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Outcomes of Curricular Enhancement in a Health Program: LPU CAMP Experience

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ABSTRACT

Higher educational system has gone through substantial reforms and changes vis-à-vis curriculum innovation over the past years. The evaluation of a revised program is one of the most relevant courses of action done when curriculum change is to be implemented. One of the main reasons is that it is a chance for practitioners to test for themselves if their plan is working. It also serves as an identification of the strengths and weaknesses of the said intervention. This study was conducted to assess the results of the implementation of the Bachelor of Science in Medical Labo-

ratory Science program. It employed descriptive survey using two types of self-made questionnaire, the Likert scale and open-ended type survey. Likewise, data on the results of the graduates' licensure examinations and status of employment were also analyzed and correlated. Eighty two graduates from 2010 to 2012 of the enhanced Medical Technology program of LPU-Batangas and 13 chief medical technologists from identified affiliate-hospitals were surveyed about their perception on the attainment of the objectives, the realization of the core competencies as well as the supposed strengths and weaknesses of the program. Results showed that objectives were achieved alongside the significant improvements in the board performance and employment rate were noted. This study can be used as a pilot study for other higher education institutions with the same health program. This can also be used as a basis for a curricular reform by assessing the different parameters that were identified.

KEYWORDS

Medical Laboratory Science Curriculum, internship training program, chief medical technologists, board performance, graduates' employment, Lyceum of the Philippines University Batangas, Philippines

INTRODUCTION

Education in the Philippines may be characterized as dynamic. Mañebog (2011) cited that the Philippine education has been a target of reform for the past 100 years or so since the arrival of the Thomasites. It has been said that educational system is the most studied sector of our society. Of course, the need for change in education has been a function of the changing needs of people and society. Enhancing the quality of the products of education – namely, our students; raising student test scores to be on a par with those of other countries; improving the quality and standards of the teaching profession are some of the motives for reform through the years (Peeraer et al., 2009). Collectively, these motives issue a call to action. As a dynamic institution, the Medical Technology program of the College of Allied Medical Professions (CAMP) at Lyceum of the Philippines University in Batangas (LPU-B) responded to this call.

The Medical Technology program is one of the health science programs in the Philippines offered in various higher education institutions. It is a program that aims to develop competent medical laboratory scientists to meet the demands for competent manpower in the healthcare service with the use of highly innovative technologies (CMO no. 14, 2006). Its curriculum is based on the memorandum

order mandated by the Commission on Higher Education (CHED) which is composed of a school-based learning focused on the different principles employed in the discipline and internship training in clinical laboratories determined to develop the critical and analytical thinking abilities of the learner.

FRAMEWORK

In 1998, the CHED initially released a memorandum order entitled: "Updated Policies and Standards for Medical Technology Education". This is also known as Commission on Higher Education Memorandum Order (CMO) No. 8 which states the different requirements needed by an institution should it want to offer a Bachelor of Science in Medical Technology program. Later in that same year, another memorandum order was released, CMO No. 27 known as "Curriculum for the Common 2-year Associate in Health Science Education," which is a program that will prepare students as they enter to the practice of health services. These memorandum orders serve as the first bases of different schools offering medical technology education.

In 2006, the Commission on Higher Education issued CMO # 14 known as "Policies and Standards for Medical Technology Education. The College of Allied Medical Professions of LPU in Batangas implemented this curricular change in the Medical Technology program. After four years of implementation, the program was evaluated. According to Shackman (1999), the evaluation of a revised program is one of the most important courses of action done when curriculum change is to be implemented. One of the main reasons is that it is a chance for practitioners to test for themselves that their plan is working as well as the identification of the strengths and weaknesses of the said intervention. Evaluation is based on evidence or data which are systematically obtained from those who are participating in the program by different methods such as surveys, interviews, analysis of documents, and performing a background check. The results gathered from these will be the basis of evaluation.

