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Evaluating Maritime English Literacy in maritime institutes in Indonesia

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ABSTRACT

The present study investigates the level of maritime English literacy of 180 cadets studying at the Maritime and Transport Education Institute in Jakarta, Indonesia. In addition to using a mixed-methods design (structured perception survey; classroom observation sheets; curriculum document analysis) for assessing five main aspects (language proficiency; curriculum relevance; pedagogy; communicative competence; industry alignment), the results show that students assessed their communicative competence as by far the most important aspect (90%); followed by their rating of language proficiency as the second best (85%). On the other hand, they rated the curriculum relevance to be significantly worse than the two first-mentioned factors, namely with only 75%. Thus, it can be concluded that there still exists an evident gap between the knowledge students receive during their studies at school and the demands placed upon them when they actually work on a ship. The analytical framework of the research presented here is based on Krashen's input hypothesis (Krashen, 2003) and Vygotskiy's sociocultural framework (Vygotskiy, 2012). Both theories provide a theoretical background for explaining the paradox resulting from the data: despite having achieved measurable increases in competence through immersive scenario-based learning processes, neither curricula nor integration into industry has caught up with the updated STCW-standards or with the developments related to digital communication of the IMO. Recommendations for concrete measures concerning the revision of curricula, simulation-based learning and well-defined industry consultation structures are provided.

1. Introduction.

The subject matter of the research presented above is about the role of Indonesia in the world's maritime sector. It is an archipelagic nation comprised of approximately seventeen thousand plus islands and therefore, it depends upon the use of marine transportation to ensure a cohesive national economy. Thereby, cargo ship operations, inter-island ferry operations, commercial fishing activities, off-shore oil/gas operations and marine trade logistics require a constant flow of properly trained marine personnel. A majority of those trainees come from the Maritime and Transportation Education Colleges located in Jakarta. Those colleges provide the educational foundation for Indonesia's maritime sovereignty.

At the center of this educational process is the training of students in Maritime English. Under Article I of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), the English language is a mandatory requirement for all seafarers — it is not an option. In fact, the English language is specified by law as the official language used for all vessel-to-vessel communications, for signaling emergencies, and for coordinating all forms of vessel traffic control. The International Maritime Organization (IMO) publishes a list of approved standard phrases that are to be followed by all vessels when communicating via radio. To date however there has been limited to no empirical study conducted into whether the current maritime educational institutions operating in Indonesia are providing adequate training in Maritime English to satisfy the requirements outlined by the IMO — or even if the students who are receiving that training feel that the English instruction provided meets their needs as future mariners.

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There have been numerous studies conducted over recent years into the overall problems experienced by Asian nations with regards to the teaching of maritime English (James et al., 2018; Mokhtari & Maouche, 2023). There is also considerable documentation available regarding the link between effective English language skills and safe operation at sea (Cicek et al., 2019). What is currently unknown is how instructors develop curricula for teaching Maritime English, how they deliver that training — and ultimately how aligned their delivery methods are with industry standards — and how those delivery methods relate to Indonesia's maritime educational culture and its institutionally supported programs. These issues present serious potential risks for graduates of the STIP Jakarta program and similarly located institutions who will eventually become crew members aboard foreign flagged vessels. Miscommunication at sea can lead to catastrophic results — and those types of results are generally not found elsewhere in any type of professional environment.

The purpose of this study was to identify these gaps. Data were gathered through surveys administered to 180 cadets attending one of three maritime and transport education institutions located in Jakarta. Additionally, data were collected from class room observations and an analysis of the curriculum documents being utilized. The primary goals of this study were: (1) to evaluate how students perceived their level of competency in terms of their ability to understand maritime English on five specific performance criteria; (2) to determine how closely aligned the current curriculum used in the three institutions studied matched STCW standards and industry expectations; and (3) to provide educators with evidence-based suggestions for improving their programs..

2. Literature Review.

Theoretical bases for this research exist across the areas of Second Language Acquisition Theory, Socioculturally-Influenced Learning Theory, and Evaluation Frameworks used for Vocational/Professional Education. Collectively, all three theories provide information that cannot be replicated by other theories.

