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Integrating Computer Literacy and Social Skills in Maritime Education: Enhancing Cadet Readiness

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Abstract: This research investigates the integration of computer literacy and social skills within Maritime Institute programs, focusing on the readiness of cadets for the contemporary maritime industry. Through qualitative analysis of 30 graduates from Sekolah Tinggi Ilmu Pelayaran Jakarta and quantitative data collection, the study elucidates the importance of these competencies in navigating the dynamic challenges of the maritime sector. Findings reveal a consensus among participants regarding the critical role of computer literacy, while variability exists in the perceived integration of social skills within curricula. Additionally, the research identifies research needs, dimensions of professionalism, and alignment with international standards, providing insights for education management and professionalism in the maritime industry. By addressing these challenges and opportunities, Maritime Institute programs can better prepare graduates for the demands of the global maritime marketplace, contributing to the advancement of the sector and ensuring the competitiveness of future maritime professionals.

Keyword: Maritime Education, Computer Literacy, Social Skills, Cadet Readiness, International Standards.

INTRODUCTION

The maritime industry stands as a vital pillar of global trade and transportation, facilitating the movement of goods and people across continents (Bergheim et al., 2015; de la Peña Zarzuelo et al., 2020). As this sector navigates the complexities of modern-day commerce, the demand for skilled professionals equipped with a diverse array of competencies has never been more pronounced. At the forefront of this endeavor lies the role of maritime education institutions, tasked with preparing cadets to navigate the dynamic challenges of the industry. In this context, researchers' research endeavors to explore the integration of computer literacy and social skills into the curriculum of Maritime Institute

programs, with a focus on enhancing the readiness of cadets for the demands of the contemporary maritime sector (Verschuur et al., 2021). The backdrop of researchers' investigation is framed by the evolution of international standards in transportation, safety, and education. In an increasingly interconnected world, adherence to these standards not only ensures the smooth operation of maritime activities but also fosters a culture of safety and efficiency. As such, researchers' research aims to examine the extent to which Maritime Institute programs align with these global benchmarks and, more importantly, how the integration of computer literacy and social skills contributes to the overall readiness of cadets.

Central to researchers' research objectives is the exploration of the multifaceted nature of maritime education. Traditionally, the emphasis has been placed on technical proficiency, with a focus on navigation, seamanship, and vessel operations. While these skills remain essential, the evolving landscape of the maritime industry demands a broader skill set from its professionals. Thus, researchers' research seeks to elucidate the role of computer literacy and social skills in complementing traditional maritime education, preparing cadets to excel in an environment characterized by technological innovation and intercultural communication (Berg, 2013). Within this context, researchers' research objectives are twofold. Firstly, researchers aim to assess the current state of Maritime Institute programs, particularly in terms of their alignment with international standards and industry expectations. Through qualitative analysis of the experiences of graduates from Sekolah Tinggi Ilmu Pelayaran Jakarta, researchers seek to identify areas of strength and areas for improvement within existing curricula. Secondly, researchers endeavor to explore the impact of integrating computer literacy and social skills into maritime education on the readiness of cadets for professional practice. By examining the perceptions and experiences of graduates, researchers aim to gauge the effectiveness of these integrative approaches in enhancing the overall competency and preparedness of maritime professionals.

In undertaking this research, researchers recognize a significant gap in the existing literature pertaining to the integration of computer literacy and social skills in maritime education. While studies abound on technical aspects of maritime training, relatively few have delved into the broader competencies essential for success in the contemporary maritime industry. By addressing this gap, researchers' research seeks to contribute to a more holistic understanding of maritime education, one that encompasses not only technical proficiency but also the interpersonal and technological skills necessary for navigating the complexities of the modern maritime sector (Autsadee et al., 2023). Researchers' research endeavors to shed light on the role of computer literacy and social skills in enhancing the readiness of cadets graduating from Maritime Institute programs. By examining the alignment of curricula with international standards and exploring the impact of integrative approaches to education, researchers aim to inform future developments in maritime education and contribute to the cultivation of a skilled and adaptable workforce capable of meeting the challenges of the global maritime industry.

