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Reframing Training Needs in Maritime Education: Facilitation Competency as a Critical Pedagogical Gap in the Era of Digital Transformation and Sustainability

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Abstract

Maritime education has long been recognised as critical for supporting maritime safety, workforce readiness, and sustainable industry practices. However, persistent concerns remain regarding the extent to which current teaching approaches effectively develop the higher-order competencies required in modern maritime operations, particularly in relation to critical thinking, collaboration, and adaptive decision-making. As the maritime sector continues to evolve in response to technological advancements, digital transformation, and global sustainability agendas, higher education institutions are increasingly expected to prepare graduates who are not only technically competent but also capable of navigating complex and dynamic professional environments. Within this context, the quality of teaching delivery becomes a key determinant of educational effectiveness. This study responds to these challenges by reframing Training Needs Analysis (TNA) beyond the identification of discrete skill gaps, conceptualising facilitation competency as a central pedagogical mechanism through which learner-centred, digitally responsive, and sustainability-oriented education can be realised.

Educators are central to this process, as their instructional practices, assessment approaches, and classroom interactions shape how learning is constructed and applied. In maritime higher education, many educators transition into academia following extensive industry careers and are typically appointed based on professional expertise rather than formal pedagogical training. While this industry experience provides valuable practical insight, it does not necessarily equip educators with the pedagogical competencies required to facilitate learning effectively in higher education environments. This gap becomes increasingly significant in the context of digital transformation, where teaching extends beyond content delivery to guiding students in navigating information, engaging critically, and learning independently. Maritime education research has further emphasised the need to align teaching practices with evolving industry expectations, including the integration of human factors, decision-making, and competency-based approaches.

This study conducts a Training Needs Analysis (TNA) to identify training needs among educators and to determine the key skill gap that most critically affects teaching delivery in a Malaysian maritime university. TNA is conceptualised as a systematic diagnostic process that identifies discrepancies between current competencies and desired performance outcomes, thereby providing an evidence-based foundation for professional development planning. The study is informed by principles of adult learning and constructivist approaches, which emphasise active, experiential, and learner-centred learning. These perspectives are particularly relevant in contemporary higher education, where learners must develop the ability to think critically, solve problems, and adapt to evolving professional contexts.

A preliminary version of this study was previously presented as a short abstract and conference presentation. The current paper provides a substantially expanded and theoretically grounded analysis, integrating perspectives of digital transformation and sustainability. It reconceptualises identified training needs into a coherent pedagogical framework centred on facilitation competency, offering a deeper interpretation of how teaching practices must evolve in maritime higher education.

A qualitative, triangulated research design was adopted to provide a comprehensive understanding of teaching practices and training needs. Data were collected through semi-structured interviews with educators (n = 30), structured classroom observations (n = 30), and a large group student focus discussion. The use of multiple data sources enabled the study to capture educators' perspectives, observed instructional practices, and students' learning experiences. Data were analysed using thematic analysis, supported by systematic coding and synthesis. Themes were identified through iterative comparison within and across data sources, enabling triangulation and validation of findings.

The findings indicate that teaching delivery in the studied context is predominantly lecture-based, supported by slides, demonstrations, and examination-oriented assessment practices. While educators demonstrate strong subject knowledge and extensive industry experience, teaching practices remain largely teacher-centred, with consistently limited evidence of facilitation-oriented approaches. Classroom observations show that instructional interactions are typically teacher-led, with questioning primarily used to check recall rather than to stimulate discussion or critical thinking. Opportunities for collaborative learning, peer interaction, and reflective engagement are present but inconsistently implemented.

From the perspective of educators, several challenges were identified, including students' short attention spans, reluctance to participate in discussions, reliance on surface learning strategies, and varying levels of motivation and preparedness. Educators also report

constraints related to time, workload, and institutional expectations, which limit their ability to implement more interactive teaching approaches. In addition, some educators express uncertainty about how to integrate digital tools effectively in ways that support meaningful learning rather than simply enhancing presentation. Despite these challenges, many educators demonstrate awareness of the limitations of lecture-based teaching and express a willingness to improve their pedagogical practices.

Across the interviews, a consistent theme emerges regarding the need for training in the facilitation of learning. Educators indicate that they require support in guiding classroom discussions, managing group activities, encouraging student participation, and adapting teaching strategies to diverse learner needs. These facilitation-related competencies are closely linked to broader challenges in student engagement and deep learning. Additional training needs are identified in areas such as educational psychology, classroom management, assessment for learning, and the use of instructional technologies beyond basic presentation tools. However, these needs consistently converge on the broader requirement for facilitation skills, suggesting that facilitation competency represents a central pedagogical capability.

