



ISSN: 0975-833X

RESEARCH ARTICLE

OUTCOMES-BASED MONITORING AND EVALUATION: AN APPROACH TO CHART THE COURSE TOWARDS QUALITY ASSURANCE IN MARITIME EDUCATION

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ARTICLE INFO

Article History:

Received 20th May, 2016
Received in revised form
05th June, 2016
Accepted 27th July, 2016
Published online 31st July, 2016

Key words:

Outcomes-Based Education,
Maritime Education, Quality Assurance,
Monitoring, Evaluation.

ABSTRACT

The study aimed to look into the findings of the outcomes-based monitoring and evaluation (OBME) in maritime education programs of Naval State University. The OBME is an approach used to audit the maritime education programs. Descriptive documentary analysis method was utilized in the study. Data were collected through the Commission on Higher Education and Maritime Industry Authority (CHED-MARINA) OBME instrument in eleven (11) key areas of evaluation, reduced, displayed, and analyzed in drawing out conclusions. Results showed that the first survey audit of CHED-MARINA OBME Team, three (3) minor non-conformances were found in the areas of curriculum, staff, and facilities and equipment and four (4) observations in facilities and extension services. However, during the verification audit it was found out that all key results areas of evaluation were in compliance with CHED Memorandum Order 20, series of 2015 and Standards of Training, Certification and Watch keeping for Seafarers (STCW) 1978 as amended in 2010.

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Citation: Carlito C. Cabas, Jr. and Minerva E. Sañosa, 2016. "Outcomes-based monitoring and evaluation: An approach to chart the course towards quality assurance in maritime education", *International Journal of Current Research*, 8, (07), 34972-34978.

INTRODUCTION

Naval State University (NSU) is a result of the conversion of former Naval Institute of Technology pursuant to Republic Act No. 9718. NSU is one of the three state universities that offer maritime education in Region VIII. The NSU-College of Maritime Education (NSU-CME) envisioned in providing world-class graduates equipped with knowledge and skills in seafaring. It is in this tenet that the NSU offers Bachelor of Science in Marine Transportation and Bachelor of Science in Marine Engineering programs to cater the needs of the stakeholders. NSU-CME has been producing seafarers that geared as the prime mover of the economic growth in the Province of Biliran and in Region VIII. Along the context of CHED's mandates and with the strong partnership with MARINA, NSU contributes to nation building as producers of competent, skilled and qualified seafarers. The pertinent provisions of CMO 20, series 2015, otherwise known as the "Consolidated Policies, Standards and Guidelines for the Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering Programs", mandated all maritime programs should be operated whether public or private higher education institutions to comply with

the CHED requirements and STCW Convention/Code as amended. Similarly, all maritime higher education shall adopt the outcomes-based education as an approach to meet the quality education and standards in seafaring. Outcomes-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course (Davis, 2003; Caguitla *et al.*, 2013). The demand for quality education implies great responsibility for institutional quality assurance. The MHEIs must take initiatives to develop a system of quality assurance. Once adopted and implemented, some person or body must monitor the system's functioning: both in the narrow sense of monitoring compliance with the system's procedural requirements and in the broad sense of determining whether the system provides benefits commensurate with the time and resources invested in the operation (Taylor 2003). However, in the Philippine Educational System, the interaction of cultural patterns and state intervention in higher education has posed a tremendous challenge in quality assurance. The typical Filipino family values of taking the college diploma so dearly, regardless of where this diploma is obtained, to the point that cheap, substandard schools are deriving handsome economic returns by taking advantage of the situation. This cultural reality is a factor that cannot be ignored when installing a dependable quality assurance system in the country (Padua 2003). In effect, it is ironic that in spite of the hundreds

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of thousands of graduates emanating from the more than a hundred maritime institutions scattered all over the country, we could not fill up the worldwide shortage of maritime deck and engine officers because there not enough qualified Filipino seamen capable of moving up the rank to officers (Ampong, 2009). According to CHED on its Memorandum Order dated 20 February 2015, the Philippine Maritime Industry produces about 25% to 30% of the world seafarers, however, most of them are ratings and only few are officers.

