



Evaluation of Master of Science in Pharmacy Program of the University of the Philippines College of Pharmacy

Monet M. Loquias

College of Pharmacy, University of the Philippines, Taft Avenue corner Pedro Gil Street, Ermita, Manila, Philippines 1000

Research Article

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Corresponding Author:

Monet M. Loquias

College of Pharmacy, University of the Philippines, Taft Avenue corner Pedro Gil Street, Ermita, Manila, Philippines 1000

Telephone number: +63-2-3025345;

Email address: monet.loquias@gmail.com

Abstract

Objective. To assess the relevance, usefulness, applicability, responsiveness, acceptability, efficiency, impact and sustainability of the Master of Science (MS) in Pharmacy program using the context, input, process and product (CIPP) framework.

Methods. The study utilized a descriptive study design using review of records, interview, focus group and round table discussions as methods of data collection. Sources of information included students, graduates of the program, faculty, administrators and pharmacists from different fields of practice. The results were analyzed using descriptive statistics and content analysis.

Results. The evaluation identified several areas for improvement. The input evaluation revealed lack of resources/facilities especially dedicated to graduate students, faculty items, faculty with relevant expertise to teach courses and professional development activities for its students. Both input and process evaluation showed obvious lack of clear and written guidelines on selection, graduation, thesis and other administrative matters leading to confusion of both faculty and students. The implementation of the different courses presented several challenges to the faculty such as absence of syllabi, diversity of students and lack of resources. The program suffered from low enrollment rates, with only an average of 8 new students per year. Similarly, it also suffered from low graduation rates. These raise some questions on the marketability, sustainability and efficiency of resources allotted or consumed for the program. The students and graduates of the program however provided very good feedback in terms of the effects of the program on their knowledge, skills and professional development.

Conclusion. There is a need to improve the current program in order to make it more relevant and responsive to the current needs of the pharmacy profession, its faculty and its students.

Keywords: Context, input, process and outcome framework; Program evaluation; pharmacy

Introduction

The College of Pharmacy is one of the nine (9) degree granting units at the University of the Philippines (UP) Manila. It envisions itself to be an institution that provides quality, socially-relevant, globally competitive pharmacy education and where research and extension services address the needs of the profession, industry and the society as a whole. Its mission includes pursuit of quality pharmacy education, dynamic responsive researches, socially-relevant extension services, improved support services and resource generation through a unified, goal-oriented faculty, students, research and administrative staff. Its curricular offerings include Bachelor of Science in Pharmacy, Bachelor of Science in Industrial Pharmacy and Master of Science in Pharmacy, which has three tracks namely hospital pharmacy, industrial pharmacy and pharmaceutical chemistry.

The College of Pharmacy started offering graduate courses leading to the degree of Master of Science with various specializations starting 1930. Through the years, while the pharmacy profession had undergone transformation of its role in response to external and internal factors affecting health care delivery and the pharmaceutical industry, the graduate program had also undergone revisions in order to meet the demands of the profession. In 2005, the Master of Science in Pharmacy with three majors was implemented in order to address the current competencies required of pharmacists in the areas of industrial, institutional and research-oriented practice. Specifically, this program aims to produce graduates who can: (a)



effectively manage a pharmaceutical organization; (b) be knowledgeable in establishing regulatory affairs compliance of pharmaceutical products and institutions; (c) demonstrate skills in the conduct of relevant research, whether basic or applied; (d) demonstrate teaching abilities and skills in pharmacy; and (e) proactively participate in resolving issues as well as in formulating policies affecting the practice and the society.

This formal internal evaluation was conducted in order to assess the relevance, usefulness, applicability, responsiveness, acceptability, efficiency, impact and sustainability of the MS Pharmacy program using Stufflebeam's^[1] context, input, process and product (CIPP) model.

The CIPP model is described as a "comprehensive framework for guiding formative and summative evaluations and has already been widely used in educational assessments"^[2]. According to Stufflebeam^[1], context evaluation provides information about the stakeholder's need and rationale of the program, organizational strengths and opportunities for strengthening the program. The input evaluation provides data about the human and physical resources allocation while process evaluation addresses program implementation in order to improve, detect or predict defects in the design. Finally, product evaluation identifies intended and unintended program outcomes by comparing these outcomes to the needs of stakeholders. According to this model, there are four kinds of decisions that can be served namely planning, structuring, implementing and recycling which are respectively addressed by context, input, process and product evaluations.

