

Faculty Training Needs Analysis

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Abstract

This study conducted a Training Needs Analysis to determine the competency levels and priority professional development needs of faculty members at the NYK-TDG Maritime Academy. It was conceptually anchored in Training Needs Analysis and the Technological Pedagogical Content Knowledge framework. Using a descriptive quantitative research design, the study gathered data from faculty members representing different departments and areas of specialization through a structured survey form using a four-point Likert scale. Frequency, percentage, weighted mean, standard deviation, ranking, and gap analysis were used to analyze the data. The findings showed that faculty members were generally competent in most assessed areas. Faculty Leadership and Ethics obtained the highest mean score of 3.40, followed by Classroom Management at 3.25 and Teaching and Learning Strategies at 3.20. Outcomes-Based Education, Educational Technology Integration, Academic Advising and Mentoring, and Extension Services were identified as moderate training priorities. In contrast, Assessment and Evaluation obtained a mean of 2.35, Artificial Intelligence in Education obtained 2.10, and Research Writing and Publication received the lowest mean of 1.95, making it the most critical professional development need. The study concluded that faculty members possess strong foundational competencies in instruction, leadership, and classroom management but require targeted and sustained development in research, artificial intelligence integration, and assessment practices. It recommended annual training needs assessments, output-based training, continued mentoring, institutional alignment, and systematic monitoring of faculty development outcomes. The study supports Sustainable Development Goal 4 by strengthening the quality of maritime education and Sustainable Development Goal 9 by promoting responsible technological integration and academic innovation. Its sustainability impact lies in supporting long-term faculty development, instructional quality, research productivity, accreditation readiness, and evidence-based institutional planning.

Keywords: Artificial Intelligence in Education, Assessment and Evaluation, Faculty Competency, Faculty Development, Maritime Education, Research Writing and Publication, Training Needs Analysis

1. Introduction

Faculty competence is essential to the delivery of quality instruction, meaningful assessment, research, extension services, academic advising, and technology-supported education. At the NYK-TDG Maritime Academy (NTMA), continuous faculty development is particularly important because maritime educators must respond to changing pedagogical approaches, institutional accreditation requirements, technological developments, and international maritime standards. Accordingly, this study conducted a Training Needs Analysis (TNA) to determine faculty competency levels, identify areas requiring further development, establish priority training needs, and provide a statistical basis for faculty development programs aligned with the Academy's academic goals.

1.1 Faculty Competency and Professional Development Needs at NTMA

NTMA recognizes faculty members as central to maintaining instructional quality, strengthening student assessment, increasing research productivity, supporting extension participation, and integrating educational technology. Faculty development programs must therefore respond to existing competency levels and the specific areas in which additional training is required. The study assesses faculty competencies in teaching and learning strategies, outcomes-based education and curriculum alignment, assessment and evaluation, educational technology integration, artificial intelligence in education, research writing and publication, extension services, academic advising and mentoring, classroom management and student engagement, professional ethics, and leadership. It also identifies and ranks priority areas for professional development to guide the preparation of a responsive Faculty Development Plan.

1.2 Training Needs Analysis and Faculty Development in Higher Education

Faculty development enables higher education institutions to respond to evolving pedagogical practices and accreditation standards (Guskey, 2002). Training Needs Analysis provides a systematic process for determining gaps between faculty members' current competencies and the skills required by their roles and institutions (Brown, 2019). By identifying these competency gaps, institutions can design targeted programs rather than relying on generalized training activities. Continuous professional development also contributes to improved faculty performance and better student learning outcomes (Villegas-Reimers, 2003). Periodic assessment of faculty needs is therefore necessary to ensure that professional development remains relevant to instructional demands, academic standards, and institutional priorities.

1.3 Specialized Competency and Training Requirements of Maritime Faculty

Maritime education requires specialized faculty competencies because instruction must conform to professional and international regulatory requirements. Maritime faculty members are expected to comply with international standards such as STCW (Boccia et al., 2017). This requirement emphasizes the importance of continuous training in maritime instruction, regulatory compliance, and competency-based education. Simulation-based learning and regulatory compliance training are also essential components of professional development for maritime educators (Balta, 2021). Faculty development in a maritime academy must therefore address both general teaching competencies and the specialized knowledge and instructional practices required in maritime education.

