

Navigating the Rules of the Sea: How Instructional Practices Shape COLREGs Literacy Among Maritime Cadet

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ABSTRACT

This study examined the relationship between perceived instructional practices and COLREGs literacy among Second-Year Marine Transportation students at the Asian Institute of Maritime Studies during Academic Year 2025-2026. Employing a quantitative descriptive-correlational design, data were collected from 253 respondents through a validated survey questionnaire, while COLREGs literacy was measured using students' final course grades. Results revealed that respondents perceived instructional practices to be highly effective across the dimensions of clarity and content mastery ($M=4.16$), instructional delivery and application ($M=4.15$), engagement and support ($M=4.21$), integration and motivation ($M=4.29$), and overall perception ($M=4.16$). The majority of students obtained excellent to outstanding academic performance in COLREGs subjects, indicating a high level of literacy. Statistical analysis showed a strong and significant positive relationship between instructional practices and COLREGs literacy ($r=0.838$, $p<0.001$). Among the dimensions, clarity and content mastery demonstrated the strongest association with literacy levels ($r=0.917$, $p<0.001$). The findings suggest that effective instructional practices significantly contribute to students' understanding and application of COLREGs. The study recommends strengthening instructional approaches that promote clarity, engagement, practical application, and maritime relevance to further improve students' professional competence and navigational preparedness.

Keywords: *Instructional Practices, COLREGs Literacy, Perception, Maritime Transportation Students*

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INTRODUCTION

The United Nations Sustainable Development Goal 4 (SDG 4) emphasizes the importance of ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. These overarching educational directives are deeply anchored in the global framework of the United Nations Sustainable Development Goals (SDGs). Within maritime education, this study's focus on COLREGs instruction directly addresses SDG Target 4.4, which aims to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship (**United Nations, n.d.-a**). Furthermore, because the primary purpose of COLREGs is to prevent maritime collisions and ensure operational safety, this research also supports SDG 8 (Decent Work and Economic Growth). Effective mastery of these regulations fulfills SDG Target 8.8, which seeks to protect labor rights and promote safe and secure working environments for all workers, particularly for seafarers navigating hazardous environments at sea (**United Nations, n.d.-b**).

Within maritime education, this goal highlights the need to develop competent seafarers through effective instruction, technical training, and continuous learning opportunities that meet global industry standards. As the maritime industry continues to evolve through technological advancements and increasingly complex shipboard operations, maritime education institutions play a critical role in preparing future seafarers to navigate safely and efficiently in a highly regulated environment.

Education is widely recognized as a fundamental driver of professional competence and workforce development. In the maritime sector, education and training serve as the foundation for developing the knowledge, skills, and decision-making abilities required for safe navigation and ship operations. Maritime education and training play a crucial role in preparing future seafarers for the operational demands of the shipping industry. Through formal instruction and practical learning experiences, maritime students develop the knowledge, technical skills, and decision-making abilities necessary for safe and efficient ship operations. As maritime activities continue to evolve, educational institutions must ensure that instructional practices effectively prepare students to meet industry standards and navigational responsibilities.

Among the numerous competencies required of future deck officers, mastery of the International Regulations for Preventing Collisions at Sea (COLREGs) remains one of the most important. COLREGs provide universally accepted navigation rules that guide vessel movements and decision-making during encounters at sea. These regulations serve as the "rules of the road" for ships and are intended to prevent collisions through the application of standardized navigational procedures. According to **Ivanišević et al. (2018)**, a thorough understanding of COLREGs is essential to navigational safety and professional maritime competence. A strong understanding of COLREGs contributes to the development of sound navigational judgment, situational awareness, and decision-making skills. These competencies are particularly important during vessel encounters and navigation in congested waterways, where adherence to established collision-prevention rules is essential for ensuring maritime safety.

Despite continuous improvements in maritime education and training programs, human error remains a major contributing factor in maritime incidents and collisions. Several studies have associated these errors with inadequate understanding of navigational regulations, poor decision-making, and ineffective application of theoretical knowledge in practical situations. As a result, maritime educators are increasingly challenged to adopt instructional practices that not only improve students' academic performance but also enhance their ability to apply COLREGs in

real-life navigational scenarios. Effective instructional practices characterized by clarity of instruction, content mastery, learner engagement, practical application, and instructional support have been shown to positively influence students' learning outcomes and knowledge retention.

