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# The Great Divergence: Mindset, Process, and Environment in ICAO English for Indonesian Air Traffic Controllers

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**Abstract:** Effective communication is a non-negotiable safety pillar in aviation, yet a persistent divergence remains between Air Traffic Controllers (ATCs) meeting the minimum ICAO Level 4 standard and those achieving advanced Level 5 competence. Addressing the need for context-specific insight, this narrative inquiry investigates the learning experiences of 20 Indonesian controllers at Makassar Air Traffic Service Center. Using Self-Regulated Learning frameworks, the study explores how individual strategies interact with the institutional environment. The findings reveal a "Great Divergence" driven by mindset: "more successful" controllers exhibit an aspirational mindset with continuous learning habits (marathon), building the resilient fluency required for non-routine events. Conversely, "less successful" controllers rely on compliance-driven, reactive preparation (cramming) focused narrowly on standard phraseology. Crucially, the study identifies systemic environmental constraints, specifically a "Social Strategy Paradox" where fear of peer judgement hinders practice, and a "Remedial Reward Paradox" where policies inadvertently incentivize failure. The research concludes that sustainable proficiency requires a fundamental shift from reactive compliance to proactive self-regulation, offering actionable policy recommendations for engineering a culture of communicative excellence.

**Keywords:** Aviation English (ESP), Air Traffic Controllers, Language Learning Strategies (LLS), Self-Regulated Learning, Institutional Paradox, Narrative Inquiry

## I. INTRODUCTION

In the high stakes, safety critical world of aerospace, effective communication is a non-negotiable pillar of safety (Kim, 2023; Shukri et al., 2021). The International Civil Aviation Organization (ICAO) has mandated English as the global language of aviation, establishing stringent language proficiency requirements for pilots and air traffic controllers (ATCs) to mitigate the risks of miscommunication (ICAO, 2010). While institutional training programs aim to meet these standards (Fowler et al., 2021), there remains a significant gap in understanding the nuanced, individual processes that differentiate controllers who merely meet the minimum operational standard from those who achieve advanced competence (Ishihara & Prado, 2021; Wicaksono et al., 2021). This is particularly true in diverse, non-native, English speaking contexts such as Indonesia, where a specific needs analysis for aviation professionals is a critical and ongoing concern (Dewi & Kurnianingsih, 2025; Kaya, 2021; Yaumi et al., 2023).

The challenge of achieving this proficiency is not only a matter of general language fluency but also mastering a highly specialized register of English for Specific Purposes (ESP). Aviation English is characterized by a distinct and safety-critical lexicon (Drayton & Coxhead, 2022) and a set of communication protocols designed to ensure clarity and precision in both routine and non-routine situations (Ishihara & Prado, 2021; Aswad et al., 2019). Achieving and maintaining this specialized proficiency requires learners to be highly effective, self-regulated learners who actively manage their own professional development (Teng, 2021; Wang et al., 2025; Rahman et al., 2021). The process of self-regulation is executed through the conscious and unconscious use of specific Language Learning

Strategies (LLS), which are the cognitive, social, and metacognitive tools that individuals employ to enhance their learning (Oxford, 2017). While the strategies themselves are important, the motivational mindset that drives their use, whether it is an internal desire for mastery or a response to an external requirement, is a critical factor that influences learning outcomes (Bai & Wang, 2023; Prihandoko et al., 2021; Andini et al., 2026).

While much of the existing research on LLS has utilized quantitative methods to measure the frequency of strategy use, there is a recognized need for more qualitative, context specific studies that explore the narrative experiences of learners in unique, high stakes environments (Dominguez & Juanias, 2024). This study directly answers that call.

Despite AirNav Indonesia's commitment to improving the English proficiency of its workforce, a persistent divergence in ICAO English Language Proficiency (IELP) test outcomes is observed among controllers at the Makassar Air Traffic Service Center (MATSC). Some controllers consistently achieve the baseline ICAO Level 4, while a smaller group achieves the more advanced Level 5, indicating a more robust and resilient communicative competence. The problem is a lack of deep, qualitative insight into the human factors that underpin proficiency (Ishihara & Prado, 2021), which hinders the development of more effective, evidence-based training and policy. Therefore, this study aimed to conduct a narrative inquiry into the English language learning experiences of Air Traffic Controllers at MATSC with the primary purpose of constructing a rich, holistic, and learner centric explanation for the observed divergence in proficiency.