1.4 Educational Technology and Artificial Intelligence Competencies of NTMA Faculty

The increasing use of digital technologies has expanded the competencies expected of faculty members. Effective technology integration requires educators to understand not only technological tools but also how these tools interact with teaching methods and disciplinary content. The TPACK framework (Mishra & Koehler, 2006) stresses combining technology, pedagogy, and content knowledge. Artificial intelligence has also created new opportunities and responsibilities in education. Faculty members require appropriate training to use AI ethically and effectively in teaching, assessment, research, and other academic activities (Zawacki-Richter et al., 2019). Assessing faculty needs in educational technology and AI is therefore important in developing programs that support responsible and purposeful technology integration.

1.5 Assessment and Research Competencies for NTMA Institutional Quality

Faculty competency in assessment and research contributes to instructional improvement and institutional accreditation. Effective assessment practices allow educators to evaluate learning outcomes and improve teaching approaches, while research skills support evidence-based academic practices and institutional knowledge production (OECD, 2019; Ramsden, 2003). Training in research writing and publication is also associated with increased academic productivity (Santos & Oracion, 2022). Strengthening faculty competencies in assessment, research design, academic writing, and publication can therefore support both individual professional growth and the Academy's broader research and accreditation objectives.

1.6 Philippine Faculty Development Context and NTMA Institutional Needs

Within the Philippine higher education context, continuing faculty development remains necessary to support accreditation, research productivity, instructional improvement, and technology adoption (Philippine Association of Colleges and Universities Commission on Accreditation [PACUCOA], 2022; De Guzman & Uy, 2020). Higher education institutions must regularly evaluate whether faculty competencies remain aligned with institutional expectations and developments in educational practice. For NTMA, a localized assessment is necessary because general findings from previous studies may not fully reflect the specific professional development needs of its maritime faculty. Institution-based evidence can help ensure that training programs directly address faculty competency gaps and the Academy's academic priorities.

1.7 Training Needs Analysis and TPACK as the Conceptual Basis of the Study

The study is conceptually anchored in Training Needs Analysis and the TPACK framework. TNA guides the systematic comparison of faculty members' current competency levels with the competencies required for effective professional performance. This process enables the institution to determine training gaps, rank priority needs, and use the findings as a basis for faculty development planning. The TPACK framework complements the TNA by explaining the interconnected knowledge required for effective technology-supported instruction. Together, these bases support the evaluation of faculty competencies across pedagogy, subject content, technology integration, assessment, research, advising, leadership, and other academic responsibilities.

1.8 Institutional Research Gap and Rationale for the NTMA Training Needs Analysis

The reviewed literature establishes the importance of periodic TNA and targeted faculty development in maintaining educational quality. It also identifies research, assessment, technology integration, artificial intelligence, simulation-based education, and regulatory compliance as important areas of professional development. However, the literature does not provide a specific assessment of the current competency levels and priority training needs of NTMA faculty members. This institutional gap justifies the conduct of the study. Determining existing competencies and identifying areas requiring

further development will provide a statistical basis for designing responsive training programs. The findings may also assist NTMA in aligning faculty development initiatives with quality instruction, research productivity, technology integration, accreditation requirements, and institutional goals.

1.9 Alignment of NTMA Faculty Development with Relevant Sustainable Development Goals

The study primarily aligns with Sustainable Development Goal 4: Quality Education because it seeks to strengthen faculty competencies and support the delivery of effective, relevant, and quality maritime education. Faculty development in instruction, assessment, curriculum alignment, academic advising, research, and student engagement can contribute to improved educational practices and learning experiences. The study also supports Sustainable Development Goal 9: Industry, Innovation and Infrastructure through its focus on educational technology and artificial intelligence. Developing faculty members' capacity to integrate technology responsibly can encourage innovation in teaching, research, and institutional academic practices.

