even if they are trying to focus on the main task or discussion, a significant part of their attention shifts to defending themselves. Instead of fully engaging with the topic, they may worry about how others see them, try to appear more favorable, or focus on winning, dominating, impressing, or avoiding a perceived attack. These can distract them from meaningful dialogue and make it harder to listen openly, which further feeds into the cycle of defensiveness described earlier (Baker, 1980).

The failure of active listening, which is the behavioral manifestation of effective metacognitive strategy use, can significantly impair CT. Ivanovska and Petkovska (2019) as well as Ku and Ho (2010) demonstrated that a correlation exists between CT and metacognitive awareness, and this impairment extends across core CT constructs. Without active listening, individuals struggle to objectively analyze information, hindering their ability to distinguish relevant from irrelevant details. This deficiency also corrupts inference, as defensive listeners may disregard or misinterpret evidence that challenges their views. Finally, the evaluation of information's

credibility and significance is weakened when emotions like fear and anxiety cloud judgment. This collective disruption prevents reflective thinking and productive dialogue, ultimately obstructing effective problem-solving.

This cycle of defensiveness in communication is deeply connected to the concept of self-face (Goffman, 1967), which represents individuals' sense of identity and the image they strive to protect in interactions. When individuals perceive a threat to their self-face, such as challenges to their beliefs or competence, the defensiveness is activated, diverting attention from the primary discussion to self-face preservation strategies. These strategies often manifest as defensive listening, where individuals filter information through a lens of self-protection, misinterpreting or disregarding cues perceived as hostile. This focus on safeguarding one's self-face undermines CT processes, as individuals prioritize defense over objective reasoning.

Neuroscience provides a foundational explanation for this cycle of defensiveness through the concept of the amygdala hijack (Goleman, 1995). When an individual perceives a threat to their self-face, such as a challenge to their competence or beliefs, the brain's amygdala can trigger an overwhelming, impulsive emotional response (like fear or anger) that bypasses the prefrontal cortex, the center for rational thinking. In this state of stress-triggered cognition, the individual's focus shifts from processing information objectively to enacting self-preservation strategies. This neural mechanism directly underlines the communicative shift from a curious, reflective mindset to a defensive, fixated one, where listening becomes filtered through a lens of perceived threat. Consequently, the brain temporarily limits the ability to think critically. This can trap the person in a repeating cycle of defensiveness that obstructs productive dialogue and problem-solving, including when they are performing a speaking task that require the articulation or engagement with opposing viewpoints.

Expanding adult ego state

One such transformative framework is Eric Berne's Structural Model of Transactional Analysis (TA), which categorizes human behavior into three ego states: Parent (P), Adult (A), and Child (C) (Berne, 1961). Among these, the Adult ego state plays a particularly important role in overcoming self-face preservation behaviors such as defensiveness, as it fosters objectivity and enables individuals to process data accurately and solve problems based on facts rather than prejudged thoughts or childlike emotions. Supporting this view, Rahiman and Kodikal (2020) highlight the Adult ego state's capacity for collecting and processing information in the present moment, making it a valuable asset in promoting a clear-thinking process.

On the other hand, the Parent ego state and Child ego state consist of distinct personalities compared to the Adult ego state. The Parent ego state represents a set of thoughts, feelings, and behaviors that are learned or adopted from our parents, parent figures, or caregivers. The Child ego state is the part of our personality that consists of thoughts, feelings, and behaviors, reflecting all remembered emotional states from our childhood. Childlike tendencies and parentlike tendencies can pop up in our grown-up lives (Solomon, 2003).

While each ego state plays a unique role, the focus on expanding the Adult ego state carries significant implications for personal development, decision-making, and effective interpersonal

relationships. The behaviors exhibited by the Adult ego state are distinct and set humans apart from the rest of the animal kingdom (Close, 2021). Summers (2014) has argued that the Adult ego state is considered conscious, whereas the Parent and Child ego states are primarily unconscious. The Child ego state encompasses vulnerabilities, fears, and expressive methods tied to early life experiences, while the Parent ego state consists of fixed positions, admonitions, and injunctions learned from significant figures in the past. Furthermore, the Adult ego state is associated with health, representing our flexible, creative, and resourceful self, whereas the Parent and Child ego states are linked to defensive fixation, reflecting rigid or compulsive psychological patterns often employed during times of stress. Personal development, according to Summers (2014), involves expanding the relational capacity of the Adult ego state while reducing the dominance of the Parent and Child ego states.

Even though the Adult ego state of an individual excels in problem-solving matters, some researchers also highlight the significance of other ego states in different aspects of life, such as intimacy. Some argue that maintaining a strong connection with our inner free Child is crucial for fostering intimate relationships. Conversely, suppose individuals adjust themselves in a manner that detaches them from their free Child aspect. In that case, they decrease the amount of intimacy they can have in their lives (Solomon, 2003). This underscores the idea that various ego states contribute uniquely to diverse facets of personal and relational dynamics.

However, in the context of CT enhancement, the Adult ego state is highly recommended. Atasoy and Çankaya (2020) has highlighted an interesting trend wherein the Adult ego state of students increased with higher levels of education, while the critical parental ego state saw an increase with lower levels of education. Expanding on the significance of the Adult ego state, as mentioned by Berne (1961), holds the potential to support the removal of all emotional problems under its control. It evaluates the possibilities of dealing with the outside world by processing the data and individuals' needs to maintain their existence (Atasoy & Çankaya, 2020). These further underscores the integral role of the Adult ego state in both cognitive and emotional aspects of human functioning.

There is one interesting research study in the past in which the researcher helped students stay in the Adult ego state in EFL classes by incorporating TA into EFL listening and speaking materials. As the researcher believed that enhancing students' Adult ego state could be achieved by providing opportunities for them to practice engaging in different formats of dialogue in terms of three ego states, the researcher undertook this investigation to present an implementation of TA in EFL classrooms to improve students' language learning experience by integrating ego states into EFL listening and speaking practices. In essence, cultivating a robust Adult ego state means being able to recognize when one's Child and Parent ego states emerge automatically (Guey & Hwang, 2012). While this study offers valuable insights, few studies have systematically explored the role of ego states in L2 speaker contexts, especially their impact on CT, underscoring the need for further research in this domain.

The conscious self, or Adult ego state, plays a pivotal role in deliberately selecting elements from the Parent and Child ego states, which typically operate unconsciously, to respond appropriately to various situations. While the Parent and Child states often default to defensive reactions, the Adult ego can consciously activate and transform them into adaptive

tools. For example, the Adult ego may choose to apply rules and guidance internalized from the Parent ego or draw on the enthusiasm and compassion of the Child ego. By exercising this conscious choice, the Adult ego mediates emotional and behavioral responses, ensuring they are aligned with the needs of the situation.

In the ADEC model, the characteristics of ego states align with the framework proposed by Park (1991), which differ from contemporary interpretations. While TA in modern literature characterizes the Adult state as assertive, Park's (1991) framework, adopted in ADEC, reconceptualizes it as inquisitive and attentive. This shift is critical for critical thinking: inquisitiveness promotes exploratory analysis (e.g., questioning assumptions), while attentiveness mitigates cognitive biases like WYSIATI ("What You See Is All There Is") by examining absent evidence. Assertiveness, conversely, can lead to defensiveness by prioritizing persuasion over truth-seeking.

Park's (1991) framework, adapted and operationalized in this study, establishes a cognitive complexity hierarchy across ego states:

- The Child state (emotional, impulsive) operates at low complexity,
- The Parent state (prejudged, authority-internalized) functions at medium complexity, and
- The Adult state (inquisitive, attentive) engages at high complexity.