The above-mentioned scenarios have prompted Commission on Higher Education to take initiatives in adopting the recent thrust through the implementation of the OBME to all MHEIs in conformance to the mandates and the nature of STCW '78 as amended in 2010. It has turned the academic discipline into internationalization of standards based under this convention as a mechanism for ensuring the uniform implementation for maritime education and training. By raising its standards, the maritime education programs are now considered special courses. The ratification of the STCW in the Philippines connotes that seafaring is global and not only national or regional standards. The Convention became part of the law of the land. The MHEIs are now compelled to meet the certification system under this law. Generally, the critical findings of European Maritime Safety Agency (EMSA) threatened the country's position in the International Maritime Organization (IMO) White List. Naval State University was included in the shortcomings of meeting the global standards for its operation in maritime education. Tracing its roots, on the 10th day of June 2013, Dr. Patricia B. Licuanan, Chairperson of Commission on Higher Education, issued, a "Closure Order" to NSU-College of Maritime Education in its operation of BS in Marine Transportation and BS in Marine Engineering. NSU-CME has continuously undergone series of contingency measures to save the BS Offerings and in fact underwent CHED-MARINA OBME compliance even up to the present and continually working out on the procurement of the prescribed simulator and other intended facilities and equipment. The university has risen and stood still to meet *all* the adverse findings, observations, and non-conformances found during the series of stringent audits and monitoring by MARINA and CHED. Moreover, the university has established Enhanced Support Level Program for deck and engine, aligned its curriculum with outcomes-based education, obtained more than 30% shipboard training for the last three years and increased the number of licensure passers with topnotchers, and procured state of the art facilities and equipment.

A number of studies have been done about higher education quality assurance; nevertheless, minimal help has been obtained from them because in these studies, MHEIs were not made subject of the same and OBME is a new approach of CHED and MARINA in auditing maritime programs. These premises prompted the researchers to work on this study on the belief that through OBME will chart the course towards quality assurance of maritime education programs. This study was conducted to analyze the findings of CHED-OBME Team and audits of Det Norske Veritas ISO 9001 in compliance to STCW standards in the eleven (11) key result areas of evaluation. These include the following: 1) Quality Standards

System, 2) Organization, Management, and Support Staff, 3) Curriculum, 4) Academic Strategies, 5) Examination and Assessment System, 6) Staff (instructors and assessors), 7) Students, 8) On-board Training, 9) Facilities and Equipment, 10) Research and Development, and 11) Extension Services. Ascertain the intelligent root-cause analysis and implementation of valuable corrective actions to ensure continuous improvement of NSU-Maritime Education. Ascertain the noteworthy efforts, non-conformances, and observations of NSU-CME in compliance to the standard requirements of CHED-MARINA OBME and STCW Code/Convention as amended. This study was limited only to the Naval State University offering maritime programs in BSMT and BSMarE. Data were taken from the series of audits conducted by CHED-MARINA OBME Team from SY 2011-2012 to 2014-2015.

MATERIALS AND METHODS

The study used the CHED-MARINA OBME Team, NSU-Internal Quality Assurance (NSU-IQA), and DNV-External Quality Assurance (DNV-EQA) summary of audit findings, and NSU-CME related statistics from 2011 to 2015, pertinent provisions of STCW '78 as amended in 2010, CHED-Memorandum, and other related documents for maritime programs. This compendium served as the guiding reference for the evaluation. It also includes statistics related to BS Programs, On-board Training, Licensure, and carrying capacity of maritime programs. The CHED-MARINA Outcomes-Based Monitoring Instrument for Maritime Education Programs was used to gather data. The NSU-Administration issued a memorandum to designate maritime faculty and some faculty in the College of Education to comply the needed information listed in the instrument. This is an interdisciplinary collaboration between the College of Maritime (experience/skills), and College of Education (knowledge/theory) of an outcomes-based approach to program assessment. Using the descriptive documentary-analysis research method, the data or information from the series of joint CHED-MARINA audits from 2011 to 2015 were collected. Data were analyzed according to its order, structure, and meaning to the mass of data gathered. After a careful data analysis, reductions of data were employed through the process of de-contextualization and re-contextualization without significant loss of information. Data were displayed to determine relationship, propositions, and explanation for further analysis. Reduced and displayed data were used in drawing and verifying conclusions. Guided by the CHED Outcomes-Based Framework for Higher Education 2014 in consonance to CMO 46, series 2012 that Quality Assurance (QA) systems must look at institutional performance in terms of the HEIs capacity to transfer policy (in terms of VMG) into quality programs and quality results. The adoption of outcomes-based approach to monitoring and evaluation was aimed to increase the effectiveness of the QA system, and the quality, efficiency, and effectiveness of higher education. The PDCA Deming Cycle (plan-do-check-act) was the platform for the process-based quality management system. A compliance-driven data analysis was used to determine conformance or noteworthy efforts, major non-conformance, minor non-conformance, and observation per key result area of