OBJECTIVES OF THE STUDY

This study determines the degree of attainment of the general objectives of the enhanced Medical Technology curriculum implemented in 2006. The specific objectives included the identification of the reforms in the enhanced B.S. Medical Technology curriculum that was implemented. It also determined the extent on how the entry-level competencies at work were exhibited by the graduates of CMO # 14 series of 2006 from LPU-Batangas as perceived by the respondents. The per-

ceived strengths and weaknesses of the six-month internship training program were also identified which will serve as the basis for further studies and formulation of the plan of action for curriculum modification that is most suitable to learners for the development of the necessary core competencies needed in the practice of the profession. Furthermore, the study correlated the results of the licensure examinations of the graduates as well as the employment status as success indicators of the implemented program.

METHODOLOGY

The descriptive research design was used. The proponents formulated a self-structured, open-ended survey questionnaire relating to the evaluation of the improved program. The questionnaire was divided into three parts: first was on the degree of attainment of the general objectives of the CMO # 14 s. 2006 using the Likert Scale; the second part was on the extent on how the entry-level competencies were exhibited by the graduates of CMO # 14 series of 2006 from LPU-Batangas as perceived by the respondents also using Likert scale; lastly was on the respondent's perceived strength and weaknesses of the internship training program as well as recommendations for the improvement of implementation. The questionnaire was validated by the Office of the Dean of the College of Medical Technology of a University in Manila together with ten randomly selected individuals from the target population. A focus group discussion and analysis of available documents were also conducted to validate the responses. These were pen recorded and summarized. Documentary analysis of the results of the licensure examinations conducted by the Professional Regulation Commission (PRC) and the results of the tracer studies conducted by the College were also used as indicators of success of the implemented program.

There were two groups of respondents: first, the graduates of the enhanced curriculum, batch 2010 to 2012 and second, the chief medical technologists or the senior medical laboratory staff of the hospitals where the graduates underwent internship training. Statistical tools used were weighted mean, frequency, distribution, and percentage.

Results of the survey showed 82 out of the 85 (96%) graduate-respondents of batch 2010 to 2012 of LPU-B and 13 chief medical technologists (CMT) from the affiliate hospitals participated in the study.

Likert scale was used in assessing the degree of attainment of the general objectives of the CMO. The scale used the following ranges and descriptive interpretation: 4.50-5.00 = Great Extent (GRT); 3.50-4.49 = Moderate Extent (MOD);

2.50-3.49 = Less Extent (LSS); 1.50-2.49 = Lesser Extent (LSR); 1.00-1.49 = Did Not Agree (NOT).

In determining the extent on which among the competency standards as stated in the CMO were developed and highly exhibited by the graduates of LPU, Likert Scale of 1 to 5 was used with descriptive interpretation as follows: 5- Always; 4 – Often; 3 – Sometimes; 2 – Seldom and 1 – Never.

The responses on the open-ended questions on the perceived strengths and weaknesses of the internship training program implementation as well as recommendations were validated with a focus group discussion and analysis of documents available.

RESULTS AND DISCUSSION

A thorough review of the old curriculum and the enhanced Medical Technology curriculum showed several modifications. One of which was the change in the nomenclature of the program from Bachelor of Science in Medical Technology to Bachelor of Science in Medical Laboratory Science Program (BSMLS). The change in the program nomenclature was based on an international benchmarking study conducted by the Technical Committee on Medical Technology Education of the Commission on Higher Education. Another significant modification was noted in the courses required for the program. In the old curriculum, Qualitative Chemistry and Quantitative Chemistry were offered as separate subjects with 5 units each. With the present program of study, these two courses were joined together as a 5-unit course now termed Analytical Chemistry. Furthermore, the following core courses were added: Basic Statistics, Introduction to Medical Laboratory Science (formerly Medical Technology) with Science, Technology and Society (STS), and Principles and Strategies in Health Education. Pharmacology and Cytogenetics were offered as new professional courses. Laboratory Management was previously incorporated in Medical Technology Laws and Ethics (3 units) but now offered as separate courses (2 units and 3 units respectively). There were also changes in the nomenclature of some courses namely: Clinical Microscopy which is now known as Analysis of Urine and Other Body Fluids and Blood Banking to Immunohematology. There were major modifications in terms of additional units and alignment in the offering of the core and professional courses that addressed the need to further develop the knowledge, skills and attitude of the students most especially in the third and fourth levels.