This was achieved through a twofold objective. First, to explore their perspective on how these strategies contribute to their IELP achievement, and second, to examine their interpretation of the influence of the institutional environment, including culture and policy, on their strategic choices. By employing a qualitative narrative methodology (Cortazi, 1993), the research seeks to provide deep, contextualized insights and offer actionable recommendations for fostering a universal culture of communicative excellence, ultimately equipping stakeholders to engineer a more proactive learning environment.

To gain the objectives of the research, this study was guided by the following research questions: (1) How do the language learning strategies implemented by air traffic controllers at the Makassar Air Traffic Service Center contribute to their achievement of ICAO English Language Proficiency Levels?, (2) How do external factors, such as company policies and the work environment, influence the implementation of English language learning strategies by air traffic controllers at the Makassar Air Traffic Service Center?.

## II. LITERATURE REVIEW

This research is grounded in the established frameworks of Self-Regulated Learning (SRL) and Language Learning Strategies (LLS). SRL theory posits that successful learners are active, metacognitive participants in their own learning process (Teng, 2021; Wang et al., 2025). This self-regulation is not an isolated cognitive activity but is heavily influenced by a learner's internal beliefs, particularly a "growth mindset", the belief that ability can be developed through effort, which is a strong predictor of learner autonomy (Bai & Wang, 2023; Zarrinabadi et al., 2021). Research within the aviation context has consistently shown that such psychological factors, including motivation and attitude, are critical to learning success (Shukri et al., 2021). The literature suggests that an institutional environment providing "autonomy support" can significantly foster the development of a growth mindset, which in turn enhances a learner's willingness to engage in the demanding processes of self-regulation (Nasmilah, 2023).

The practical tools through which learners execute this self-regulation are their Language Learning Strategies (Bai & Wang, 2023). LLS are the specific thoughts and actions that individuals employ to manage and enhance their learning (Oxford & Amerstorfer, 2018). Rebecca Oxford's (1990) influential framework categorizes these strategies into direct (e.g., memory, cognitive) and

indirect (e.g., metacognitive, social, affective) types. Of particular relevance to this study are the metacognitive strategies, which are the operational engine of SRL, and social strategies, which have been shown to enhance language enjoyment and build communicative competence (Zhao & Yang, 2022; Zheng & Zhou, 2023).

The specific context of aviation places unique demands on these learning strategies. As an area of English for Specific Purposes (ESP), Aviation English (AE) is characterized by a specialized, safety critical lexicon and a reliance on standard phraseology (ICAO, 2010). The ICAO framework itself emphasizes a controller's ability to handle not just routine communications but also "unexpected turn of events," which requires a deep, flexible proficiency that goes beyond rote memorization. In the modern era, the rise of Informal Digital Learning of English (IDLE) has empowered learners to engage with the language through accessible media (Alawiyah et al., 2022; Taherian et al., 2024), aligning with a shift towards more collaborative and technology-driven learning (Ma et al., 2024; Yingxin et al., 2024). The prevailing research in LLS has been dominated by quantitative methods, creating a recognized need for more qualitative, context-specific studies that this research aims to provide.

## III. METHODS

This study employed a qualitative narrative inquiry methodology to gain a deep and rich understanding of the controllers' lived experiences. This approach was chosen for its suitability in exploring the personal stories, subjective perceptions, and the rich context behind individual strategic choices (Cortazi, 1993). By centering on the narratives of the controllers, the research aimed to construct a holistic understanding from the participants' point of view, prioritizing depth and meaning over statistical generalizability.

### A. Participants

Makassar Air Traffic Services Center has 198 air traffic controllers, working around the clock, 24/7 to safeguard its airspace. The IELP level of the air traffic controllers are shown in Figure 1. The study involved 20 certified air traffic controllers, selected through purposive sampling to ensure a diverse representation of experience and proficiency. Participants were categorized into four distinct groups (STR, STA, ASP, and EST) based on their IELP levels. For comparative analysis, these groups were consolidated into two functional groups: a "more successful" group (IELP Level 5 or higher) and a "less successful" group (IELP Level 4 standard).