Second Language Acquisition Theory's Input Hypothesis (Krashen, 2003) continues to have relevance for understanding how students acquire languages in a professional setting. The primary claim made by the Input Hypothesis states that when learners experience input at the learner's current level of competence plus one (i+1), then acquisition can occur. When applied to Maritime English instruction, the Input Hypothesis suggests that instructional materials should contain authentic Maritime language and should be presented to students at their current level of mastery. For example, this may include: SMCP phrases, VHF radio messages, cargo documents, etc. If the instructional material does not present realistic or practical language use, it will impede acquisition. That is a significant point. Widyalankara (2017), and Mokhtari & Maouche (2023) cite examples of some Indonesian maritime educational institutions continue to instruct Maritime English in a way that focuses on generalized English frameworks versus task-oriented, operationally-situated Maritime tasks. Regardless of the amount of time devoted to teaching, this limits student competence.

Vygotsky's (2012) concept of the Zone of Proximal Development (ZPD) provides another methodological lens. ZPD conceptualizes linguistic/cognitive development as relational. Students develop linguistically and cognitively, but only if supported by more capable instructors or peers. This view also supports a collaborative instructional methodology over a traditional lecture format focused on grammar presentation. Collaborative methodologies support activities such as: role playing marine communication scenarios, co-authoring incident reports, or reviewing peers' written interpretations of radio messages. Importantly, there exists a strong sociocultural basis for Vygotsky's work that fits well into the cultural diversity of Indonesia's cadet population. As James et al. (2018) indicate, cadets are already communicating in English among themselves in informal ways, thereby creating authentic language use.

As a regulatory document and a curriculum framework, the revised 2010 STCW Convention establishes the minimum performance requirements for seafarers at various certification levels. Specifically, the Maritime English portions of the competency tables establish minimum standards that educational institutions must meet (de Água et al., 2020; Trenkner, 2009). However, these standards represent a floor rather than a ceiling. Seafarers often face greater communication demands than those established by the STCW Convention in a multilingual/multicultural crew environment (Brenker et al., 2017). Therefore, while targeting regulatory compliance alone prepares cadets for a version of professionalism that does not reflect actual working conditions on-board commercially-operated vessels, it does not prepare them for the realities they will likely face.

Kirkpatrick's Four Level Evaluation Model (2006) represents a useful evaluation framework for determining the effectiveness of training programs. Kirkpatrick's four levels – Reaction (trainee reactions/satisfaction), Learning (the degree to which participants learn the subject matter), Behavior (whether new behaviors were observed), Results (measurable changes resulting from the program), – directly translate into the context of evaluating Maritime English training. Previous studies have evaluated aspects of Kirkpatrick's model within the context of maritime training (Frangoudes et al., 2019; Ferritto, 2016), yet few comprehensive four-level evaluations exist within the Indonesian maritime education literature. This study will focus primarily on Reaction and Learning levels, while utilizing cadets' self-reported assessments of their communication abilities as indicators of behavior.

3. Research Methodology.

A mixed-methods research design has been employed. Survey data have been collected through the use of a questionnaire, while the qualitative aspects of the study have involved the examination of classroom observations and curriculum documentation. In this regard, it is important to note that the decision to combine both types of data has been taken deliberately. That is, survey scores allow for the systematic identification of how

students perceive their Maritime English education in terms of five key dimensions, while observation notes and documentation analyses provide the contextual information necessary to interpret those perceptions as something other than just numbers.

Students enrolled in three different Maritime and Transport Education Institutions located in Jakarta formed the target group. Each of the three institutions are different in type: one is affiliated with the Government, one is focused on transportation training, and one is focused on vocational education. With respect to the sample selection process, a purposeful strategy was adopted in order to achieve representative samples across academic years (first-year to fourth-year students), degree programs (nautical and technical degrees) and gender. In total, there were 180 cadet respondents included in the study. The number of coded responses required to reach thematic saturation was approximately 140.

The survey instrument used in this study included a 25 item Likert scale. The Likert scale was derived from a previously validated framework of maritime English competences (Corina et al., 2012; Mallam et al., 2019). Three maritime English practitioners reviewed the survey instrument before administering it to cadets. The items in the survey were categorized into five themes: language proficiency, curriculum relevance, pedagogy, communicative competence, and industry alignment. Reliability testing indicated that the internal consistency coefficient (Cronbach's alpha) was .81. Therefore, composite measures were created for each theme, and percentage measures were developed to enable comparisons among the themes.