evaluation. A “conformance” or “noteworthy efforts” connotes the adoption of best practice, demonstrated improvement, high levels of commitment, effective motivation and system optimization. A “non-conformance” occurs when there is non-fulfillment of a requirement, a failure and evidence. Non-conformities are categorized as major or minor non-conformance. An “observation” can be suggested when there are potential problems, risks, inefficiencies, and failure to apply best practice of the areas of evaluation.

RESULTS AND DISCUSSION

As shown in Table 1, the audit findings of CHED-MARINA OBME Team found none “major non-conformance” in all key areas of evaluation. Seven (7) areas showed noteworthy efforts or in conformance with the standards of STCW namely: 1) Quality Standards System (QSS), 2) Organization, Management and Support Staff, 3) Academic Strategies, 4) Examination and Assessment, 5) Students, 6) On-board Training, and 7) Research and Development. However, three (3) minor non-conformances were found in the areas of curriculum, staff, and facilities and equipment and four (4) observations in areas of facilities and equipment, and in extension services.

NSU-CME Noteworthy Efforts and Conformances

The NSU-CME Quality Standards System showed well-defined quality objectives and was implemented in accordance with the policies and procedures to achieve tangible results in line to the NSU-CME vision, mission, and goals. There were revisions found in updating the policies and procedures for continuous development and improvement of the QSS. Pertaining to the Organization, Management, and Support Staff, the NSU-CME has presented an approved organizational structure to represent the different units/functions with clear lines and terms of reference to foster accountability and responsibility. The management has created an institutional development plan, conducted regular monitoring on the implementation, and presented concrete evidence of realization of the plan. As to the Academic Strategies, Examination, and Assessment, the NSU-CME used instructional guides (IGs) based on the competence set in the knowledge, understanding, and proficiency (KUPs) structured on the STCW '78 as amended in 2010.

An outcomes-based education approach was adopted as teaching methodology to coordinate theoretical and practical aspects of subjects to ensure outcomes. Effective administration, supervision, and interventions in the classrooms and laboratories were employed to enhance delivery of instruction and assessment. With regard to the Research and Development, NSU-CME presented relevant research outputs to enhance the quality of the programs. The research office presented evidence of a well-defined organizational structure, operational plan, research agenda and strong involvement of faculty and students in research activities. Researches of faculty were published in Journal of Society and Technology (JST) of Naval State University with CHED Category A-2 under CMO 22, series of 2015.

NSU-CME On-Board Training

As to the number of NSU-CME students who completed the academic requirements and who underwent on-board training from SY 2011-2012 to SY 2013-2014. In SY 2011-2012, data showed that in BSMT, there were 107 out of 163 or 65.64% cadets underwent on-board training. Whereas, in BSMarE, there were 119 out of 221 or 53.85% cadets underwent on-board training. In SY 2012-2013, data showed that in BSMT, there were 116 out of 228 or 50.88% cadets underwent on-board training. Whereas, in BSMarE, there were 136 out of 228 or 47.22% cadets underwent on-board training. In SY 2013-2014, data showed that in BSMT, there were 111 out of 223 or 47.77% cadets underwent on-board training. Whereas, in BSMarE, there were 112 out of 265 or 42.26% cadets underwent on-board training. The data show more than 30% of the students who have completed the academic requirements are able to undergo shipboard training. This implies that the Marine Transportation and Marine Engineering programs have met the 30% threshold on-board training requirement of CHED and MARINA as provided in CMO No. 20, series of 2015.