**Table 1** Participant Group Categorization

| Original Group | Description | Number | Consolidated Group |
|---|---|---|---|
| **ASP** | Newly Gained Level 5 | 5 | More Successful |
| **EST** | Established Level 5 | 5 | |
| **STR** | Level 4 with Recheck | 5 | Less Successful |
| **STA** | Purely Level 4 | 5 | |

Data was collected using a triangulated approach involving in-depth, semi-structured interviews and researcher observation. The interviews served as the primary instrument, guided by the two research questions, and were designed to elicit rich narratives about their learning journeys. Simultaneously, researcher observation was employed to capture non-verbal data such as participants' confidence, emotional responses, which provided a crucial contextual layer to enrich the verbal data.

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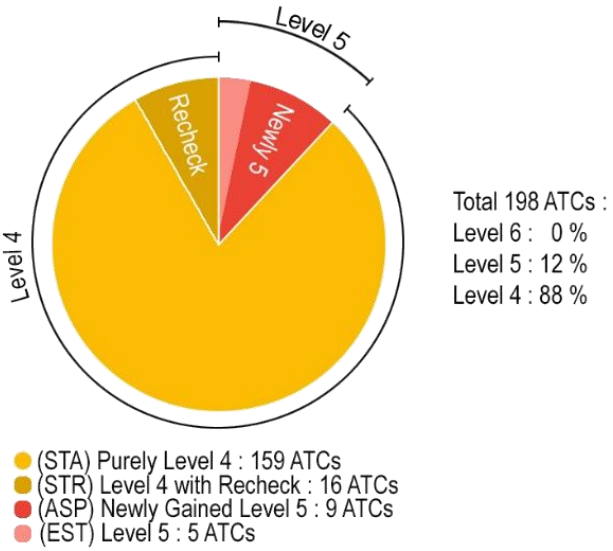


**Figure 1** ATC According to IELP Levels

Following the interviews, all audio recordings were transcribed utilizing the software Turboscribe AI and a clean verbatim approach was implemented to focus on the core meaning of the narratives. The combined data was then subjected to a rigorous, inductive thematic analysis to identify recurring patterns, which were then coded and collated into the emergent themes and conceptual frameworks that form the basis of the study's results.

Ethical protocols were strictly maintained throughout the research process. All participants provided informed consent prior to the interviews and were assured of the anonymity and confidentiality of their responses. Pseudonyms for the groups (STR, STA, ASP, EST) were used to protect participant identities while still allowing for a meaningful comparative analysis.

### B. Instrument

The primary instrument for this study was a semi-structured interview guide, specifically designed to elicit rich narratives from the participants. The guide was structured around the two core research questions and included a dedicated inquiry into Strategic Self-Regulation (S2R). Questions were developed to probe the various dimensions of Language Learning Strategies (LLS) based on Rebecca Oxford's framework, covering topics such as learning journeys, test preparation strategies, workplace culture, and the impact of company policies.

As a supplementary instrument, researcher observation was employed during the interviews. The researcher's observational notes served to capture non-verbal data such as participants' confidence, hesitations, and emotional responses. This provided a crucial contextual layer to the verbal data, allowing for a more holistic analysis of the participants' experiences.

## IV. RESULTS AND DISCUSSION

The thematic analysis of the narrative and observational data revealed a complex interplay between the controllers' strategic behaviors, and the external environment. The results are organized around three overarching themes that emerged from the synthesis of all research questions, they are: (1) The Great Divergence in Strategic Implementation, and (2) The Environmental Constraints on Strategic Practice.

### A. The Great Divergence in Strategic Implementation

The primary finding of this study is the "Great Divergence" in the implementation of learning strategies, a difference that directly correlates with IELP success and manifests across the controllers' core mindset, their learning process, and their resulting operational readiness. The more successful controllers are consistently driven by an internal, aspirational mindset for mastery, which fuels a continuous, process-oriented learning habit and builds resilient fluency. In contrast, the less successful group operates from an external, compliance-focused mindset, leading to a reactive, event-driven "cramming" process that masters standard phraseology but results in a more rigid proficiency.

This divergence begins with mindset. The more successful group demonstrates high intrinsic motivation, framing the IELP test not as an obligation but as a meaningful benchmark and a gateway to "opportunity for promotion". This creates a self-directed "spirit to learn" where success becomes a catalyst for further motivation, a characteristic linked to higher achievement in self-regulated learning (Bai & Wang, 2023). Conversely, the less successful group is characterized by extrinsic motivation. For them, the test is a requirement to be met, an "obligation" to "maintain our license". Their structured learning is often a direct response to institutional rules rather than a self-initiated habit.