Another major change was the duration of the internship training of the senior students. Based on the previous curriculum, the internship training program entails

12 months in the fourth level. In the new program, the 12 months was shortened to six months that require going on-duty at 40 hours per week in 27 weeks with a total minimum training hours in the clinical laboratory of 1080 hours. The 1080 hours were divided as follows in the different sections of the laboratory: Clinical Chemistry (230 hrs.), Hematology (120 hrs.), Blood Bank (150 hrs.), Immunology and Serology (100 hrs.), Bacteriology (150 hrs.), Clinical Microscopy and Parasitology (230 hrs.) and Histopathology and Cytology (100 hrs.).

The number of months were lowered but the total number of contact hours were retained such that the CMO mandated that the student should go on duty at 40 hours per week in 27 weeks. In addition to this, CHED mandated all clinical laboratories to undergo accreditation by the Technical Committee for Medical Laboratory Science/ Medical Technology Education under the Office of Programs and Standards of the Commission. A standard evaluation tool was formulated in the evaluation and inspection of clinical laboratories that will be used for training of the senior students. Therefore, the training officers of the laboratories were required to adhere to the standards and mandates of the Commission to improve the training of interns.

Table 1. Perceptions of the respondents on the degree of attainment of the general objectives of the enhanced BS medical laboratory science curriculum (CMO) # 14 s. 2006)

General Objectives of the Enhanced Medical Laboratory Science Curriculum CMO # 14 s. 2006	Weighted mean Graduate Respondent n = 82	Verbal Inter preta tion	Rank	Weighted Mean Chief Med Tech n = 13	Verbal Inter preta tion	Rank
1) Develop the knowledge, attitudes and skills in the performance of clinical laboratory procedures needed to help the physician in the proper diagnosis, treatment, prognosis and prevention of diseases	4.70	Great extent	1	4.59	Great extent	1

2.) Develop skills in critical and analytical thinking to advance knowledge in Medical Technology/ Medical Laboratory Science and contribute to the challenges of the profession.	4.20	Moderate extent	3	4.15	Moderate extent	3
3.) Develop leadership skills and to promote competence and excellence.	3.57	Moderate extent	4	3.77	Moderate extent	4
4) Uphold moral and ethical values in the service of society and in the practice of the profession.	4.68	Great extent	2	4.57	Great extent	2
AVERAGE	4.28	Moderate extent		4.27	Moderate extent	

Data in Table 1 show that both the graduate-respondents (weighted mean of 4.28) and the chief medical technologists (weighted mean of 4.27) perceived that the different general objectives of the enhanced BS MLS curriculum were achieved to moderate extent.

Surprisingly, results showed that in the ranking of the objectives, the ranking is almost the same for both groups of respondents. The graduate-respondents and the chief medical technologists perceived that the first general objective of CMO # 14 series of 2006 on developing the knowledge, attitudes and skills in the performance of clinical laboratory procedures needed to help the physician in the proper diagnosis, treatment, prognosis and prevention of diseases was attained to a great extent with weighted mean of 4.70 and 4.59 respectively. The graduate-respondents believed that the enhanced program most especially in increasing the lecture and laboratory units in the professional courses in the third year and first semester in their fourth level greatly helped them to develop the knowledge, skills and attitude in the performance of clinical laboratory procedures coupled with their training in the hospital clinical laboratories following the training program required by the

CHED in the accreditation of these clinical laboratories. This shows then that the improvements done in the core and professional courses in the enhanced program contributed much to the attainment of this general objective of the CMO.

The degree of achieving the objective on upholding moral and ethical values in the service of society and in the practice of the profession was attained to a great extent as perceived by both group of respondents (WM=4.68, 4.56). This can be explained by the fact that the medical technology professors at LPU-B and the training officers and medical technology staff in the different hospitals of affiliation are fully aware of the code of ethics in the practice of the profession and therefore they oriented the students and made sure that they will imbibe the same. The orientation and training in the university and in the different hospitals of affiliation of the senior students can explain why these indicators were described as practiced "always". In the daily practice of the profession, one should really be fully aware of the laws and ethics that the profession asks for. In the actual practice as a medical laboratory scientist, one must be professionally responsible at all times as any mistake in the conduct of the profession will expose one to a lot of legal issues that might revoke the professional license and more importantly will affect the health and lives of the patients.