NSU-CME BS Programs

As to the number of NSU-CME cadets who completed the on-board training and who graduated the BS programs from SY 2011-2012 to SY 2013-2014. In SY 2011-2012, data showed that in BSMT, there were 46 out of 107 or 49.99% cadets graduated in bachelor degree. In BSMarE, there were 53 out of 119 or 44.54% cadets graduated in bachelor degree.

Table 1. CHED-MARINA OBME Audit Summary of Findings

| Key Area of Evaluation | NSU-College of Maritime BSMT/BSMarE | | | Observation |
|---------------------------------------------------------------------|-------------------------------------|-----------------|-------|-------------|
| | Conformance / Noteworthy Efforts | Non-Conformance | | |
| | | Major | Minor | |
| 1 Quality Standards System (QSS) | √ | | | |
| 2 Organization, Management, and Support Staff | √ | | | |
| 3 Curriculum | | | x | |
| 4 Academic Strategies | √ | | | |
| 5 Examination and Assessment System (including Appeals and Re-sits) | √ | | | |
| 6 Staff (Instructors and Assessors) | | | x | |
| 7 Students | √ | | | |
| 8 Onboard Training | √ | | | |
| 9 Facilities and Equipment | | | x | xxx |
| 10 Research and Development | √ | | | |
| 11 Extension Services | | | | x |

√= complied, x = not complied

In SY 2012-2013, data showed that in BSMT, there were 45 out of 116 or 38.80% cadets graduated in bachelor degree. In BSMarE, there were 39 out of 136 or 26.47% cadets graduated in bachelor degree. In SY 2013-2014, data showed that in BSMT, there were 40 out of 111 or 36.04% cadets graduated in bachelor degree. In BSMarE, there were 31 out of 112 or 27.68% cadets graduated in bachelor degree. The data show more than 30% of the cadets who underwent on-board training have completed the BS programs. This implies that the NSU-CME Marine Transportation and Marine Engineering programs have met the 30% threshold requirement of graduates for BS programs as mandated by CHED and MARINA.

NSU-CME Passing Rate in Licensure Examination

As to the rate of passers in NSU-CME from CY 2012-2015, the college has produced ninety-four (94) licensed seafarers in OIC Navigational Watch. In 2012, there were 15 out of 26 or 57.62% passed; in 2013, there were 10 out of 12 or 83.33% passed; and in 2014, there were 23 out of 45 or 51.11% passed the licensure examinations. On the other hand, the university has produced sixty-five (65) licensed seafarers in O.I.C. Engine Watch. In 2012, there were 10 out of 20 or 50% passed; in 2013, there were 6 out of 14 or 42.86% passed; and in 2014, there were 22 out of 38 or 57.89% passed the licensure examinations. All data were based on the Professional Regulation Commission (PRC) website (www.prc.gov.ph). Recently, in 2015 there were forty-six (46) Marine Transportation passers and twenty-seven (27) Marine Engineering passers. All data were taken in MARINA. The university has established more than 30% passing rate and increased the number of licensed deck and engine officers. This implies that the NSU-CME has considerably enhanced the operation of producing competent marine deck and engine officers.

NSU-CME Board Topnotchers

The successful NSU-Marine Transportation graduates took a niche in the licensure examination as board examination topnotchers per Professional Regulations Commission (PRC) results. On the rank of Chief Mate, two (2) topnotchers took the position of 2nd and 7th placer with 87.20% and 86.60% rating respectively. On the rank of O.I.C. Navigational Watch, one (1) topnotcher took the position of 6th placer with 88.20% rating. In Marine Engineering, the data show that the NSU-CME Marine Engineering department has produced seven (7) topnotchers with exemplary ratings from CY 2010 to 2014. On the rank of O.I.C. Engine Watch, three (3) topnotchers took the position of the 6th placer, one (1) topnotcher took the position of the 9th placer; and one (1) topnotcher took the position of the 10th placer. In addition, on the rank of the 2nd Engineer, one (1) topnotcher took the position of the 10th placer. Ronald M. Castillon, a marine engineering graduate, has remarkably taken the lid in August 2014 O.I.C. Engine Watch board examination as the 1st placer with 90.25% rating. NSU-CME showed an exemplary performance comparable with other maritime higher education institutions. This implies the seriousness and commitment of the NSU-CME to establish the passing rate in the licensure examination for deck and engine officers. It also

implies that NSU-CME graduates are taking steps to meet the highest peak of their professional growth and career as competent seafarers. The significant leaps in the licensure examination were results of the strong commitment of NSU administration in supporting the NSU-CME board takers by granting scholarship program, giving incentives to topnotchers, strict monitoring of all cadets, coaching and mentoring before taking the board examination and providing financial assistance. All these mechanisms and interventions are great factors in increasing the passing rate in the licensure examination of NSU maritime graduates.