In addition to the surveys, a series of classroom observations were made during eight Maritime English classes taught at two of the three educational institutions that participated in the study. These observations were guided by a structured observation checklist that represented the underlying framework of the study. The checklist enabled researchers to determine the ratio of receptive to productive language tasks, whether instructors utilized actual maritime materials (e.g. SMCP phrases, radio simulations) when teaching Maritime English, and how often cadets actively participated in class discussions.

It should be noted here that the primary researcher has experience working as a maritime educator at STIP Jakarta. As such, she brought an insider's view (emic perspective) to her observations that shaped — or sometimes complicated — her interpretations of field notes. Readers should bear this in mind when interpreting her field notes.

Finally, a document analysis was also conducted to examine the extent to which the curricula of the three participating institutions aligned with the STCW Table A-II/1 competency requirements. Additionally, whether or not the curricula contained industry relevant communication exercises were assessed. The document analysis framework outlined by Miles and Huberman (1994) was used to guide this portion of the study. Specifically, they recommended using a method called "data reduction" to identify patterns within the data; creating displays of the data to help illustrate patterns found in the data; and finally, making conclusions about what was learned from analyzing the data. Coding was completed manually and then checked against another researcher for inter-rater reliability.

Prior to collecting any data for this study, approval had been received from the Institutional Review Board. Also, all participants signed an informed consent agreement prior to completing their survey. The results of all institutional-level data are presented as aggregate data so that confidentiality can be maintained.

4. Results: Cadets' Perceptions of Maritime English Literacy.

The survey data paint an overall positive picture of maritime English literacy, though the results are uneven across the five dimensions assessed. Table 1 provides operational definitions of each construct to clarify exactly what is being measured before the scores are analysed.

Table 1: Constructs and Operational Definitions.

Construct	Operational Definition
Language Proficiency	Cadet self-ratings on reading, writing, listening, and speaking in Maritime English contexts
Curriculum Relevance	Perceived connection between course content and actual maritime operational tasks
Pedagogical Approach	Satisfaction with and perceived effectiveness of instructional methods in Maritime English classes
Communicative Competence	Ability to use English clearly and appropriately under real seafaring conditions
Industry Alignment	Degree to which English education prepares cadets for actual maritime industry expectations

Source: Authors.

Table 2 shows the weights assigned to each construct in the overall composite score. The weights were determined through pre-data collection consultations with three experts in Maritime English at STIP Jakarta, reflecting deliberate consideration of which dimensions play the most significant role in shaping the profile of a competent maritime communicator.

Table 3 shows the distribution of cadets' intensity ratings across five constructs, assessed on a five-point scale ranging from Very Low to Very High.

Table 2: Composite Score Weights.

Construct	Weight (%)
Language Proficiency	25
Curriculum Relevance	20
Pedagogical Approach	15
Communicative Competence	20
Industry Alignment	20

Source: Authors.

Table 3: Percentage of Cadet Intensity Ratings by Construct.

Construct	Very Low (%)	Low (%)	Moderate (%)	High (%)	Very High (%)
Language Proficiency	5	10	20	40	25
Curriculum Relevance	10	15	30	30	15
Pedagogical Approach	10	15	25	35	15
Communicative Competence	5	10	20	40	25
Industry Alignment	10	15	30	30	15

Source: Authors.

Table 4: Composite Scores by Construct.

Construct	Score (/100)	Rating
Language Proficiency	85	High
Curriculum Relevance	75	Moderate
Pedagogical Approach	80	High
Communicative Competence	90	Very High
Industry Alignment	80	High

Source: Authors.

Some patterns in Table 4 warrant closer examination. A communicative competence score of 90 is the highest score across all constructs, with 65% of cadets rating this dimension as High or Very High. This finding in itself is not surprising, but becomes far more significant when combined with classroom observation data: the cadets' most outstanding performance consistently occurred during role-play and simulation tasks, rather than during grammar-based instruction. Language proficiency followed at 85, broadly reflecting these institutions' sustained investment in developing cadets' linguistic foundations during the early years of training.

The curriculum relevance score of 75 is the most diagnostically significant finding of this survey. The concentration of ratings in the 'Moderate' range (30%) and the relatively low proportion of 'High' ratings (30%) suggest that the majority of cadets are not confident that what they learn in the classroom corresponds to what they will do at sea. Observations have also illustrated the reason why there is such a large gap. During a number of sessions, teachers were using General English textbooks instead of resources which were tailored to the SMCP. Document review also showed that of the three institutional syllabi reviewed, only one included a reference to the IMO Model Course 3.17 Maritime English (the leading International Standard in the field). Again this is an example of a serious practical gap as well as an administrative issue: Cadets are developing English Language Skills on an ad-hoc basis without systematic guidance toward the unique communicative requirements of marine working.