The objective on developing skills in critical and analytical thinking to advance knowledge in Medical Technology/Medical Laboratory Science and contribute to the challenges of the profession and on developing leadership skills and to promote competence and excellence were attained to moderate extent as perceived by both groups of respondents and ranked third and fourth respectively. This can probably be explained by the fact that these competencies continuously develop to the fullest as the working experiences in the practice of the profession widens or increases in terms of exposure and number of years along with the maturity of the individual professional.

The most marketable skill of an entry-level medical laboratory scientist is the application of principles learned in the educational program and use in a broad spectrum of laboratory testing in the work environment. Over the past few years, concern was raised as to how well a curriculum met the needs of programs preparing entry-level medical laboratory scientists for a workplace that is rapidly changing due to new technology and changes in the health care system (Green & Graybeal, 2011).

Table 2. Extent on how the entry-level competencies were exhibited by the graduates of CMO # 14 series of 2006 from LPU-Batangas as perceived by the respondents

Core competencies exhibited by the graduates of CMO # 14 series of 2006 from LPU-Batangas	Respondents – CMT Mean Value	De-scription	Rank
1) Collect samples, prepare specimen for analysis, determine the acceptability of samples within guidelines; perform the test according to the standard method or techniques	4.73	Always	1
2) Demonstrate skills in judgment and decision making to analyze quality control and recognize implausible results and take appropriate actions to maintain accuracy and precision.	4.00	Often	7
3) Perform accurately data-gathering processing and encoding into the computer system.	4.30	Often	5
4) Observe the principle of data security or patient confidentiality; maintain ethical standards in working with other laboratory and hospital personnel.	4.62	Always	2
5) Possess good communication and humane relation skills for effective and healthy interactions with healthcare professionals.	4.35	Often	4
6) Take responsibility for their own professional development or continuing education especially computer education in the application and management of data and computerized laboratory equipment.	4.07	Often	6
7) Acquire basic management, supervision, and administrative skills to contribute to the resolution of conflicts pertaining to laboratory management, implementation of changes in response to technology and laboratory procedures, development of safety management procedures and improvement of standard of practice.	4.38	Often	3

The data illustrate that two of the entry-level competencies expected of the graduates were always exhibited in the workplace namely: first, collecting samples, preparing specimen for analysis, determining the acceptability of samples within guidelines and performing the test according to the standard method or techniques;

and, second in rank is observing the principle of data security or patient confidentiality as well as maintaining ethical standards in working with other laboratory and hospital personnel. These competencies were always exhibited by the graduates on their first to second year of employment right after the licensure examinations as perceived by their senior staff because these are the most common skills and values that they have learned in the university and acquired during their internship training in the different hospitals they were sent. This clearly shows that the objectives of the improved curriculum on this category of core competencies were successfully met.

The rest of standard competencies exhibited by the graduates during the first two years in their place of work were described as "often" exhibited with weighted mean ranging from 4.00 to 4.30. These are: third in rank, acquiring basic management, supervision, and administrative skills to contribute to the resolution of conflicts pertaining to laboratory management, implementation of changes in response to technology and laboratory procedures, development of safety management procedures and improvement of standard of practice; fourth, possessing good communication and humane relation skills for effective and healthy interactions with healthcare professionals; fifth, performing accurately data-gathering processing and encoding into the computer system; sixth, taking responsibility for their own professional development or continuing education especially computer education in the application and management of data and computerized laboratory equipment; lastly, demonstrating skills in judgment and decision making to analyze quality control and recognizing implausible results and take appropriate actions to maintain accuracy and precision. This is explained by the fact the there is limited "hands-on" training of the senior medical technology students in the private hospitals where they are sent for training and failure of some of the interns to rotate in public hospitals. This limited "hands-on" training also limits the opportunity of the interns to develop these core competencies to the fullest. Honing of the skills and attitudes in as far as these categories of competencies are concerned takes time and more exposure to the different situations and challenges in the practice of the profession in the clinical laboratory.