This difference in motivation dictates the learning process. The more successful controllers cultivate a continuous learning habit, signifying a state of constant readiness where they need "no special preparation" for the test. Their learning is a marathon, not a sprint, powered by a steady consumption of informal digital media that builds a rich, authentic understanding of the language (Taherian et al., 2024). This process is the sign of a highly self-regulated learner (Teng, 2021). The less successful group, however, engages in an event-driven process, a classic "cramming" approach concentrated into the "one week or a few days before the exam". While this tactical approach is effective for refreshing standard phraseology and achieving the IELP level 4 baseline, it is significantly less effective for building the robust, intuitive fluency required for higher levels.

Ultimately, these divergent strategies cultivate two different types of operational readiness. The broad, continuous learning of the more successful group builds "resilient fluency", a deep and flexible competence that prepares them for variability and allows them to excel when they must go "off-script". This aligns perfectly with the ICAO descriptors for Level 5, which emphasize the ability to handle an "unexpected turn of events" (ICAO, 2010). In contrast, the focused, pre-test preparation of the less successful group builds an expert mastery of the standard. While a fundamental strength, this creates a proficiency that is deep but narrow, leaving them with fewer resources to draw upon when a communication event deviates from the norm, a characteristic of a Level 4 performance (ICAO, 2010).

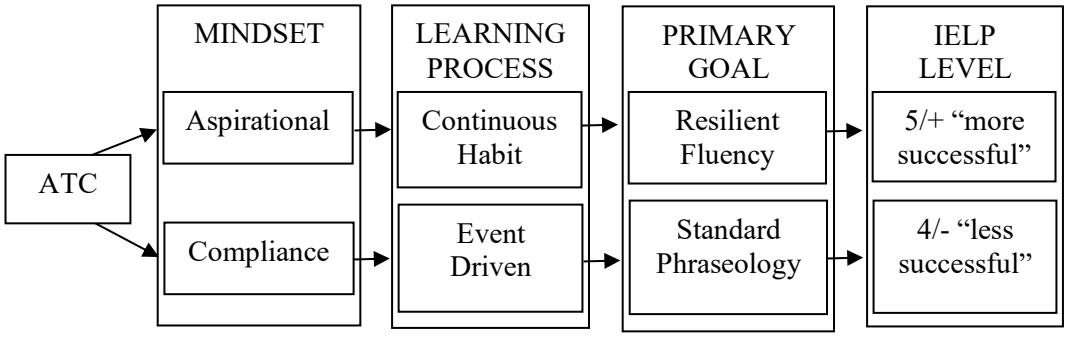


**Figure 2.** The Great Divergence

### B. The Environmental Constraints on Strategic Practice

The analysis of the controllers' narratives reveals a complex interplay between individual agency and a powerful, albeit often passive, institutional environment. The findings are organized into four key themes that emerged from the data, they are: (1) The "Supportive but Passive" Learning Culture, (2) Institutional Policy: The "Remedial Reward" Paradox, (3) The Power of "High-Stakes"

Motivation, and (4) The Primacy of Individual Agency in a Passive System.

**1. The "Supportive but Passive" Learning Culture**

A dominant and recurring theme in the controllers' narratives is the characterization of the MATSC workplace as an environment that is individually supportive but collectively passive. This distinction is critical: while controllers feel secure enough to seek help on a one-on-one, reactive basis, the broader culture does not actively encourage, normalize, or provide a psychologically safe space for the proactive, collective practice of English. This cultural passivity serves as a significant environmental constraint, directly undermining the implementation of what the controllers themselves perceive as their most effective learning strategies (Qin, 2022). It creates a fertile ground for the "Social Strategy Paradox" identified in earlier analyses, where the most desired learning method is the least accessible due to environmental and affective barriers.

This passivity manifests most clearly and universally in the perceived failure of the "English Day" initiative. In principle, this policy was intended to create a weekly immersive practice opportunity, a dedicated time to lower the barrier for using English in a professional, non-operational context. However, in practice, it was largely ineffective. The reason cited was not a lack of interest or a rejection of the policy's goals, but a powerful affective barrier: a pervasive fear of social judgment. Multiple controllers, across both "more successful" and "less successful" groups, used highly similar language to describe this phenomenon. They expressed being "shy" (STR5) or, more pointedly, "afraid of being judged" by their peers. As one participant (ASP4) explained, the core issue is that "people are still embarrassed, afraid of being wrong" (Kaya, 2021; Treadaway & Read, 2025). This fear is multifaceted. It includes the fear of making a grammatical mistake, of mispronouncing a word, or of simply sounding unnatural. Another controller (ASP1) articulated a more subtle but equally powerful social dynamic, the fear of appearing arrogant or showing off by initiating a conversation in English.