METHOD

The research method employed in researchers' study on the integration of computer literacy, social skills, and the readiness of cadets graduating from Maritime Institute programs is grounded in qualitative inquiry, specifically utilizing descriptive analysis (Cascetta, 2013; Katz, 2015). Given the nuanced nature of researchers' research questions and the need to explore the lived experiences of professionals in the maritime industry, qualitative methods offer a rich and insightful approach to data collection and analysis. Researchers' research participants consist of 30 graduates from Sekolah Tinggi Ilmu Pelayaran Jakarta, selected purposively to ensure representation across diverse specializations within the maritime field. This sample size was deemed appropriate for achieving saturation,

whereby data collection reaches a point of redundancy and further sampling is unlikely to yield substantially new insights. By focusing on graduates with backgrounds in multimodal transportation, logistics, transportation safety, and port shipping management, researchers aimed to capture a comprehensive spectrum of perspectives on the integration of essential competencies into maritime education (Berg, 2013; Hakim et al., 2022).

Data collection in researchers' study primarily involved semi-structured interviews conducted with each participant. The use of semi-structured interviews allowed for flexibility in exploring participants' experiences, perceptions, and attitudes towards computer literacy, social skills, and their preparedness for professional practice (Darlington & Scott, 2020; Padgett, 2016). The interview protocol was designed to elicit detailed narratives from participants, probing into their educational experiences, the perceived relevance of computer literacy and social skills, and the challenges encountered in transitioning from education to the workplace. In addition to interviews, documentary analysis was employed to supplement and triangulate the findings from participant narratives. This involved reviewing relevant curriculum documents, course syllabi, and institutional policies to gain insights into the formal integration of computer literacy and social skills within Maritime Institute programs. By juxtaposing participants' perspectives with institutional materials, researchers aimed to provide a comprehensive understanding of the curricular landscape and its implications for cadet readiness.

The data obtained from interviews and documentary analysis were subjected to thematic analysis, a methodological approach widely used in qualitative research for identifying patterns, themes, and meanings within qualitative data. Following transcription, the interview transcripts were systematically coded and organized into thematic categories reflecting key aspects of participants' experiences and perceptions. This iterative process involved constant comparison and refinement of codes to ensure accuracy and reliability in capturing the richness of the data. Throughout the analysis process, attention was paid to ensuring rigor and trustworthiness in the interpretation of findings. This involved employing techniques such as member checking, wherein participants were given the opportunity to review and validate the interpretations derived from their narratives. Additionally, peer debriefing and reflexivity were integral to the research process, allowing for critical reflection on the researcher's own biases and preconceptions. Researchers' research method combines qualitative inquiry, descriptive analysis, semi-structured interviews, documentary analysis, and thematic analysis to explore the integration of computer literacy, social skills, and cadet readiness within Maritime Institute programs. By engaging with the lived experiences of graduates and examining institutional practices, researchers' methodological approach seeks to generate nuanced insights into the complex dynamics of maritime education and its implications for professional practice.

RESULTS AND DISCUSSION

Results

The results of researchers' research on the integration of computer literacy, social skills, and cadet readiness within Maritime Institute programs reveal nuanced insights into the preparedness of graduates for the demands of the contemporary maritime industry. Through qualitative analysis of participant narratives and documentary review, researchers identified key themes and patterns relating to the perceived importance of computer literacy and social skills, their integration into curricula, and their impact on cadet readiness. Additionally, quantitative data was collected to provide numerical insights into participants' perceptions across various parameters. The results are presented below, organized by indicator and accompanied by comprehensive tables for clarity and comprehension.

Indicator: Importance of Computer Literacy; Participants overwhelmingly recognized the importance of computer literacy in their professional practice within the maritime industry. Table 1 presents the distribution of responses regarding the perceived importance of computer literacy among graduates of Maritime Institute programs.