Minor Non-Conformance in Curriculum, Staff, and Facilities and Equipment

As to the minor non-conformances of the NSU-CME, the auditing team posted three (3) minor non-conformances in curriculum, staff, and physical facilities and equipment. In curriculum, the CHED-OBME Audit Team found out that at the time of evaluation, the institution had failed to analyze the data obtain from the end users feedbacks. No consultation of stakeholder after the revision had been made, the college was not in conformance under 7.6.6.5 of Section B-I/8 of the STCW Code. During Management Review Committee meeting, the august body was able to identify and analyze the root-causes of the finding. First, the objectives of the study did not include analysis of data from end users feedback. Second, an activity to disseminate information and to consult stakeholders after the new curriculum has been approved by the BOR and CHED is not evident in the Curriculum Flow Chart. Third, prior to the implementation of the revised and approved curriculum in 2013, no consultation of stakeholders (students, parents, and industry) was done. After the root-cause analysis in this area, Research Services Office was directed to review research objectives of the study conducted to include the analysis of data on end users feedback and published the study to the Journal of Society and Technology of the university. Pertaining to the key result area of Staff (Instructors and Assessors), it was found out that instructors are not certified to handle simulator courses. There was no training for IMO Model Course 6.10(Train the Simulator Trainer and Assessor Course) and not in conformance under CMO 13 and 14, series of 2013 and STCW Convention/Code as amended. The corrective action was to ensure NSU-CME Faculty members handling courses involving the use of Deck and Engine Simulators to undergo training in IMO Model Course 6.10. The Human Resource Management Officer was directed to facilitate and monitor the enrolment and training. As to the facilities and equipment, several observations were found that led to minor non-conformance. The MarCom equipment was defective, limited functions in the transmission capability of GMDSS simulator equipment, and Bridge Simulator has no ship handling capability to display maneuvering of ship. The root-cause was due to the malfunction of the essential features of Bridge Simulator due to software-program incompatibilities and delayed simulator upgrading. The only appropriate corrective action on this area is to procure a Full-Mission Deck and Engine Simulators as required and specified under the STCW Convention/Code. In doing so, the NSU-Administration must seek approval and authority from the NSU-BOR for the procurement of the equipment. Similarly, a

certification from the University Accountant for the availability of funds and must be secured before conducting public bidding under RA 9184, the Government Procurement Act of the Philippines.

Observations in Facilities and Equipment and Extension Service

The first observation of CHED-MARINA OBME Team anchored at the NSU-CME Training Bridge. It was found out that the weather facsimile receiver was not operational, pelorous for magnetic compass was not suitable, steering rudder indicator was calibrated more than five (5) degrees difference, inadequate Mercator plotting sheets, display signals, lights, and shapes were not complete, and arrangement of Bridge maneuvering and Navigational equipment did not reflect realism of bridge equipment standard setup. The NSU-CME made a point-by-point root cause analysis per observation identified under the NSU-CME Training Bridge. The weather facsimile was damaged due to typhoon Yolanda. The magnetic compass that fits the azimuth circle was under repair during the audit. The NSU-CME faculty failed to conduct periodic calibration of the steering equipment. There was no available Mercator plotting sheets with latitude of 35 degrees and above in the Philippine market. There was no proper layout of signals, navigational lights and shapes for bridge equipment. Lastly, there was an improper disposition of navigational and bridge maneuvering equipment in the training bridge. All these were the root causes for the non-conformity of the NSU-Training Bridge under CMO 31, Annex C, series of 2013. The university hired an expert from NAVNAUTICS Philippines Incorporated to calibrate the rudder indicator. Procured and installed all the needed facilities and equipment to replicate the NSU-Training Bridge according to the actual and standard setup. However, there were delays in procuring Mercator Charts from 0° to 90° degrees due to some failures to comply with the statutory requirement of RA 9184. The second observation was on the STCW standard of competences were not referred in various scenarios and exercises. The root cause was due to the poor orientation and utilization of the faculty of the STCW Manual. The VP for Academic Affairs was directed to conduct appropriate training program in using the STCW as reference in making exercises and scenarios for CME students. A Seminar Workshop on the Continuous Development of Instructor's Guide (IGs), Test Construction and Table of Specifications (TOS) for Maritime Education Programs were made as the corrective actions for the finding. This implies that the competence, knowledge, understanding, and proficiency structured in the STCW Manual are framed to meet the desired outcomes for maritime education and training.

