Curriculum Model for Medical Technology: Lessons from International Benchmarking

ANACLETA PRING-VALDEZ

anniejunvaldez@yahoo.com
Lyceum of the Philippines University
Capitol Site, Batangas City

Abstract - Curriculum is a crucial component of any educational process. Curriculum development and instructional management serve as effective tools for meeting the present and future needs of the local and national communities. In trying to strengthen the quality assurance system in Philippine higher education, institutions of higher learning were mandated to upgrade higher education curricular offerings to international standards. Anchored on the PMI framework, data were gathered through in-depth review of documents, interviews with program coordinators and on-site observation in selected schools offering Medical Technology program in U.S.A., Australia, Singapore, Japan, Thailand and Canada. The benchmarking results showed that there were major "plus" and "interesting" points that can be used as guide in the innovation of the existing Philippine Medical Technology program and can become the basis of enabling implementation activities: reform and improve curriculum structure, content, teaching-learning strategies and employ competency-based assessment process.

INTRODUCTION

Curriculum development and instructional management are at the core of educational process, two dynamic complementary management functions through which the mission of a school is operationalized and concretized. Hence, the need to analyze the past and present world trends as a basis of anticipating future developments from which educational implications could be drawn as cited by Reyes (2000).

In 2006, the Philippine Commission on Higher Education mandated tertiary schools offering Medical Technology program to implement the new CHED Memorandum (CMO) No. 14 known as "Harmonized Policies, Standards and Guidelines on Medical Technology Education". The CMO embodied the revised curricular offering for the profession. This was a shift from the CHED Memorandum Order No. 27 series of 1998, "Curriculum for the Common-Two Year Associate in Health Science Education" leading to Bachelor of Science in Medical Technology .

However, enrolment in the program drastically decreased due to the tremendous increase of enrollees in the Nursing program in 2007. In the light of the decreasing enrolment, the Commission identified the Medical Technology program to be included in the list of six programs to be benchmarked under CHED Special Order No. 19 series of 2007 known as "Benchmarking of the Curriculum on Priority Areas". This is a part of the Higher Education Development Project Activities on improving the quality assurance system of higher education curricula by upgrading to international standards. It is hoped that the curriculum benchmarking and revision will establish a coherent, precise and measurable curriculum at each year level with organization and expectations that are consistent from level to level and across the course areas and to set rigorous standards for all students. This is also to make sure that the curriculum is competency-based and is aligned with that of the local and international assessment measures.

FRAMEWORK

The field of curriculum studies is cluttered by an array of dissimilar definitions of the term curriculum. In empirical studies, definitions of curriculum run the gamut from those that would have the term signify everything that takes place in a classroom to others that restrict its meaning to only the topics that are defined as instructional requirements in the official policy of an educational system. There are also those that limit the definition of curriculum to only those topics actually taught by teachers.

McKnight (2000) proposed a model that subdivides the curriculum into three components: the intended, the implemented, and the attained. The intended curriculum is what educational institutions expect to be taught or hold as learning goals in the educational system while implemented curriculum refers to the instructional implementation of the intended curriculum which is therefore embodied in classroom instruction On the other hand, attained curriculum refer to the skills, knowledge, and dispositions referred to as competencies that students effectively acquire as a result of their schooling.

Gailan (2000) and Valverde (2000) added that the movement toward the development of educational standards in many educational systems reflects this emphasis on the quality of the content of the intended curriculum, as policymakers and educational leaders have favored the development of official curricula and a variety of implementation tools in order to ensure the delivery and attainment of socially significant disciplinary content. Most new curricula stipulate the acquisition of higher-order knowledge by all students, and such prescription tends to be informed by the type and amount of knowledge that is perceived to be critical for students to function effectively in society and in the economy.

