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Students' Cognitive Dimensions On The English Club Program At SMAN 8 Mandau

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ABSTRACT

Understanding internal mental processing is crucial for explaining language learning outcomes in informal educational settings. However, students' cognitive development within extracurricular English Club programs has rarely been evaluated through systematic psychometric profiling. This research aimed to identify and analyze students' cognitive dimensions in the English Club program at SMAN 8 Mandau, focusing on how underlying mental architecture influences English as a Foreign Language (EFL) learning and communicative fluency. A quantitative survey research design employing a census sampling technique was conducted with all 10 active members of the SMAN 8 Mandau English Club. Data were collected using a validated and reliable 8-item Likert-scale questionnaire measuring five core cognitive dimensions: perception, memory, attention, language processing, and thinking and problem solving. Descriptive statistical analysis revealed a high overall cognitive readiness among participants, with a cumulative group mean score of 33.00 out of a maximum of 40.00 (SD = 5.270). Among the dimensions, "Thinking and Problem Solving" achieved the highest score (Mean = 4.5), indicating that club activities effectively train students to utilize communication strategies and overcome real time speaking obstacles. Conversely,

"Attention Management" recorded the lowest mean score (Mean = 3.6), highlighting susceptibility to internal and external distractions during oral practice. Overall, the English Club significantly fosters students' cognitive frameworks by lowering language anxiety, facilitating long term vocabulary recall, and accelerating sentence processing. It is recommended that EFL instructors integrate targeted focus-training and interactive digital tasks into extracurricular club routines to ensure balanced cognitive development and sustained communicative accuracy.

Introduction

The Cognitive dimensions explore the inner workings of the human mind, focusing on how individuals actively manage, structure, and utilize information during learning. Within the context of English as a Foreign Language (EFL) education, cognitive dimensions encompass the fundamental mental processes that govern how learners notice linguistic stimuli (perception), encode and retain vocabulary and grammatical structures (memory), allocate limited mental resources (attention), coordinate syntactic and lexical rules (language processing), and execute strategic decisions during spontaneous communication (thinking and problem-solving) (Brown, 2007). In foreign language learning environments like Indonesia where English is not used in daily societal communication developing oral proficiency requires significant mental effort. A central developmental objective for EFL students is transitioning from controlled processing, where sentence construction demands intense conscious labor, to automatic processing, which enables language to flow quickly and effortlessly (Gui & Wu, 2023a). When students rely heavily on controlled processing during real-time speech, their limited working memory capacity becomes rapidly overwhelmed, resulting in frequent hesitations, awkward pauses, and heightened language anxiety (Malavé-López & Duquette, 1991);(Baddeley, 2007).

To overcome the limitations of formal classroom instruction and provide authentic communicative exposure, secondary schools in Indonesia frequently establish extracurricular English Club programs. The English Club serves as an ideal learning laboratory where students can freely practice spoken English, develop oral fluency, and build self confidence in a supportive, low anxiety environment (Darwis, 2024). Empirical research indicates that active participation in English Clubs significantly enhances students' communicative competence and learner autonomy(Simbolon Hernawan et al., 2023;Carreno, 2022). However, despite the positive structure of these programs, the

achievement of communicative fluency is often hindered by students' internal mental barriers. Based on preliminary observations conducted at SMAN 8 Mandau, many club members exhibited slow retrieval of vocabulary and grammar when required to speak spontaneously, demonstrated a shallow understanding of instructional materials, and struggled to transfer linguistic knowledge from long-term memory into practical, real-life communication.

Crucially, these observable speaking difficulties are directly linked to underlying cognitive overload and affective interference. When students experience high language anxiety or lack cognitive problem-solving strategies, their working memory resources are diverted from language processing to stress regulation, which impairs their ability to focus, think creatively, or recall vocabulary quickly (Tahmina, 2023). According to information processing theory, successful learning depends on reducing extraneous cognitive load so that students can select, organize, and integrate linguistic input into coherent mental models (E.Mayer, 2009). While previous studies have examined EFL students' general perceptions of speaking clubs (Riyadini, 2022) or cognitive strategy use among university-level learners (Alaraj, 2024;(Muslimin et al., 2022), there remains a lack of empirical research systematically profiling the comprehensive cognitive dimensions of high school students in extracurricular language programs. Therefore, this research aimed to identify and evaluate students' cognitive dimensions in the English Club program at SMAN 8 Mandau across five core mental domains: perception, memory, attention, language processing, and thinking and decision-making.

