

Licensing of Secondary Mathematics Teachers in the Philippines: Policy Implications

Nilda T. Aggabao¹- ¹Faculty of College of Teacher Education, Isabela State University, 3328, Isabela, Philippines

Article Info

Volume 83

Page Number: 10195 - 10211

Publication Issue:

May - June 2020

Abstract:

This is a policy oriented study relative to the assessment of the performance of Teacher Education Institutions (TEIs) and their capability to produce quality secondary mathematics teachers from national regional and institutional levels based on the results of the Licensure Examination for Teachers (LET) over the five years 2003-2008. This study utilized both qualitative and quantitative research designs. Majority of the LET passers and non-passers for prospective secondary teachers mathematics teachers are nurtured and trained by state universities and colleges (SUCs) both at the national and regional levels. Based on overall, the performance of institutions which supply LET secondary with specialization in mathematics were consistently above the national passing rates for the 5-year period. For every 10 examinees with specialization in mathematics wanting to get the license to teach, only about four are successful for every year. The supply of licensed mathematics teachers is dominated by graduates of non-Bachelor of Secondary Education (BSEd). With the growing population of high school students and the implementation of K to 12 program, the potential future supply of qualified mathematics teachers who are BSEd graduates would not be enough. Thus, many of the future mathematics teachers will not be adequately prepared in terms of pedagogical skills.

Keywords: *Supplier-Institutions of Prospective Mathematics Teachers, TEIs LET Performance, Characteristics of Prospective Mathematics Teachers, CHED and TEIs BSEd Program*

Article History

Article Received: 19 November 2019

Revised: 27 January 2020

Accepted: 24 February 2020

Publication: 18 May 2020

1. Introduction

Every school has its own unique philosophy in attaining its mission and vision. Although, the Teacher Education Institutions (TEIs) envision producing quality teachers who can compete globally, variations in knowledge and skills learned by the students are inevitable among them. Similarly, the performance of TEIs on some valued indicators like in the Licensure Examination for Teachers (LET) also varies. The prospective teachers wanting to get licensed come from several institutions with different orientations. Some institutions have Teacher Examination for Teachers (LET) also vary. The prospective teachers wanting to get licensed come from several institutions with different orientations. Some institutions have

Teacher Education programs independent of other curricular programs; others have Teacher Education programs attached to a department or a college. Some have no Teacher Education programs to speak of at all. Some produce 100% passing rates in the school while others show low or zero percent passing rates. A review of the LET results showed that many institutions which have different satellite campuses where similar programs like Teacher Education are offered, that do not produce licensed teachers, which would warrant their existence. Quality education lies in the hands of licensed and highly competent teachers, particularly in the field of mathematics. Mathematics ability is an important skill that is needed in achieving the educational goals of the country and for improving the people's lives. Countries which have recognized the importance of science and mathematics have been moving forward. Many Filipino teachers leave to

work abroad; this affects the quality of education for the youth in the country. The pool of experienced teachers particularly in the mathematics in the country will slowly decrease due to many job offerings abroad that give better benefits and opportunities. If this situation continues every year, the human resources of many Teacher Education Institutions (TEIs) in the Philippines will be affected, particularly among the high performing institutions in the LET. Since most of the faculty members of these institutions are veterans and experts who are likely to be recruited to work abroad. The education of pre-service teachers is likely to be handled by amateur teachers. In the licensing process for secondary teachers, the PRC allows graduates of related programs who are non-Bachelor of Secondary in Education (BSEd) to take the LET if they have taken 18 units or 6 subjects of pre-identified professional education courses. In particular, graduates of mathematics-related courses such as BS in Mathematics, BS in Engineering, BS Statistics, and other mathematics-oriented degree programs are eligible to take the LET mathematics specialization test if they have taken 18 units of professional education courses. Many teachers in the field have been licensed through this scheme. With the current situation of the country, there is a glut of education graduates because many institutions offer teacher education program, the diminishing pool of mathematics teachers and with the majority of institutions offering Teacher Education producing low, if not zero, licensed mathematics teachers. There is a need to analyze the trends and patterns of institutional performance in LET of all institutions of the different types, namely: Private Sectarian, Private Non-sectarian, State Universities and Colleges (SUCs) and government institutions other than SUCs at the national, regional and school levels. Specifically, the study sought to determine the following: (1) characteristics of institutions from which prospective secondary mathematics teachers come, based (1.a) Institution type, cluster, and region, and (1.b) performance of

institutions in the LET; (2) characteristics of prospective secondary mathematics teachers, in terms of degree earned; and whether First timer takers or repeaters; and (2.3) trend among Math passers?