This hierarchy directly enables Kahneman's (2011) System 2 cognition: the Adult state's high-complexity processing engages deliberate, effortful analysis, regulating System 1's intuitive/emotional responses (manifest in Child/Parent states). By incorporating this framework into lesson design, ADEC's ego state exploration phase helps students recognize their own thinking patterns, fostering the metacognitive awareness essential for critical thinking.

ADEC instructional model

The ADEC instructional model developed in the present study primarily aims to enhance the CT ability of L2 speakers, with a concurrent focus on improving their speaking ability. Given that CT is often evaluated through verbal communication, speaking proficiency becomes a crucial aspect of assessing learners' CT ability. Encouraging speaking practice within ADEC serves a dual purpose: it not only fosters the development of CT but also provides a tangible means of evaluating it. Through verbal expression, learners demonstrate their capacity to analyze, infer, and evaluate information in real-time discourse, offering insight into their cognitive processes.

ADEC targets the development of CT and speaking ability by guiding learners through a structured process. It achieves this by guiding them through a structured, three-phase process. Phase 1: Ego State Exploration: This fundamental phase lays the groundwork by helping learners identify the ego states—Parent, Adult, or Child. Phase 2: Input-based Instruction: Here, learners actively practice using their Adult ego state during communication exchanges. Phase 3: Reflective Exchange: In this phase, learners reflect on their dominant ego states during communication, analyzing and deriving insights from their experiences more effectively.

The foundational phase, known as the ego state exploration phase, emphasizes the enabling objectives that follow in the lesson plan. Students will demonstrate proficiency in identifying the three ego states and they will apply this understanding to analyze dialogues, recognize the ego states exhibited in conversations, and propose solutions by encouraging a shift toward the Adult ego state. To ensure effective scaffolding, the content is aligned with Mayer's 12 Principles of Multimedia Learning (Mayer, 2021). Additionally, the lesson plan for this phase has been validated by a panel of five experts, ensuring content validity. The expert panel consists of professionals from psychology or those with expertise in ego states from various institutions. The lesson plan designed for this phase is included in Appendix 1, which offers tasks and exercises aimed at helping learners identify and analyze ego states.

The second phase, namely input-based instruction, involves student-centered activities designed to help learners practice staying in the Adult ego state during real-life interactions. These tasks emphasize input-based learning rather than rote language drills, encouraging students to incorporate knowledge meaningfully into conversations. The goal is to create a supportive environment where CT is naturally integrated into communication. Topics of the lessons are carefully selected to encourage final classroom discussions, allowing both parties to argue their stances.

The final Reflective Exchange Phase in the ADEC model encourages students to engage in pair work discussions on a specific issue, followed by writing self-reflection short reports that focus on their personal experiences with different ego states. In these reports, students reflect on their dominant ego state and any instances of ego state contamination, which helps solidify their understanding and identify areas for improvement. This self-reflection promotes deeper insight by encouraging students to articulate the reasons behind their self-ratings. Topping (2023) observed a positive response from students towards self-assessment, suggesting that it allows for the evaluation of deeper aspects of the self. Additionally, the teacher fosters exploratory talk (Mercer, 2002) by using a checklist presented in Appendix 4, which guides students in asking questions, challenging ideas, sharing relevant information, and building on others' contributions to ensure collaborative and critical dialogue.

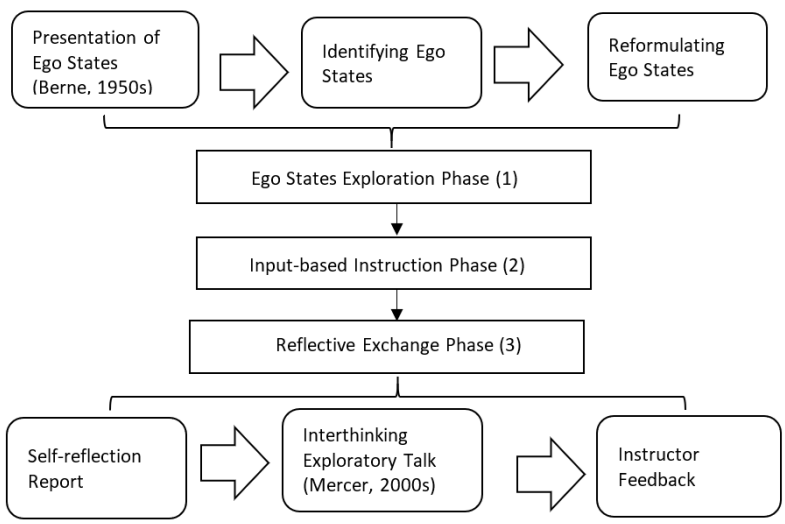

Figure 2 Comprehensive flow chart covering each phase of the ADEC instructional model

This study aimed at addressing the following questions:

1. To what extent can the ADEC instructional model (Adult-Ego-Centric Thinking) enhance CT ability of upper intermediate Burmese EFL learners?
2. What are upper intermediate Burmese EFL learners' opinions toward the ADEC instructional model?

RESEARCH METHODOLOGY

Research design

A mixed-methods approach was used in the present study. The immediate post-test and delayed post-test quantitative data as well as the qualitative data from the semi-structured interview and responses during the post-tests were collected and analyzed to better understand the phenomenon under investigation. Sixty upper intermediate Burmese EFL students were randomly assigned into the experimental and control groups. Random assignment minimized extraneous influences, making it a statistically reliable method, often regarded as the gold standard in treatment outcome research (Shadish et al., 2002).

In this study, both groups of participants received the same input content, the element of the ADEC phase (2) to ensure that any differences in the outcomes were not due to the exposure to the input itself. The key distinction between the groups is laid in the inclusion of the ADEC elements phases (1) and (3). The experimental group engaged in activities incorporating the Adult ego state operational knowledge which is central to the ADEC model.

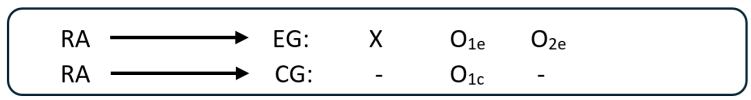

Figure 3 Randomized equivalent control group post-test design

RA = Random Assignment
EG = Experimental Group
CG = Control Group
X = ADEC Instructional Model as a Treatment
O_{1e} = Immediate Post-test of Experimental Group
O_{1c} = Immediate Post-test of Control Group
O_{2e} = Delayed Post-test of Experimental Group

The implementation of the ADEC instructional model started with engaging students in activities over four weeks. During the first week, Ego State Exploration (phase one) of the model was conducted to introduce the foundational concepts through multimedia assisted presentations, scenario analyses, and guided exercises (see Appendix 1 for a full lesson). The subsequent three weeks followed a cyclical pattern integrating Phases two and three. A typical session began with a brief review of ego states, followed by an input-based instruction phase where

students spent most of the time on reading and listening activities, with some opportunities to discuss controversial topics in small zoom breakout rooms. Sessions concluded with a reflective exchange (Phase three), where students shared their experiences, identified which ego states they manifested, with guidance from the instructor using exploratory talk prompts developed by Mercer (2002).

Structured pedagogical sequence of phase one moved learners from theoretical understanding of ego states to practical application. Activities 1 through 5 systematically built the foundational knowledge of ego states, using activities such as readings, vocabulary quizzes, ego states concept quizzes, scenario-based lectures to make abstract concepts tangible. Activities 6 to 9 then reinforced this knowledge through iterative practice, using true/false questions, matching exercises, and case studies, to train participants in the precise identification of ego states, a crucial metacognitive skill for self-awareness. Finally, Activities 10 to 14 facilitated the critical transfer of theory into real-time communicative competence. By analyzing transaction types, drawing transaction lines, and deconstructing dialogues from films and peer interactions, participants practiced depersonalizing conflict and consciously accessing their Adult ego state. Therefore, this progression from recognition (Activities 1–9) to application (Activities 10–14) provided the necessary repetition and varied context for participants to internalize the model.