CONTEXT	INPUT	PROCESS	OUTCOME
Congruence of curriculum with program goals and objectives	Faculty	Working well in the implementation	Impact/ outcome of program
Degree of responsiveness to pharmacy profession	Support staff	Problems encountered	Marketability and sustainability
Discrepancy between reality and planned goals	Usefulness and appropriateness of course offerings	Suggestions to improve implementation	Perception of graduate's ability and expectations of work stations
	Internal facilities	Teaching-learning activities	
	Professional activities	Methods of assessment	
	Existing policies	Outcome	

Figure 1. Framework for the Evaluation of the MS Pharmacy Program

Given the characteristics of the model and the intended goals of each type of evaluation, this evaluation of the Master of Science in Pharmacy program of the College hoped to provide a comprehensive description of the program's strengths and weaknesses, identify areas that need to be improved and determine whether the goals of the program were met.

Material and Method

Evaluation design. This evaluation utilized a non-experimental, descriptive study design using both quantitative and qualitative methods of data collection. The study was conducted for a period of 6 months, September 2011 to February 2012. The CIPP framework (Figure 1) used in this evaluation was adapted from the works of Sana et al.^[3] and Singh^[1].

Sources of information and data collection procedures. The sources of information included the Dean of the College, the Committee on Graduate Program, faculty, students, graduates of the program, pharmacists working in various field of

practice and student records or documents of the College. Records reviewed were from AY 2005-2006, when the program was first implemented until AY 2011-2012. Interview was conducted on the four (4) graduates of the program, stakeholders from the Philippine Pharmacists Association (1) and the Philippine Society for Hospital Pharmacists or the PSHP (1).

Focus group discussions were conducted on the students of the program where a total of 11 students from different tracks participated. Finally, a round table discussion was held which included graduate faculty, members of the Graduate Committee, students and graduates of the program and resource persons from the fields of manufacturing, hospital pharmacy and the academe and research for a total of 18 people. The results of the evaluation were then presented to the members of the Committee on Graduate Program, graduate faculty and students for their comments and additional suggestions.

Analysis of data

All quantitative data were properly encoded and edited to check for the accuracy of data. Descriptive statistics were conducted using Microsoft Excel 2007. All key informant interviews, focus group and round table discussions were transcribed and analyzed by content analysis. The patterns of



responses, frequency of occurrence and intensity statements were considered in the content analysis.

Results

A. Context evaluation

The results of the evaluation of the courses in the MS Pharmacy program were found to be congruent with its goals. Key informant interviews and round table discussion revealed that while the present program serves its purpose, it can be improved in order to make it more relevant. A key informant indicated that the College should consider creating a new program on clinical pharmacy considering that this is the path Philippines is heading to. There should be more patient-related or pharmaceutical care courses in order to truly prepare the pharmacists for their clinical roles. Actual immersion or internship courses in hospitals and the community pharmacies were also suggested to be included.

B. Input Evaluation

The MS Pharmacy curriculum is composed of at least 30 units of formal courses and 6 units of thesis. The 30-unit formal courses include 12 units of core courses, 13 units or more major courses and 3 units

or more qualified electives or cognates. All courses except for Health Professions (HP) 221 are offered by the College. For HP 221, students are asked to cross-enroll at the National Teacher Training Center for the Health Professions (NTTC-HP) of UP Manila. The faculty and a majority of the students agreed that the course offerings are useful and relevant. Curricular revisions such as changes in pre-requisite courses, reclassification of courses, addition of laboratory component, change in course descriptions and addition of hospital pharmacy-related courses were proposed.

There are 13 graduate faculty members presently active in service. Among the 13, seven are tenured (6 full time and 1 part time), one full time but not tenured, one cross-appointee and the rest are lecturers. The lecturers are appointed as the need arises. All graduate faculty members possess either a Masters or a Doctoral degree. The assignment of courses to the faculty rests on the Department chair. The graduate faculty unanimously agreed that the program lacks faculty and faculty items. There are courses, especially in the Pharmaceutical Chemistry track, that were never offered due to the absence of a teacher to handle the course. Majority of the full time faculty members also acknowledged lack of actual hospital or industry experience which could have affected their teaching competencies.

There is no full time support staff that caters to the needs of the graduate students. The students however raised satisfaction on how their concerns were handled especially regarding administrative matters but also preferred if laboratory classes could have a laboratory aide to assist them with their needs.

Both faculty and students agreed that the College lacks facilities to support its graduate students. There is also limited professional development activities organized for graduate students. Some students and graduates of the program felt such activities are needed as these could serve as venue for them to get to know the other students of the program and share experiences with each other.

Majority of the participants expressed satisfaction over guidelines on retention, graduation and thesis. Their primary comment is the lack of written policies regarding these matters. Some comments were received on the selection process which include the absence of explicit criteria for the type of students that the program is looking for and high reliance on the general weighted average in the decision-making. There were suggestions of improving the current selection policy by adding placement examinations and interview. A comprehensive examination prior to thesis was also suggested to serve as an assessment for students on the acquisition of knowledge and skills expected of them.