This creates a powerful social dilemma. No one wants to be the first to speak and risk judgment, and no one wants to be perceived as arrogant by trying too hard. The collective result is a "day of silence" rather than a day of practice, a situation where the desire to maintain social harmony and avoid individual embarrassment outweighs the collective goal of language improvement. This finding powerfully illustrates how a lack of psychological safety can undermine even well-intentioned institutional efforts. The environment, while not hostile, lacks the explicit permission and structured encouragement needed for learners to take the social risks that are essential for language development. It prevents the use of the very Social Strategies such as practicing conversation and cooperating with peers that the controllers themselves identified as most effective for learning. As the literature suggests, the availability of social and interactive learning opportunities is a key component of a supportive learning environment (Zheng & Zhou, 2023), and its absence here is a critical finding. The environment inadvertently fosters a culture of silence that works directly against the development of communicative competence, particularly in the interaction domain, which is a key assessment criterion in the ICAO (2010) framework. The culture of absolute precision and error avoidance required for live operations appears to have inadvertently bled into the developmental culture, creating an environment that is optimized for performance but not for practice.

**2. Institutional Policy: The "Remedial Reward" Paradox**

The controllers' perception of formal company policy is one of appreciation for the intent but frustration with the implementation and its unintended consequences. While they value the training opportunities provided, they identify two significant flaws in the current policy framework that create a systemic barrier to the cultivation of a proactive learning culture: the infrequency of training, which leads to a "feast or famine" cycle of skill development, and a flawed incentive structure that inadvertently rewards failure. This creates what can be termed the "remedial reward" paradox, a situation where institutional policies, though designed to support proficiency, are misaligned with the principles of effective, self-regulated learning.

The "feast or famine" cycle of training is the company-sponsored ITSAP English training which universally praised by the controllers as a high-quality, motivating, and effective intervention. Participants describe it as a significant opportunity to "upgrade" their skills and boost their confidence. However, the positive impact of this training is significantly diluted by its infrequency. As one controller (STR1) vividly described, the skills gained are like a battery that is fully charged during the course but steadily and inevitably depletes over the following year due to a lack of a structured, supportive environment for continuous practice. He lamented that after the course, his proficiency might be at 100%, but "month per month, it's decreasing". This creates a "feast or famine" cycle of learning, characterized by short bursts of intense, high-quality instruction followed by long periods of unstructured, unsupported practice where skills are likely to atrophy. This model is fundamentally at odds with the principles of sustained, self-regulated learning, which require consistent, ongoing effort to build stable, long-term competence (Teng, 2021). The infrequency of formal training places an almost complete reliance on individual, informal strategies, such as the digital learning habits identified in the literature (Taherian et al., 2024), which, while valuable, are insufficient on their own to build the high-level, interactive skills required by ICAO.

The paradox of rewarding failure is more critical. The data reveals a widespread awareness of a flawed incentive structure at the heart of the company's remedial policy. This is the "remedial reward" paradox. The policy entails sending controllers who fail to achieve the ICAO level 4 standard on their recurrent IELP test for remedial training. Critically, this training is often conducted in a desirable out-of-town location, with all expenses covered by the company. While the experienced and more intrinsically motivated controllers in the study were quick to state that professional pride and a sense of shame would prevent them from being personally tempted by this, they all clearly recognized the problematic nature of the incentive.

The most astute analysis came from a controller (STR1) who, with remarkable clarity, identified the core flaw in the system's logic. He asked the rhetorical question: "Why is the reward given after failure? It should be given before the test". This single statement encapsulates the entire paradox. The policy, though designed to help those who struggle, inadvertently positions failure as a gateway to a company-sponsored benefit. It creates a system where the proactive, self-regulated learner who studies consistently on their own time and successfully passes the test receives no institutional recognition or reward, while the individual who fails is granted a fully-funded training opportunity. This is a classic example of an institutional policy that is profoundly misaligned with the goal of fostering proactive, self-regulated learning. It undermines the intrinsic motivation of high achievers and does little to cultivate a culture where success is the primary rewarded outcome. It is a system that reacts to problems rather than building a culture that prevents them. This is antithetical to the principles of a supportive learning environment, which should aim to bolster learners' autonomy and positive mindset (Zarrinabadi et al., 2021), not create a system where the most visible institutional support is a direct consequence of underperformance. This policy fails to harness the positive, aspirational motivation that has been shown to be a key factor in language learning success within the aviation context.