As mentioned by Schmidt (2001), a considerable body of work has been contributed to support the use of educational policy programs focused on the quality of the content of schooling in what has been termed content-driven systemic reform. It is stated that ambitious curriculum intentions must be formulated and subsequently appropriate mechanisms must be designed to implement these curricula so that students have the opportunity to attain high levels of

achievement. Content-driven reform holds that a core specification of curriculum goals provides the basis for setting up a policy structure designed to enhance the achievement of students. Thus, the intended curriculum is intended to directly influence teacher training and certification, school course offerings, instructional resources, and systems of accountability.

With the emergence and growth of the global economy, policymakers and educators have turned to international comparisons to assess how well national systems of education are performing. These comparisons shed light on a host of policy issues, from access to education and equity of resources to the quality of school outputs. They provide policymakers with benchmarks to assess their systems' performance, and to identify potential strategies to improve student achievement and system outputs as mentioned by Grayson (2000) and James and Clark (2007).

The new world of work requires the use of holistic, integrated skills and competencies rather than discrete competencies and isolated skill sets. The emphasis is on the ability to solve problems that require drawing on all competencies and applying them in ever changing contexts. Competency- or performance-based curriculum informed by industry skill standards improves the correspondence between workplace requirements and educational preparation.

According to Harris et al as mentioned in the studies of James and Clark, competency-based education is structured around competent performance by learners, where competence is defined in terms of achievement to the level of industry standards. The quality of education is more easily measured because the criteria for achievement are more precisely defined. Since the levels of performance are described by the standards, consistency of expected performance between programs and schools is more easily achieved. Thomas (2006) added that realistic applications increase motivation and enhance learning acquisition. Learners experience skills as related and applicable to many contexts resulting in a more explicit focus on foundation or employability. Transfer of learning is higher when the competency-based program provides for realistic learning experiences based on solving real problems.

RESULTS AND DISCUSSION

The "plus" and "interesting" points gathered from the study showed the following: (1) The ladder concept in curriculum planning is implemented where the first two years lead to a certificate or diploma program where graduates can work as laboratory technicians, histotechnicians or as phlebotomists. The baccalaureate program is a two-year continuation of the certificate program leading to Bachelor of Science degree as a medical laboratory scientist; (2) The general education subjects have lesser units because majority of these courses were already taken in the 12-year basic education program; (3) The clinical practicum of senior students requires shorter number of hours in affiliating hospitals because review courses are integrated in the program; (4) The terminal competencies expected upon entry into the practice of the profession are identified and presented in detailed key areas of responsibility patterned after the standard competencies set by the accrediting and certifying agencies like the Board of Registry of the American Society of Clinical Pathologists (ASCP) and the National Accrediting Agency for Clinical Laboratory Science (NAACLS). Each key area of responsibility has its own indicators on which competency-based assessment tools can be formulated and be used for evaluation of curriculum and instruction; and, (5) Graduates are able to take National Certification Examinations (NCA) offered through the ASCP, the National Credentialing Agencies like AMT, NAACLS in USA and Thailand and Australian Institute of Medical Laboratory Scientists (AIMLS) in Australia and other equivalent certification agencies upon completion of either degree. Associate of Applied Sciences graduates are eligible to certify as medical or clinical laboratory technicians, phlebotomists and BS graduates are eligible to certify as Medical/Clinical Laboratory Scientists. Certifying examinations are made available several times each year. The ASCP examination is computerized and consists of approximately 100 questions. The NCA examination is written and consists of approximately 200 questions; and, (6) Postgraduate programs in both masters and doctorate degrees with specialty tracks are offered in almost all schools offering the

program.