This instructional design directly supported the experimental manipulation. While the control group received content instruction on the same content topics (Phase 2), their activities lacked the explicit framework of ego state identification (Phase 1) and the reflective practice (Phase 3) that is central to the ADEC instructional model. This ensured that the difference in outcomes could be attributed to the ADEC intervention itself. After completing the implementation, the immediate post-tests were administered to both experimental and control groups to quantitatively assess their CT after the intervention. To gain deeper insights, semi-structured interviews were conducted with the experimental group, allowing for qualitative data collection on their experiences and perceptions. Moreover, a thematic analysis of post-test responses was carried out to identify recurring patterns in learners' critical thinking performance. At a later stage, a Likert scale survey questionnaire was used at a later stage to receive students' opinions on the long-term retention of their CT ability. This combination of quantitative and qualitative methods ensured a comprehensive understanding of the impact of the instructional model.

Population and sample

The target population comprised both male and female students from Myanmar who had expressed an interest in improving their English language skills for university preparation. While their educational backgrounds were diverse, purposive sampling ensured participant homogeneity through an English-speaking proficiency threshold and motivation screening by applying strict criteria. Subsequently, random selection as the second step of sampling helped reduce variability in other factors like educational background, ensuring an internally valid study design. Participants needed to demonstrate B2-level speaking ability, as determined by the British Council English Score Application software and exhibit a positive level of motivation toward the content they would be engaging in the class.

The study controlled for participant motivation to prevent it from becoming a confounding variable, as motivation levels are correlated with both speaking ability (Minh & Ngoc, 2023) and critical thinking (Chana, 2024; Dwyer, 2023). Since student difficulties often reflect limited exposure to academic discourse rather than linguistic issues alone (McKinley, 2025), ensuring uniform motivation was critical. To this end, an exclusion criterion was applied whereby participants ranked seven topics by interest. Those who ranked a course-related topic lower than four were considered insufficiently motivated and excluded, thereby creating more homogeneous participant groups for the experimental design.

By carefully selecting participants based on these criteria, the researchers minimized potential extraneous variables, enhancing the internal validity of the study. This approach ensured that observed effects could be confidently attributed to the independent variable, the ADEC instructional model, rather than extraneous factors such as motivation and language proficiency. After gathering voluntary participants who met the purposive sampling inclusion criteria, simple random sampling was used to select the final participants. While more students expressed interest than the target number required, only 30 participants were needed for each of the control group and experimental group, resulting in a total of 60 participants.

Data collection instruments

The data collection instruments employed in this study underwent the IOC validation process. Specifically, the CT test, CT scoring rubric, semi-structured interview questions, and delayed post-test questionnaire were reviewed and validated by a panel of three experts in language instruction. This rigorous procedure underscored the credibility of the study's assessment tools, setting a strong foundation for data collection.

To evaluate students' CT ability, a performance-based assessment (PBA) was conducted in the form of a one-on-one discussion via Zoom, with the teacher serving as the interlocutor. This method, recognized for bridging the gap between knowledge and real-world application, assessed the impact of the ADEC instructional model on Burmese EFL learners. Two raters participated: one acted as both the evaluator and the interlocutor to ensure consistent evaluation, while the second focused solely on assessing performance. Each test lasted approximately eight minutes. Students discussed two topics, one course-related and one unseen, each lasting three and a half minutes, with an additional minute for introductions and instructions. The interlocutor presented opposing viewpoints to the student's stance. The speaking tests were recorded with participants' permission for subsequent review to ensure evaluation accuracy and thematic analysis of responses.

In addition, the CT scoring rubric utilized in this study was tailored to assess CT ability within interactive verbal communication settings. It was adopted from the Buck Institute for Education, with the CT constructs identified in their rubric aligning closely with those found in Dwyer (2017). The rubric specifically evaluated the CT constructs of analysis, evaluation, and inference. Unlike traditional rubrics designed for writing or monologue assessments, this rubric was specifically modified for evaluating CT in interactive discourse. The full rubric is provided in Appendix 2.

Finally, the perceived delayed post-test questionnaire was designed to evaluate the long-term effectiveness of the ADEC instructional model in enhancing CT. Comprised of six Likert-scale questions, it examined key dimensions such as knowledge retention, transferability of CT skills, behavioral changes in problem-solving, self-assessment of CT growth, and anticipated long-term benefits. Responses were measured using a five-point Likert scale ranging from "Completely" (5) to "Very Little" (1), with a scoring system to categorize perceptions from very low to very high based on established benchmarks. Importantly, the questionnaire was administered four weeks after course completion, adhering to common research practices for the delayed post-test to assess retention and application. The full questionnaire is provided in Appendix 3. The design of the post-test, interview and delayed post-test were guided by Kirkpatrick's evaluation model, which distinguishes between short-term learning and long-term application (Smidt et al., 2009).

RESULTS

The effects of the ADEC instructional model on improvement of CT ability

Table 1 below shows the CT scores of the control and experimental groups in immediate post-tests.

Table 1

Descriptive statistics of control and experimental groups' immediate post-test CT scores

Group	N	M	SD	SE
1	30	12.50	0.94	0.17
2	30	11.10	1.42	0.25

As shown in Table 1, the experimental group performed better on the CT immediate post-test compared to the control group, with a more consistent performance among its members. As can be seen in Table 2, there were significant differences between the two groups immediately after the intervention (t = 4.500, p = <.001).

Table 2

Independent samples t-test between the control and experimental groups' CT immediate post-test scores

	Levene's Test for Equality of Variances				Significance	95% Confidence Interval of the Difference	
	F	Sig.	t	df	Two-Sided p	Lower	Upper
Equal variances assumed	8.92	.004	4.500	58	<.001	.777	2.022
Equal variances not assumed			4.500	50.196	<.001	.775	2.024

The following Table 3 provides detailed descriptive statistics and T-test results for students' immediate speaking post-test scores in each aspect of CT ability.

Table 3

Descriptive statistics and t-test of students' immediate speaking post-test scores in each aspect of CT ability

Construct	Experimental Group		Control Group		t	p
	M	SD	M	SD		
Analysis	4.06	.63	3.63	.88	2.16	.03
Inference	4.16	.59	3.73	.69	2.60	.01
Evaluation	4.26	.44	3.73	.86	2.98	.00

The results indicated that the ADEC instructional model significantly enhanced students' CT in the constructs of analysis, inference, and evaluation, as reflected by statistically significant *p*-values ($p < .05$), along with their overall CT ability. The notably lower scores in the control group underscored the inherent challenge of applying CT effectively in interactive, potentially face-threatening L2 contexts. The ADEC model successfully mitigated these difficulties by specifically targeting the defensive fixations that impeded objective analysis, inference, and evaluation during spoken interaction. High inter-rater reliability ($r = 0.80$) further confirmed the robustness of these findings. Collectively, these results provided strong empirical evidence for the effectiveness of the ADEC instructional model in fostering CT development for L2 speakers engaged in spoken discourse.

Students' opinions towards the ADEC model

After the ADEC instructional model-oriented teaching, a semi-structured interview (SI) was conducted with a subset of the experimental group. Six students were randomly selected and coded as Ss-E-SI1 to Ss-E-SI6 to indicate their individual identity, group membership, and data source while maintaining anonymity. The interviews were conducted via Zoom. Thematic analysis of students' opinions towards the ADEC instructional model was employed, using data drawn from an open-ended questionnaire that students completed at the end of the ADEC implementation.