Table 3. Perceived strengths of the MLS Six-month internship training program as perceived by the chief medical technologists

Areas	Responses of Graduate-respondents (no. of responses/total no. of respondents)	Responses of the CMT
1. Duration and quality of internship training	▪ Interns learn to manage their time efficiently because of the specific number of training hours required in rotating in the different sections of the clinical laboratory. (66/82)	▪ On the theoretical aspect of the training, the CMT felt that the required training hours is enough to develop the competencies needed for the students to help them pass the board examinations (12/13)
2. Training staff	▪ The training staff are more focused on mentoring the interns rather than giving them extra works or errands that are not related to internship training. (60/82)	▪ Since the training entails only 6 months, the MT staff involved in training the interns can spend the other 6 months in attending continuing professional education programs so they can be updated also in the practice of the profession. (9/13)
	▪ Because of the limited time, the staff follow the schedule of the lectures that should be conducted within the 6 months rotation. (49/82)	▪ The medical staff involved in training can maximize the time allotted for the lecture since they have to follow the policies embodied in the training program. (12/13)
3. Financial expenses	▪ It entails lesser expenses on the part of the interns especially on the affiliation fees and payment for the boarding house. (82/82)	▪ Lesser expenses on the part of the students since they will be paying their affiliation fees for 6 months only instead of 12 months. (13/13)

On the perceived strengths of the six-month internship training program, majority (80%) of the graduate-respondents believed that they were able to manage their time efficiently given the required specific number of training hours per section in the clinical laboratory.. Likewise, the CMT (92%) claimed that because of the shortened number of weeks of rotation per section, they strictly follow the policies and guidelines of the internship training program stated in the memorandum order thus, the lectures and mentoring were conducted as to what they reported in the documents the staff submitted to the technical committee members and CHED assessors who evaluated the program and the clinical laboratory during the accredita-

tion of the program and facility that is being used by both parties in the training of the interns. Similarly, many of the CMT (69%) cited that one advantage of the new training program was that they will have the opportunity to also attend continuing professional education activities during the latter half of the year when there are no interns training in the laboratory. These conferences and seminars will update and enhance their leadership and management skills so they can deliver effectively their role as training officers.

On the other hand, both groups of respondents (100%) agreed that the six-month training program entails lesser expenses on the part of the students. These include the affiliation fees, transportation expenses, board and lodging and their daily allowances during the six months training in the hospital especially for interns who are living far from the assigned hospital.

Table 4. Perceived Weaknesses of the MLS Six-month Internship Training Program

Areas	Responses of Graduate-respondents	Responses of the CMT
1. Duration and quality of internship training	■ The interns were not given the opportunity to be rotated in other hospitals. (75/82) ■ The number of contact hours is not sufficient to learn all the tests in the different sections of the clinical laboratory. (61/82) ■ The shortened duration of training is not enough to develop their confidence in performing different laboratory examinations. (62/82). ■ Limited exposure to different types of patients and laboratory tests. being requested and done. (60/82)	■ The training hours is not enough to teach everything that the interns need to know in all the different sections of the clinical laboratory. (8/13) ■ Limited exposure to different types of patients and their needs. (10/13) ■ Their orientation of their role in the hospital is also affected since the interns will be training for 6 months only. (10/13)

2. Training staff	▪ Because of the limited time, the staff are not able to teach all they want to teach the interns especially on complicated test procedures and trouble shooting of the equipments when technical problems happen in the laboratory. (44/82)	▪ Because of the time constraint, the training staff felt that they cannot deliver the expectations of the interns and the teachers from the school where the interns came from. (8/13)
3. Financial expenses	No identified weakness	No identified weakness