2. Literature Review

2.1 Regulation and Professionalization of Teaching

Republic Act (RA) 7836 known as the “Philippine Teachers Professionalization Act of 1994” envisions the promotion of quality education. The professionalization of the practice of teaching requires proper supervision and regulation through the licensure examination. The PRC licensure examination for secondary school teachers consists of three tests with these corresponding weights: a General Education Test (20%), a Professional Education Test (40%) and the specialization test (40%). Mathematics is one of the 10 specialization-examinations. Licensure is a legal process by which the state sets a minimum standard for entry into a profession; these standards ensure that the individual professionally practices with competence [1]. In the case of teaching as a profession, this process prevents the hiring of incompetent teachers. Licensure is a prime entry requirement into the teaching profession. Ball and McDiarmid [2] (cited in Brown and Borko [3]) cautioned that when teachers provide information in narrow ways, the students may also receive information in narrow ways.

2.2 The Producers of LET Mathematics Examinees.

According to PRC, there are 1,387 CHED-Recognized Institutions offering the degree programs and participated in two or more of the 42 licensure examinations in 2016. Majority of these institutions are located at the National Capital Region (190) and the least number is from the Cordillera Administrative Region (CAR) with 32 schools. Many of these schools are also offering teacher education and are expected to supply LET

examinees every examination schedule. There are too many private and public institutions represented by the LET Secondary. Some institutions have Teacher Education as an independent college unit that offers BSEd with different specializations. Other institutions do not have Teacher Education, but they offer BSEd with some specializations and these offerings are attached to a related unit or college.

2.1 The Supply of Secondary Mathematics Teachers.

Many students flock to Teacher Education courses because the tuition fee in this program is affordable; it also requires very minimal laboratory fees. Many schools just require the passing of an entrance examination without giving emphasis to additional evaluative measures focused on the major field the students are applying for. According to Brahier [4], everything that is valued in the classroom cannot be measured by a written test. Some schools are even into open admission, without considering the standard requirement of CHED on student admission and retention. Due to lack of employment, the glut of education graduates has led many teachers to work abroad not as teachers, but often as domestic helpers. From 1992 to 2002, a total of 2289 teachers were deployed in the United States, Saudi Arabia, Brunei and the rest of the world (Philippine Overseas Employment Administration in Bureau of Employment and Statistics, Department of Labor. LabStat Updates) [5]. From 1988 to 2001, another report said that 9608 teachers migrated to the United States, Canada, Australia, Japan, Germany and other countries as elementary teachers, secondary teachers and as principal (Commission on Filipino Overseas, in LabStat Updates) [6]. Although, there is a surplus of teachers, the deployment and migration of teachers to other countries has resulted in a depletion of teachers particularly among the experienced and seasoned ones.

2.4 Pre-Service Teachers' Background

Cangelosi [7] views concepts in mathematics as the building blocks of mathematical knowledge. On the other hand, Franke and Fennema [8] found that

content knowledge does influence the decisions made by teachers about classroom instruction and from the description of their teaching. The way the teacher delivers the lesson plays a key role on how well the students develop mathematical knowledge (Cangelosi [7]). According to the National Commission on Teaching and America's Future [9], in order to teach mathematics effectively, one must combine a profound understanding of mathematics with knowledge of students as learners, and skillfully use a variety of pedagogical strategies. Hence, pre-service teachers must be adequately prepared in terms of mathematical content knowledge and pedagogical knowledge. The Interstate New Teacher Assessment and Support Consortium (INSTASC) has established a set of 10 Standards that can be used to assess performance of teachers who are new to the classroom (Brahier [4]). The preparation of pre-service teachers could be attributed to the kind of instruction provided by the respective schools where the pre-service education was earned. One indication of capability to produce competent graduates could be seen from the number of licensed professionals produced. The low quality of education in most higher education institutions has been attributed to the lack of qualified faculty (Philippine Commission on Educational Reform-PCER)[10]. The finding of Bagaforo [11] that prospective mathematics teachers are not adequately prepared in mathematical competencies essential for secondary school mathematics is supported by the PCER report, in which she found that the overall mean percent performance score of prospective teachers in the Licensure Examination for Teachers (LET) fell below the 50% criterion in 1996 and 1997. Philippine Commission on Educational Report [10] reported that there is a serious shortage of teachers trained in mathematics. Many college and high school mathematics courses are being taught/handled by faculty with inadequate background in mathematics. This could be one of the reasons why college graduates fail to demonstrate attainment of the required mathematical

skills (Golla) [12]. Similarly, Pedro [13] in her study found that products of the pre-service program for mathematics teachers do not have adequate knowledge of mathematics and teaching skills. Solid teaching skills, strategies and content mastery techniques are the building blocks of mentoring a mentor (Philippine Daily Inquirer) [14]. What competencies can be expected of the future students of the prospective teachers? Quality education will continually deteriorate if the preparation of prospective teachers is inadequate.