Effective instructional practices are widely recognized as important factors in student learning and academic success. Clear explanations, organized lesson delivery, active student participation, and practical learning activities help students understand complex concepts and retain knowledge more effectively. In maritime education, these instructional practices are particularly important because students are expected to apply theoretical knowledge to real-life shipboard situations. This necessity for structured pedagogy is further corroborated by recent research within the same institution; **Tingas et al. (2026)** demonstrated that while passive exposure can build basic awareness of maritime frameworks, translating that superficial familiarity into actionable, practical understanding relies entirely on formal, analytical classroom instruction.

However, while existing literature recognizes the theoretical importance of COLREGs and the value of effective instruction in maritime education, limited empirical research has examined the direct relationship between specific instructional practices and students' COLREGs literacy. Most previous studies have focused on general maritime competencies, instructional effectiveness, or safety training, with relatively few investigations exploring how instructional practices influence students' mastery of collision regulations. Furthermore, there is a scarcity of research conducted within Philippine maritime institutions, particularly at the Asian Institute of Maritime Studies (AIMS), that quantitatively examines the association between instructional practices and students' academic performance in COLREGs.

This gap in the literature highlights the need for empirical evidence that can assist maritime educators and institutions in identifying instructional approaches that most effectively enhance student learning outcomes. Understanding how students perceive instructional practices and how these perceptions relate to COLREGs literacy may provide valuable insights for improving curriculum delivery, teaching strategies, and educational policies in maritime education.

Therefore, this study aims to examine the relationship between perceived instructional practices and COLREGs literacy among Second-Year Bachelor of Science in Marine Transportation students at the Asian Institute of Maritime Studies during Academic Year 2025-2026. Specifically, the study investigates instructional practices in terms of clarity and content mastery, instructional delivery and application, engagement and support, integration and motivation, and overall instructional effectiveness. The findings are expected to contribute to the enhancement of maritime teaching practices, strengthen the quality of maritime education, and support the development of competent future officers capable of ensuring safe and efficient navigation.

Objectives

Despite the extensive body of literature emphasizing the importance of COLREGs knowledge in promoting navigational safety and professional maritime competence, limited empirical studies have examined how specific instructional practices influence students' actual literacy in COLREGs. Most existing research focuses on the theoretical significance of maritime regulations, instructional effectiveness in general education, or maritime training outcomes without directly assessing their relationship to students' academic performance in COLREGs. Furthermore, there is a scarcity of quantitative studies conducted within Philippine maritime institutions that investigate how

instructional clarity, instructional delivery, engagement, support, integration, and motivation contribute to students' mastery of collision regulations. At the Asian Institute of Maritime Studies (AIMS), no known study has specifically examined the relationship between students' perceptions of instructional practices and their COLREGs literacy. Therefore, this study seeks to address this gap by providing quantitative evidence on how instructional practices correlate with students' performance in COLREGs. The findings may serve as a basis for improving teaching strategies, enhancing curriculum delivery, and strengthening maritime education programs that prepare future seafarers for safe and competent navigation.

This study aims to examine the relationship between perceived instructional practices and the COLREGs literacy of second-year Marine Transportation students at the Asian Institute of Maritime Studies, Academic Year 2025-2026. Specifically, it seeks to answer the following questions:

1. What is the demographic profile of the respondents in terms of
 - a. Sex
 - b. Age
2. What is the level of perceived instructional practices COLREGs among the respondents in terms of:
 - a. Clarity and content mastery?
 - b. Instructional delivery and application?
 - c. Engagement and support?
 - d. Integration and motivation?
 - e. Overall perception?
3. What is the COLREGs literacy level of the respondents based on their examination results?
4. Is there a significant relationship between perceived instructional practices and the COLREGs literacy level of the respondents?

Hypothesis

Ha: There is a significant relationship between perceived instructional practices and COLREGs literacy among second-year Marine Transportation students at the Asian Institute of Maritime Studies, Academic Year 2025–2026.

METHODS

Research Design

The study employed quantitative descriptive-correlational research design. The design was utilized since it sought to examine whether a significant relationship exists between the perceived instructional practices and the literacy in COLREGs among 2nd year Marine Transportation students of Asian Institute of Maritime Studies, Academic Year 2025-2026.

Participants

The study consists of a population of six hundred eighty-four (684) enrolled 2nd year Bachelor of Science in Marine Transportation Students in the Asian Institute of Maritime Studies, Academic Year 2025-2026. The study has a sample size of two hundred fifty-three (253) enrolled 2nd year Bachelor of Science in Marine Transportation Students in the Asian Institute of Maritime Studies, Academic Year 2025-2026. Sample size was determined using Slovin's formula at 5% (0.05) margin of error. The study employed a random sampling to ensure that every participant has an equal chance of being selected to avoid bias and ensure a fair representation of the population.