Scores of both Pedagogy (80), and Industry Relevance (80) reflect that there is a notable and significant gap. Pedagogy's score reflects that while cadets expressed reasonable satisfaction with the quality of instruction they received, observational evidence indicated a much more nuanced view: Some classes utilized authentic maritime media materials and real world task based learning techniques, while other classes remained heavily reliant upon textbooks — and it was apparent through observation how significantly cadet participation varied between these two instructional methodologies. The Industry Relevance score of 80 reflects a very real gap. A number of open ended responses provided additional insight into the perceived gap from the perspective of the students. For instance, some students responded directly, "we need 'practical' English for use at sea, not just 'classroom' English." Un-solicited commentary has been shown to be generally considered to be a more reliable measure of student attitudes and beliefs than simply analyzing rating patterns.

5. Discussion.

Placing these findings within the theoretical framework introduced earlier clarifies what these institutions are doing well and where structural reforms are urgently needed.

Findings regarding communicative competence deserve more than just a brief mention. What makes them stand out is not merely the scores themselves, but what those scores reveal about how the cadets actually learn. During the observed sessions, the difference in the cadets' performance between task-based communication activities and grammar-based instruction was striking. In one session, a radio communication simulation exercise produced sustained and contextually appropriate English dialogue from the cadets, who had demonstrated far more limited output just minutes earlier during a form-filling exercise. This is precisely what Vygotsky's framework predicts: language development is accelerated when there is a genuine communicative need, rather than when there is abstract linguistic pressure. The implications for pedagogy are clear — yet traditional teaching patterns persist in some of the observed curricula.

The gap in curriculum relevance is perhaps the most operationally significant finding. Document analysis revealed that two participating institutions had not revised their Maritime English syllabuses since 2018 — preceding a number of significant updates to the IMO Model Course 3.17, as well as the

Table 5: Theoretical Frameworks Applied to Empirical Findings.

Construct	Theoretical Lens	Interpretive Commentary
Language Proficiency	Krashen (2003) — Input Hypothesis	High scores reflect extended exposure to comprehensible maritime input; gains likely plateau when input remains general rather than operationally grounded
Curriculum Relevance	STCW / Kirkpatrick Level 2	The 75% score indicates partial learning goal fulfillment; alignment with STCW Table A-II/1 competency descriptors remains inconsistent across institutions
Pedagogical Approach	Vygotsky (2012) — ZPD	Interactive tasks that scaffold cadet performance within the ZPD produced notably higher engagement; lecture-only sessions did not
Communicative Competence	Sociocultural / Interactionist perspectives	The highest-scoring construct; simulation and peer-interaction tasks appear to be primary explanatory factors
Industry Alignment	Kirkpatrick Levels 3–4 / STCW Manila 2010	A real but modest gap between instructional content and operational industry demands; industry involvement in curriculum governance remains limited

Source: Authors.

increasingly rapid integration of electronic chart systems, Automatic Identification System (AIS) communications, and Digital Selective Calling (DSC) protocols into day-to-day ship operations. Responses to the open-ended survey confirmed the practical consequences: a number of cadets reported never having received classroom instruction on DSC or AIS communication protocols, both of which are now standard on commercial vessels. This is not, it must be emphasised, a failure of teaching. The instructors observed demonstrated a genuine commitment. The failure lies in curriculum governance — specifically, the absence of systematic mechanisms linking the syllabus revision cycle to IMO updates and real-time feedback from maritime industry partners still actively operating.

The current industry alignment score is, in its origins, structural in nature. The administrators and teachers involved in the document review process are aware of this alignment issue; this is not knowledge that this research needs to convey to them. The problem is institutional: the curriculum revision cycle is slow, industry partnerships are informal rather than formalised within governance structures, and Maritime English instruction is in some cases delivered by English language specialists rather than practitioners with maritime experience. This final point carries particular weight. Knowing what to say in a specific operational situation and understanding why certain phrases are used — what they signal, what they imply about the vessel's situation — requires more than mere linguistic expertise. It requires the practical knowledge of a practitioner, which is not easily replaced.