Method

The This research adopted a quantitative approach with a survey research design. According to (Creswell, 2012), survey research provides a systematic numeric description of trends, attitudes, or opinions of a population by studying a defined sample. This method was selected to obtain an objective, empirical measurement of students' internal cognitive processes during extracurricular language activities.

The research was conducted at State Senior High School (SMAN) 8 Mandau, Bengkalis Regency, Riau Province, Indonesia, during the 2025/2026 academic year. The target population comprised all active members of the SMAN 8 Mandau English Club, totaling 10 students. Given the finite and accessible nature of the population, a census sampling technique was employed, involving 100% of the club members as research participants (Creswell, 2012). This exhaustive sampling eliminated sampling error and allowed for highly accurate descriptive profiling of the entire program membership.

Data collection utilized a structured, closed-ended questionnaire developed based on Brown's (2007) cognitive framework and Mayer's (2009) information processing theory. The initial instrument consisted of 15 items distributed across five indicators: perception (items 1, 6, 11), memory (items 2, 7, 12), attention (items 3, 8, 13), language processing (items 4, 9, 14), and thinking/problem solving (items 5, 10, 15). Each item

was evaluated using a 5-point Likert scale ranging from 1 "Strongly Disagree" to 5 "Strongly Agree".

To ensure psychometric rigor, the instrument underwent empirical validity and reliability testing. Construct validity was assessed using the Pearson Product Moment correlation coefficient against a critical r-table value of 0.707 (at alpha = 0.05, N = 10). The analysis confirmed that 8 items achieved correlation coefficients exceeding 0.707 (ranging from r = 0.705 to r = 0.830) and were deemed valid, while 7 items failed to meet the threshold and were removed. The final 8-item instrument demonstrated excellent internal consistency, achieving a Cronbach's Alpha reliability coefficient of 0.895, which surpasses the standard benchmark of 0.70 . The collected data were analyzed using descriptive statistics, calculating frequencies, percentages, means, and standard deviations to establish the cognitive profile of the respondents.

Finding and Discussion

The The quantitative data collected from the 10 members of the SMAN 8 Mandau English Club provided a comprehensive overview of their cognitive readiness and processing capabilities. Cumulative individual scores across the 8 validated items ranged from a minimum of 24.00 to a maximum of 40.00 points out of a possible 40.00. The summary of descriptive statistics for the overall cognitive dimensions variable is presented in Table 1.

Table 1: Descriptive Statistics of Students' Cognitive Dimensions

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
Cognitive dimensions	10	24	40	33.00	5270

As shown in Table 1, the overall group mean score for cognitive dimensions reached 33.00 (out of 40.00), placing the club membership in the "Very Good" category. This high average indicates that students possess strong internal cognitive readiness when participating in club activities. However, the standard deviation of 5.270 highlights a noticeable degree of variance among individual learners, reflecting diverse levels of mental automaticity and processing speed within the group. To further understand the general sentiment of the participants, the distribution of responses across the Likert scale categories was analyzed, as detailed in Table 2.

Table 2: Frequency and Percentage Distribution of Likert Scale Responses

Linkert Scale	Table Notes	Frequency	Percentage
5	Strongly agree	31	38,75%
4	Agree	29	36,25%
3	Neutral	19	23,75%
2	Disagree	1	1,25%
1	Strongly disagree	0	0,00%
	TOTAL	**80**	**100,00%**

The frequency distribution in Table 2 demonstrates an overwhelmingly positive perception of the English Club's impact on cognitive functioning. Combined positive responses "Strongly Agree" and "Agree" accounted for exactly 75.00% of all data points. Neutral responses represented 23.75%, while negative sentiments were virtually non existent, with only a single response (1.25%) recorded under "Disagree" and none under "Strongly Disagree". To evaluate the specific cognitive mechanisms operating during club activities, Table 3 presents the item by item breakdown across the five cognitive indicators.

Table 3: Item-by-Item Analysis of Cognitive Dimensions (N = 10)

No	Indicator And Questionaire Item	Mean	Std.Dev	Category
Q1	Perception: Club atmosphere helps me try to speak English without inhibition	4.10	0.876	High
Q2	Memory: Club activities help me remember new words for a long time	4.10	0.994	High
Q3	Attention: I can fully focus on material without getting distracted	3.60	0.843	Moderate
Q4	Language: The English Club greatly improves my speaking fluency	4.20	0.789	High
Q5	Language: I can quickly organize my ideas when sharing an opinion	4.40	0.699	Very High
Q6	Memory: Easier to remember grammar rules after club practice	4.10	0.738	High
Q7	Memory: Program provides new daily vocabulary for practical use	4.00	0.816	High
Q8	Thinking: Activities train me to solve problems/answer questions in English	4.50	0.707	Very High

The item level analysis in Table 3 reveals significant insights into how different cognitive domains function within the extracurricular environment. The highest scoring

indicator was "Thinking and Problem Solving" represented by Q8 (Mean = 4.50, SD = 0.707), where 60% of respondents strongly agreed that club activities trained them to resolve communication challenges using English. This finding suggests that the interactive, communicative tasks embedded in the club encourage learners to engage higher-order executive functions and apply compensatory communication strategies such as paraphrasing, repetition, and lexical substitution when facing vocabulary deficits under real-time speaking pressure (Wennyta, 2014 ;Hiver et al., 2020). This aligns with Kapitan et al., (2025), who noted that regular oral interaction effectively diminishes cognitive barriers and builds strategic speaking competence.

The second highest domain was "Language Processing" highlighted by Q5 regarding rapid idea organization (Mean = 4.40, SD = 0.699) and Q4 regarding fluency enhancement (Mean = 4.20, SD = 0.789). These robust scores provide empirical evidence that the English Club facilitates the critical transition from slow, controlled processing to automatic linguistic processing (Gui & Wu, 2023). In formal classrooms, students often suffer from cognitive bottlenecking because their working memory is consumed by conscious grammar monitoring (Baddeley, 2007). In contrast, the low-anxiety, supportive atmosphere of the English Club (as validated by Q1, Mean = 4.10) lowers students' affective filters, allowing cognitive resources to be freed up for lexical access and conceptual structuring (Widiartin et al., 2020); (Desti Aryanti et al., 2024). When students feel psychologically secure, their academic self efficacy increases, which directly enhances cognitive processing efficiency and oral fluency(Bai et al., 2022) (Aminah & Nugraha, 2021)

The "Memory" dimension also demonstrated strong performance across all three items: long-term word recall (Q2, Mean = 4.10), grammatical rule retention (Q6, Mean = 4.10), and daily vocabulary acquisition (Q7, Mean = 4.00). These results corroborate Li (2022) psycholinguistic assertion that interactive, contextualized language use consolidates fragile short-term memory traces into robust long-term retrieval systems. The spaced, repetitive conversational practice inherent in club meetings ensures that linguistic items are encoded deeply, enabling learners to retrieve words spontaneously without experiencing mental fatigue.

Conversely, the "Attention" dimension recorded the lowest average score in the research, with Q3 achieving a moderate mean of 3.60 (SD = 0.843), where 60% of participants selected "Neutral" This finding indicates that attention management remains a vulnerable cognitive area; students frequently experience attentional drift or distraction during club sessions. In an informal, dynamic club setting, external environmental noise and social dynamics can easily impose extraneous cognitive load, making it challenging for students to sustain selective attention on complex syntactic structures (E.Mayer, 2009) . To address this attentional bottleneck, instructional designers must apply cognitive load principles such as Mayer's signaling and coherence principles and integrate interactive digital learning tools, which have been empirically shown to enhance student

engagement, focus duration, and concentration in EFL learning environments (Elaish et al., 2023) .

Conclusion

This research empirically established that students' cognitive dimensions within the English Club program at SMAN 8 Mandau operate at a highly effective level, evidenced by an overall group mean score of 33.00 out of 40.00. The extracurricular program successfully stimulates essential cognitive processes, with particularly outstanding performance in higher-order thinking and problem solving (Mean = 4.50) and rapid linguistic idea organization (Mean = 4.40). By establishing an inclusive, low anxiety learning environment, the English Club effectively mitigates affective inhibition, enabling learners to consolidate long term lexical memory and transition toward automatic spoken fluency. However, attention management exhibited moderate performance (Mean = 3.60), identifying susceptibility to environmental and internal distractions as the primary cognitive limitation within informal club settings.

Based on these findings, several practical recommendations are proposed. For EFL teachers and club supervisors, it is recommended to introduce structured focus-training exercises, timed speaking challenges, and multimedia learning technologies to strengthen students' selective attention and reduce extraneous cognitive load. For students, active and consistent participation is encouraged to further automate language processing and solidify vocabulary recall. Finally, future researchers are advised to conduct longitudinal studies utilizing larger, multi school samples and incorporating objective psychometric tests or classroom observation protocols to complement student self assessments and broaden the generalizability of cognitive dimensions research in EFL contexts.

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