Instrumentation

The study utilized one (1) research instrument which is a Google Forms Survey made by the researchers consisting of three (3) sections. The survey includes a section on the demographic profile of the respondents, allowing the gathering of basic information such as sex, age, and year level. The form also contains a fifteen (15) items Likert-scale Questionnaire to measure the 2ndyear Marine Transportation students' perceptions of the instructional practices used in teaching COLREGs. Each item is rated using a five-point Likert scale: 1-Strongly Disagree, 2-Slightly Disagree, 3-Neither Agree/Disagree, 4-Agree, 5-Strongly Agree. The form also includes an upload section where the respondents attached their grade from the student portal as proof of their final course grade in COLREGs.

To get accurate and validated data, the researchers sought content validation for the research instrument. The Likert-scale questionnaire was endorsed to Center for Research and Institutional Development (CRID) and School of Merchant Marine (SMM) for expert review and validation.

Use of Final Course Grades as a Measure of COLREGs Literacy

In this study, final course grades in COLREGs-related subjects were used as an indicator of students' COLREGs literacy. This measure was considered appropriate because the course assessments are designed to evaluate students' knowledge, comprehension, interpretation, and application of the International Regulations for Preventing Collisions at Sea (COLREGs). The grading system incorporates various assessment methods, including written examinations, quizzes, classroom activities, practical exercises, and other academic requirements aligned with the learning outcomes of the course. Since these assessments directly measure students' understanding of navigational rules, principles, and collision-avoidance procedures, final course grades provide a reasonable and standardized measure of COLREGs literacy among the respondents. Consequently, higher grades indicate a greater level of mastery and understanding of COLREGs concepts and regulations.

Procedure

The researchers firstly determined the total population and sample size of enrolled second-year Marine Transportation Students in the Asian Institute of Maritime Studies Academic Year 2025-2026. A formal request letter, endorsed and signed by the researcher's research adviser, was submitted to the Office of the Registrar for data collection. The researchers gathered a total population of six hundred eighty-four (684) enrollees. From the gathered population, the researchers utilized the Slovin's formula at 5% margin error and came up with a sampling size of two hundred fifty-three (253) respondents.

The researchers submitted a formal letter to the Center for Research and Institutional Development (CRID) and the School of Merchant Marine (SMM) requesting content validation and approval of the Likert-scale questionnaire. Subsequently, the researchers also submitted a formal request to the Dean of School of Merchant Marine (SMM) for permission to conduct data gathering during class hours of instructors handling maritime-related subjects. Once approved, the researchers submitted a separate formal letter to the research adviser to seek approval for the actual conduct of the study.

Upon approval, the researchers formally conducted the data gathering procedure block by block until required sample size is achieved. Voluntary consent was obtained from the respondents, ensuring confidentiality and voluntary participation. The Likert-scale questionnaire was distributed via google forms and was answered using the respondents' cellphones. In contrast, the evaluation of students' COLREG literacy was based on their grades from the previous school year in their COLREGS course. The data that the researchers obtained from the research instruments was systematically checked and analyzed in accordance with the statistical treatment outlined in this chapter.

Data Analysis

The data gathered by the researchers was checked and analyzed in accordance with the following statistical tools that were applied in the study:

1. Slovin's Formula was utilized to get the sample size and respondents of the study.
2. Cronbach's Alpha (α) was utilized to test the reliability of the Likert-scale questionnaire on perceived instructional practices. Values closer to 1.0 indicate higher reliability. A coefficient of 0.70 or higher indicates acceptable reliability.
3. The Mean and Standard Deviation was used to describe the level of perceived instructional practices, which is measured through a Likert scale. A 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was utilized in this questionnaire.
4. Frequency and Percentage Scores were utilized to describe the level of COLREGs literacy. COLREGs final course grades was utilized to determine the student level of COLREGs literacy.
5. Pearson R formula was utilized to determine the relationship between perceived instructional practices and COLREGs literacy using SPSS software.

Ethical Considerations

By requiring all second-year Marine Transportation students to give their informed, voluntary agreement before giving their opinions, this study places a high priority on participant ethics. All replies will be anonymized in order to preserve academic and professional integrity and shield students' opinions about institutional teaching methods from any consequences. Strict anonymity will be maintained throughout the data collection and analysis process to ensure that results are presented truthfully and do not distort the students' true reading levels or experiences. Lastly, in keeping with the ethical principles of the Asian Institute of Maritime Studies (AIMS) and the maritime industry, the researchers pledge to use the findings only for educational advancement.