C. Process Evaluation

The College follows the University policy and schedule for accepting applicants to its graduate program. All

applications are filed with the National Graduate Office for the Health Sciences (NGOHS) who in turn forwards these to the College through the College Graduate Program Coordinator or the Chair of the Committee on Graduate Program. The Chair then calls for a meeting or routes the applications to all members of the Committee for their approval and summarizes the comments/ decisions given. The committee decision is then approved by the Dean and communicated by the Chair to the Director of the NGOHS who in turn informs applicants of the results of the selection process.

Students are assigned program advisers. Upon notification of their acceptance to the program, they are referred to their respective advisers who provide the necessary instructions. After which, they are allowed to enroll. During the round table discussion, it was suggested that the assignment of program advisers must be based on the research interest of the student, although there were dissenting opinions on this.

There were varied teaching learning strategies employed by the teachers. Majority of the courses however employed primarily either a lecture or reporting as teaching strategies. The faculty



commented they had a difficult time implementing the course, especially the first time that the course was taught where they were also tasked to prepare the syllabus. Teaching was a challenge considering the diverse students of the program in terms of their communication skills and background in pharmacy. Because of this, the syllabus is sometimes adjusted depending on the type of students enrolled in the course. Adjustment of syllabus also happens when equipment or reagent for an experiment is not available. This led to implementation of a supposed to be lecture and laboratory course to purely lecture class. At present, all laboratory components of a course are not charged hence faculty members are also left to think of ways where to actually source the needs of the graduate students. Evaluation of students was also a challenge for the teachers. There were different forms of assessment employed which included exams, oral and written reports, class participation and other outputs/ exercises. But despite the difficulties confronted in the implementation of the courses, the faculty reported very satisfactory ratings of their students.

The students were not able to provide regular evaluation of their teachers because of the unavailability of a staff to administer these since most classes are held after office hours. During the FGDs however, the students commented that their teachers in the program are among the best.

Table 1. Number of Students in the Program

		2005 -06	2006- 07	2007 -08	2008- 09	2009- 10	2010 -11	2011 -12
Hospital Pharmacy	Male	1	0	1	0	2	0	0
	Female	6	3	3	5	6	3	1
Pharmaceutical Chemistry	Male	0	0	0	0	0	0	0
	Female	0	3	0	0	1	1	1
Industrial Pharmacy	Male	1	0	2	1	1	1	0
	Female	1	2	2	0	1	1	3
Total (new entrants)		9	8	8	6	11	6	5
Continuing students as of FS AY 2011-2012		2	4	5	4	8	6	5
Number of students graduated from the batch*		1	1	2	-	-	-	1

*1 student started AY 2004-2005 and shifted to the new program implemented in 2005

They also identified strong points of their teachers which included, being very considerate, fair, passionate about what they do and expertise in the field being taught.

The identified strengths of the program include the three tracks of the program, faculty, flexibility of time, self-directed nature of majority of its courses and the integrity of the college. The absence of written/ clear procedures/ guidelines,

lack of elective courses, lack of resources (both faculty and equipment), difficult program, unclear expectations and lack of collaborations or network with other universities were identified as weaknesses or areas for improvement of the program.

Several suggestions were raised in order to improve the current program some of which were already discussed earlier in the context and input evaluation. Other suggestions included variation in teaching strategies, collection of appropriate charges for laboratory classes, increasing faculty researches, collaboration with other institutions and Saturday or off campus classes to accommodate working students who cannot come to the University.

D.Product Evaluation

Since 2005, the College has accepted a total of 53 students, or an average of 8 students per year. Among the three tracks, Hospital Pharmacy usually has the most number of entrants - five (5) students on the average per year and Pharmaceutical Chemistry with the least, an average of one (1) student per year (Table 1). Most of the students are enrolled part time. At the time of admission, their ages ranged from 21 – 41 years old, which places them at the early and mid-career stages.

They are usually employed in the hospital, industry or the academe. Only about 38% or 20 students were graduates of the College with either a BS Pharmacy or BS Industrial Pharmacy degree, the rest came from other universities. Of the 20 students, four were faculty members of the College.

To date, five (5) students have successfully completed the program – one with a hospital pharmacy, one with Pharmaceutical Chemistry track



and the rest are Industrial Pharmacy track. Of these five students, only one completed the program beyond the prescribed five years. The three graduates are presently employed in the academe, one in the pharmaceutical industry and one is a fulltime student pursuing another master degree abroad.