3. Methodology

This consists of a quantitative and qualitative analysis of the performance of institutions offering Teacher Education and which produce Mathematics teachers through the PRC Licensure Examination for Teachers (LET). Document analysis of the primary existing data was utilized. The data gathered for this study were analyzed jointly with existing primary documents. The data sources consisted of PRC reports, e.g. lists of institutions arranged by institution type, region, cluster, and category with their number of LET takers, passers, non-passers, and percentage of passers in the secondary level. These were taken from the CSPS published by PRC for calendar years 2012 to 2016. From the data, the trend in the number of institutions supplying LET Secondary Mathematics examinees was determined. Institutions fielding LET Secondary examinees were identified and categorized by institutional type (e.g. Private Sectarian, Private Non-Sectarian, Government School, State College, State University, etc.), clusters (1, 2 and 3), and by region for the 5-year period 2003 – 2008, Cluster I includes colleges and universities which are officially recognized by CHED as offering the degree program(s) relevant to particular licensure board examinations (e. g. Bachelor of Elementary Education, Bachelor of Secondary Education and BS in Industrial Education and a few of the BS programs meant to prepare teachers of particular subjects); Cluster II consists of colleges and universities which are not officially

recognized or registered to be offering the degree programs relevant to a particular licensure examination, but institutions from which examinees may take additional courses/subjects to qualify them to take a particular licensure examination (e.g. BS Engineering, BS Math, BS Biology, BS Nursing, BS Economics, etc.); and, Cluster III includes tertiary institutions which have either closed or may have changed under the new school name because the new management may not be inclined to recognize graduates under the old school name. The institutions fielding LET-Secondary Mathematics examinees were not identified by institutional type, cluster nor category. PRC provided the total number of all institutions supplying LET-Secondary Mathematics for the period of 5-year period. The trend in the number of institutions supplying LET-Secondary Mathematics examinees was determined from the list of CHED legitimate institutions that offer the degree program, BSEd major in mathematics. The LET-Secondary Mathematics examinees were categorized as either first-time takers or repeaters but this could be done only on the total number of examinees from each of these classifications for all institutions in the country. The examinees were identified, as either BSEd graduates (Category A) or non-BSEd graduates (Category B, C or D). Only the examinees in 2007 and 2008 were categorized by PRC examinees as either **first-time takers** or **repeaters** and as A, B, C and D. These data were used to determine the characteristics of the prospective secondary mathematics teachers. Same data were also used to determine how closely the actual number of licensed mathematics teachers produced approximates the number or the demand for in-service mathematics teachers needed for basic secondary education considering those who took the LET Secondary-Mathematics actually go to mathematics teaching. This data was supplemented by the Department of Education's (DepEd) projections of numbers of in-service teachers needed. One particular university in Region 02 together with its satellite campuses, ("Mission"

School as its fictitious name) was considered to assess its capability to produce licensed mathematics teachers.

3.1 Data Description

The volumes of Compilation of Statistics on the Performance of Schools (CSPS) published annually by PRC for the calendar years 2003 to 2007 were the main sources of data on the numbers of institutions supplying LET Secondary examinees; trends and patterns in the performance of these institutions; the number of legitimate and non-legitimate TEIs. The specific number of legitimate institutions that supply LET Secondary-Mathematics was obtained from the CHED's lists of institutions which offer the degree program-Bachelor of Secondary Education, major in mathematics. The characteristics of LET Secondary Mathematics examinees in terms of the classifications as either first-time takers or repeaters and basic degree earned were also obtained from PRC's data. The trends in the number of LET Secondary-Mathematics examinees and passers were inferred from an analysis of data from the PRC. The actual and projected numbers of in-service mathematics teachers from 2006 to 2011 were obtained from the DepEd's Basic Education Statistics.

The quantitative analyses used in this study include frequencies, percentages, and the arithmetic means. For the qualitative analyses, the data were further analyzed and categorized to generate interrelated thoughts/themes that emerged from it.

4. Results

4.1 On Characteristics of Institutions Producing Prospective Secondary Teachers/Prospective Mathematics Teachers.

4.1.1 Institutional Cluster.

The number of supplier-institutions of prospective secondary teachers increased in each year from 1256 to 1393 over the period of 2012 to 2016. Likewise for the secondary mathematics teachers, the number increased from 732 to 782 as reflected in table 1. The average number of institutions supplying prospective secondary mathematics teachers was 757 for the period studied. Of these suppliers of secondary mathematics teachers, 644 or 85% are predominantly CHED recognized institutions offering the BSEd program while 133 or 15% identified as CHED recognized institutions but they are not formally nor are they legitimately offering the BSEd degree program.

3.3 Data Analysis Procedure

Table 1. Number of Institutions Supplying LET Secondary/Math Examinees by Year and Cluster

Institutions	Examination Year					Average
	2012	2013	2014	2015	2016	
Participating Schools in the PRC LET Secondary Math Examination	732	758	760	753	782	757 (60%)
Legitimate Institutions (Cluster 1)				644(85%)		
Non-legitimate Institutions (Cluster 2)	88	114	116	109	138	113 (15%)
Total Number of Participating Schools in LET Secondary	1256	1292	1367	1327	1393	1327

Source: Philippine Regulation Commission (PRC) Data (2012-2016)

4.1.2 Institutional Region and Type.

The private non-sectarian schools are the primary source of LET math examinees among the four institutional types (296 Or 46%). Hence, many of the

future secondary mathematics teachers acquired their content and pedagogical knowledges from the orientation of private non-sectarian institutions.

Table 2. Distribution of CHED Recognized Institutions Producing LET Math Examinees by Region and Institutional Type

Region	PN	PS	GS/SUC	GO	Total(%)
I-Ilocos	27	6	8	2	43 (7%)
II-Cagayan Valley	12	5	11	-	28 (4%)
III-Southern Luzon	26	9	15	4	54 (8%)
IV-Southern Luzon	45	14	19	5	83 (13%)
V-Bicol	29	9	16	10	64 (10%)
VI-Western Visayas	2	12	22	4	40 (6%)
VII-Central Visayas	14	2	6	-	22 (3%)
VIII-Eastern Visayas	7	7	17	1	32 (5%)
IX-Western Visayas	9	7	27	-	43 (0.07%)
X-Northern Mindanao	19	9	4	5	37 (0.06%)
XI-Eastern Mindanao	16	12	4	1	33 (6%)
XII-Central Mindanao	16	9	2	-	21 (3%)
XIII-Nat'l Capital Region	41	8	3	11	63 (10%)
XIV-Cordillera Administration	9	2	8	2	21 (3%)
XV-Autonomous Region of Muslim Mindanao (ARMM)	12	7	8	1	28 (4%)
XVI-CARAGA	12	3	11	-	26 (.04%)
Overall (%)	296 (46%)	121(19%)	181(28%)	46(7%)	644

4.2 Performance of Institution in Mathematics Specialization Test

National Level. The passing rates of institutions which supply LET secondary examinees with specialization in mathematics were consistently

above the national passing rates. They ranged from 30% to 38% (average of 35.5%) for September examination in 2004 to 2008. In the April 2008 and April 2009 tests, the passing rates were 30% and 28%, respectively.

Table 3. Number of Examinees, Passers and Failures in LET Secondary-Mathematics (2004- 2009)

Examination Year	Number Passers and Failures				
	Passed		Failed		Total
Regular Schedule					
	P	%P	F	%F	N
August, 2004	2785	36%	5183	64%	7968
August, 2005	2615	30%	6170	70%	8785

August, 2006	2958	36%	5296	64%	8254
August, 2007	3377	38%	5442	62%	8819
September, 2008	2984	38%	4648	62%	7632
Average	2944	36%	5348	64%	8292
Non-Regular Schedule					
April, 2008	667	38%	1525	62%	2192
April, 2009	943	28%	2482	72%	3425
Average	805	40%	2004	60%	2809

Source: Philippine Regulation Commission (PRC) Data (2004-2009)

School Level. Among the 7 campuses of “Mission” School who are offering BSEd with Mathematics as a major field of specialization, only Satellite A consistently surpassed the LET national passing rate (67% to 86%) for the period 2003 to 2007 as shown in table 4. Satellite B is the main campus of the “Mission” School while the Satellite A is the mother unit of the College of Teacher. It is from this satellite that the Teachers Education program emanated. Thereafter it was extended to other satellites. One of its satellites (E) was able to produce only one (1) licensed secondary mathematics teacher for the period of 2003 to 2007; it consistently failed to produce any licensed teacher for the period 2003 to

2006. The “Mission” School failed to come close enough to the national passing rates over the 5-year period. The findings strongly indicate that the University needs to closely monitor and evaluate the performance of most its satellite campuses since it produces very few licensed secondary mathematics teachers each year. Most of the satellite schools are likely to produce poor graduates. One of the predictors of school effectiveness is the achievement of students is standardized test (Reynolds and Farell, 2004). Moreover, the low passing rates of some of the campuses of this school indicate a very poor performance and raises issues about their maintenance as satellites.