Classroom observations provide further support for these findings. While some educators incorporate questioning, group work, and problem-based tasks, these practices are often limited in scope or implemented inconsistently. In many cases, teaching remains focused on content delivery, with limited opportunities for students to actively construct knowledge. The use of technology is largely confined to slides and videos, with minimal integration of interactive or collaborative digital tools. This pattern suggests that digital transformation in teaching has not yet translated into pedagogical transformation, highlighting the need for educators to develop competencies in facilitating technology-enhanced learning.

Student perspectives reinforce this pattern. Students report that teaching is largely lecture-based, supplemented by assignments, presentations, and exercises. While they value opportunities for practice and application, they express a preference for more interactive and discussion-based learning. They report learning more effectively when actively engaged in problem-solving tasks and when lecturers provide guidance and feedback during the learning process. Students also highlight challenges related to engagement, fatigue, and limited opportunities for meaningful classroom interaction. In addition, they report reliance on easily accessible digital resources, with limited guidance on critical evaluation or use of academic sources, indicating a gap in information literacy support.

The triangulation of findings across educators, observations, and students leads to a clear conclusion: facilitation competency is the key skill gap that most critically affects teaching delivery. Despite strong content expertise, teaching practices require a shift from transmission-oriented approaches towards facilitation-oriented pedagogy. This shift is particularly important in the context of sustainability and digital transformation, where learners must be equipped not only with knowledge but also with the ability to think critically, collaborate, and adapt to changing conditions.

These findings have important implications for professional development in maritime higher education. Rather than focusing primarily on content knowledge or technology adoption, professional development programmes should prioritise facilitation skills, active learning strategies, and learner-centred approaches. Training initiatives should support educators in developing competencies such as questioning techniques, group facilitation, scaffolding of learning, and the design of interactive learning activities. Digital pedagogy should be integrated in ways that support facilitation rather than merely enhancing content delivery. Institutions

should also provide enabling conditions, including time, resources, and recognition, to support pedagogical innovation and continuous professional development.

In addition, the findings highlight the need for a more integrated approach to pedagogical development, where facilitation is not treated as an isolated skill but as a core capability embedded across teaching practices, curriculum design, and assessment strategies. This suggests that professional development initiatives should move beyond short-term training interventions towards sustained, practice-oriented support that enables educators to continuously refine their facilitation approaches. Such an integrated perspective is particularly important in rapidly evolving educational contexts, where educators must adapt their teaching to meet changing learner needs and industry expectations.

This study extends existing Training Needs Analysis (TNA) research in maritime education by moving beyond the identification of discrete competency gaps to conceptualising facilitation competency as a central pedagogical capability underpinning effective teaching delivery. It demonstrates that the primary constraint in teaching quality is not a lack of content expertise, but a limited capacity to facilitate active, learner-centred learning. By addressing long-standing concerns regarding the limitations of traditional instructional approaches, the study advances the discussion by identifying facilitation competency as the underlying mechanism through which these limitations can be addressed.

By situating facilitation within the broader context of digital transformation and sustainability, the study highlights its role in enabling the development of higher-order competencies such as critical thinking, collaboration, and adaptive decision-making. Through integrating pedagogical theory with empirical findings from a maritime higher education context, this research provides a refined conceptual lens for designing targeted professional development interventions aligned with evolving industry and educational demands.

In conclusion, while maritime educators bring valuable industry experience to their teaching roles, this study demonstrates that the principal constraint on teaching quality lies in a limited capacity for facilitation. By reframing training needs through the lens of facilitation competency, the study advances Training Needs Analysis from a descriptive diagnostic tool to a conceptually grounded approach for pedagogical transformation. This reframing positions facilitation not as a discrete skill, but as the core mechanism through which learner-centred, digitally responsive, and sustainability-oriented education can be realised. The findings, therefore, provide a robust foundation for designing targeted, practice-oriented professional development that enables educators to shift from transmission to facilitation. Although based on a single institutional context, the study offers transferable insights for maritime higher education more broadly and points to the need for subsequent research to design and evaluate facilitation-focused interventions that can sustain pedagogical change in rapidly evolving educational environments.

Keywords:

Training Needs Analysis (TNA); Maritime education; Facilitation competency; Digital transformation; Learner-centred teaching