Data in Table 4 showed that both groups of respondents have almost the same perceived weaknesses which focused on the shortened number of months of rotation in the hospital. Because of the nature of the new program, a lot of the activities which they used to carry out during the one-year program were also modified. One of these is the chance to be assigned in other hospitals. Almost all (92%) of the graduate-respondents complained of not having been able to rotate in other hospitals due to the shortened period. Both groups of respondents felt that the rotation in different hospitals will help the students develop the necessary knowledge, skills and values in the practice of the profession. To be sent in two or three different hospitals especially if the assignment is a mixture of private and public rotation, the interns will have the chance to immerse themselves in different clinical situations and different approaches. The opportunity to learn is greater when exposed in different hospitals because of the different methodologies and approaches that the medical technology staff use in the day to day activities and situations they face in the hospitals where they work. In effect, the graduate-respondents perceived that the shortened duration of training is not enough to develop their confidence in performing different laboratory examinations.

Times run so fast, that even if the number of contact hours is the same as that in the one-year program, the CMT (62%) perceived that the training hours is not enough to teach everything that the interns need to know in all the different sections of the clinical laboratory thus they feel that they were not able to meet the expectations of the clinical instructors as well as the students.

Furthermore, the 77% of the CMT (10/13) claimed that the interns lost the opportunity to learn other clinical cases that entails different clinical laboratory tests especially seasonal diseases since the training starts in November and ends in April. They claimed that if the training is for one year then there is great chance to see and learn clinical diseases that are common during the months of May to October. They perceived that this kind of experience will help the students see and experience the

actual clinical cases which they read on the books.

The responses of the CMT and the graduate-respondents on the perceived weakness all point out to the limited number of months of the training program because in planning their program the senior medical technologists assigned in training the interns were more oriented on working on the one-year training program.

Moreover, both groups of respondents claimed that the financial aspect involved in training was not seen as weakness but was perceived as one of the advantages of the new curriculum.

Table 5. Recommendations of the respondents on the MLS Six-month internship training program

Recommendations of the Graduate-respondents	Recommendations of the senior medical technologists involved in the training program
Retain the six-months internship training program but there is a need to have better planning of those involved in training like the chief medical technologists of the different hospitals and the clinical supervisor of the school so that a better program can be formulated. (82/82) It is also recommended that the six months can be divided into 2 or 3 programs such that the interns may be able to rotate in two or three different hospitals for better exposure and experiences. (74/82) Some (31/82) of the graduate-respondents recommended that the six months be focused on hospital duties only and the pull out for seminars in school be given another period after the internship training so they can also have time to rest after their hospital duties and further lessen the expenses.	Some of the CMT (5/13) recommended to go back to the one-year internship training program. Many of the respondents (9/13) are very much open to retain the six months duration and strongly recommend that a planning workshop can be done together with the clinical instructor or supervisors of the schools so that they can come up with a better and concrete program that will really address the needs of the interns in preparation for the board examinations and the practice of the profession in the future. To lessen the pull-out of interns from the hospital duties for seminars in school. The schedule for the seminars be programmed after the training so the interns can focus on their responsibilities and assignments in the laboratory at the same time the medical technology staff they can fully monitor the activities of the interns on rotation. (10/13) To address the shortened number of months in internship training, many (10/13) suggested that graduates may undergo externship training prior to acceptance of employed in the hospital to improve their confidence in the actual day-to-day work not only in the clinical laboratory but in the entire hospital.

Data on Table 5 revealed different points of view when it comes to recommendations on how the six-month internship training program can be improved based on the perceived strengths and weaknesses of the program. While all the graduate-respondents agree that the six months can be retained but with some modifications in terms of approaches in planning the schedule of rotation, all of them recommended to increase the number of hospitals where they can be assigned so they can have varied experiences in the different types of management and leadership of the senior medical technologists and the approaches in the clinical setting.

In contrast, the CMT vary in their recommendations. Some (38%) believe that the one-year training program is better than the six-month program. However, many (90%) are open to the idea of coming up with a better planning by the interns coordinators and training officers of the different hospitals so a well-defined program can be formulated and may guide them in the implementation and evaluation.

Furthermore, many (77%) recommended that graduates be allowed to undergo externship for a couple of months prior to actual employment in the hospital to give them ample time to adjust and improve their critical and analytical thinking skills and develop their confidence in handling their daily responsibilities as licensed medical laboratory scientists.