Table 4. Passing Rates of Satellite Campuses of “Mission” School in LET Secondary-Mathematics by Year (2003-2007)

Satellite School/Campus	Passing Rate/Year														
	2003			2004			2005			2006			2007		
	N	P	%P	N	P	%P	N	P	%P	N	P	%P	N	P	%P
A	7	5	71%	7	6	86%	6	4	67%	7	5	71%	21	3	86%
B	8	4	50%	17	7	41%	12	5	42%	10	2	20%	16	5	31%
C	7	1	14%	5	2	40%	8	4	50%	9	4	42%	11	3	27%
D													6	1	17%
E	3	0	0%	4	0	0%	6	0	0%	8	0	0%	4	1	25%
F	8	2	25%	9	3	33%	8	3	38%	8	1	13%	8	2	25%
G	1	0	0%	4	1	25%	3	0	0%	3	0	0%	10	1	10%
University Passing Rate	34	14	41%	46	19	41%	43	16	37%	45	14	31%	57	4	25%
National Passing Rate			25%			27%			26%			32%			29%

Legend: *N* – Number of Examinees

P – Number of Passers

%P – Percentage of Passing

Source: Philippine Regulatory Commission (PRC) Data (2003-2007)

4.3 Characteristics of Prospective Secondary Mathematics Teachers.

National Level. Majority (86%) of the LET mathematics examinees are graduates of BS programs related to BS/BSE Math who have taken courses heavy in mathematics content at least up to Integral Calculus and Differential Equations and have taken 18 units of professional education courses as shown in Table 3. Very few are BSEd graduates with specialization in mathematics. The number of passers is dominated by non-BSEd graduates in both the regular (2517 to 2775) and non-regular (573 to 816) examinations. However, percentage-wise, passers who are graduates of BSEd mathematics (784, or 53%) showed a higher passing rate than non-BSEd mathematics graduates (6681 or 35%) based on total number of passers for all examination schedules. The ratio of passers and flunkers among first time-takers from among the non-BSEd graduates are nearly the same for all the examination schedules, with an average of 52% and 48%, respectively. On the other hand, the ratio of passers to flunkers for repeaters is much smaller (17% : 83%). The majority of the LET Math examinees in 2007 (60%) and 2008 (65%) were first time- takers in the regular schedule while the majority of LET examinees in 2008 (69%) and 2009 (72%) were repeaters in the non-regular schedule.

Table 5. Distribution of Secondary LET Math Examinees and Passers by Category: First-Time Takers and Repeaters (2004 – 2009)

CATEGORY/ YEAR	FIRST-TIME TAKERS			REPEATERS			OVERALL		
	No. of Examinees (N)	No. of Passers (P)	No. of Failures (F)	No. of Examinees (N)	No. of Passers (P)	No. of Failures (F)	No. of Examinees (N)	No. of Passers (P)	No. of Failures (F)
*Aug. 2007									
A	495	336 (68%)	159 (32%)	214	45 (21%)	169 (79%)	709	381 (54%)	328 (46%)
B	4367	2283 (52%)	2084 (48%)	3046	492 (16%)	2554 (84%)	7413	2775 (37%)	4638 (63%)
C	440	180 (41%)	260 (59%)	232	27 (12%)	205(88%)	672	207 (31%)	465 (69%)
D	5	4 (80%)	1 (20%)	6	0 (0%)	6 (100%)	11	4 (36%)	7 (64%)
E	13	10 ((77%)	3 (23%)	1	0 (0%)	1(100%)	14	10 (71%)	4 (29%)
Grand Total	5320	2813 (53%)	2507 (47%)	3499	564 (16%)	2935 (84%)	8819	3377 (38%)	5442 (62%)
**April 2008									
A	57	34 (60%)	23 (40%)	54	13 (24%)	41 (76%)	111	47 (42%)	64 (58%)
B									1344
	549	267 ((49%)	282 (51%)	1368	306 (22%)	1062 (78%)	1917	573 (30%)	970%)
C	78	29 (37%)	49 (63%)	86	18 (21%)	68 (79%)	164	47 (29%)	117 (71%)
D	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-
Grand Total	684	330 (48%)	354 (52%)	1508	337 (22%)	1171 (78%)	2192	667 (30%)	1525 (70%)
*Sept 2008									
A	396	262 (66%)	134 (34%)	126	27 (21%)	99 (79%)	522	289 (55%)	233 (45%)
B	4220	2196 (52%)	2024 (48%)	2403	321 (13%)	2082 (87%)	6623	2517 (38%)	4106 (62%)
C	300	135 (45%)	165 (55%)	143	22 (15%)	121 (85%)	443	157 (35%)	286 (65%)
D	11	5 (45%)	6 (55%)	1	0 (0%)	1 (100%)	12	5 (42%)	7 (58%)

E	24	14 (58%)	10 (42%)	8	2 (25%)	6 (75%)	32	16 (50%)	16 (50%)
Grand Total	4951	2612 (53%)	2339 (47%)	2681	372 (14%)	2309 (86%)	7632	2984 (38%)	4648 (60%)
**April 2009									
A	74	51 (69%)	23 (21%)	71	16 (23%)	55 (77%)	145	67 (46%)	78 (54%)
B	793	381 (48%)	412 (52%)	2303	435 (19%)	1868 (81%)	3096	816 (26%)	2280 (74%)
C	77	40 (52%)	37 (48%)	103	19 (18%)	84 (72%)	180	59 (33%)	121 (66%)
D	0	0	0	3	0 (0%)	3 (100%)	3	0 (0%)	3 (100%)
E	1	1 (100%)	0 (0%)	0	0	0	1	1 (100%)	0 (0%)
Grand Total	945	473(50%)	472(50%)	2480	470 (19%)	2010 (81%)	3425	943 (28%)	2482 (72%)
A	1022	683 (67%)	339 (33%)	465	101 (22%)	364 (78%)	1487 (7%)	784 (53%)	703 (47%)
B	9929	5127 (52%)	4802 (48%)	9120	1554 (17%)	7566 (83%)	19049 (86%)	6681 (35%)	12368 (65%)
C	895	384 (43%)	511 (57%)	564	86 (15%)	478 (85%)	1459 (7%)	470 (32%)	989 (68%)
D	16	9 (56%)	7 (44%)	10	0 (0%)	10 (100%)	26	9 (35%)	17 (65%)
E	38	25 (66%)	13 (34%)	9	2 (22%)	7 (78%)	47	27 (57%)	20 (43%)
Grand Total	11900	6228 (52%)	5672 (48%)	10168	1743 (17%)	8425 (83%)	22068	7971 (36%)	14097 (64%)

Legend:

* regular schedule of LET

** Non-regular schedule of LET

Category A – Graduates of institutions with CHED recognized programs such as BSE Math, BS Teaching Math, BSE Physics-Minor in Math M.Ed/MA in Math Educ. & Diploma/Certificate in Mathematics Teaching

Category B – Graduates of BS programs related to BS/BSE Math who have taken heavy mathematics content at least up to Integral Calculus and Differential Equation such as: BS Engineering (all specialization), BS Physics for Teachers, BS Elementary and Secondary Education (combined course), BS Applied Statistics, BS Maritime/ Transportation Engineering and BS Architecture.

Category C – Graduates of degree programs which are somewhat related, or just require basic/general Math, but took the 18 units of education to qualify them to take the LET Math specialization test such as: BS Economics, BS Management, BS Information Technology, BS Agricultural Education, BS Library Science and BS Technology Education.

Category D – Graduates of degree programs not related to mathematics but who took basic education courses plus the courses required among the 18 education units.

Category E – Graduates of degree programs not classified A, B, C and D.

Source: Philippine Regulation Commission (PRC) Data (2007-2009)

School Level. The “Mission” School has 11 campuses, 9 of them are supplying LET examinees. Seven of the nine campuses offer the BSEd with Mathematics as a major subject. These are satellite campuses A, B, C, D, E, F and G. Campus A had the highest passing rate (71% to 86%) over the other campuses for First-time takers in the 5-year period, and was rating consistently way above the national passing. This campus also had the fewest repeaters. The first-time takers of Campuses E and G had the lowest passing rates; both had one (1) passer over the 5-year period. Both the first-time takers and repeaters of Campus E also showed the same probability of not passing the LET. Campuses B (0 to 50%) and C (0% to 50%) had many repeaters and demonstrated probability of passing is very low. There is a shortage of takers and passers of LET Secondary-Mathematics specialization in almost all the satellite campuses of the university system. The ratio of teachers to the number of LET takers and licensed teachers produced by these satellites are not economically feasible in terms of the standard operation cost in the implementation of teacher education program. With this trend, the expertise of the mathematics faculty members is not being utilized to the fullest considering the limited number of graduates in the BSEd mathematics program.

Table 15

Number of Examinees, Passers and Failures among First-Time Takers and Repeaters of LET Secondary-Mathematics from “Mission” School(2003-2007)

Satellite School/ Campus	Year																	
	2003			2004			2005			2006			2007			Total		
	Passed	Failed	Total	Passed	Failed	Total	Passed	Failed	Total	Passed	Failed	Total	Passed	Failed	Total	Passed	Failed	Total
A(Cabagan)																		
First timer	5(83%)	1	6	5(83%)	1	6	4(80%)	1	5	5(71%)	2	7	18(86%)	3	21	37(82%)	8	45
Repeater	-	-	-	1		1		1	1	-	-	-				1	1	2
Total	5	1	6	6	1	7	4	2	6	5	2	7	2	0	2	22	6	28
B(Echague)																		
First timer	3(50%)	3	6	4(36%)	7	11	3(50%)	3	6	1(14%)	6	7	5(38%)	8	13	16(37%)	27	43
Repeater	1(50%)	1	2	3(50%)	3	6	2(33%)	4	6	1(33%)	2	3	0(0%)	3	3	7	13	20
Total	4	4	8	7	10	17	5	7	12	2	8	10	5	11	16	23	40	63
C(Cauayan)																		
First timer	1(25%)	3	4	2(100%)	-	2	4(67%)	2	6	3(43%)	4	7	2(29%)	5	7	12(46%)	14	26
Repeater	0(0%)	3	3	0(0%)	3	3	0(0%)	2	2	1(50%)	1	2	1(25%)	3	4	2(14%)	12	14
Total	1	6	7	2	3	5	4	4	8	4	5	9	3	8	11	14	26	40
D(Roxas)																		
First timer													1	5	6	1	5	6
Repeater													-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-	-	-	1	5	6	1	5	6
E(Sn.Marian)																		

o)

First timer	0(0%)	2	2	0(0%)	3	3	0(0%)	3	3	0(0%)	5	5	1(33%)	2	3	1	15	16
Repeater	0(0%)	1	1	0(0%)	1	1	0(0%)	3	3	0(0%)	3	3	0(0%)	1	1	0(0%)	6	6

F (Ilagan)

First timer	2(33%)	4	6	2(40%)	3	5	3(50%)	3	6	1(20%)	4	5	1(25%)	3	4	9(35%)	17	26
Repeater	0(0%)	2	2	1(25%)	3	4	1(33%)	2	3	0(0%)	3	3	1(25%)	3	4	3(19%)	13	16

Total	2	6	8	3	6	9	3	5	8	1	7	8	2	6	8	12	30	42
--------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------	-----------	-----------

I(Angadana)

First timer	0(0%)	1	1	1(25%)	3	4	0(0%)	2	2	0(0%)	3	3	0(0%)	9	9	1	18	19
Repeater													1	0	1	1	0	1

Total	0	1	1	1	3	4	0	2	2	0	3	3	1	9	10	2	18	20
--------------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------	----------	-----------	-----------

4.4 Trends Among Math Passers.

The total number of examinees ranged from 7632 to 8819 and the number of passers ranged from 2615 to 3377 in the regular September schedule of the LET for the period of 2004 to 2008. In April non-regular examination, the number of examinees ranged from 2192 to 3425 and the number of passers ranged from 667 to 943 for the years 2008 to 2009. The average passing rates for the two year regular schedule is 38% while 29% for the two-year non-regular schedule. Based on the average number of examinees and passers for the 2-year period, only about 4 out of every 10 examinees earned a license to teach for the regular schedule while only about 3 out of every 10 examinees for the non-regular LET schedules April 2008 and April 2009. (See table 3). The demand for secondary mathematics teachers has been increasing over the last five years (2006-2010) as reflected in table 7. Based on the ratio of BSEd Mathematics LET passers, the number needed for the service in the secondary education, the

number of licensed BSEd Mathematics teachers is not adequate to supply the demand for in-service secondary mathematics. The ratio of potential mathematics teachers to teachers needed was 381:653 in 2007 and 289:734 in 2008. This means that only about 60% and 39% of the number needed are supplied by licensed BSEd mathematics teachers in 2007 and 2008, respectively. There is a shortage of licensed mathematics teachers who are BSEd graduates, or under Category A and is brought by the trends in enrollment and number of graduates in the BSEd program which are relative few. The supply of non-BSEd passers is more than enough to supply the demand for in-service mathematics teachers in 2007 (the ratio is 2986:653). The same is true in 2008 (the ratio is 2579:734). This could mean that future supply is possibly not adequate in terms of mathematical content and pedagogical skills since majority of the LET passers are not graduates of the BSEd major in mathematics program.

Table 7. Number of LET Passers with Specialization in Mathematics and In-Service Mathematics Teachers by School Year

No. Of Passers Per Category	School Year							
	2004	2005	2006	2007	2008	2009	2010	2011
Regular Schedule								
A	-	-	-	381	289	-	-	-
B	-	-	-	2775	2517	-	-	-
C	-	-	-	207	157	-	-	-
D	-	-	-	4	5	-	-	-
E	-	-	-	10	16	-	-	-
Total	2785	2615	2958	3377	2984			
Non Regular								
A				47	67			
B				573	816			
C				47	59			
D				-	-			
E				-	1			
Total				667	943			
Overall Total				4044	3927			
Number In- service Math Teachers			25025	25678	26412	27603	28241	29108
Increase				653	734	1191	638	867

Conclusions and Policy Implications

The institutions at the national level exhibit an average capability of producing licensed secondary mathematics teachers. Only of the satellite campuses of “Mission School” possess the high the capability to produce licensed secondary mathematics teachers. The large supply of licensed secondary teachers was brought by the large supply of LET takers who are non-BSEd graduates. The BSEd graduates exhibit high capability to get the license to teach mathematics than the non-BSEd graduates. The first-time-takers in LET demonstrate high capability to get the license to teach than the repeaters.