Limitation of the Study

While this study utilized final course grades in COLREGs-related subjects as an indicator of students' COLREGs literacy, it is acknowledged that academic grades primarily measure classroom performance and theoretical understanding rather than actual operational competence. Although course grades provide a standardized and accessible measure of students' knowledge of the International Regulations for Preventing Collisions at Sea (COLREGs), they may not fully capture a student's ability to apply such knowledge in real-world navigational situations, emergency scenarios, or shipboard decision-making environments. Consequently, the findings of this study should be interpreted as reflecting students' academic literacy in COLREGs rather than their practical navigational competence. Future researchers are encouraged to incorporate simulator-based assessments, scenario analyses, practical examinations, or onboard performance evaluations to provide a more comprehensive assessment of COLREGs competency.

RESULTS and DISCUSSION

Table 1.1

Demographic Profile of the Respondents in Terms of Sex

Sex	Frequency	Percentage (%)
Female	15	5.93%
Male	238	94.07%
Subtotal	253	100%

Table 1.1 presents the distribution of respondents according to sex. The findings reveal that out of 253 respondents, 238 (94.07%) were male and 15 (5.93%) were female. This indicates that the majority of the respondents were male, reflecting the demographic composition commonly observed in maritime education programs, where male enrollment generally outnumbers female enrollment.

The results suggest that the respondents represent the prevailing gender distribution within the Bachelor of Science in Marine Transportation program. Since the study primarily focuses on examining the relationship between perceived instructional practices and COLREGs literacy, the presentation of sex serves only as a descriptive profile of the respondents and is not intended for comparative analysis. The demographic information provides context for understanding the characteristics of the study participants and the population from which the sample was drawn.

Table 1.2

Demographic Profile of the Respondents in Terms of Age

Age	Frequency	Percentage (%)
18	2	0.8%
19	128	50.6%
20	100	39.5%

21	17	6.7%
22	3	1.2%
23	3	1.2%
Subtotal	253	100%

Table 1.2 presents the distribution of respondents according to age. The ages of the respondents ranged from 18 to 23 years old. The largest proportion of respondents was 19 years old, with a frequency of 128 respondents, representing 19.4 percent of the total responses. Those aged 20 followed this, with 100 respondents or 15.2 percent of the total responses.

Smaller proportions of respondents were recorded in the higher age brackets. Those aged 21 accounted for 17 respondents, representing 2.6 percent, while the aged 22-year-old and 23-year-old groups each comprised of 3 respondents, or 0.5 percent of the total responses. The age 18-year-old respondents represented the smallest group, with 2 respondents or 0.3 percent of the total.

Overall, the distribution of respondents according to age showed the majorities were concentrated in the 19 and 20-year-old categories, indicating that most participants fell within a narrow age range.

Table 2.1

Level of perceived instructional practices in terms of clarity and content mastery

Statement	Mean	Std. Deviation	Interpretation
1. Explaining lessons in a way that is easy to understand.	4.08	.839	Agree
2. Explaining important COLREGs ideas and rules clearly.	4.21	.802	Strongly Agree
3. Using examples to make difficult topics easier to understand.	4.19	.850	Strongly Agree
Average	4.1594	.76322	Strongly Agree

Table 2.1 presents the level of perceived instructional practices in terms of clarity and content mastery. The results show that the overall mean is $M = 4.1594$ with a standard deviation of $SD = 0.76322$, interpreted as Agree. Among the indicators, explaining important COLREGs ideas and rules clearly obtained the highest mean ($M = 4.21$), interpreted as Strongly Agree, while explaining lessons in an easy-to-understand manner yielded the lowest mean ($M = 4.08$), still interpreted as Agree. The findings indicate that respondents generally perceive their instructors as effective in demonstrating clarity and mastery of COLREGs content. The consistently high mean scores suggest that instructors can communicate complex maritime rules clearly and support learning through relevant explanations and examples. The relatively low standard deviation implies that responses were closely clustered, reflecting a shared perception among students regarding the quality of instructional clarity and content mastery.

The findings indicate that students perceive their instructors as effective in communicating COLREGs concepts and demonstrating subject matter expertise. Clear explanations and the use of practical examples appear to help students understand maritime regulations more effectively. The relatively low standard deviation further suggests consistency in students' perceptions regarding instructional clarity and content mastery.

Table 2.2

Level of perceived instructional practices in terms of instructional delivery and application

Statement	Mean	Std. Deviation	Interpretation
1. Teaching lessons in an organized, step- by-step way.	4.07	.888	Agree
2. Using pictures, videos, or models to help students understand.	4.24	.791	Strongly Agree
3. Demonstrating real or practice situations to apply COLREGs.	4.14	.906	Strongly Agree
Average	4.1502	.75495	Strongly Agree

As shown in Table 2.2, the level of perceived instructional practices in terms of instructional delivery and application obtained an overall mean of $M = 4.1502$ with a standard deviation of $SD = 0.75495$, interpreted as Agree. The use of pictures, videos, or models received the highest mean score ($M = 4.24$), interpreted as Strongly Agree, while teaching lessons in an organized, step-by- step manner recorded the lowest mean ($M = 4.07$), still within the Agree range.