On the other hand, the Medical Technology program in the Philippine tertiary education has the following features: (1) A straight four-year program of Bachelor of Science in Medical Technology. This means that there are no certificate nor diploma programs in the first two years; (2) There is congestion of semestral units due to general education courses that need to be taken by students in the tertiary level because the basic education is offered in ten years only; (3) The clinical practicum takes one year with more than 1000 contact hours in the hospital clinical laboratory while review courses are not incorporated in the training program; (4) Terminal competencies are not clearly identified as they are presented in general sentences in the policies, standards and guidelines for Medical Technology program; (5) After completion of the straight four-year bachelor degree program the graduate may apply for the licensure examinations given by the Professional Regulation Commission (PRC) conducted twice a year during the months of March and September. Two days are allotted for the licensure examinations. There are six professional board subjects, three subjects each day where an hour is allotted for each subject. Each board subject will cover 100 questions with a total of 600 questions in two days; and, (6) Only the masters program is offered by only two schools all over the country.

Programs utilizing the ladder concept give the students the chance to finish a particular program in a short span of time and be able to land jobs in the clinical laboratories if and when they will no longer be able to proceed to the degree program

General education courses in the basic and secondary education with special emphasis on English, Mathematics especially Sciences is very essential in the development of strong foundation prior to entry to tertiary education and thus need not be repeated in the tertiary level.

The defined terminal and entry level competencies allow better assessment of what is expected of the student at the end of the of each year level thus critical thinking, problem solving and the ability to use and combine knowledge and skills are developed to address new challenges.

The integration of technical content and foundation skills brings more related emphasis to the foundation skills and puts technical

content in the context of solving work- related problems.

Clinical practicum with review courses play vital role in the development of knowledge, skills and attitude necessary in proficiency examinations as well as in the practice of the profession.

Proficiency examinations based on the identified competencies expected of medical technologists and conducted by accrediting societies or professional associations is a healthy practice of assessing the quality of education delivered in different institutions offering the program.

CONTRIBUTION TO KNOWLEDGE

This study reviewed the different curricular offerings of Medical Technology education from the different foreign schools offering the program and are licensed by the different accrediting societies like the Board of Registry of the ASCP , the NAACLS in the United States, the AIMLS, and the ASEAN Association of Medical Laboratory Scientists. That being so, the lessons and best practices learned guided the Philippine Commission on Higher Education through the Technical Panel for Medical Technology Education under the Office of Programs and Standards in the restructuring of a benchmarked curriculum for Medical Technology education so that graduates will be prepared to face global challenges in the field of Medical Technology profession. In so doing, it is hoped that equivalency programs can be devised to facilitate opportunities for Filipino medical technologists to play equal role in the global market.

CONCLUSION

From the best practices gathered from the selected schools offering Medical Technology program in USA, Australia, Canada, Japan, Singapore and Thailand the following lessons were learned and thereby recommended:

1) A competency-based Medical Technology curriculum using the ladder concept may be prepared such that the first two years lead to an Associate of Applied Sciences degree to finish as phlebotomist, histotechnician or as medical or clinical laboratory technician. The

baccalaureate program is a two-year continuation of the associate program and leads to a Bachelor of Science degree as a medical laboratory scientist;

2) Enrichment experiences or practicum for both the associate and degree programs must be performed at off-campus clinical laboratory facilities and allow students to polish their skills in an actual clinical laboratory setting;

3) The entry-level or functional competencies from the ASCP/AMT may probably be adapted since these are standard competencies expected of graduates to become globally competitive in the practice of their profession;

4) Clinical laboratory internship or practicum performance evaluation tools should be formulated based on the expected entry-level competencies in both the associate and baccalaureate programs;

5) Proficiency examinations or certification for the associate programs may be conducted by the professional associations like the Philippine Association of Medical Technologists (PAMET) in full cooperation with the Philippine Association of Schools of Medical Technology (PASMETH); and,

5) Postgraduate programs offering specializations in the field of Clinical Chemistry, Clinical Microbiology, Clinical Hematology, Clinical Immunology, Immunohematology, Laboratory Management and Laboratory Information System may find a place later on in order for the graduates to be able to gain competencies and skills in a specific field and to become capable of applying new knowledge in solving problems which will enable them to function as efficient and competent laboratory managers and counselors.

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