Practical application of ego states

The findings showed that students perceived that practical use of ego states in learning allowed them to bridge the gap between theory and real-life situations, as can be seen in the following excerpts:

"*We learned how to apply our knowledge to real-world.*" (Ss-E-SI2)

"*I think the teacher who provided the topic made us very memorable to the lessons he let us watch the video of some demos again and again that led us to remember the lessons very well.*" (Ss-E-SI4)

"*Providing clear examples through a scenario made the lesson appear straightforward.*" (Ss-E-SI3)

The integration of real-world scenarios and multimedia resources aligned with Mayer's principles (2021) in the ADEC model emerged as a cornerstone of its effectiveness. Students

highlighted how repeated exposure to practical demonstrations, such as videos and contextualized examples, solidified their understanding of ego states, bridging theoretical knowledge with tangible application. Repetition and clear demonstrations turned abstract ideas into tools they felt ready to use, making lessons memorable, demonstrating that hands-on learning built both confidence and competence.

Perceived enhanced CT

In addition to practical application, they noted improvements in their CT through the ADEC program, as they described:

"*I feel more logical after taking the course.*" (Ss-E-SI5)

"*Analyzing and categorizing different scenarios into CPA ego states helped me improve my CT the most.*" (Ss-E-SI3)

"*Working with group members helps me think about issues deeply because of their different viewpoints.*" (Ss-E-SI2)

Students reported that tasks like categorizing scenarios into CPA ego states and engaging in group discussions helped them evaluate situations systematically and develop logical reasoning. The benefit of group work was highlighted, explaining that diverse viewpoints challenged them to think deeply and consider alternative perspectives while operating from the Adult ego state. Overall, the ADEC program's focus on structured analysis and interactive activities helped students feel more confident in their ability to think critically and solve problems effectively.

Challenges in ADEC

It is worth noting that despite its benefits, implementing the ADEC instructional model was not without challenges. Students encountered obstacles related to language, technology, and group dynamics, which sometimes hindered their learning experience, as can be seen in the following sentiments:

"*When we practice being role of Adult ego in conversation, it really burned my brain because I must use new vocabulary out of my head, and I never use it.*" (Ss-E-SI1)

"*I didn't pick up much from the video due to technological constrains.*" (Ss-E-SI6)

"*Some participants were a bit reluctant to contribute to discussions, so I encouraged them to share their ideas first and tried to be supportive.*" (Ss-E-SI3)

While the ADEC instructional model showed strong teaching benefits, students also faced challenges like language difficulties, technical problems, and uneven participation in groups. Using new vocabulary during role-plays was hard for some, showing the need for more language support. Technical issues sometimes made it difficult to follow video lessons. Despite

these problems, students found ways to adapt, such as encouraging each other and working together. These results highlighted the need to balance new teaching methods with helpful support in language, technology, and teamwork to create a fair and effective learning environment for everyone.

Students' responses during the post-test

During the post-test, conducted after the completion of the ADEC instructional model, a total of six students were randomly selected for detailed analysis. Three students were chosen from the control group and three from the experimental group. Each student was assigned a code to indicate individual identity, group membership and data source, with Ss-C-PT1 to Ss-C-PT3 for control group students and Ss-E-PT1 to Ss-E-PT3 for experimental group students. This subset was selected independently of the students who participated in the semi-structured interviews. Their verbatim responses were analyzed thematically, revealing distinct ego states that shaped the way they engaged with the examiner's stimulus.

Prevalence of the adult ego state in the experimental group

Students from the experimental group often displayed behaviors consistent with the Adult ego state. For instance, one student challenged the examiner's broad claim about air quality in rural versus urban areas by citing Chiang Mai as an example where the air quality is worse than Bangkok.

"*...but you know, take, you know Chiang Mai as an example... the air quality in Chiang Mai is way worse than Bangkok. So... people have, you know, usually over generalized...*" (Ss-E-PT1)

The student effectively analyzed "countryside air quality" by introducing the counterexample. This demonstrates a chain of reasoning that uncovers an inconsistency in the argument. The student was processing data (the example of Chiang Mai) to challenge overgeneralization.

A similar analytical stance was evident in student 2's response, when faced with an examiner's dense, academic statement about the purpose of exams, student 2 interrupted the flow to request clarity:

"*Can you elaborate on that by using some normal words? Because, you know, I'm not familiar with scientific words.*" (Ss-E-PT2)

The student effectively analyzed the communication by identifying a lack of clarity and directly requesting simplification. This demonstrates an analytical approach to understanding the core of the argument by first ensuring comprehension of its components. The language was inquisitive and focused on objective understanding ("Can you elaborate..."), responding to the structure of the argument rather than dismissing it. The student is processing the information by recognizing a knowledge gap and seeking factual clarification to enable further discussion.

Prevalence of parent and child ego states in the control group

In contrast, the control group's responses were primarily coded under the Parent and Child ego states, which correlated with less effective critical engagement and a reliance on judgment or passive compliance.

The Parent ego state was evident in responses that were judgmental and dismissive. For example, student 4 reacted to the examiner's argument that exams prepare students for workplace stress by rejecting the idea outright:

"*Exams… I gotta say that it's really narrow mindset when, when you say it's such a thing, because, you know, children nowadays, they're more mature.*" (Ss-C-PT4)

The student made a weak evaluation. The opponent's argument was dismissed by labeling its "mindset" as "narrow" rather than engaging with its logic or evidence. The supporting point about children's maturity was a broad, unsupported generalization ("children nowadays...") that was not logically developed to counter the original claim about stress preparation. It substituted a personal opinion for a reasoned critique. The response was characterized by a judgmental pronouncement ("really narrow mindset"). Instead of logically processing the stimulus (Adult), the speaker imposed their own value judgment on the opponent's perspective, which is a hallmark of the Parent ego state.

Student 5's reaction also showed a similar pattern, though expressed more subtly. When the examiner suggested analyzing the past five years of data to establish a baseline, the student replied:

"*Yes, we can do that, but….*" (Ss-C-PT5)

The student gave the appearance of agreeing with the examiner's suggestion but continued to push the original idea, ignoring the new information instead of integrating it into the reasoning process. This failure to incorporate relevant evidence is a flaw in the inference process.

Finally, one response from the control group reflected the Child ego state, characterized by compliance without critical engagement. When the examiner introduced academic jargon instead of a substantive argument, student 6 simply replied:

"*Yes, that's it.*" (Ss-C-PT6)

The student's response did not integrate or analyze the examiner's statement. No reasoning or evidence-based inference was displayed. Although the examiner signaled disagreement through jargon-heavy language that contradicted the student's stance, the test-taker responded affirmatively without seeking clarification. This was a passive response without reasoning. The student accepted the statement superficially without actively processing it.

Based on the thematic analysis of the post-test responses, it was evident that the ADEC instructional model successfully fostered the cognitive conditions for enhanced critical thinking by cultivating the Adult ego state in learners. The stark contrast between the experimental and control groups underscored this point: students trained under ADEC consistently demonstrated inquisitive, evidence-based reasoning, effectively analyzing arguments and seeking clarification. In contrast, the control group students predominantly operated from Parent or Child ego states, resulting in judgmental dismissals, passive compliance, or a failure to integrate new information.

The perceived delayed effects of the ADEC instructional model on CT

Table 4

Descriptive statistics of the perceived delayed effects of the ADEC instructional model on CT

	N	Mean	SD	Meaning
Retention of Knowledge	30	4.20	0.61	High
Transfer of Learning	30	4.13	0.81	High
Behavioral Changes	30	3.90	0.84	High
Self-assessment of CT	30	3.76	0.43	High
Overall Long-term Impact	30	4.06	0.73	High
Valid N (listwise)	30			

The questionnaire employed a five-point Likert scale to assess participants' responses, with values ranging from 1 (Not at all) to 5 (Completely). Perceptions of the ADEC instructional model were classified as very low (1.00–1.89), low (1.90–2.69), moderate (2.70–3.40), high (3.50–4.29), and very high (4.30–5.00). The results reflected participants' perceptions of the delayed effects of the ADEC model on CT, with consistently high ratings reported even four weeks after the instructional period. These findings suggest that learners recognized the ADEC model's sustained impact and effectiveness in fostering CT over time.