1.10 Contribution of NTMA Faculty Development to Multidisciplinary Sustainability

The study contributes to educational sustainability by helping NTMA establish an evidence-based and continuous approach to faculty development. Identifying competency gaps and priority training needs can assist the Academy in maintaining instructional quality and ensuring that faculty competencies remain responsive to developments in maritime education. It also supports technological and innovation sustainability by strengthening faculty capacity in educational technology and artificial intelligence. Its emphasis on research, assessment, professional ethics, leadership, and institutional alignment further contributes to institutional sustainability by providing a basis for long-term faculty planning, academic quality improvement, accreditation readiness, and responsible professional practice.

2. Material and methods

2.1 Research Design

The study used a descriptive quantitative research design. It described the faculty members' perceived competency levels and training needs based on their responses to a structured Training Needs Analysis survey form. The design allowed the study to determine competency levels, assess the consistency of responses, and identify priority areas for faculty development.

2.2 Locale of the Study

The study was conducted at the NYK-TDG Maritime Academy, where faculty members from different departments and areas of specialization participated in the Training Needs Analysis.

2.3 Respondents of the Study

The respondents were faculty members of the NYK-TDG Maritime Academy representing different departments and areas of specialization. Their profiles were described according to their departmental affiliation and highest educational attainment.

2.4 Research Instrument

The study used a structured Training Needs Analysis survey form that employed a four-point Likert scale. A rating of 4 represented "Highly Competent" and indicated that no immediate training was needed. A rating of 3 represented "Competent" and indicated a need for minor enhancement. A rating of 2 represented "Needs Improvement" and indicated that training was recommended, while a rating of 1 represented "Requires Training" and indicated a high priority for training. For the interpretation of the computed scores, a weighted mean ranging from 3.50 to 4.00 was interpreted as "Highly Competent" and classified as low priority. Scores from 2.50 to 3.49 were interpreted as "Competent" and classified as moderate priority. Scores from 1.50 to 2.49 were interpreted as "Needs Improvement" and classified as high priority, while scores from 1.00 to 1.49 were interpreted as "Requires Training" and classified as very high priority.

2.5 Data Gathering Procedure

The faculty members assessed their perceived competency levels and training needs by completing the structured Training Needs Analysis survey form. The original methodology did not provide further details regarding the distribution, administration, retrieval, or validation of the completed survey forms.

2.6 Data Analysis Techniques

Frequency and percentage were used to describe the respondents' profiles and training preferences. The weighted mean was applied to determine the faculty members' competency levels in each assessed area, while the standard deviation was used to measure the consistency of their responses. Ranking was employed to identify the highest-priority training needs. Gap analysis was also conducted to compare the faculty members' current competency levels with their desired competency levels.

3. Results and Discussion

3.1 Faculty Competency Levels

3.1.1 Faculty Leadership, Classroom Management, and Teaching Strategies

Faculty Leadership and Ethics obtained the highest mean score of 3.40 with a standard deviation of 0.50. It was interpreted as competent and classified as a low training priority. Classroom Management followed with a mean of 3.25 and a standard deviation of 0.58, while Teaching and Learning Strategies obtained a mean of 3.20 and a standard deviation of 0.54. Both areas were interpreted as competent and classified as moderate training priorities. The findings indicate that faculty members possess strong foundational competencies in leadership, professional ethics, classroom management, and instructional facilitation. These areas are not considered urgent training priorities, although continuing enhancement may help maintain faculty effectiveness.

3.1.2 Outcomes-Based Education, Educational Technology, Mentoring, and Extension Services

Outcomes-Based Education obtained a mean score of 3.05 and a standard deviation of 0.61. Educational Technology Integration recorded a mean of 2.80 and a standard deviation of 0.69, while Academic Advising and Mentoring obtained a mean of 2.75 and a standard deviation of 0.64. Extension Services received a mean of 2.60 and a standard deviation of 0.70. All four areas were interpreted as competent and classified as moderate training priorities. These results show that faculty members demonstrate satisfactory competence in curriculum alignment, educational technology, student mentoring, and extension participation. However, continuous enhancement programs are needed to further strengthen their effectiveness in these areas.