On the other hand, both groups agree that the pull-out of interns from their hospital duties to school activities and seminars be lessened or be assigned a different schedule after the six months of training.

Table 6 illustrates the performance of the graduates batch 2010 to 2012 in the licensure examinations for medical technologists given by the Professional Regulation Commission.

Table 6. Results of the licensure examinations of the graduates from LPU-Batangas batch 2010-2012 (n=67)

Year	Total No. of graduates	Total No. of graduates who took the Licensure Examinations			Total No. of graduates who passed Licensure Examinations
		Sept.	March	Total	
2010	14	8	3	11	11/11 (100%)
2011	26	15	7	25	22/25 (88%)
2012	45	31	March 2013	31	31/31 (100%) Sept 2012 only

TOTAL	85	67	64
Average performance for 3 yrs.	64/67 (96%)		

The Board of Medical Technology under the Professional Regulation Commission prepares the licensure examinations which are given twice a year during the months of September and March. The board examinations are used to certify competence or to license individuals before they can legitimately practice the profession.

Results reveal that 11 out of the 14 (78%) from the first batch of graduates of the enhanced curriculum in April 2010 took the board examinations in September 2010 (8/8) and March 2011 (3/3) with a 100% passing performance. Furthermore, 22 out of the 26 (85%) graduates in 2011 took the licensure examinations in September (15/18) and March 2012 (7/7) obtaining an overall 88% passing percentage with one graduate from those who took the examinations in September 2011 who successfully garnered the 10th place. Likewise, 69% (31/45) of those who graduated in April 2012 took the examinations posting a 100% (31/31) passing performance for LPU-B Medical Laboratory Science Program. These figures were compared with the performance of the College in the last 5 years (ranging from 48% to 70% passing percentage) prior to the implementation of the enhanced Medical Laboratory Science curriculum. The marked improvement in the performance rating among the graduates to whom the enhanced curriculum was implemented clearly shows the effectiveness of the program. This can probably be explained also by the additional units in the professional courses where students can widen their knowledge on the principles of the different laboratory tests needed in the diagnosis, treatment, prognosis and treatment of diseases.

Table 7. Employability rate and of the 2010-2012 graduates of LPU-Batangas

	Working as Medical Laboratory Scientists	Working as Phlebotomists	Works in the diagnostic companies	Pursue further studies
No. of graduates	60/82 (73%)	8/82 (10%)	5/82 (6%)	9/82 (11%)

Results reveal that majority (90%) of the graduate-respondents of batch 2010 to 2012 from LPU Batangas are practicing their profession such that 73% are in the clinical laboratories working as licensed medical laboratory scientists, 10% as phlebotomists and 6% engaged in the diagnostic companies. On the other, there were some (9%) who continued their studies in the college of medicine. These show that almost all of those who finished the improved program were employed and are practicing their chosen profession. Moreover, even those who did not yet passed the licensure examinations were in the field of medical laboratory science working as phlebotomists in the clinical laboratories and as medical specialists in diagnostic centers.

CONCLUSIONS

The general objectives of the enhanced medical technology curriculum also known as "Policies and Standards of Medical Laboratory Science (formerly Medical Technology) Education" CMO # 14 series of 2006 were achieved to a moderate extent.

The results presented in this study have shown that majority of the graduates have demonstrated the entry-level competencies expected of them like professional responsibility, professional laboratory skills and safe work practices while further improvement and retooling is needed on the other core competencies like critical thinking, problem solving and decision-making, communication, teamwork and interactive skills, instrumentation and computer skills, leadership and management and teaching and training responsibilities.

There were strengths and weaknesses in the implementation of the six-month internship training program which need to be addressed. The recommendations warrant consideration to improve its implementation.

The results of this study became the basis in reviewing and improving the internship training program and policies to strengthen the activities that will help improve the competencies expected of the graduates. Likewise, effective and efficient mentoring by the training staff and clinical supervisor is also considered.

Overall, the implementation of the enhanced medical technology curriculum is successful as shown by the excellent results of the performance in the licensure examinations as well as the high employability rate and the appropriate alignment of the practice of the profession with the nature of the program.

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