These results suggest that instructors employ effective delivery strategies and practical approaches when teaching COLREGs. The high mean values indicate that visual aids and real-life demonstrations are commonly used, which supports experiential learning. The consistency of responses further reflects that students recognize the application of structured and practical instructional methods as part of their learning experience.

According to the OECD (2022), effective instructional delivery practices such as organized lesson sequencing use of visual materials, and real-life applications were consistently rated high by students and were found to positively influence learning engagement and outcomes. The report also noted that smaller standard deviation values reflect a common perception among learners regarding teaching effectiveness. This corresponds with the respondents' perceptions reflected in Table 2, where students agreed to strongly agree that instructors effectively delivered and applied COLREGs lessons, and the relatively low standard deviation ($SD = 0.755$) indicates a high level of agreement and consistency among respondents' evaluations of instructional delivery and application.

Table 2.3

Level of perceived instructional practices in terms of engagement and support

Statement	Mean	Std. Deviation	Interpretation
1. I am encouraged to join in class discussions and activities.	4.14	.846	Agree
2. I can ask questions freely when something is not clear.	4.29	.730	Strongly Agree
3. I receive helpful feedback that helps me improve my understanding.	4.21	.813	Strongly Agree
Average	4.2148	.71021	Strongly Agree

As shown in Table 2.3, the level of perceived instructional practices in terms of engagement and support reveals that students strongly agree they can ask questions freely when something is unclear ($\text{Mean} = 4.29$, $SD =$

0.730), strongly agree they receive helpful feedback (Mean = 4.21, SD = 0.813), and agree they are encouraged to participate in class discussions and activities (Mean = 4.14, SD = 0.846). This overall "Strongly Agree" average (Mean = 4.2148, SD = 0.71021) suggests that learners perceive high levels of engagement and support within their instructional environment.

The results indicate that students perceive a high level of instructional engagement and support. The highest mean the item obtained score related to asking questions freely, suggesting that instructors create an open and supportive learning environment. The relatively low standard deviation values indicate consistency in respondents' perceptions regarding engagement and support.

The results suggest that students experience a supportive learning environment where they feel comfortable asking questions and receiving constructive feedback. Such an environment encourages active participation and engagement in the learning process. The consistently high mean scores across the indicators demonstrate that respondents generally perceive their instructors as approachable, supportive, and responsive to their learning needs.

Table 2.4

Level of perceived instructional practices in terms of integration and motivation

Statement	Mean	Std. Deviation	Interpretation
1. The lessons connect what we learn to real shipboard situations.	4.30	.727	Strongly Agree
2. The activities make me more interested in studying COLREGs.	4.08	.889	Agree
3. Each lesson is connected to the next one, making it easier to follow and learn.	4.17	.849	Agree
Average	4.2858	.73596	Strongly Agree

As shown in Table 2.4, the level of perceived instructional practices in terms of integration and motivation reveals that students strongly agree that the lessons connect what they learn to real shipboard situations (Mean = 4.30, SD = 0.727), agree that the activities make them more interested in studying COLREGs (Mean = 4.08, SD = 0.889), and agree that each lesson is connected to the next one, making it easier to follow and learn (Mean = 4.17, SD = 0.849). This overall "Strongly Agree" average (Mean = 4.2858, SD = 0.73596) suggests that learners perceive a high level of integration of content and motivation within their instructional environment.

The findings indicate that instructional practices effectively integrate lesson content with real-life applications and maintain logical lesson sequence. The highest mean score was observed for the connection of lessons to real shipboard situations, highlighting the relevance of instruction. The results suggest that instructional integration contributes positively to learner motivation and interest.

The findings indicate that students value instructional practices that connect classroom lessons to actual shipboard situations. When students recognize the relevance of lessons to future professional responsibilities, their

interest and motivation to learn may increase. The results suggest that integrating real-world applications into instruction contributes positively to students' engagement and understanding of COLREGs concepts.