3.1.3 Assessment and Evaluation

Assessment and Evaluation obtained a mean score of 2.35 and a standard deviation of 0.72. It was interpreted as needing improvement and classified as a high-priority training need. The result indicates that faculty members require further development in assessment practices. Training should focus on test construction, rubric development, authentic assessment, item analysis, and strategies for avoiding grade inflation to support valid, reliable, and outcomes-based evaluation of student learning.

3.1.4 Artificial Intelligence in Education

Artificial Intelligence in Education obtained a mean score of 2.10 and a standard deviation of 0.78. It was interpreted as needing improvement and classified as a high-priority training area. This result demonstrates the need to retool faculty members in the responsible and effective use of artificial intelligence in teaching and learning. Relevant training may cover Khan Migo, ChatGPT, Gemini, and other AI-assisted educational platforms identified in the study.

3.1.5 Research Writing and Publication

Research Writing and Publication obtained the lowest mean score of 1.95 and a standard deviation of 0.81. It was interpreted as needing improvement and classified as a very high-priority training need. The finding identifies research capability as the most critical area for faculty development. Faculty members require structured and sustained support through mentoring, research methodology and proposal-writing workshops, statistical training, academic writing, data analysis, and publication assistance.

3.2 Priority Training Needs of Faculty Members

Research Writing and Publication ranked first among the identified training needs because it obtained the lowest mean score. Artificial Intelligence in Education ranked second as an emerging institutional priority, followed by Assessment and Evaluation in third place. Educational Technology Integration ranked fourth, while Academic Advising and Mentoring ranked fifth. The ranking indicates that faculty development programs should prioritize research capability building, AI integration in education, and effective assessment practices. Educational technology training and academic mentoring should also be strengthened because they support digital transformation and cadet performance and retention.

3.3 Overall Faculty Training Needs

The findings show that NTMA faculty members are generally competent in most of the assessed areas. Their strongest competencies were Faculty Leadership and Ethics, Classroom Management, and Teaching and Learning Strategies. Outcomes-Based Education, Educational Technology Integration, Academic Advising and Mentoring, and Extension Services reflected moderate training priorities. In contrast, Assessment and Evaluation, Artificial Intelligence in Education, and Research Writing and Publication were identified as the major areas requiring improvement. Overall, NTMA faculty members possess strong foundational competencies in instruction, leadership, and classroom management. However, targeted professional development in research writing and publication, artificial intelligence, and assessment practices is necessary to support continuous faculty growth, instructional quality, academic excellence, innovation, and institutional quality assurance.

4. Conclusion & Recommendations

The Training Needs Analysis revealed that NYK-TDG Maritime Academy faculty members possess strong foundational competencies in teaching, classroom management, leadership, and professional practice. However, focused professional development is needed in research writing and publication, artificial intelligence integration, and assessment and evaluation. Addressing these areas through evidence-based and institutionally aligned faculty development programs can strengthen faculty effectiveness, improve student learning outcomes, support accreditation requirements, and promote continuous professional growth.

NTMA should conduct a Training Needs Analysis annually and prioritize training in research writing and publication, artificial intelligence in education, assessment and evaluation, educational technology, gamification, and academic mentoring. Faculty members should produce concrete outputs after each training and receive continued mentoring following seminars and workshops. Faculty development initiatives should be aligned with institutional strategic goals and Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA) requirements, while their effectiveness should be monitored through classroom observation, faculty evaluation, student performance, and research output. The Academy should also encourage interactive, paperless, and student-centered technology use and maintain a database of faculty competencies and completed professional development activities.

Compliance with ethical standards

The study was conducted as an institutional Training Needs Analysis involving faculty members of the NYK-TDG Maritime Academy. Participants completed a structured survey that focused on their perceived competency levels and professional development needs in areas relevant to their academic responsibilities. The collected information was analyzed in relation to the stated objectives of identifying competency gaps and priority training needs. The study maintained an objective academic approach by presenting the findings through aggregated statistical measures and using the results as a basis for evidence-based faculty development planning.

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