Table 1: Perceived Importance of Computer Literacy

Response	Percentage
Very Important	70%
Important	25%
Neutral	5%
Not Important	0%

As depicted in Table 1, a majority of participants (70%) indicated that computer literacy was "very important" in their professional roles, highlighting its centrality to tasks such as data analysis, navigation systems, and communication. Only a small minority (5%) expressed neutrality towards the importance of computer literacy, suggesting a broad consensus among graduates regarding its significance.

Indicator: Integration of Social Skills; In contrast to computer literacy, participants exhibited a more varied range of perspectives regarding the integration of social skills into Maritime Institute curricula. Table 2 presents the distribution of responses regarding the perceived integration of social skills within educational programs.

Table 2: Perceived Integration of Social Skills

Response	Percentage
Adequately Integrated	40%
Partially Integrated	35%
Not Integrated	20%
Not Applicable	5%

As shown in Table 2, participants were divided in their perceptions of the integration of social skills into curricula. While a significant proportion (40%) felt that social skills were "adequately integrated" into educational programs, a sizable minority (20%) indicated that they were "not integrated" at all. These findings underscore the need for further examination of pedagogical approaches and curriculum design to enhance the incorporation of social skills within maritime education.

Indicator: Cadet Readiness; The culmination of computer literacy and social skills within Maritime Institute programs ultimately aims to enhance the readiness of cadets for professional practice in the maritime industry. Table 3 presents the distribution of responses regarding participants' perceptions of their readiness upon graduation.

Table 3: Perceived Cadet Readiness

Response	Percentage
Fully Ready	45%
Moderately Ready	40%
Slightly Ready	10%
Not Ready	5%

As illustrated in Table 3, a majority of participants (45%) felt "fully ready" to enter the workforce upon graduation from Maritime Institute programs. An additional 40% reported feeling "moderately ready," indicating a generally positive perception of their preparedness for professional practice. However, it is noteworthy that a minority of participants (15%) expressed reservations about their readiness, with 10% indicating feeling "slightly ready" and 5% reporting feeling "not ready" at all.

Parameter: Correlation Analysis; To further elucidate the relationship between computer literacy, social skills, and cadet readiness, correlation analysis was conducted. Table 4 presents the correlation coefficients between these variables.

Table 4: Correlation Analysis of Computer Literacy, Social Skills, and Cadet Readiness

Parameter	Correlation Coefficient
Computer Literacy	0.75
Social Skills	0.65
Cadet Readiness	0.80

As depicted in Table 4, there exists a strong positive correlation between computer literacy and cadet readiness ($r = 0.75$), indicating that higher levels of computer literacy are associated with increased readiness for professional practice. Similarly, social skills also demonstrate a positive correlation with cadet readiness ($r = 0.65$), albeit slightly weaker than that of computer literacy. These findings underscore the importance of both technical and interpersonal competencies in preparing cadets for success in the maritime industry.

In researchers' continued exploration of the integration of computer literacy, social skills, and cadet readiness within Maritime Institute programs, researchers delve deeper into the analysis of research needs and professionalism, contextualizing researchers' findings within the framework of international standards. Through qualitative inquiry and quantitative analysis, researchers aim to bolster and reinforce the insights gleaned from the first set of results, elucidating the broader implications for education management and professional practice in the maritime industry.

Analysis of Research Needs: One of the overarching themes that emerged from researchers' research is the pressing need for a more comprehensive and standardized approach to integrating computer literacy and social skills within maritime education. While participants generally recognized the importance of these competencies, there were notable variations in their perceived integration within curricula. This underscores the need for curriculum developers and educational policymakers to prioritize the development and implementation of clear guidelines and frameworks for incorporating these essential skills into maritime education programs.

Table 5 presents the distribution of responses regarding participants' perspectives on research needs in maritime education.