Table 2.5

Level of perceived instructional practices in terms of overall perception

Statement	Mean	Std. Deviation	Interpretation
1. Planning lessons to be easy to follow.	4.16	.840	Agree
2. Teaching in a way that helps students feel confident applying COLREGs.	4.17	.880	Agree
3. Providing instruction that helps students learn better and become competent cadets.	4.17	.840	Agree
Average	4.1647	.80542	Agree

The findings suggest that respondents perceived the instructional practices employed in teaching COLREGs as effective, organized, and supportive of learning. The indicators related to building confidence in applying COLREGs and developing competent cadets obtained the highest mean scores, indicating that students view these instructional practices positively. These results imply that effective teaching strategies contribute to students' confidence, understanding, and preparedness to apply maritime regulations in academic and future professional settings. Additionally, the relatively low standard deviation values indicate consistency in the respondents' perceptions of the instructional practices employed by their instructors.

Student perceptions are important indicators of instructional effectiveness because they reflect learners' experiences regarding lesson organization, clarity, engagement, and relevance. Positive perceptions of instructional practices are often associated with improved learning outcomes, increased motivation, and stronger academic performance. Therefore, the favorable ratings obtained in this study suggest that the instructional approaches used in teaching COLREGs support meaningful learning and contribute to the development of maritime competencies among students.

Table 2.6

Level of perceived instructional practices in terms of Grand Mean

Statement	Mean	Std. Deviation	Interpretation
Overall perceived instructional practices of COLREGs	4.1750	.69174	Agree
Average	4.1750	.69174	Agree

Table 2.6 shows the overall perceived instructional practices of COLREGs. The results show an overall mean of 4.1750 with a standard deviation of 0.69174, which is interpreted as Agree.

The mean score indicates that respondents perceived instructional practices as positive and beneficial, implying that instructional practices in COLREGs are effective and satisfactory. The low standard deviation (0,96174) implies that the respondents' perceptions are consistent. Most of the students answered similar responses in the survey questionnaire regarding instructional practices of COLREGs.

According to the Organization for Economic Co-operation and Development (**OECD, 2022**), students

usually perceive positively the teaching practices if lessons are clear, well-structured, and well-presented, as these contribute to an improvement of learning and comprehension. Research has supported that consistent and effective teaching practices give higher agreement and satisfaction from the students. This also agrees with the observation in Table 2.6, as the data revealed that the students agreed on the effectiveness of the general teaching practices in COLREGs, as clear from its high grand mean ($M = 4.1750$). Moreover, the value of its standard deviation ($SD = 0.69174$) reveals that the students' responses gathered consistency, demonstrating a similar level of positive perceptions of COLREGs teaching practices.

Table 3

COLREGs literacy level of the respondents based on their final course grades in the COLREGs-related subject for AY 2025–2026

COLREG's Grade	Frequency (N)	Percentage (%)
1.00	7	3
1.25	53	21
1.50	98	39
1.75	46	18
2.00	30	12
2.25	9	4
2.50	3	1
2.75	6	2
3.00	1	0
Subtotal	253	100

Table 3 shows the COLREGs respondents' level of literacy according to their final course grades in the COLREGs-related subject academic year 2025- 2026. A total of 253 respondents (100%) provided a valid grade. The grades of the respondents ranged from 1.0 to 3.0, with different frequencies and percentages for each grade classification. Based on the frequency and percentage, 1.50 gets the most frequent recorded grade in COLREGs, with 98 respondents or (39%) of the total sample. And followed by 1.25 (21%), 1.75 (18%), 2.00 (12%), 2.25 (4%), 1.00 (3%), 2.75 (2%), 2.50 (1%). 3.00 is the least frequently recorded grade, with 1 respondent only.

The results indicate that most of the respondents signified an outstanding to excellent understanding of the International Regulations for Preventing Collisions at Sea (COLREGs). This shows a high COLREGs literacy level among the recorded grades of the respondents.

The distribution of grades indicates that most respondents achieved satisfactory to excellent academic performance in their COLREGs-related subject. This finding suggests that the respondents generally possess a strong understanding of the concepts and regulations covered in the course. The results further demonstrate that a majority of students were able to meet the academic requirements and learning outcomes established for COLREGs instruction.

Table 4

Correlation Between Perceived Instructional Practices and the COLREGs Literacy Level of the Respondents

Indicators (Average)	Pearson R	Significance	Decision
A. Clarity and Content	0.917**	<0.001	Accept Ha
B. Instructional Delivery and Application	0.757**	<0.001	Accept Ha
C. Engagement and Support	0.712**	<0.001	Accept Ha
D. Integration and Motivation	0.719**	<0.001	Accept Ha
E. Overall Perception	0.734**	<0.001	Accept Ha
Grand Mean of Instructional Practices	0.838**	<0.001	Accept Ha

Legend:

r = Pearson correlation coefficient

p-value = Probability value (2-tailed) Significance Level:

p < 0.05 = significant (*)

p < 0.01 = highly significant (**)

Table 4 presents the correlation between perceived instructional practices and the COLREGs literacy level of the respondents. The Pearson r values for all instructional indicators: Clarity and Content ($r = 0.917$), Instructional Delivery and Application ($r = 0.757$), Engagement and Support ($r = 0.712$), Integration and Motivation ($r = 0.719$), and Overall Perception ($r = 0.734$) show strong positive relationships. All indicators yielded significance values less than 0.001, indicating statistically significant correlations. The Grand Mean of Instructional Practices also showed a strong correlation with COLREGs literacy ($r = 0.838$, $p < 0.001$).