### 3. The Power of "High-Stakes" Motivation

While the passive culture and paradoxical policies act as systemic constraints, the data provides a clear and unequivocal answer to what motivates a definitive change in learning strategies: high-stakes, tangible consequences. The narratives reveal that when English proficiency is directly and inextricably linked to meaningful professional outcomes, the inertia of the passive environment is overcome by the powerful force of necessity and ambition. This theme manifests in two distinct but related forms, they are: the institutional power of career progression and the immediate, visceral power of on-the-job operational stress.

Career Progression as an External Catalyst for Internal Regulation

There was near-unanimous agreement across all participant groups that if IELP proficiency

were made a firm and explicit requirement for promotions, educational opportunities, or desirable assignments, it would serve as the single most powerful catalyst for a universal shift in learning strategies. The controllers' responses suggest that while the intrinsic motivation of the most successful learners is the ideal, a strategically implemented external motivator can be a powerful tool for elevating the baseline performance and strategic engagement of the entire group.

The power of this motivator lies in its ability to transform the abstract goal of "improving English" into a concrete, high-stakes objective. As one controller (STR2) stated, such a demand would become a "challenge," forcing him to change his strategy from passive to active. His language is critical: the external demand creates an internal "challenge" that necessitates a strategic response. Another controller from the more successful group (ASP1) confirmed this from the opposite perspective, noting that if ICAO level 5 were required for a promotion, "automatically everyone will be competing to get level 5". The word "automatically" suggests a powerful cause-and-effect relationship. This external goal provides the definitive "why" that is currently missing for many controllers who are content with meeting the level 4 obligation. It forces them to engage in the very self-regulation processes such as proactive planning and goal-setting that characterize highly effective learners (Teng, 2021). The institutional goal becomes a personal goal, thereby overcoming the social fears that inhibit practice in the current low-stakes environment. When a promotion is on the line, the fear of professional stagnation outweighs the fear of looking "show off" in front of colleagues.

**a. Operational Stress as a Real-Time Learning Incentive**

Beyond formal institutional pressures, many controllers identified the immediate, high-stakes environment of live operations as a powerful, positive trigger for learning. This is a fascinating finding that reframes on-the-job stress not as a detriment to learning, but as a potent, real-time learning incentive. One controller (EST5) shared a vivid story of handling a "PAN-PAN" call due to cabin pressure issues. He described feeling "nervous" and not knowing what to say, a visceral experience that immediately highlighted the gaps in his non-standard communication skills. He and another controller (ASP4) both described such unexpected or high-pressure situations as a positive motivator that reinforces the critical importance of their skills and drives them to improve further.

This aligns perfectly with the core philosophy of the ICAO (2010) language proficiency requirements, which are fundamentally designed to ensure safety during non-routine situations and "unexpected turn of events". The controllers' experience validates this as the moment of highest stress is also the moment of most profound learning. It provides immediate, unambiguous feedback on the state of one's communicative competence. This experience transforms the abstract need for good English into a concrete, safety-critical reality. This real-world "test" is far more powerful than a formal IELP exam. It reinforces the purpose behind the continuous, informal learning strategies of the most successful controllers, who intuitively understand that their wide-ranging exposure to authentic English is the best preparation for the unpredictability of their job. It provides the intrinsic, purpose-driven motivation that is often lacking in the day-to-day routine, reminding them that they are not just learning a language, but mastering a tool that is essential for saving lives.

**b. The Primacy of Individual Agency in a Passive System**

A final, overarching theme that permeates the entire dataset reinforces the controllers' strong sense of autonomy, a concept that lies at the very heart of Self-Regulated Learning (Teng, 2021; Zarrinabadi, 2021). Despite their sharp and insightful critiques of the passive culture and flawed institutional policies, the vast majority of controllers ultimately circle back to the deeply held belief that the primary responsibility for learning rests with the individual. This is not just a passing comment but a foundational element of their professional identity. It was stated with unambiguous clarity by controllers from both proficiency groups. One controller (EST5) from the more successful group, when asked about the company's role, stated definitively, "I think for me personally it's my own responsibility". This sentiment was echoed by a controller (STR4) from the less successful group, who, when comparing personal effort to company training, concluded, "The will of the self is

more important".