Table 5: Research Needs in Maritime Education

Research Needs	Percentage
Clear Guidelines	55%
Curriculum Frameworks	30%
Training Programs	10%
Policy Development	5%

As illustrated in Table 5, a majority of participants (55%) identified the need for clear guidelines to inform the integration of computer literacy and social skills within maritime education. This call for clarity reflects a broader desire for standardized approaches that ensure consistency and coherence across educational programs. Additionally, a significant proportion of participants (30%) highlighted the importance of curriculum frameworks to guide the development and implementation of integrative initiatives. These findings underscore the importance of evidence-based practices and systematic approaches to addressing the evolving needs of maritime education.

Analysis of Professionalism: Central to the discourse surrounding maritime education is the cultivation of professionalism among cadets, encompassing not only technical proficiency but also ethical conduct, communication skills, and adaptability. Researchers'

research sought to explore participants' perceptions of professionalism within the context of their educational experiences and subsequent professional practice.

Table 6 presents the distribution of responses regarding participants' perspectives on professionalism in the maritime industry.

Table 6: Aspects of Professionalism in the Maritime Industry

Aspect of Professionalism	Percentage
Technical Proficiency	40%
Ethical Conduct	25%
Communication Skills	20%
Adaptability	15%

As depicted in Table 6, participants identified technical proficiency as the most salient aspect of professionalism within the maritime industry, with 40% of responses highlighting its importance. This emphasis on technical skills underscores the foundational role of education in equipping cadets with the requisite knowledge and expertise to navigate the complexities of maritime operations. However, it is noteworthy that a significant proportion of participants (25%) also emphasized the importance of ethical conduct, reflecting a growing recognition of the ethical dimensions of professional practice in the maritime sector. Additionally, communication skills and adaptability were identified as key components of professionalism, highlighting the multifaceted nature of competency development within maritime education.

Alignment with International Standards: A crucial aspect of researchers' research is the examination of the extent to which Maritime Institute programs align with international standards in transportation, safety, and education. By contextualizing researchers' findings within the broader framework of global best practices, researchers aim to assess the efficacy and relevance of current educational approaches in preparing cadets for professional practice on a global scale.

Table 7 presents the distribution of responses regarding participants' perceptions of the alignment of Maritime Institute programs with international standards.

Table 7: Alignment of Maritime Institute Programs with International Standards

Alignment with International Standards	Percentage
Partial Alignment	45%
Strong Alignment	35%
Limited Alignment	15%
No Alignment	5%

As illustrated in Table 7, a majority of participants (80%) perceived some degree of alignment between Maritime Institute programs and international standards, with 35% indicating a "strong alignment." This suggests a recognition among graduates of the importance of adhering to global best practices in education and professional development. However, it is noteworthy that a minority of participants (20%) perceived limited or no alignment with international standards, indicating potential areas for improvement in curriculum design and educational delivery. Researchers' second set of results provides further support for the importance of integrating computer literacy, social skills, and professionalism within Maritime Institute programs. By analyzing research needs, professionalism, and alignment with international standards, researchers contextualize researchers' findings within the broader landscape of maritime education and professional practice. These insights underscore the imperative for continued innovation and improvement in educational approaches to ensure that graduates are equipped with the diverse skill set necessary to excel in the global maritime industry.

Discussions

The findings from researchers' research on the integration of computer literacy, social skills, and cadet readiness within Maritime Institute programs offer valuable insights into the current state of maritime education and its alignment with international standards. Through qualitative inquiry and quantitative analysis, researchers have illuminated key areas of strength, identified challenges, and proposed recommendations for advancing education management and professionalism in the maritime industry. **Integration of Computer Literacy and Social Skills:** The results of researchers' research underscore the critical importance of integrating computer literacy and social skills within Maritime Institute curricula. While participants universally recognized the significance of computer literacy in their professional practice, variability existed in the perceived integration of social skills. This suggests that while technical competencies are well-established within maritime education, there is room for improvement in fostering interpersonal skills and adaptability among cadets. The emphasis on computer literacy reflects the increasing reliance on technology in the maritime sector, where advancements in navigation systems, data analysis, and communication technologies have reshaped industry practices. As such, the integration of computer literacy within curricula is essential to ensure that graduates are equipped to navigate the complexities of modern maritime operations effectively.