Out of 10 (ten) of the yearly supply of prospective mathematics secondary teachers at the national level, only 4 earn the license to teach. There is a shortage of licensed secondary mathematics teachers who are BSEd graduates. Majority of the supply of licensed secondary mathematics teachers are not adequately prepared in content and pedagogical skills. The very large number of institutions producing prospective teachers and supplying LET Secondary-Mathematics examinees of which majority of are low performing institutions resulted to glut of unlicensed teachers. Proportionate numbers of institutions in every province should be set in order to produce the potential supply of licensed teachers needed in each region. A moratorium on the opening of teacher education programs should be strongly enforced in the different institutions, particularly the private non-sectarian ones. The state colleges or universities with many satellite campuses need to reduce duplication of course offerings across the different campuses. Such institutions must identify only one or two of the satellite campuses to offer teacher education, especially among geographically-close campuses. Deserving students who are willing to enroll in a teacher education program but who have to travel a far distance may be granted financial support. This way the competition among the campuses in terms of resources can be reduced and the focus of a particular specialization will be in only one satellite campus. The government must increase the budget for teacher education in particular and also provide more scholarships to deserving students aspiring to become teachers. CHED should monitor the granting of permits, and periodically evaluate the capacity of all state colleges and universities to offer Teacher Education by taking into consideration the schools’ LET performance and other

indicators in order to maintain quality and excellence. CHED should strictly impose proper sanctions concerning institutions that do not produce licensed teachers and identify the curricular and specialization each satellite is best equipped for. This way, the glut of education graduates will be minimized. The number of repeaters in the LET grows every year. In this five-year study, many teacher aspirants consistently failed to pass the LET. Examinees who repeatedly fail in the LET do not deserve to become teachers. A maximum number of re-takes of LET should be set and strongly enforced. Second-time repeaters should be required to enroll in refresher courses in certified centers for excellence (COE) in Teacher Education, after which, failure to pass the LET should bar them from taking the LET again. PRC and CHED should join forces in re-defining and implementing policies concerning this issue. Licensed mathematics teachers in every examination year are dominated by non-BSEd graduates and the number of licensed secondary mathematics teachers who are graduates of BSEd do not suffice to meet the demand for mathematics teachers each year. TEIs must strengthen their implementation of the teacher education curriculum to produce a sufficient supply of potential secondary mathematics teachers to replace teachers leaving the country to work abroad and teachers reaching retirement age in order to sustain quality education.

State universities and colleges should produce fewer LET re-takers but potential LET passer.

References

1. Shivel, J. J. (1988). Professional practices boards for teachers. *Journal of Teacher Education*. Vol. 36, No. 6, pp 27.
2. Ball, D. L. and Mc Diarmid, G. W. (1990). The subject matter preparation of teachers. In W. R. Houston (ed). *Handbook for Research on Teacher Education*. New York: Mac. Millan Publishing Co. , pp. 437-449.
3. Brown C. and Borko H. (1992). Becoming a mathematics teacher. *Handbook for Research on Teacher Education and Learning*. In D. A. Grouws (ed). New York: Mac. Millan Publishing Co. , pp. 209-239.

4. Brahier, D. J. (2000). Teaching secondary and middle school mathematics. Needham: Allyn and Bacon.
5. Philippine Overseas Employment Administration in Bureau of Employment and Statistics, Department of Labor. LabStat Updates: (July 2003).
6. Commission on Filipino Overseas, in LabStat Updates, July 2003
7. Cangelosi, J. S. (1996). Teaching mathematics in secondary and middle school. New Jersey: Prentice Hall, Inc.
8. Fennema E. and Franke M. (1992). Teacher's knowledge and its impact. Handbook for Research on Teacher Education and Learning. In D. A. Grouws (ed). New York: Mac. Millan Publishing Co. , pp. 147-164.
9. National Commission on Teaching and America's Future, 1996
10. The Philippine Commission on Educational Reform- PCER, 2000.
11. Bagaforo, J. (1999). Mathematical Competencies of Prospective Mathematics Teachers. Unpublished Research of the University of the Philippines, College of Education.
12. Golla, E. (1993). An Evaluation of Mathematical Competencies of Filipino College Graduates. Unpublished Research of the University of the Philippines, College of Education.
13. Pedro, L. (1996). A Quantitative- Qualitative Analysis of the Pre-service Program for Mathematics Teachers. Unpublished Research of the University of the Philippines, College of Education.
14. Philippine Daily Inquirer, November 17, 2007, p. A 1.