This perspective was most eloquently and powerfully articulated by a high-achieving controller (ASP5), who drew a sharp distinction between self-directed and externally mandated learning: "If we learn on our own, it's with our own awareness. Sometimes if it's from the company, we might feel forced so there's no spirit to learn". The concept of a "spirit to learn" is crucial, it captures the essence of intrinsic motivation and the internal locus of control that defines a truly autonomous learner. This highlights a critical tension at the center of this study, the controllers' internal sense of ownership is a tremendous asset, a powerful engine for any potential learning initiative. However, this agency exists largely in spite of, rather than because of, the current institutional environment.

The passive system forces the controllers to be almost entirely self-reliant. This creates a performance gap. The already motivated and self-regulated learners, those who enter the profession with a pre-existing "spirit to learn", thrive. They have the internal drive and the metacognitive skills to build their own learning systems, overcome the lack of social practice opportunities, and sustain their motivation. They succeed because their personal agency is strong enough to overcome the inertia of the passive environment. However, the system provides little to no scaffolding for those who are less intrinsically motivated or who require more external structure to build effective habits. These controllers, while responsible and competent, are more susceptible to the influence of their environment. In the absence of a proactive culture that encourages practice and a set of policies that rewards success, they are more likely to fall into the "compliance mindset," doing what is required but not being systematically encouraged to do more.

The danger for the institution is in misinterpreting the success of its top performers. Their achievement is not necessarily a validation of the current system, but rather a testament to their exceptional individual agency. A system that relies solely on the heroism and intrinsic motivation of its most dedicated members is not a robust or equitable system. It is a passive system that will consistently produce a small group of high achievers while leaving the majority to stagnate at the level of compliance. While the controllers' belief in individual agency is admirable and essential, the data suggests it is not sufficient on its own to elevate the proficiency of the entire workforce. The "spirit to learn" is the fire, but the institution is responsible for providing the oxygen. The current environment, by being passive, forces each controller to bring their own oxygen, a task at which only a dedicated few can consistently succeed.

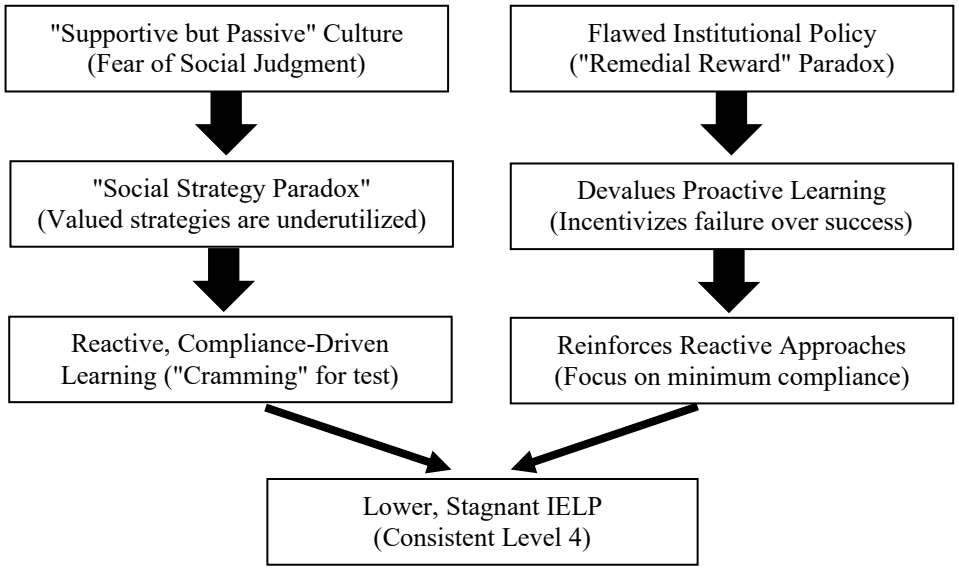


**Figure 3.** Flowchart: Environmental Constraints on Strategic Practice

## V. CONCLUSION

This study concludes that while MATSC controllers possess the ideal psychological foundation for learning, their ultimate IELP achievement is determined by the nature of their strategic process. The divergence between the "mastery-oriented" habits of the more successful group and the "compliance-oriented" habits of the less successful group is not an accident but a predictable outcome of a passive institutional environment that fails to systematically cultivate the habits of its highest achievers. The research proves false the hypothesis that a strong pre-training background is the primary ticket to success, instead, it is the ongoing, self-regulated learning habits developed on the job that are most critical. The study's core conclusion is that the institution itself, through its culture and policies, is the most powerful factor in either enabling or constraining the potential of its workforce (He et al., 2024; Qin, 2022; Shen, 2022).