Viewed through the Kirkpatrick evaluation model, the picture that emerges is one of strong institutional competence at Levels 1 and 2 — cadets are satisfied and language learning is taking place — but limited transfer at Level 3, where the skills learned should translate into actual professional behaviour. The curriculum gaps and industry mismatches outlined above are the mechanisms that effectively limit this transfer. Addressing them does not require dismantling what is already working well; strengths in communicative competence and language ability provide a solid foundation upon which curriculum reform can be built.

6. Recommendations.

Three recommendations that emerge from the evidence are focused on institutional action – not general aspirations

Recommendation 1: Curriculum review based upon imo Model Course 3.17. The Maritime English curricula at all participating institutions should be reviewed to align with the 2020 edition of imo Model Course 3.17 and competency descriptors in STCW Table a-ii/1. Gaps in DSC communication protocols, AIS terminology and multicultural crew communication conventions were identified within this research — gaps concrete enough to be integrated as stand-alone learning modules rather than being scattered across existing courses. Revision cycles should occur no more often than every Three years with designated course coordinators to monitor both imo and stcw updates between cycles.

Recommendation 2: systematically integrate simulation-based and task-based instruction. Corroborated by classroom observations and validated through the analysis of data regarding communicative competency scores obtained through simulated tasks — provides pragmatic basis for increasing proportion of scenario-based instruction in Maritime English classes. The core pedagogical strategies should include, but not be limited to, role-playing exercises, VHF radio communication simulations and collaborative incident report writing should account for no less than 40% of time spent in class — not as supplementary activities but rather as part of the core teaching methods. Institutions operating ship handling simulators should explore options to implement Maritime English assignments using their simulator environment, integrating technical operations with language use rather than treating them separately.

Recommendation 3: establish formalized industry consultancy partnerships. Goodwill will only provide improved compliance — structural mechanisms must be established. Each participating institution should establish an industry consultancy panel with a formal governance mandate — comprised of representatives from shipping companies, port authorities and crewing agencies — whose specific responsibility would be to review and provide input on Maritime English Curriculum documents during each revision cycle. This is not a new mechanism — maritime universities in Europe have implemented similar frameworks which have been demonstrably successful (de água et al., 2020; brenker et al., 2017). What indonesia's maritime institutions need to do is formalize relationships currently informal and make external input part of their decision-making processes.

Conclusions.

This study evaluated the current state of Maritime English literacy at the Maritime and Transportation Training Institute (MTTI) in Jakarta and the preliminary data indicate an overall coherent yet uncomfortable picture. Cadets are demonstrating tangible language abilities—especially in interactive, role-playing based contexts—to communicate effectively while their language skills show a consistent development due to prolonged instructional support over the course of multiple years of instruction. As such, MTTI has achieved a significant institutional accomplishment and it would be unfortunate if those accomplishments were overshadowed by the notable gaps noted in this report.

Those gaps however, are not minor. A curriculum relevancy score of 75% when paired with the documentation indicating the last update to the syllabi was in 2018 creates a very serious concern: cadets may graduate from MTTI with sufficient functional English skills to be employed as mariners on ships, but lack knowledge of the most recent International Maritime Organization (IMO) communication standards, and therefore unprepared to operate on the types of vessels they will be assigned upon graduation. Given that the consequences of miscommunication during distress signals or cargo handling procedures can result in loss of life, those gaps should not be viewed as secondary concerns.

As previously stated, none of the recommendations made here would necessitate additional funding. Standard features of all developed maritime education programs throughout the world include structured updates to curricula, increased amounts of time dedicated to simulating scenarios that mirror actual situations encountered in shipping, and formalized processes for consulting with shipping industry professionals. That MTTI does not have established structures similar to its peers worldwide is indicative of institutional resistance rather than institutional inability, and as suggested in this report, that resistance requires directed and deliberate focus.

Future studies examining the effectiveness of this assessment methodology could evaluate how effective Maritime English proficiency testing relates to success in obtaining certifications, and conduct longitudinal follow up evaluations with graduates to determine how well Kirkpatrick's Behaviors and Outcomes relate to each other—the degree of alignment demonstrated in this study is limited to the scope of this study. The results of this study present a foundation for future studies, and as such, are neither conclusive nor should be used as such.

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