The results suggest that as students perceive instructional practices more positively, their literacy in COLREGs tends to increase. The strongest correlation was observed in Clarity and Content ($r = 0.917$), implying that clear communication and mastery of content by instructors are highly associated with better student performance in COLREGs. Other indicators such as Instructional Delivery, Engagement, and Integration also demonstrated substantial correlations, reinforcing the idea that effective teaching strategies contribute meaningfully to students' understanding of maritime regulations.

These findings indicate that perceived instructional practices play a critical role in shaping students' literacy in COLREGs. The significant relationships across all dimensions suggest that enhancing instructional clarity, delivery, engagement, and integration can lead to improved comprehension and application of collision regulations. The findings demonstrate that instructional practices have a significant association with students' COLREGs literacy. The strong correlations observed across all instructional dimensions indicate that effective teaching strategies contribute positively to learners' understanding of maritime regulations. These results highlight the importance of promoting instructional clarity, active engagement, practical application, and meaningful learning experiences in maritime education.

Implications for Policy and Practice

The findings of this study revealed a strong and significant relationship between perceived instructional practices and COLREGs literacy among Second-Year Marine Transportation students. As such, the results provide important implications for maritime education institutions, curriculum planners, academic administrators, and instructors in improving the quality of maritime instruction.

First, maritime institutions may consider strengthening the use of simulation-based learning, case studies, and scenario-based exercises alongside traditional lecture methods. Since instructional delivery and application were found to have a strong positive relationship with COLREGs literacy, practical learning experiences can help students better understand and apply collision regulations in realistic navigational situations.

Second, instructors are encouraged to adopt student-centered teaching approaches that promote active participation, problem-solving, critical thinking, and collaborative learning. The high ratings obtained in the areas of engagement and support suggest that students benefit from learning environments where they are encouraged to ask questions, participate in discussions, and receive constructive feedback.

Third, academic administrators may implement continuous faculty development programs focusing on innovative teaching strategies, instructional technologies, assessment methods, and maritime simulation techniques. Providing instructors with opportunities for professional growth can further enhance the effectiveness of COLREGs instruction and improve student learning outcomes.

Fourth, curriculum developers may review and strengthen the integration of real-world shipboard situations and navigational decision-making exercises within COLREGs-related subjects. The findings indicate that students highly value lessons that connect classroom concepts to actual maritime operations. Therefore, curriculum enhancements should emphasize experiential learning opportunities aligned with industry practices and International Maritime Organization (IMO) standards.

Lastly, maritime institutions may establish a system for regular instructional evaluation and feedback gathering from students. Monitoring students' perceptions of instructional practices and relating them to academic performance can provide valuable information for improving teaching effectiveness and maintaining high standards of maritime education.

CONCLUSION

Based on the indicated findings, the following conclusions were drawn:

1. The respondents were predominantly male, mostly aged 19–20 years old, and all were second-year Marine Transportation students.
2. Respondents strongly agreed that their instructors demonstrated clarity, mastery of content, effective instructional delivery, and meaningful engagement. Lessons were perceived as well integrated with real shipboard situations and motivational in nature. The consistently high mean scores and low standard deviations across all dimensions indicate a shared and positive perception of instructional practices in COLREGs, highlighting the effectiveness of teaching methods.
3. The majority of students achieved excellent to outstanding grades in COLREGs-related subjects,

with 1.50 as the most frequent grade. This demonstrates that the respondents possess a high level of literacy in COLREGs, reflecting both their academic competence.

4. A strong and significant positive correlation was found between perceived instructional practices and COLREGs literacy levels. This indicates that higher perceptions of instructional clarity, delivery, engagement, integration, and motivation are directly associated with higher academic performance in COLREGs.

The researchers concluded that effective instructional practices— characterized by clarity and content mastery, instructional delivery, engagement and support, integration and motivation, significantly contribute to the development of COLREGs literacy among Marine Transportation students. The findings underscore the importance of pedagogical approaches that connect theoretical knowledge with practical shipboard applications, thereby enhancing students' competence and readiness for professional maritime responsibilities. Furthermore, the findings support Sustainable Development Goal 4 (Quality Education) by providing evidence-based insights into instructional practices that strengthen vocational and technical learning outcomes.

After a thorough analysis of the data, the following recommendations are hereby made:

1. Students should actively participate in COLREGs classes by asking questions, contributing to discussions, and relating lessons to real navigational situations. They may also enhance their learning by reviewing COLREGs rules regularly, practicing situational analyses, and using supplementary materials.
2. Instructors should maintain clarity and mastery in delivering COLREGs lessons and may use real shipboard scenarios and simulations to strengthen practical learning. They must also encourage active student engagement and motivate students to apply lessons to future maritime responsibilities.
3. The institute should continue supporting effective instructional practices by providing teaching resources, simulation tools, and professional development opportunities for instructors. AIMS may also regularly assess the effectiveness of COLREGs instruction through student feedback and academic performance to identify areas for improvement.
4. Future researchers may conduct similar studies in other maritime institutions and may explore additional factors like teaching styles or learning strategies. They must also consider using practical assessments or simulations to measure COLREGs competence more effectively.
5. Future researchers may consider examining instructional practices by individual COLREGs instructors to identify variations in teaching approaches and effectiveness. Comparing at least two or three instructors handling the same subject may provide deeper insights into how different instructional strategies influence students' COLREGs literacy. This approach would allow for a more detailed analysis of faculty-specific instructional practices and help institutions identify best teaching practices that can be replicated across instructors.
6. Future researchers may consider further refining and enhancing the Statement of the Problem (SOP) and the research questionnaires by improving item clarity, content coverage, and construct alignment to more accurately and comprehensively measure students' perceptions of instructional practices.

7. Future research and maritime institutions can employ different techniques to evaluate COLREG literacy. Grades reflect students' theoretical knowledge; they may not fully measure students' ability to interpret and apply COLREGs in real navigational situation. To more accurately assess decision-making, situational awareness, and rule application, scenario-based assessments, simulations, and case analyses are recommended.
8. Since the study is quantitative, future researchers can employ a qualitative study for further understanding of the topic.

REFERENCES

- Abad, M., Manalo, K., Merchant, P., & Academy, M. (2020). Instructional competence and faculty performance among maritime schools in Central Luzon. *International Journal of Multidisciplinary: Applied Business and Education Research*, 1(1), 44–53. <https://doi.org/10.11594/ijmaber.01.01.09>
- Abdulla, S. (2024). The use of active learning strategies to foster effective teaching in higher education institutions. *Zanco Journal of Humanity Sciences*, 28(4). <https://doi.org/10.21271/zjhs.28.4.18>
- Ahmod, U., & Wenzheng, Z. (2021). *An effective instructional strategies approach in higher education: A pilot investigation* [Unpublished manuscript]. ResearchGate. https://www.researchgate.net/publication/356580116_An_Effective_Instructional_Strategies_Approach_in_Higher_Education_A_Pilot_Investigation
- Fernández-García, C. M., Maulana, R., Inda-Caro, M., Helms-Lorenz, M., & García-Pérez, O. (2019). Student perceptions of secondary education teaching effectiveness: General profile, the role of personal factors, and educational level. *Frontiers in Psychology*, 10, Article 533. <https://doi.org/10.3389/fpsyg.2019.00533>
- International Maritime Organization. (2025). *Standards of training, certification and watchkeeping for seafarers (STCW Convention)*. IMO Publishing.
- Ivanišević, D., Mohović, Đ., Mohović, R., & Vukić, L. (2018). The importance of understanding COLREGs in the prevention of maritime accidents. *Pomorstvo*, 32(1), 65–72. <https://doi.org/10.31217/p.32.1.8>
- Organisation for Economic Co-operation and Development. (2022). *Students' perceptions of teaching practices and learning outcomes*. OECD Publishing.
- Tingas, A. N. B., Forte, J. M. L. D., Armado, B. L. G., Ibong, E. I. C., & Galindo, A. B. (2026). Awareness vs. actionable understanding: Dissecting the disconnect in maritime legal education regarding the Magna Carta of Filipino Seafarers. *GET International Research Journal*, 4(2), 149–159. <https://doi.org/10.5281/zenodo.20352940>

United Nations. (n.d.-a). *Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*. Department of Economic and Social Affairs, Sustainable Development.
https://sdgs.un.org/goals/goal4#targets_and_indicators

United Nations. (n.d.-b). *Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*. Department of Economic and Social Affairs, Sustainable Development.
https://sdgs.un.org/goals/goal8#targets_and_indicators