The high percentage of participants who indicated the "very important" nature of computer literacy highlights the consensus among graduates regarding its centrality to professional practice. In contrast, the variability in perceptions of the integration of social skills underscores the need for greater attention to interpersonal competencies within maritime education. While technical proficiency remains foundational, the ability to communicate effectively, collaborate with diverse teams, and adapt to changing circumstances is equally crucial in navigating the dynamic challenges of the maritime industry. The findings suggest that while some institutions have made strides in integrating social skills into curricula, there is room for improvement in ensuring consistency and coherence across educational programs. **Research Needs and Professionalism:** Researchers' research identified several key research needs and dimensions of professionalism within the maritime industry. Participants emphasized the importance of clear guidelines and curriculum frameworks to inform the integration of computer literacy and social skills within educational programs.

This highlights a desire for standardized approaches that provide educators with clear guidance on best practices for curriculum design and delivery (Khan, 2020). Additionally, participants identified professionalism as encompassing not only technical proficiency but also ethical conduct, communication skills, and adaptability. These findings underscore the multifaceted nature of professionalism within the maritime sector and the need for holistic educational approaches that address both technical and interpersonal competencies. The emphasis on professionalism reflects a broader recognition of the evolving nature of the maritime industry and the need for graduates to possess a diverse skill set to succeed in today's global marketplace. As the industry continues to adapt to technological advancements, environmental concerns, and shifting regulatory frameworks, professionalism will play an increasingly pivotal role in shaping the future of maritime operations (WEINTRIT, 2005). Thus, it is imperative for maritime education programs to prioritize the cultivation of professionalism among cadets, equipping them with the skills and attributes necessary to thrive in a rapidly changing environment (Bodin, 2017; Harper & Snowden, 2017).

Alignment with International Standards: Researchers' research also examined the alignment of Maritime Institute programs with international standards in transportation,

safety, and education. The majority of participants perceived some degree of alignment between educational programs and international standards, indicating a recognition of the importance of adhering to global best practices in education and professional development (Balkin, 2006; Harrison, 2009; IMO, 2018). However, a minority of participants identified areas where alignment was limited or nonexistent, highlighting potential areas for improvement in curriculum design and educational delivery.

The findings suggest that while efforts have been made to align Maritime Institute programs with international standards, there is room for enhancement to ensure consistency and coherence across educational programs. This may involve revisiting curriculum frameworks, updating course content to reflect emerging industry trends, and fostering partnerships with industry stakeholders to incorporate real-world experiences into educational programs. By aligning with international standards, Maritime Institute programs can better prepare graduates for the demands of the global maritime industry, enhancing their competitiveness in the job market and contributing to the overall advancement of the sector.

CONCLUSION

The researchers' research underscores the imperative for Maritime Institute programs to prioritize the integration of computer literacy, social skills, and professionalism into their curricula. The findings highlight the critical role of these competencies in enhancing the readiness of cadets for professional practice in the maritime industry. From the recognition of the importance of computer literacy to the identification of key research needs and dimensions of professionalism, researchers' research provides valuable insights into the evolving landscape of maritime education. Moving forward, it is essential for educators, policymakers, and industry stakeholders to collaborate in addressing the identified challenges and opportunities. By adopting standardized approaches, fostering professionalism, and aligning with international standards, Maritime Institute programs can better prepare graduates to navigate the complexities of the global maritime marketplace. Ultimately, researchers' research contributes to the ongoing dialogue surrounding education management and professionalism in the maritime sector, highlighting the importance of holistic approaches that address both technical and interpersonal competencies. As the maritime industry continues to evolve, it is incumbent upon educational institutions to adapt and innovate, ensuring that graduates are equipped with the knowledge, skills, and attributes necessary to succeed in their professional careers and contribute to the advancement of the sector.

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