DISCUSSION

The ADEC model significantly enhanced CT performance by fundamentally altering how participants approached disagreement. This study argues that the intervention succeeded by activating the Adult ego state, which in turn reduced defensive, face-saving behaviors typically driven by the Parent and Child ego states. Quantitative and qualitative data confirm that this psychological shift allowed the experimental group to prioritize collaborative problem-solving over protecting their self-image, leading to significant improvements in evaluation, analysis, and inference.

The findings were interpreted through the integrated lens of Goffman's (1967) face theory and Berne's (1961) ego state theory. Face, or public self-image, becomes a priority to protect in threatening interactions. This defense is often governed by the impulsive Child ego state or the judgmental Parent ego state. The control group's behavior aligned with these defensive states. In contrast, the experimental group's ability to operate from the Adult ego state allowed them to focus on the logical structure of arguments rather than on defending their stance.

Guided by this theoretical lens, the analysis reveals a clear distinction in behaviors between the experimental and control groups. The control group's interactions were characterized by defensive strategies that actively undermined critical thinking. Thematic analysis of post-test responses revealed a consistent pattern where the primary goal was self-face preservation rather than mutual understanding. This represents a fundamental failure of active listening, which requires understanding the other person first before seeking to be understood (Hoppe, 2007). For instance, participants frequently employed judgmental dismissals, such as labeling an argument a "narrow mindset" (an ad hominem fallacy) or exhibiting passive compliance like superficially agreeing ("Yes, that's it.") only to disengage. This defensive posture was underpinned by significant cognitive biases. Participants often fell prey to confirmation bias, selectively acknowledging information that supported their existing views, and the false dilemma fallacy, framing complex problems in only black-and-white terms. These strategies prevented a deep engagement with opposing viewpoints and distorted their evaluative reasoning.

These observed patterns of defensiveness align with broader psychological phenomena that explain why such behaviors are detrimental to CT. The control group's interactions frequently resembled the psychological games described by Berne (1961), such as the "Yes, but..." game, where the hidden goal is to reject suggestions and maintain one's own position. This defensive posture can also be understood through the Dunning-Kruger effect, where a lack of metacognitive awareness leads to overconfidence in flawed knowledge (Kruger & Dunning, 1999), and a fixed mindset that avoids challenges perceived as threats to one's ability (Dweck, 1999). While this current study did not measure these constructs directly, the prevalence of such behaviors in the control group suggests that the Parent and Child ego states create cognitive conditions that make it harder for individuals to think critically.

In sharp contrast to the control group's defensive patterns, the experimental group demonstrated a consistent priority for achieving clarity and resolution. Their communication was characterized by analytical behaviors that fostered constructive dialogue. When faced with complex or unclear arguments, they actively sought clarification, as when one participant asked the examiner to elaborate "by using some normal words." This approach effectively managed cognitive load (Sweller, 1988) by filtering out irrelevant complexity. Furthermore, they used factual counterexamples to engage directly with the logic of the argument itself. This shift indicates the operation of the Adult ego state, where the "face" of being seen as competent or winning in debate was less important than the collaborative pursuit of a well-reasoned solution.

The critical question, therefore, is how the ADEC intervention facilitated this shift from defensive thinking to critical thinking. The superior performance of the experimental group is best explained by the model's specific design, which systematically cultivated the Adult ego state. Qualitative reports from students that "analyzing scenarios helped improve CT" point to the foundational role of Phase 1. By using scenario-based lectures and case studies to make the abstract concepts of ego states tangible, the model provided a crucial metacognitive framework. This framework allowed learners to consciously recognize their own ego states, a necessary precondition for self-regulation. The marked improvement, moreover, in evaluation and inference among the experimental group can be attributed to the weekly Reflective Exchange of Phase

3. The constant practice of analyzing their own conversations likely heightened their metacognitive awareness, allowing them to better identify logical fallacies and weak arguments in their own reasoning and that of their interlocutor during the post-test.

This study demonstrates that effective critical thinking interventions must address the underlying socio-cognitive dynamics of communication. The findings indicate that by fostering greater awareness of internal psychological states (Berne, 1961), individuals can shift from defensive, self-focused communication to a more objective and analytical mode of engagement. This cognitive shift is paramount, as it enables a focus on logical reasoning and collaborative problem-solving over the protection of one's self-image (Goffman, 1967). Consequently, the cultivation of such metacognitive awareness emerges as a critical mechanism for enhancing CT performance (Ku & Ho, 2010), suggesting that future pedagogical approaches should integrate strategies that target these foundational psychological barriers.

CONCLUSION

This study set out to examine whether the ADEC instructional model could enhance CT in L2 learners by addressing socio-cognitive barrier of defensive fixations linked to the Parent and Child ego states. The findings show that participants trained in the Adult ego state exhibited significantly higher CT performance, as they moved beyond self-face preservation (Goffman, 1967) toward exploratory dialogue (Mercer, 2002). This shift enabled notable gains in analysis, inference, and evaluation, all of which are the core components of CT.

The study offers two key theoretical contributions. First, it provides empirical evidence for a theoretical model that integrates Goffman's (1967) face theory with Berne's (1961) ego state theory to explain CT performance in spoken interaction. It demonstrates that defensive fixations are not just a social phenomenon but are rooted in specific, identifiable psychological states (Parent/Child). Second, it positions the Adult ego state, conceptualized as inquisitive and attentive (Park, 1991), as a critical metacognitive tool that regulates System 1 intuitive/emotional responses (Kahneman, 2011), thereby creating the cognitive conditions necessary for deliberate, System 2 CT to occur.

These results confirm the practical value of the ADEC instructional model for EFL/EMI classrooms, offering a structured pedagogical approach that reframes disagreement as an opportunity for collaborative problem-solving rather than a threat to face. For educators, this implies that CT instruction should move beyond mere logical reasoning exercises to include explicit training in socio-cognitive awareness. Practical applications include: (1) designing tasks that explicitly practice identifying ego states in dialogues, (2) creating a classroom culture that rewards inquisitive questioning (as distinct from self-serving questioning) and active listening over persuasive dominance, and (3) integrating reflective practice where students analyze their own communicative stance during discussions.

The central takeaway from this research is that CT in spoken interaction is as much about managing one's psychological stance as it is about logical skill. The ADEC model demonstrates

that by fostering the Adult ego state, learners can overcome the fundamental barrier to CT in spoken interactions, defensiveness, which pollutes clear thinking.

LIMITATIONS AND RECOMMENDATIONS

This study has several limitations that suggest directions for future research. Given neuroplasticity principles, where sustained practice strengthens neural pathways, future implementations should extend the intervention duration to solidify the activation of the Adult ego state and the associated CT gains. Delayed post-tests spaced over months or years are needed to measure lasting cognitive reorganization. Furthermore, future research could be strengthened by designing alternative delayed assessments that go beyond perception-based measures while maintaining ecological validity.

Additionally, while participants managed the cognitive load imposed by the interlocutor's jargon-heavy language during the post-test, it remains unclear how frequently they can tolerate such demands. Future studies should investigate this threshold. Since there are several models of TA, future researchers could also explore CT using the functional model of ego states. Furthermore, alongside self-face preservation, another barrier that may warrant investigation is group-face preservation, which might manifest as superficial compliance without critical engagement. Finally, whereas this study used thematic analysis, future research could employ discourse analysis for a more thorough examination of the interactions in different actual contexts.

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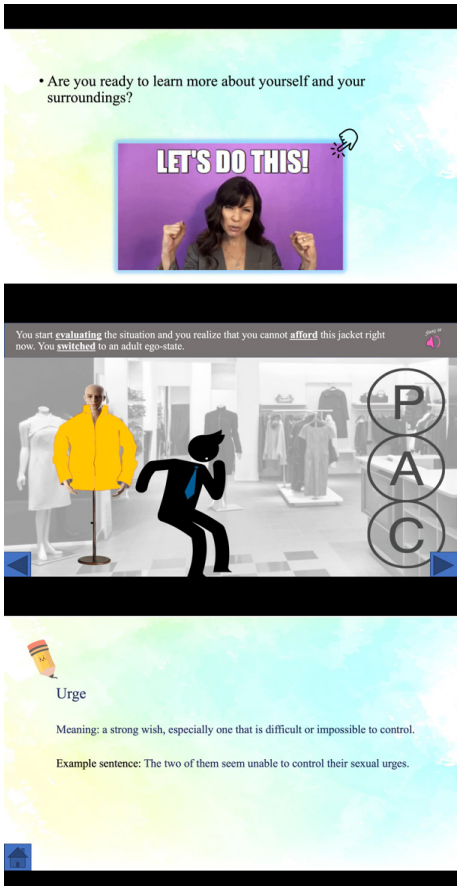
Appendix 1
Lesson Plan (A)

Ego States Exploration
Time – 8 hours
Key Focus – Ego States of Transactional Analysis

Terminal Objective	Students can identify ego states and apply them to analyze dialogues, focusing on the Adult ego state.
Enabling objectives	• Students can demonstrate proficiency in identifying the three ego states: o Parent o Adult o Child • They can apply this understanding to: o Analyze dialogues. o Recognize ego states exhibited in conversations. o Propose solutions by encouraging a shift toward the Adult ego state.
Warm-up	1. Have you ever found yourself acting differently around certain people or in specific situations? Why do you think that is? 2. What factors do you consider when making decisions, and how do they influence your choices?
Presentation	Activity (1): Concept Introduction Students read the paragraph carefully, one sentence at a time. The paragraph outlines the concept of ego states, explains their functions, and includes a scenario as an example. The teacher clicks the sound icon only when students are ready. Students read each sentence with the aid of animations, sound effects, and highlighted words that, when clicked, provide vocabulary definitions. Students read the following paragraph sentence by sentence: Transactional analysis defines the complexity of thinking, feeling, and **behavin**g as an **ego state**. There are three ego states: Parent, Adult, and Child. In the Parent ego state, you think, act, and feel like your **attachment figures**. If you are in the Adult ego state, you act **logically**, appropriately, and in relation to the present. If you are in the Child ego state, you think, feel, and act as you did in childhood. All three ego states are defined as the **structural model** of ego states in Transactional Analysis (TA). Each ego state is the combination of thinking, feeling, and behavior. In the upcoming example, we will be mainly focusing on the behavior. You are out shopping and see an amazing jacket. Excited, you **try it on**. It **fits** perfectly, and you really want it. You may be in the Child ego state. From this ego state, your needs mainly arise. You look at the **price tag** and see 1,199 dollars. “Oh no!” **Disappointed**, you talk to yourself in a parental voice: “This jacket is a total **scam**. It is not even **waterproof**.” At the same time, you feel a strong urge to buy the jacket, **nevertheless**. You are back in the Child ego state.

You begin **evaluating** the situation and realize that you cannot **afford** the jacket right now. You switch to the Adult ego state. However, the **urge** becomes stronger, and you buy it anyway. Your Adult ego state switches off, and your Child ego state is back on. When you return home, your partner is shocked by the price. You have a hard time explaining your **purchase**. You are in the Child ego state. After thinking about that again, you accept the fact that it is too expensive, and you finally decide to return it the next day. This decision is made from the Adult ego state.

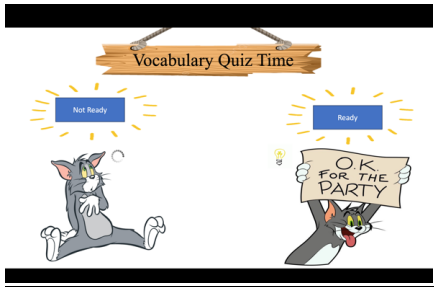


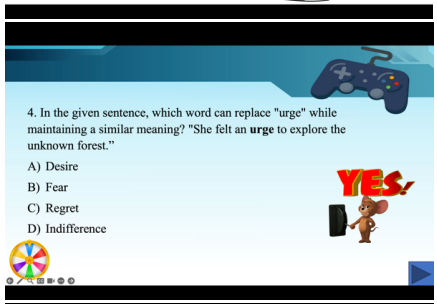
Activity (2): Vocabulary Quiz

The teacher explains how students complete a vocabulary quiz consisting of five multiple-choice questions.
The class divides into two groups. Students are instructed to raise their hands on Zoom using the icon when they want to answer.

After reading each question, students take a moment to think and discuss their answers with their group mates in their designated chat box on Telegram before selecting the correct option.

Once the quiz is complete, the teacher introduces a “Spin the Wheel” activity.
The class reflects on what they have learned and discusses how to use the vocabulary in conversation.





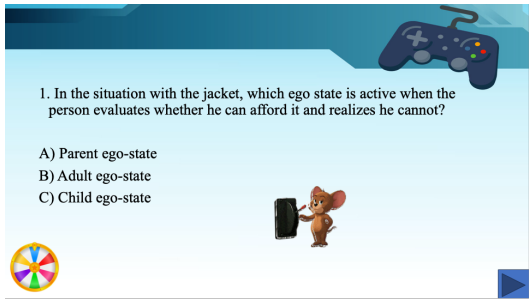
Activity (3) Guided Re-reading

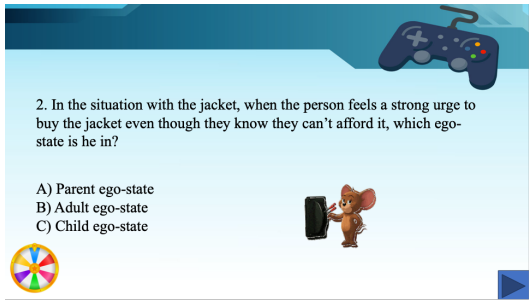
Students read the paragraph a second time to reinforce understanding.

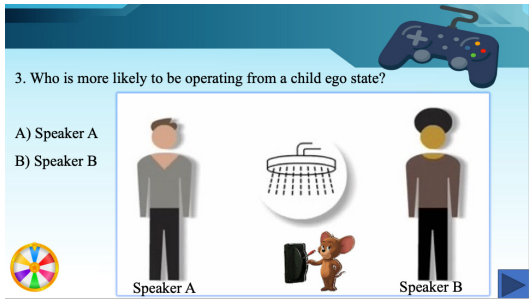
Activity (4) Comprehension Check

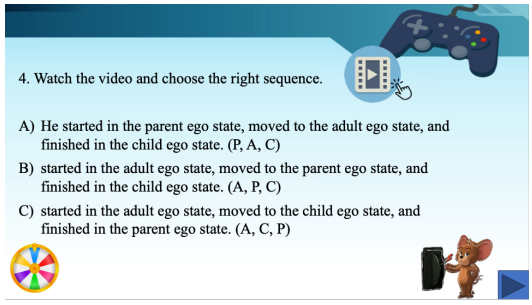
Students answer five multiple-choice questions before engaging in the bonus “Spin the Wheel” activity.

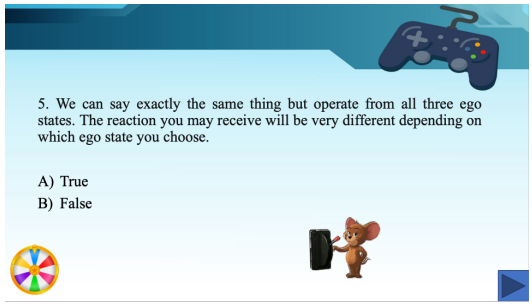
The teacher explains the procedure. The class is divided into two groups as in Activity (2). Students raise their hands using the Zoom icon. The rest of the procedure follows the same format as Activity (2).


1. In the situation with the jacket, which ego state is active when the person evaluates whether he can afford it and realizes he cannot?
A) Parent ego-state
B) Adult ego-state
C) Child ego-state

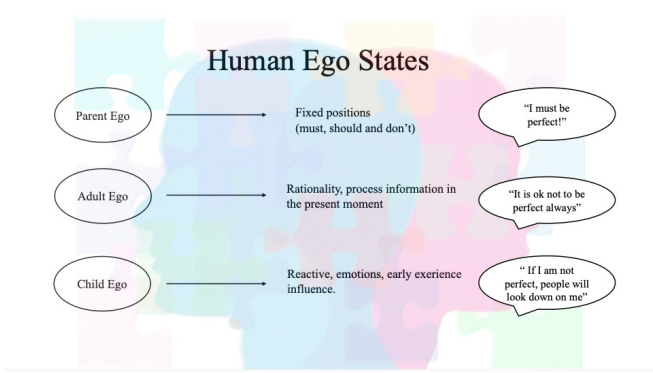

2. In the situation with the jacket, when the person feels a strong urge to buy the jacket even though they know they can't afford it, which ego-state is he in?
A) Parent ego-state
B) Adult ego-state
C) Child ego-state

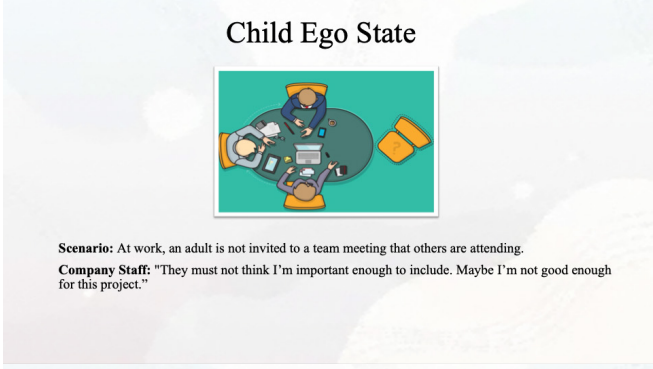

3. Who is more likely to be operating from a child ego state?
A) Speaker A
B) Speaker B
Speaker A
Speaker B

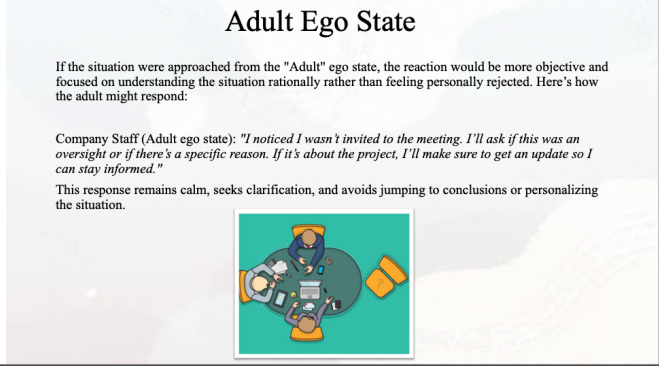

4. Watch the video and choose the right sequence.
A) He started in the parent ego state, moved to the adult ego state, and finished in the child ego state. (P, A, C)
B) started in the adult ego state, moved to the parent ego state, and finished in the child ego state. (A, P, C)
C) started in the adult ego state, moved to the child ego state, and finished in the parent ego state. (A, C, P)


5. We can say exactly the same thing but operate from all three ego states. The reaction you may receive will be very different depending on which ego state you choose.
A) True
B) False

Practice	Activity (5) Scenario-based Lecture on Ego States The teacher explains the concept of ego states using the dialogue scenario, identifying which ego state each individual is functioning in while also connecting it to the previous reading passage.



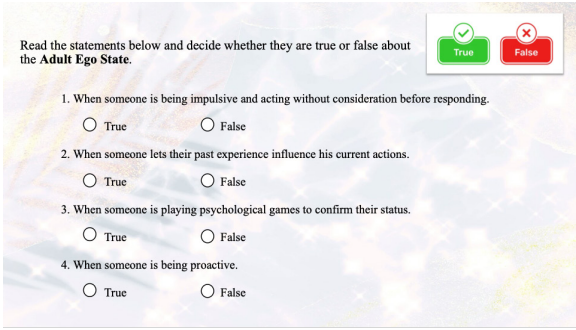




Activity (6) True or False

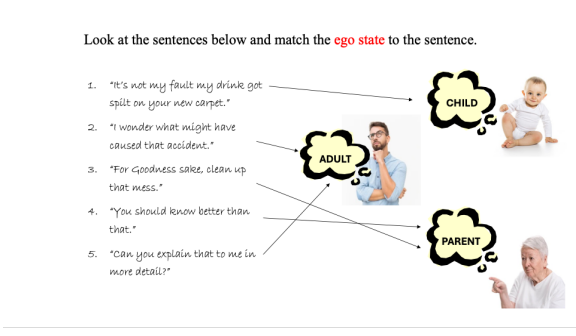
Read the statements below and determine whether they are true or false regarding the Adult Ego State.

The teacher instructs each student to write their answers and send them in a private message to assess their individual understanding of the concept.



Activity (7) Matching Exercise

Look at the sentences below and match each one to the appropriate ego state.

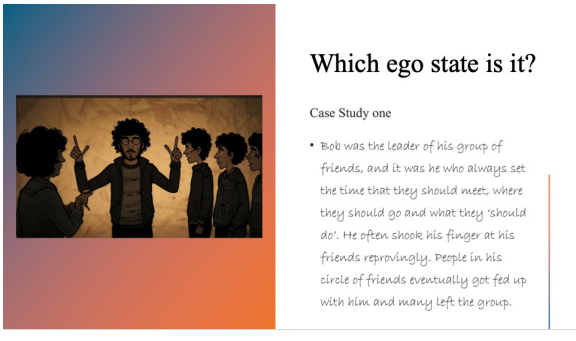


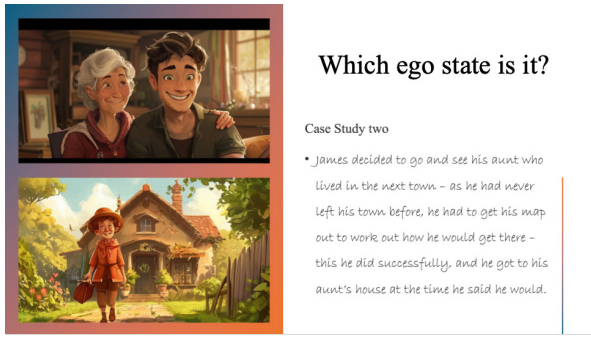
Activity (8) Case Study of Ego States

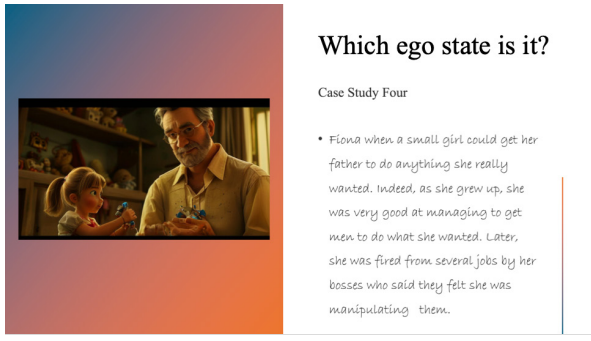
The teacher divides students into groups of five and assigns one case study to each group.

Students discuss the case in breakout rooms and identify the ego state represented.

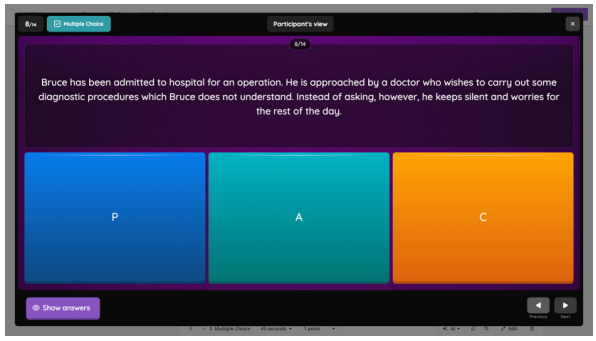
The teacher assigns additional case studies until all are completed.

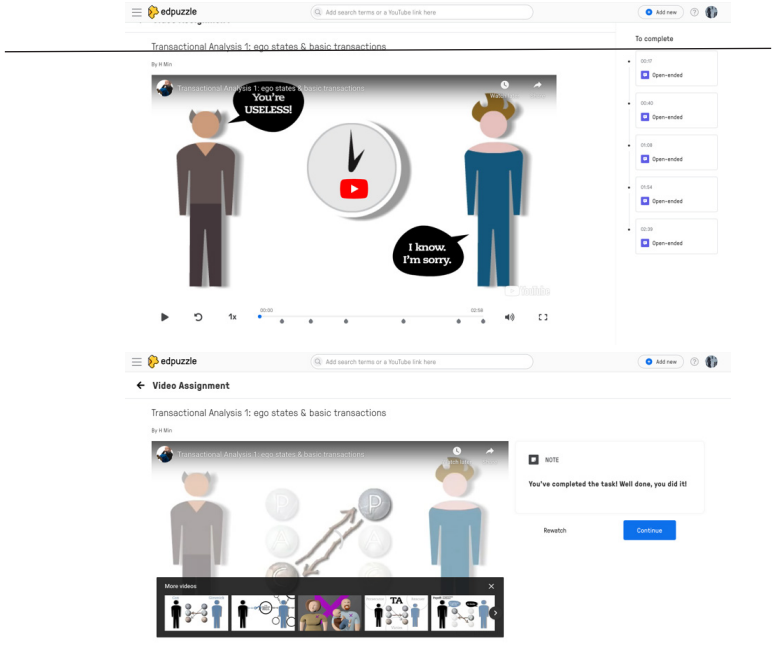






Activity (9) Quiz via Quizizz.com
Students complete multiple-choice questions individually using Quizizz. An example question from the quiz:



	Activity (10) Lecture on Transaction Types The teacher explains different transaction types using visual aids and highlighted keywords. Activity (11) Drawing Transaction Lines The teacher provides each pair of students with a dialogue. Students create a transaction line to illustrate the interaction between the two characters, identifying the ego states each character is engaging in and determining the type of transaction taking place. A total of three dialogue pairs are provided for analysis. Activity (12) Revision exercise video via edpuzzle.com The teacher provides students with a video lesson using Edpuzzle.com, where students watch segments and respond verbally to embedded questions. 
Production	Activity (13) Film Analysis Students select a short interaction from a movie and analyze which ego states are present. They justify their conclusions based on dialogue and behavior. Activity (14) Dialogue Analysis The teacher divides the class into pairs and distributes one dialogue to each pair for analysis. Students identify the ego states portrayed in the dialogue and brainstorm possible solutions by encouraging a shift toward the Adult ego state. After completing the analysis, the teacher randomly selects two pairs to present their findings to the class. The selected pairs then perform a role-play of their dialogue using reformulated ego states. The teacher provides guidance and feedback during the role-play activity.

Appendix 2
Critical Thinking Scoring Rubric

Score	Explanation/ Analysis	Interpretation/ Evidence (Inference)	Evaluation
5	- Analyzes concepts using a chain of reasoning to uncover interrelationships, patterns, inconsistencies, and/or counterexamples.	- Draws logical conclusions about a topic and generalizes to other concepts using evidence-based inferences and reasoning from multiple sources, taking into account the quality and limitations of evidence, claims, and counterclaims.	- Evaluates the quality and credibility of the reasoning, information, sources, and/or evidence used to make a claim or argument. - Addresses the strengths, limitations, and sources of error or bias in a claim or argument.
4	Performance shares features of Score 5 and 3.		
3	Analyzes concepts using a chain of reasoning to uncover interrelationships and patterns	- Draws logical conclusions about a topic using evidence-based inferences and reasoning from multiple sources, taking into account the quality and limitations of evidence, claims, and counterclaims	Evaluates the quality and credibility of the reasoning, information, sources, and/or evidence used to make a claim or argument.
2	Performance shares features of Score 3 and 1.		
1	- Analyzes concepts using a chain of reasoning to uncover interrelationships.	- Draws logical conclusions about a topic using evidence-based inferences and reasoning from multiple sources, taking into account the quality and limitations of evidence and claims.	- Evaluates the quality (including limitations) of the reasoning, information, sources, and/or evidence used to make a claim or argument.

Appendix 3
Delay-Post Survey Questionnaire

Likert-scale questions for assessing the perceived long-term effectiveness of the ADEC instructional model on Critical Thinking ability.

No	Questions	1	2	3	4	5
1.	Retention of Knowledge: - Please indicate the extent to which you remember the concepts taught during the ADEC instructional model.	Very Little (1)	Slightly (2)	Moderately (3)	Mostly (4)	A Great Deal (5)
2.	Transfer of Learning: - Please indicate the extent to which you have been able to transfer the critical thinking ability developed in the ADEC program to other areas of your life?	Very Little (1)	Slightly (2)	Moderately (3)	Mostly (4)	A Great Deal (5)
3.	Behavioral Changes: - Please indicate the extent to which your approach to problem-solving or decision-making has changed since completing the ADEC program.	Very Little (1)	Slightly (2)	Moderately (3)	Mostly (4)	A Great Deal (5)
4.	Self-Assessment of Critical Thinking: - Please indicate the extent to which you believe your overall critical thinking ability has improved, compared to your ability before you started the ADEC program	Very Little (1)	Slightly (2)	Moderately (3)	Mostly (4)	A Great Deal (5)
5.	Overall Long-Term Impact: - Please indicate the extent to which you anticipate the critical thinking ability gained from the ADEC program will benefit you in the future.	Very Little (1)	Slightly (2)	Moderately (3)	Mostly (4)	A Great Deal (5)

Appendix 4
Exploratory talk checklist

Exploratory talk	Cumulative talk	Disputational talk
Everyone listens actively.	Everyone simply accepts and agrees with what people say.	There is a lot of disagreement, and everyone just makes their own decisions.
People ask questions.	Students do use talk to share knowledge, but they do so in an uncritical way.	There are few attempts to pool resources, or to offer constructive criticism.
People share relevant information.	Students repeat and elaborate each other's ideas, but they don't evaluate them carefully.	There are often a lot of interactions of the 'Yes, it is! – No, it's not!' kind.
Ideas may be challenged.		The atmosphere is competitive rather than cooperative.
Reasons are given for challenges.		
Contributions build on what has gone before.		
Everyone is encouraged to contribute.		
Ideas and options treated with respect.		
There is an atmosphere of trust.		
There is a sense of shared purpose.		