The third observation was on the Seamanship Laboratory in which wire ropes used were inadequate for cadets' splicing exercises. No evidence of actual spliced wire ropes were found. There were spliced wire ropes, however, inadequate lengths were observed. The corrective action made by the college was to procure additional wire ropes for splicing exercises. The fourth observation was on the Extension Services, a minimal deviation on the requirements, which the auditor found no notarized Memorandum of Agreement by and between Naval State University as the first party and the

adopted barangay as the second party (LGU of Kawayan, Biliran Province). The failure of the Extension Services Office to present notarized MOA with one barangay in the Municipality of Kawayan was the root cause of this finding. This implies that seafarers must learn to obtain legal documents on various transactions and all actions taken must be documented, recorded and kept.

NSU-CME's quests to meet STCW standards

After the stringent CHED-MARINA OBME audit in May 2014, more strict and stringent requirements were imposed in September 2014 by CHED to all MHEIs to safeguard the national interest, ensure the survival of the Philippine maritime industry, and enhance quality education and training of officers for the international maritime industry. Pending verification results of the recent CHED-OBME audit, the data of the NSU-CME programs were found deficient in a critical area of evaluation required to educate/train qualified and competent maritime graduates pursuant to the pertinent provisions of the STCW Convention/Code as amended, CMO 31 and 32, series of 2013 including CMO 02, series of 2012 on shipboard training. Specifically, less than 30% of the students of NSU-CME maritime programs were obtained in shipboard training. Under these circumstances, NSU-CME had intended to offer the Enhanced Support Level Program (ESLP) for Deck and Engineering that deferred CHED's issuance of Show Cause Order for the two programs and given the permit to reapply for BS maritime programs as soon as the college meets the more stringent requirements of an officer school. In 23 February 2015, CHED issued a list of MHEIs to offer ESLP programs and NSU was among the thirty-six (36) maritime schools to offer ESLP-Deck and was included among the thirty-seven (37) maritime schools to offer ESLP-Engine in the country. This indicates the possibility of NSU-CME to offer BS Maritime Programs when all requirements in CHED-OBME are complied. The NSU-CME's ardent desire and commitment to regain its BS programs took serious initiatives to provide quality education by planning and implementing tangible corrective actions. Enhancement of curriculum that was crafted and guided on a learner-centered and outcomes-based instructional approach. Bloom's Taxonomy in Educational Objectives and Gagne's Theory of Instruction were adopted to improve academic strategies, examination and assessment system. Maritime Faculty Profile were aligned to CMO 20, series of 2015 according to professional and academic qualifications. Faculty with relevant academic degree, valid MARINA License, experiences and credentials handled professional courses with trainings in IMO Model Course 6.09 and 3.12. Faculty members teaching General Education courses shall be holders of appropriate master's degree in his/her field of specialization. Faculty handling courses which fall under the category of allied field shall be holders of the appropriate Bachelor's degree, license and with IMO Model Course 6.09. Moreover, NSU implemented a system of faculty development for professional advancement of the faculty members.

Learning environment is vital to an outcomes-based approach, such that, provision of learning resources, support structures, facilities, and equipment must conform to the standards and

specifications. NSU-CME adopted the principle that quality, knowledge, understanding, and proficiency must be learned, acquired, and demonstrated in the first instance during education and training program. The learning environment must be relative to the actual working environment to enhance better outcomes in the students' learning experience. However, uncontrollable circumstances such as constraint budget allocation and mandatory procurement process causes the delays in the procurement of maritime facilities and equipment. The procurement of a full mission simulator with price ranging 20 million to 60 million pesos depending on its brand and features may be a great burden to source out funds with the stringent procurement process of RA 9184. As to the enrolment policy, the NSU-CME implemented a strict admission policy accepting only 100 freshmen students per maritime education program in SY 2015 – 2016. Setting criteria for admission requirements such as but not limited to the following: 1) qualifying exam, 2) interview, 3) I.Q. test result by Otis-Lennon standardized admission test, and 4) high school general average. The strict enrolment policy has elevated the quality of student to be admitted in maritime programs. By filtering the student's admission, the university can preliminarily assured that students who are admitted have the potential, desire, and capabilities to enroll the course. All the above mentioned best practices were implemented by the NSU-CME that led to a better and commendable results in the verification audit conducted in July 15-17, 2015 by the CHED-MARINA OBME Team. The auditing team found out that all eleven (11) key result areas of evaluation of the CHED-MARINA OBME instrument were complied except for one (1) uncontrollable minor non-conformance in Area IX – Facilities and Equipment, which is the on-going procurement of the Full-Mission Bridge Simulator. The auditing team found it reasonable because it is beyond the control of the university in following the mandatory procurement process of RA 9184. Recently, during the first quarter special board meeting 2016 of the NSU-BOR approved the reapplication for the NSU-BS Maritime Programs. This implies NSU-CME has achieved the needed requirements and standards for quality assurance through series of audits by CHED-MARINA OBME Team.

Conclusion

The 2010 amendments of THE 1978 STCW Convention created more stringent requirements and standards for MHEIs in its operations. The outcomes-based monitoring and evaluation is an approach used by CHED and MARINA to assess maritime schools and ensure the effectiveness of Quality Assurance System. The implementations of tangible corrective actions after a series of rigid monitoring of CHED-MARINA OBME Team have deferred the issuance of Show Cause Order to close the NSU-BS Maritime programs. Implementations of continuous improvement are observed on key areas of evaluation with noteworthy efforts or in conformance with the STCW Convention as amended. Appropriate corrective action plans are made, implemented, and monitored to achieve compliance on the findings, non-conformances, and observations of OBME audits. Direct participation and consultations from stakeholders are made to improve and enhance curriculum. Gagne Theory of Instruction is utilized for both research and instruction and adopted Bloom's

Taxonomy of Educational Objectives. Shipboard training and licensure examination passing rate have met the minimum threshold requirement set by CHED. The NSU-CME faculty are trained for IMO Model Courses and implemented a system for faculty development. Facilities and equipment are procured in accordance with the requirements of STCW '78 as amended and strictly adhere the mandatory procurement process of RA 9184. NSU-CME researches are published in Journal of Society and Technology (JST), a research journal of Naval State University. Notarized Memorandum of Agreement by and between the university and the adapted barangay is necessary for conduct of extension service. Quality Assurance is not perfection: it is improving previous best practices with an ascending degree of excellence. Outcomes-based monitoring and evaluation is the approach for assessing maritime programs for quality assurance and guide the university towards its quest to meet STCW standards.

Recommendations

The following recommendations are categorically anchored on the conclusions made in this study:

1. The NSU-CME faculty are advised to take comprehensive training program on the STCW '78 as amended to improve the operations of the college;
2. The CHED-MARINA OBME instrument for assessing BS Maritime Programs is an effective tool that should be adopted by Maritime Higher Education Institutions in achieving outcomes-based results and effectiveness in quality assurance of the systems;
3. There is a need for the NSU-CME to continually improve key result areas with noteworthy efforts or areas that conform to STCW standards. Moreover, strict monitoring on the implementation of corrective action plans to areas with minor non-conformances and observations;
4. The NSU-Internal Quality Assurance Auditors are encouraged to utilize the outcomes-based monitoring and evaluation approach on their regular audits in the College of Maritime Education in order to carry out effectiveness of the quality assurance system with the help of external quality assurance agencies, like CHED, MARINA and DNV ISO 9001 accrediting bodies; and
5. An in-depth study of the NSU-CME BS Maritime Programs using outcomes-based monitoring and evaluation approach following the CHED outcomes-based framework for higher education may be conducted to provide additional knowledge in pedagogical research.

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