### Limitations and Recommendations

This study's limitations include its focus on a single site (MATSC) and its qualitative nature, which means the findings are not statistically generalizable but provide deep, transferable insights. Future research should include longitudinal studies to track strategic development over a controller's career and intervention studies to quantitatively measure the impact of the policy changes recommended below.

Based on the findings, this study offers the following recommendations to AirNav Indonesia: (1) Reform Policy to Incentivize Aspiration: Abolish the "remedial reward" paradox. Instead, introduce incentives for passing the IELP test on the first attempt. Crucially, link IELP Level 5 to career progression opportunities to provide the powerful, high-stakes motivation that the data shows is a key catalyst for change, (2) Actively Engineer a Proactive Learning Culture: Mandate the "English First Fifteen" (first 15 minutes of briefings in English) to normalize daily practice and solve the "Social Strategy Paradox". Formalize peer-to-peer learning through mentorship programs and study groups, and (3) Provide Strategic Support for Continuous Learning: Counter the "cramming" habit by launching a "Micro-Learning" initiative with small, regular learning tasks. Curate and guide resource use by creating an official guide to effective online resources for building resilient fluency.

By implementing these systemic changes, AirNav Indonesia can create an environment where the powerful individual agency of its controllers is not just a prerequisite for the success of a few, but is actively nurtured, supported and unleashed for the benefit of all. This proactive approach is the most direct path to elevating the baseline of communicative competence and, by extension, enhancing the overall margin of aviation safety. Ultimately, this fosters a culture of excellence where every controller is equipped and encouraged to achieve their highest potential, transforming a simple requirement into a shared professional value.

To English language teaching institutions, this study offers recommendations: (1) Teach "How" to learn, not just "What" to learn, focus on teaching metacognitive strategies. Equip controllers with the tools to plan, monitor, and evaluate their own learning, fostering the self-regulated habits identified as critical by Kehing & Yunus (2021) for long-term success, (2) Move beyond standard phraseology. While essential, training must rigorously address non-routine situations. Use authentic materials, real-world incident recordings, and complex simulations to build the "resilient fluency" required for ICAO level 5. The specialized vocabulary of aviation, as identified by Drayton & Coxhead (2022), must be a core component of this training, and (3) Focus on building confidence. Recognize that fear of judgment is a major barrier. Design low-stakes, interactive activities that create a psychologically safe environment for students to practice speaking and make mistakes without embarrassment.

This study also offers the following recommendations to air traffic controllers: (1) Embrace a mastery mindset. Shift personal goal from merely passing the IELP test to achieving the highest possible level of competence. View every interaction as a learning opportunity, (2) Adopt the

"continuous habit" model. Do not wait for a test to study. Integrate small, consistent learning activities into daily routine, as demonstrated by the most successful peers. Consistency is more powerful than intensity, and (3) Become a proactive agent of change. Do not wait for the environment to change. Initiate English conversations, form your own study groups, and seek out speaking partners. Individual initiative can help shift the collective culture from passive to active.

Lastly, this study offers the following recommendations to future researchers: (1) This study provides a foundation for several avenues of future research and answers the call for more qualitative, context-specific LLS research (Dominguez and Juanias, 2024), (2) Longitudinal Studies: Conduct a long-term study to track the strategic development of a group of controllers from their initial training throughout their careers to better understand how strategies evolve, (3) Intervention Studies: Implement the policy recommendations from this dissertation at a test site and conduct a quantitative and qualitative study to measure their impact on IELP scores and workplace culture, (4) Comparative Studies: Replicate this narrative inquiry at other Air Traffic Service Centers in Indonesia or Southeast Asia to determine if these findings are specific to the MATSC context or are more broadly generalizable, and (5) Technological Integration: Investigate the efficacy of specific technologies, such as AI-powered conversation partners or gamified learning apps like the one studied by Dinçer & Dinçer (2021), in solving the "Social Strategy Paradox."

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## Conflict of Interest

The authors declare that there is no conflict of interest.

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