The program suffers from a low graduation rate of 11 – 25%. Of the supposed 48 students (excluding AY 2011-12) currently enrolled in the program, 19 students (40%) already dropped out of the program. About 58% (11 of the 19) did not continue with the program during or after their 1st year in the program. Possible reasons of attrition identified were migration, no intention to finish program, demanding work schedule, shifting to other graduate programs, lack of guidance so eventually lost interest in the program and misunderstanding with adviser. Ongoing students and graduates of the program alike gave very positive responses about the benefits of taking the program. Everyone perceived that it increased their level of confidence, competency and their knowledge in pharmacy. It also opened up opportunities for career growth although they also admitted that it provided additional pressure because of higher expectations from their superiors.

Discussion

The context evaluation revealed that the current program needs to be improved in order to make it more relevant and responsive to the needs of the pharmacy profession. Curricular revisions and creation of a new program are proposed. The College must explore and carefully study the implications of continuing the current program or creating a new one.

The input evaluation showed considerable lack of facilities especially dedicated to graduate students. This could serve as a disincentive for students to finish and might even send the wrong impression that they are not given adequate importance by the College. The faculty similarly raised this concern as it also affects the implementation of the courses and subsequently the learning process of students. Partnerships or collaborations with other institutions could be built in order to address the lack of equipment especially that college resources are scarce. Sandwich programs where students could perform thesis in other institutions can be explored. This could help students finish their theses faster as it overcomes concerns on limited equipment or resources. Laboratory fees should be collected for courses with laboratory components in order to finance students' needs in the courses. Additional faculty items and a dedicated staff must be in place to ensure adequate faculty advising, teach courses especially those that were never offered, periodic evaluation of teachers and monitoring of retention, attrition and graduation among students.

Process evaluation revealed obvious lack of clear and written guidelines. The students of the program complained of lack of clarity in the enrolment process, selection and assignment of program and thesis advisers and proposal and thesis defense.

It also seems that there is poor coordination and differentiation/ definition of the roles of the College and the NGOHS. Overall, it seems that the NGOHS is just another step in the bureaucracy. Students therefore usually rely on the other students who have already undergone the same process for information. This should be resolved as it could somehow be a source of discouragement on the part of the student. Such guidelines/ policies of the University and the College regarding graduate school must be clear, documented and properly disseminated to both the faculty and students. The College must also consider revising its student selection process among other policies. In terms of the implementation of the different courses, various teaching strategies are recommended in order to improve the learning process among students. Hence, there is probably a need to equip teachers with teaching strategies that are more appropriate for adult learners. There is also a need to re-align these courses with the identified competencies and goals for each track to ensure that these competencies are achieved when a student finishes the program. Students should be asked to accomplish the SET (Student's evaluation of teachers) regularly. This could monitor the teacher's performance in these courses and serve to provide feedback to teachers in order to improve their teaching. It might also identify areas for improvement of the course. However, there might be a need to create a different form of teacher evaluation for this rather than simply adopting the SET for undergraduate students as it may not be very appropriate because of different expectations from both the students and faculty.

The product evaluation showed that the College needs to improve its enrolment and graduation rates. The identification of some of the reasons of attrition should help identify specific strategies to encourage students to actually finish or graduate. Strategies must particularly target the students in their first year, who were identified to have the highest dropout, in order to encourage them to stay and finish the program. Marketing of the program needs to be reinforced in order to attract more students, especially its BS Pharmacy and BS Industrial Pharmacy graduates and its faculty members into pursuing further education in the College. More students in the program could result to higher income for the College and efficient utilization of resources utilized to implement the program.

Overall, the students and graduates of the program provided very good feedback in terms of the effects of the program on their knowledge and skills. They



also claimed that entering the program opened up new opportunities in their respective workplaces. These I believe are indicators of the success of the program despite the numerous concerns identified in this evaluation.

Conclusion

This evaluation provided several insights regarding the implementation of the current MS Pharmacy program of the UP College of Pharmacy and identified important specific areas for improvement.

The results of the context, input, process and product evaluations suggested a need to improve the current program in order to make it more relevant and responsive to the current needs of the pharmacy profession, its faculty and its students. A number of proposals were put forward which include creating a new specialization or restructuring the

current specializations according to the identified needs of the profession; increasing current human and physical resources; improving current implementation of courses; making available clear and written guidelines and reinforcing current marketing efforts of the program to increase enrolment rates.

Despite the numerous concerns raised, students and graduates of the program have unanimously agreed that the program have increased their knowledge and skills and has affected their careers positively, and this should be regarded by the College as an indicator of success of the program.

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AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests