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EMPLOYABILITY AND SATISFACTION OF MATHEMATICS EDUCATION PROGRAM GRADUATES OF A SCIENCE AND TECHNOLOGY UNIVERSITY IN SOUTHERN PHILIPPINES

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Abstract:
This study determines the employability and satisfaction of the graduates of the mathematics education programs of the University of Science and Technology of Southern Philippines (USTP)-Cagayan de Oro City, namely, Bachelor of Secondary Education major in Mathematics, Master of Science in Teaching Mathematics (MST-Math) and Doctor of Philosophy in Mathematical Sciences major in Mathematics Education for the academic year 2012 to 2018 for the BSEd Mathematics and AY 1999-2018 for the graduate programs. This study utilized a modified Graduate Tracer Study (GTS) questionnaire developed by the Commission on Higher Education (CHED). The mathematics education graduates completed the GTS questionnaire through face-to-face/personal and online using the Google Forms created and sent to the graduates. Results of the data gathered revealed that the graduates of the BSEd Mathematics and MST-Mathematics program are highly employable as secondary school mathematics teachers in both public (Department of Education (DepEd)) and private institutions in the region while the graduates of the Doctor of Philosophy in Mathematical Sciences major in Mathematics Education are highly employable as mathematics instructors or professors while some are holding administrative positions in higher education institutions (HEIs), both public and private in the region. This shows that the program curriculum was very relevant and useful in their current employment status. Moreover, the mathematics education graduates are highly satisfied with the USTP services, facilities, learning environment and more importantly the knowledge and technical skills including problem solving, research, communication, ICT and human relation skills acquired during their academic years in the university. It is then recommended that the USTP mathematics education programs, both undergraduate and graduate level may be enhanced by reducing courses on pure mathematics and adding more courses on

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leadership and technology innovation and may offer a master's program exclusively designed for elementary mathematics teachers in the field.

Keywords: graduate tracer study, employability, satisfaction, mathematics education programs

1. Introduction

Quality education is viewed as any country's pillar of success. Restructuring the Philippines basic educational system through the K to 12 Program is a tough but strategic move by the government to ensure that it produces competent graduates who can serve as backbone for highly skilled and employable work force. Despite this, the Philippines as a developing country face challenges of having been beset for decades with structurally high unemployment and underemployment rates. High population and labour force growth continues to outpace formal job creation. The Philippine education system churns out more and more college graduates with various professional disciplines such as commerce, engineering, health, sciences and law to name a few. But the jobs are not really created as fast as the universities handing out of the college diploma.

People go to universities and finish a degree with the goal of being employed, earned a living and promoted in their careers. Teacher Education Institutions (TEIs) primarily aim of producing competent and highly qualified graduates employable locally and abroad. They employ a variety of strategies to realize this relevant goal. TEIs continually enhance their curriculum content and delivery through employing and maintaining competent faculty members, improving instructional facilities, providing relevant student support systems, and cultivating a culture of quality and excellence. Through these concerted efforts, it is hoped that they would result to high-quality teacher education preparation and provide graduates with better employment opportunities.

The University of Science and Technology of Science and Technology of Southern Philippines (USTP), formerly Mindanao University of Science and Technology (MUST) is one of the country's leading providers of scientific and technological knowledge and skills, supports the mission of the Philippine government in building the country's human capital and innovation capacity toward the development by promoting relevant, efficient and quality higher education. Hence, the USTP aimed to provide advanced education, higher technological, professional and advanced instruction in mathematics, science, technology, engineering, and advanced research and extension work in human resource development in critical skills and competencies required for global competitiveness. In line with this thrust, the College of Science and Technology Education (CSTE) formerly the College of Policy Studies, Education and Management (CPSEM) started offering the Bachelor of Secondary Education (BSEd) major in Mathematics program during the academic year 2008-2009 to present. BSEd major in mathematics emanates from the undergraduate program BS Mathematical Sciences, teaching stream of the Mathematical Sciences program under the College of Arts and

Sciences now being transferred in CSTE is the Mathematics Education stream. BSEd Mathematics program blends the aspects of pure mathematics (analysis, algebra and geometry) with the understanding of the nature of mathematics, language in mathematics education, affective aspects of mathematics learning, comparative mathematics education, mathematical problem solving and the assessment of mathematical learning. This program is, therefore, suitable for the development of future secondary mathematics teachers.

In addition, in response to the growing demand of teachers in the Philippines and abroad, the Master of Science in Teaching Mathematics was established in 1990. The college produced first batch of MS Teaching Mathematics graduates in 1993. And to vertically align the graduate programs of the Department of Mathematical Sciences, the Doctor of Philosophy in Mathematical Sciences major in Mathematics Education was instituted. These programs were designed to become suitable for serving teachers in primary or secondary schools, as well as education administrators and teachers in higher education. It is also very suitable for recent graduates in mathematics or mathematics education wishing to undertake advanced study and those looking to develop a career as researchers in the field.

The university employ a variety of strategies to realize this relevant goal. The University continually enhance their curriculum content and delivery through employing and maintaining competent faculty members, improving instructional facilities, providing relevant student support systems, and cultivating a culture of quality and excellence. Through these concerted efforts, it is hoped that they would result to high-quality teacher education preparation and provide graduates with better employment opportunities. Since, the performance of an educational institution's is partly measured by the employability of its graduates, (Gicane, Sapul & Penetrante, 2006) and this can be done by conducting an institutional tracers study.

Graduate tracer studies are one form of empirical study that can appropriately provide valuable information for evaluating the results of the education and training of a specific institution of higher education. By obtaining this kind of information, this tracer study will be conducted so USTP can show the success of its educational efforts pertaining to the graduates of the BSEd Mathematics, MST-Mathematics and PhD in Mathematical Sciences major in Mathematics Education in the labor market, and feedback from the employers. It can collect essential information concerning the employment profile of graduates, their undergraduate experience, the first and current jobs of graduates, and the relevance of their educational background and skills required in their job. Graduate tracer study can also collect data on the relevance of the curriculum and graduates' level of satisfaction of their academic preparation. Strategically, the institution can identify areas for growth and development in the context of quality assurance and the provision of relevant preparation and training. Any possible deficits in its program offerings in terms of administration, content, delivery and relevance can be ascertained and improved.

Thus, this study aimed to trace the graduates of the Bachelor Secondary Education major in Mathematics, MST Mathematics and PhD Mathematical Sciences major in Mathematics Education in terms of their employability in the industry as well as their levels of job satisfaction of their current job affiliations.

2. Literature Review

Education has long been regarded as one of the primary components for poverty reduction and socio-economic upliftment. Higher education institutions (HEI's) in the country, in particular, is tasked to train the nation's manpower in the skills required for national development, and to instill and foster the appropriate and relevant, knowledge, skills, and attitudes to enable each individual to become a useful, productive and gainfully employed member of society. Investments in education would be considered "wasted" if people do not move into productive jobs that enable them to pay taxes and support public services.

HEI's in the Philippines has historically provided a dominant role in the delivery of educational services to the country's citizenry. Both state universities and colleges in the Philippines like the MUST and private education sector has contributed immensely in producing the country's highly qualified manpower, estimated to be more than 80 percent of all those who have joined the work force. The image of a tertiary education institution in the Philippines is most likely tied to its reputation of producing excellent graduates who easily land a job after graduation. Graduate Tracer Studies are common research methods for these educational institutions to check on the employability of their recent graduates.

De Ocampo, et al. (2012) looked into the culture of entrepreneurship versus employment among recent graduates of the business school of a large university based in the Philippines. Students who chose to take an entrepreneurial education undergo a two-semester business practicum program entailing preparation of a business plan and actual implementation of a start-up enterprise. Students who go through this baccalaureate degree are envisioned to become entrepreneurs when they graduate. The study revealed that one out of four of the graduates who took up entrepreneurial education became entrepreneurs after graduation. Many still opted for employment. It appears from this initial study that the culture of entrepreneurship particularly youth entrepreneurship still needs to take root in the young people's mindset. Filipino youth continue to have a strong cultural preference for secure jobs and the employment route.

Ramirez, Cruz and Alcantara (2014) conducted a tracer study to determine if the field of specialization in the different colleges of Rizal Technological University graduates and their academic-acquired skills and competencies are related to their present occupations. The findings revealed that the graduates claimed that their knowledge, academic-acquired skills and competencies contributed greatly to their job performance. The Chi-square goodness of fit proved that there is a significant relationship between the graduates' fields of specialization and their occupations after

graduation. Likewise, the academic-acquired skills and competencies of the graduates are relevant to their chosen occupations. The results further proved that RTU produces marketable and appropriately trained graduates with the majority landing in course-related jobs within a short period after graduation. The study also indicates that the RTU graduates possess the skills and competencies necessary to succeed in this competitive world. However, expansion of tie-ups with private business entities is made to at least maintain the high employability level of the graduates.

Mercado (2009) mentioned the initiative of the Commission on Higher Education in the Philippines to spearhead the conduct of GTS among selected Higher Education Institutions in order to obtain data that would show if HEI's are offering courses or programs that produce graduates to meet the needs of industry and society. Likewise, through the GTS, HEIs would be able to align their efforts with the manpower needs of industry (CHED CMO #s 38, s. 2006, 11, s. 1999).

In the study conducted by Lalican (2007) she emphasized that the acquisition of knowledge in the undergraduate specialization, skills and competencies will also promote productivity, efficiency and expertise in the graduates' present job. On Employment Status (Miranda, 2000), the provision of written agreement notwithstanding and regardless of the oral agreement of the parties, an employment shall be deemed to be regular where the employee has been engaged to perform activities which are usually necessary or desirable in the usual business or trade of the employee; except where the employment has been fixed for a specific project or undertaking the completion or termination of which has been determined at the same time of engagement of the employee or where the work or service to be performed is seasonal in nature and employment is for the duration of the season.

A study made by Yangco (2007) showed that ECE graduate-respondents are employed and mostly with permanent positions. As to the small portion who were unemployed they said that they wanted to apply for a job abroad. The respondents also suggested more skills related to information technology and improved facilities for hands-on-training to further improve the curriculum.

On the number of employed and unemployed, (Diestro, 2013), most of the graduates are employed on the course they finished while those who did not land a job mentioned the following reasons: busy as housewives and some pursue to higher studies such as masteral and doctorate.

Canencia and et al., (2007) conducted a tracer study which cover the period from graduates of the academic years from 2001 to 2004. It provides a comprehensive analysis of the curricular programs offered by Mindanao Polytechnic State College (MPSC was the former name of MUST) and the absorption of its graduates to the labour market. There were 500 graduates successfully traced based on the proportionate sampling done by course/discipline. The results revealed that all programs of Mindanao Polytechnic State College – MPSC (former name of MUST) effectively produced "employable" graduates. The highest mean average among the 12 programs studied is obtained by graduates of Bachelor in Technician and Teacher Education (BTTE), while the other

programs are categorized as "employable graduates". MPSC graduates from these disciplines seemed very relevant and responsive to the labour market demands specifically when graduate-respondents affirmed that their courses are relevant to the first job after graduation and on the usefulness of the competencies/skills they acquired. On the aspects of quality and excellence, majority of the respondents worked locally while few were employed abroad. Other parameters measured were initial gross monthly earnings in the first job and accreditation status attained which showed favourable results. There were several educational opportunities toward broadening the access and equity of deserving and qualified students and graduate respondents where the institution provided access to scholarship and various modes of students' assistance.

Calpa, et al. (2015) conducted a descriptive research to determine the employability of the graduates of Bachelor of Science in Mathematics of the College of Science, University of Eastern Philippines from the first batch of 2001 up to 2015. Results of their survey showed that majority of the respondents are gainfully employed. Most of them are on contractual basis and are working in the Philippines. From the 110 graduates, 91 are employed while no data were gathered from the 19 graduates. Majority are professionals working as teachers in the secondary and tertiary level. Problem solving skills are most useful in their personal and professional growth. The teacher-student relationship is most rated that contributes to the degree they finished at the College of Science.

Basista, D. et al. (2016) conducted a descriptive study to determine the performance of the BS Mathematics graduates who are currently employed, particularly on the skills related to their job performance as a continuation of the study of Calpa, et al. (2015) on the same university. The employer of the BS Math graduates rated them very satisfactory in developing technical skills, numeracy skills, analytical and logical skills and computer literacy skills as well as their level of communication skills in both oral and written, listening skills and in their leadership skills. The employers rated the BS Math graduates excellent in terms of their teamwork, planning, organizing skills and professionalism. They concluded that the employability skills of the BS Math graduates showed a positive response from the employers.

Batac, A. et al. (2015) also conducted a tracer study of the BS in Mathematics for Teachers and Bachelor of Secondary Education major in Mathematics of Philippine Normal University from 2012 to 2014 to determine their employment characteristics, competency and skills development and retrospective evaluation of their academic programs. Findings revealed that most of the graduates of BS MT and BSE mathematics programs were female, single, 24 to 26 years old, living in Metro Manila, LET passers, and employed full-time within a year after graduation. They found their pre-service training to be adequate and applicable to their current work specifically in the K to 12 curriculum. They also claimed that they used the knowledge and technical skills, communication skills, human relation skills, leadership skills, research skills, problem solving skills and information technology skills to a great extent. They were highly satisfied with the physical facilities, services and their academic experiences in the

university. Suggestions to improve the programs include putting emphasis on developing students' skills in writing and communication, information technology and research. This tracer study was related to the present study since it will survey the education graduates major in mathematics only that this present study included to trace the graduates of the MST Mathematics and PhD in Mathematics Education.

Aquino, A. et al. (2015) traced the employment profile of the graduates after they obtained their teacher education degree in the College of Teacher Education at Batangas State University (BSU) ARASOF, Nasugbu Campus, Batangas, Philippines. The descriptive survey method of research was applied to this research with a survey questionnaire as the main data gathering instrument. It analyzed data from 129 respondents characterized by a preponderance of females over male as females and unmarried or single graduates as opposed to those who were married. The study found that there were more respondents who finished Bachelor of Secondary Education (BSED) over Bachelor of Elementary Education. They obtained this degree as they believed that teaching is a rewarding and challenging profession, Majority are Licensure Examination for Teachers (LET) passers and are employed in public schools at the time of the study. Their present job, mostly professional in nature, was also their first job and relevant to their degree. It took only a moderate period of time for most graduates to land a job. Most stay in their job for economic reason, finding communication skills and human relation skills as part of their teacher education preparation very relevant to their jobs.

Balingbing (2014) conducted a study to determine the employability of BSIT graduates of SY 2004-2010 of Camarines Sur Polytechnic Colleges (CSPC) and unveil specifically their personal profile, level of competency along knowledge, skills and attitudes, significant relationship of the level of competency and the level of difficulties encountered along knowledge, skills, and attitudes and the measures to enhance their competitiveness. Most respondents were female, 20-25 years old, TESDA-certified, employed in private sectors, incompetent in SY 2003-2004, competent in SY 2005-2010and encountered difficulty along knowledge, skills, and attitudes. There is no significant relationship in the level of competencies among graduates per school year and their level of difficulty along knowledge, skills and attitudes. Some measures to enhance their competitiveness include conducting TESDA Assessment and Civil Service examination review and IT Faculty in-house trainings and strengthening English Proficiency Program. BSIT graduates of SY 2004-2010 are competent despite difficulties encountered along skills, attitudes and knowledge.

Cardona and Andres (2014) conducted a tracer study of the employability of Mathematics Education graduates (2008-2013) of a Teacher Education Institutions (TEI) in the Philippines. The graduate tracer study determined the employment status and the retrospective evaluation of Bachelor of Secondary Education (BSEd) mathematics graduates of PNU-North Luzon. Eighty-one respondents from Batch 2008-2013 participated in the study. Results revealed that almost all of the respondents are presently employed, had taken the Licensure Examination for Teachers (LET) and passed in their first attempt, acquired a job within six months after graduation, and are practicing their

profession by teaching in all education levels across almost all subject areas. The graduates also claimed that the competency skills provided by the University were useful to a certain extent on their current work. They were also satisfied on the facilities, learning environment and services offered. The hierarchical cluster analysis showed three relative groupings of graduates dominated by those who are presently employed, two years and above in service, relatively low in all the subject areas but rated the University's services to be of average. This graduate tracer study has a semblance of the present study since it will determine the employability of the mathematics education graduates but it will include graduate students enrolled in masters and doctoral programs majoring mathematics education of USTP.

The above tracer studies provided a support in this present study in terms of the school support in terms of developing the required skills for employment of the mathematics education graduates of USTP from the prescribed years under this study as well as their work satisfaction after graduation.

3. Material and Methods

In the conduct of this graduate tracer study of the mathematics education graduates of USTP, the researcher utilized a descriptive survey questionnaire which was administered either face-to-face or personal or online to the respondents. Descriptive research is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation. This type of research method is not simply amassing and tabulating facts but includes proper analyses, interpretation, comparisons, identification of trends and relationships. Descriptive survey research design is concerned not only with the characteristics of individuals but with the characteristics of the whole sample thereof. It provides information useful to the solutions of local issues (problems). Survey may be qualitative or quantitative in verbal or mathematical form of expression; such studies are factual and hence supply practical information. The survey research employs applications of scientific method by critically analyzing and examining the source materials, by analyzing and interpreting data, and by arriving at generalization and prediction. Since, the present study was undertaken to study the employability of the graduates of mathematics education, the descriptive survey research method was adopted (Salaria, 2012). The online descriptive survey questionnaire was already uploaded by the researcher for easy access for the graduates while for graduates who are very accessible for the researcher was asked to answer the survey questionnaire in person and through the professors of the department teaching in the graduate school.

The respondents of this study were the graduates of the BSEd Mathematics for the academic year 2012 -2018, Master of Science in Teaching Mathematics and Doctor of Philosophy in Mathematical Science major in Mathematics Education from the academic year 1999 to 2018. These graduates are expected to be employed in the Department of Education (DepEd) as well as private education sector in either elementary, secondary or tertiary schools within the region. The summary of the graduates of the BSEd

Mathematics, MST-Mathematics and PhD Mathematics education program is shown the in the following table:

Table 1: Distribution of the Graduates of BSEd Mathematics, MST-Mathematics and PhD Mathematics Education from the respective Academic Year

Academic Year	Mathematics Education Programs		
	BSEd Mathematics	MST Mathematics	Doctor of Philosophy in Mathematical Sciences major in Mathematics Education
1999	---	1	1
2000	---	1	1
2001	---	1	---
2002	---	3	---
2003	---	9	2
2004	---	4	1
2005	---	5	---
2006	---	4	4
2007	---	5	3
2008	---	3	1
2009	---	1	1
2010	---	5	---
2011	---	1	2
2012	18	3	---
2013	22	2	2
2014	20	3	1
2015	34	5	3
2016	39	2	5
2017	43	2	1
2018	49	2	4
Total	**225**	**62**	**32**

After the approval of the research study, the researchers asked the list of graduates of the mathematics education programs from the academic year 2012 to 2018 for the BSEd Mathematics and AY 1999-2018 for the graduate programs from the University Registrar. The researcher start collecting the data in both online and face-to-face or personal methods. The prepared modified Graduate Tracer Study (GTS) questionnaire developed by CHED and PNU was sent to the graduates through Facebook, email, snail mail, FB messenger and other means of delivery. This questionnaire was modified for the purpose of providing a more comprehensive feedback of the graduates. A letter was attached to the survey questionnaire to inform the respondents about the study and assure them about the confidentiality of the data. The answered questionnaire was retrieved by the researcher in either online or personal meeting with the graduates.

The data gathered was analyzed using frequency count, percentage, mean and standard deviation. Permissions and informed consent from the concerned authorities were secured before the study was conducted. This is compliance with the Republic Act 10173, or the Data Privacy Act, protects individuals from unauthorized processing of

personal information that is (1) private, not publicly available; and (2) identifiable, where the identity of the individual is apparent either through direct attribution or when put together with other available information.

4. Results and Discussion

Figure 1: Distribution BSEd Mathematics Graduates Licensure Examination for Teachers Performance

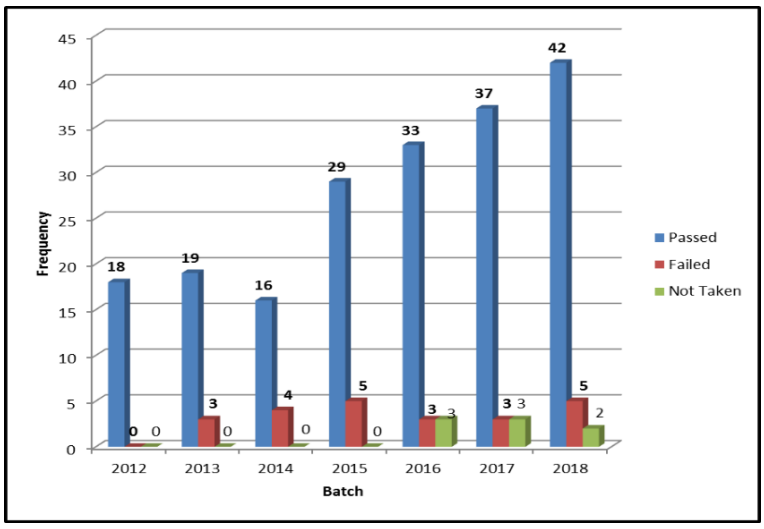


Figure 1 shows the distribution of the BSEd Mathematics LET passers, failed and those who have not taken the examination for Professional Teacher. Although, there was a decrease from 2013 to 2014, it can be observed that there was an increasing trend of the number of BSEd graduates who passed the LET. Also, it is significant to note that the first time the program was offered in 2012; the program obtained a 100% passing rate for the LET. Moreover, in 2017, the BSEd program was able to produce a topnotcher, specifically, Top 8, in the person of Ms. Angelie Padilla which is now also connected with the Department of Education (DepEd) division of Cagayan de Oro City and currently pursuing her MST-Math in the same university. This means that the BSEd program of USTP was able to garner high passing rates in the LET and consistently above the national passing rate. This proved that the BSEd Mathematics program of USTP is one of the top providers of LET passers in the region and signifies that the program outcomes (POs) and program educational objectives (PEOs) was successfully met and sustained by the program for the past nine (9) years and the years to come. The BSEd Mathematics program strives to earn national recognition as a premier Teacher Education Institution (TEI) in the field of mathematics education and serves as a global resource of innovative mathematics teachers equipped with excellent skills in content, pedagogy, research and extension. It can be recalled that LET is the assessment required of all applicants for registration as professional teachers as mandated by RA 7836. It is given twice a year in places and dates determined by the Board of Professional Teachers. Licensure examination is one of the factors that influence the quality of teachers and teaching in the

country; thus, a passing average performance in LET is one of the outcome indicators under curriculum and instruction parameter of the new OBQA instrument of AACCUP evaluation. Likewise, performance in the LET has been identified as one of the output indicators in the Normative Financing Scheme in determining the financial allocations given to State Universities and Colleges. Normative Funding, adopted since 2005, refers to the application of a set of objectives, criteria and norms that are designed to promote and reward quality instructions, research and extension services as well as financial prudence and responsibility (DBM-CHED, 2004).

Figure 2: Frequency Distribution of MST- Mathematics and PhD Mathematical Sciences major in Mathematics Education Graduates Professional Examinations Passed

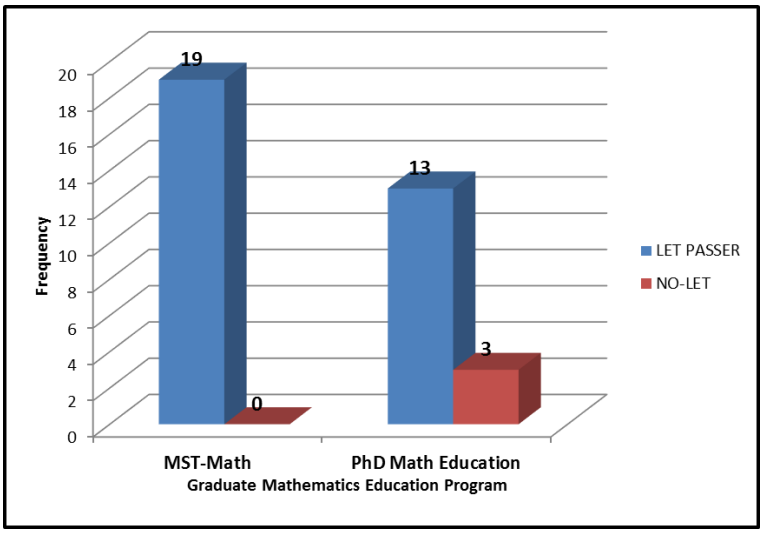
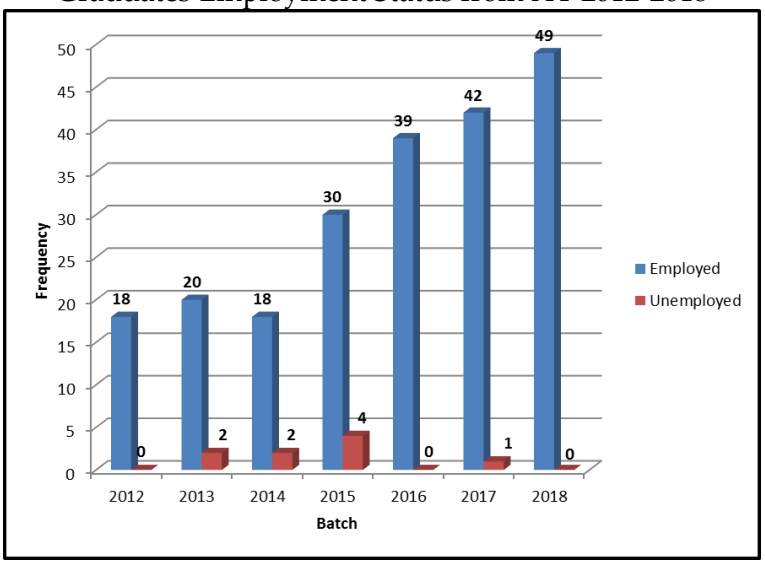


Figure 3: Frequency Distribution of BSEd Mathematics Graduates Employment Status from AY 2012-2018

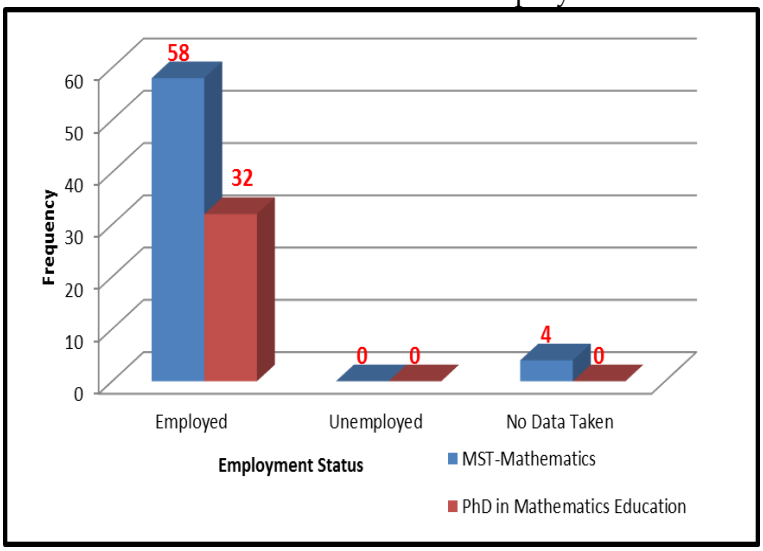


It can be gleaned from Figure 2 that majority of the MST-Mathematics and PhD Mathematical Sciences major in Mathematics Education graduates are licensed professional teachers in the field. This means that they are all qualified to teach in their

respective schools because they have satisfactorily met the minimum requirement set by the DepEd or even in the private institutions for their teacher applicants. It should be noted that licensure examination for teachers is considered important by teacher education students in their professional development. It also gives them not only honour and prestige but a competitive advantage over those who are non-LET passers. More importantly, as argued by Allen (2010), schools with well-qualified teachers are important in every subject, but for several reason it is especially critical in science and mathematics. These are highly technical subjects that can be adequately taught only be individuals who have a solid grasp of their science and mathematics disciplines.

It can be observed from the figure 3 that from academic year 2012 to 2018 almost all of the graduates landed a teaching job after graduation. This means that the graduates of the BSEd Mathematics of the USTP are highly employable. This might be due to the fact that since there is an increasing demand for technology, engineering and sciences as essential components of everyday life, more and more mathematics teachers are needed to support the education of students who may want to enter those kinds of professions in the future. Aside from the fact that USTP graduates are very flexible and trainable to teach in other related fields which can happen in the field. It is difficult for other fields to teach mathematics but mathematics teachers can teach other fields. As mentioned by DepEd Secretary Leonor Briones the country needs more and more science and mathematics teachers for the K to 12 program implementation. In order to determine where the BSEd Mathematics graduates are employed, the figure below displays the distribution.

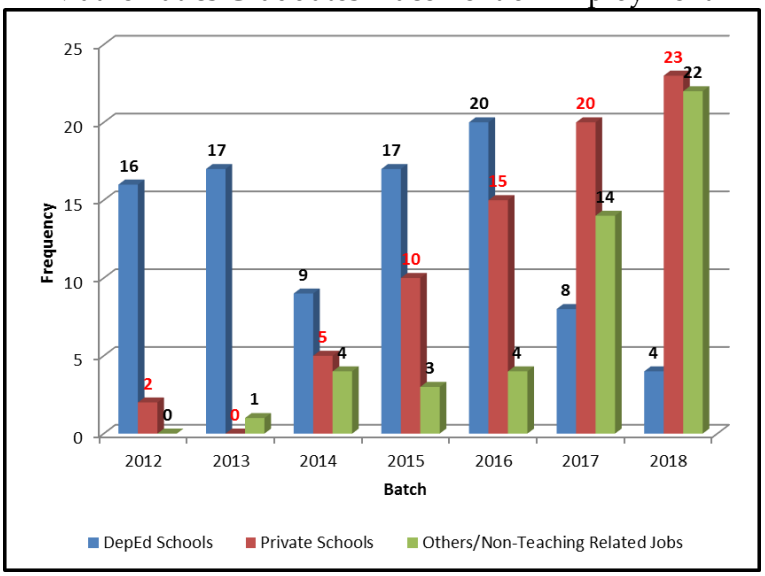
Figure 4: Frequency Distribution of MST-Mathematics and PhD Mathematical Sciences major in Mathematics Education Graduates Employment Status from AY 1999-2018



The figure above shows that 100% of the graduates of the PhD in Mathematical Sciences major in Mathematics Education graduates are employed while 58 (91%) of the MST-Mathematics graduates are also employed. There are 4 MST-Mathematics graduates in which as of this writing, there are no data that can be taken whether they are employed

or not. Nonetheless, it is evident from the result that the graduates of the mathematics education programs of the graduate school of the department are highly employable. This means that there is no chance that the graduates can be employed if they are graduates of USTP and the program outcomes (POs) and program educational objectives (PEOs) of the mathematics education programs are attained based on the employment status of the graduates.

Figure 5: Frequency Distribution of BSEd Mathematics Graduates Placement of Employment



It can be gleaned from the figure that majority of the BSEd Mathematics graduates from academic year 2012 to 2016 are already permanently employed as DepEd public school teachers while as the years progress many are also employed in private schools. This might be due to the fact that these graduates opted to have more teaching experience and training in the private schools before they will apply in DepEd schools. As per DepEd Order No. 7, s. 2015 (Hiring Guidelines for Teacher I Position), basis for the hiring policies for Kindergarten, Elementary, and Junior High Levels and DepEd Order No. 3, s. 2016 for Senior High School teaching positions, teaching experience has a weight of 15 points while specialized training and skills is 10 points. In this case, in order for the teacher applicant's gain those points they need to have teaching experience and fresh graduates can only achieve those points by first applying for teaching positions in private schools to have an edge of other teacher applicants. Besides, private schools rarely give permanent positions, they normally give one-year contract which is renewable every after the school year and this might also be one of the reasons why private school teachers do not stay longer in these schools aside from the fact that the security of tenure and salary in public schools with all benefits can be enjoyed by them once they transfer to DepEd. It can be also observed that when the BSEd graduates seek employment after graduation, their most preferable option was to apply for a teaching position in a private school and then gain experience for 1 or 2 years and then when they already have enough

experience and trainings, the following years they will then apply for a teaching job in DepEd because it can offer them job security and a permanent job in public school is enough for them to feel secured and received all the benefits of a government employee and therefore considered it as a stable and long term job.

The following chart on the next page shows this scenario as to how long they stayed in their first job after graduation. It can be gleaned from the figure below that majority of the BSEd-Mathematics graduates are employed as a regular or permanent employee in either public or private institutions and very few are employed as part-time or in contractual basis. Meanwhile, all of the MST-Mathematics and PhD Mathematical Sciences major in Mathematics Education are regular employees in either private or public institutions. This means that graduates of the mathematics education programs of USTP from undergraduate to graduate studies are employed permanently in their respective schools. Hence, it can be said that the graduates of the mathematics education programs are highly employable and secured in their respective positions in either private or public institution.

Figure 6: Frequency Distribution of Mathematics Education Graduates Employment Status

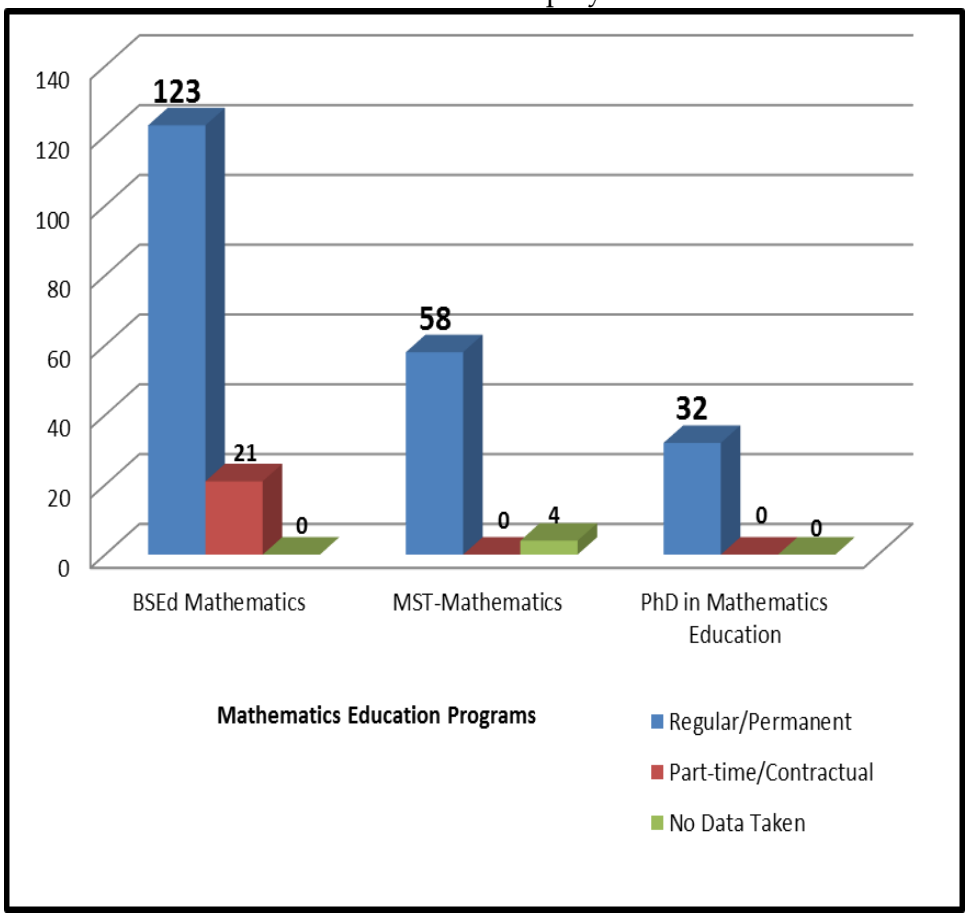
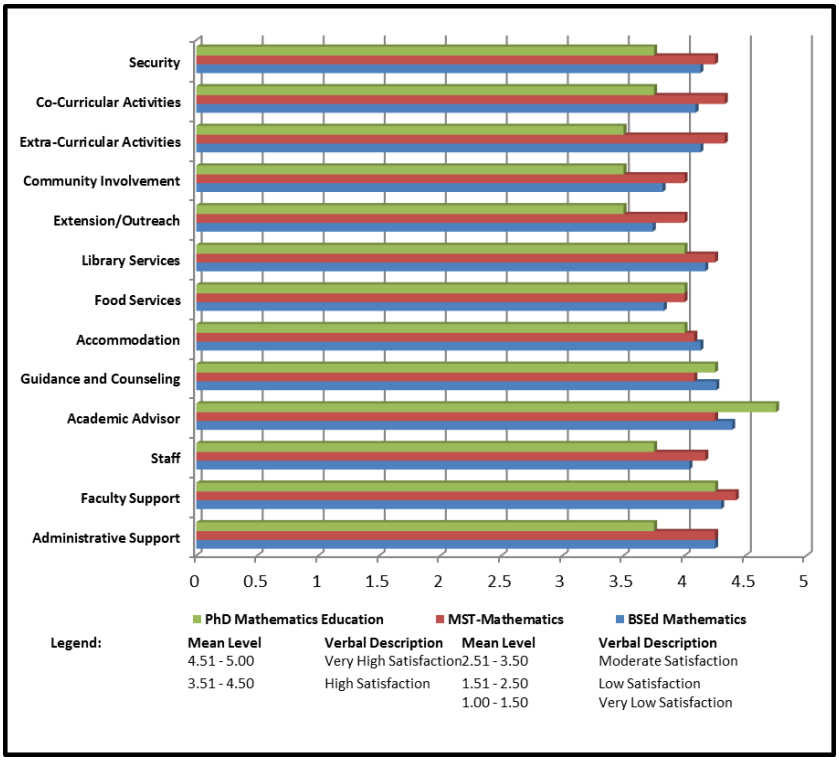
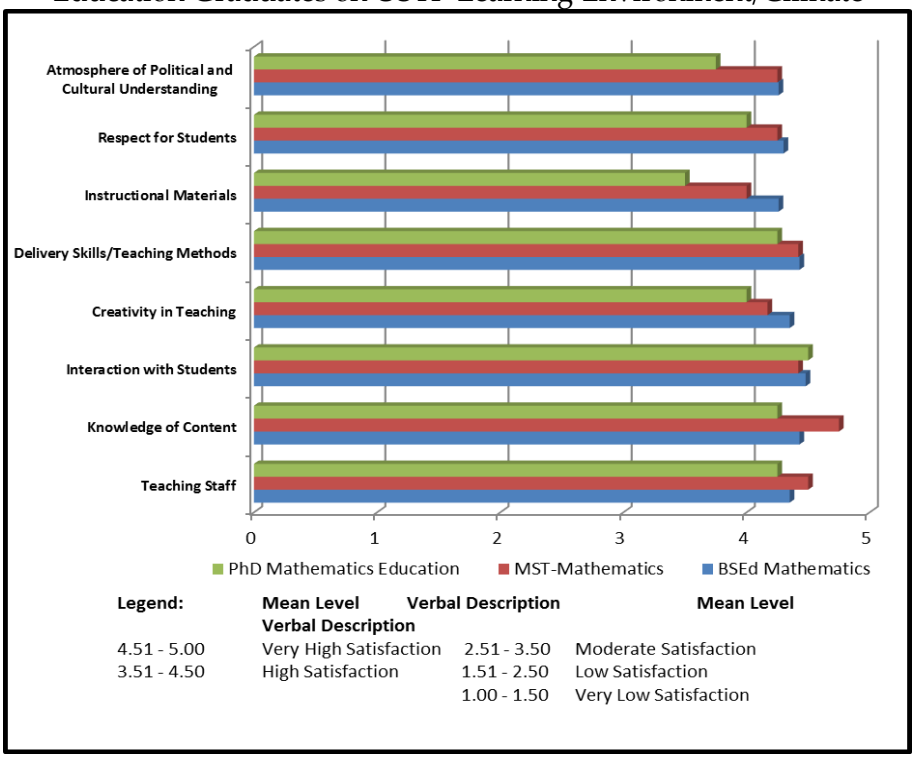


Figure 7: Level of Satisfaction of the Mathematics Education Graduates on USTP Services



In terms of the level of satisfaction of the mathematics education graduates of USTP services, results show that they are highly satisfied in almost all indicators of these services. In particular, the faculty support services received the highest level of satisfaction for the BSEd Mathematics and MST Mathematics graduates while the PhD Mathematics Education considered the academic advisor support as the highest but also followed by faculty support. This means that the mathematics education graduates of USTP are contented of the faculty support services as well as the academic advisor. On the other hand, the BSEd Mathematics considered extension or outreach support as least among the services while the MST Mathematics considered food services, extension or outreach as well as community involvement as least. The PhD Mathematics Education graduates considered extension or outreach, community involvement and extra-curricular activities as least among the different services provided by USTP. Despite having these services rated as least among others, these are still in the high satisfaction level which indicates that the mathematics education graduates must have encountered these services in their academic journey at USTP and they are highly satisfied with it. Nonetheless, this is a point of consideration for USTP to revisit and review on how these services can actually be rendered in an optimum level for the benefit of all students (graduate or undergraduate). In the mathematics education programs, students in the undergraduate and graduate levels are actually involved in community extension activities. The Mathematics Education department is making sure that these students take part of the different activities spearheaded by the department because they need to be exposed to these kinds of activities so that when they work in the future, they can apply what they have learned in the activities they are involved.

Figure 8: Level of Satisfaction of the Mathematics Education Graduates on USTP Learning Environment/Climate



In terms of the level of satisfaction of the mathematics education graduates on the learning environment or climate they experience in USTP, it can be observed that the BSEd Mathematics graduates have high satisfaction while the MST Mathematics and PhD Mathematics Education have high to very high satisfaction. In particular, the BSEd Mathematics and the PhD Mathematics education graduates rated highest the indicator interaction with the students while the MST Mathematics rated the indicator knowledge of content as highest. This means that the BSEd Mathematics and the PhD Mathematics education graduates have experienced a worthwhile interaction with their co-students or classmates in the program during their academic years in the university. This is a very important aspect in learning because student-to-student interaction is vital to building community in an online environment, which supports productive and satisfying learning, and helps students develop problem-solving and critical thinking skills (Kolloff, 2011). Also, the MST-Mathematics graduates perceived that the teachers or professors teaching in the program possess strong content knowledge. This is very true because all of the teachers teaching the graduate program are PhD in Mathematics or mathematics education degree holders which expected that these are experts on their respective courses. As agreed by Ball, Thames & Phelps (2008), teachers must know the subject they teach. Indeed, there may be nothing more foundational to teacher competency. According to them the reason is simple, teachers who do not themselves know a subject well are not likely to have the knowledge they need to help students learn the content.

On the other hand, the mathematics education graduates agreed and rated the indicator on the provision of instructional materials as least among the indicators of

learning climate but still on the high satisfaction level. Although on a high satisfaction level, this should be also considered by the program to develop more innovative instructional materials to be used in their classes. As contended by Muraina (2015) in her study, instructional materials influence students' learning outcomes in schools. Hence, these instructors or professors in the graduate school need to be motivated by providing incentives and recognitions aside from the points they would earn by developing instructional materials which can be copyrighted or patented.

In Figure 9 on the next page, it can be observed that the mathematics education graduates possess moderate to high satisfaction on the provision of the facilities which the graduates enjoyed in their academic years in the university. In particular, the mathematics education graduates are satisfied with the amenities which the audio visual room (AVR) and the library of the university. USTP at present has three (3) functional AVRs and one is an oval type and sophisticated Performing Arts Theater (PAT) which can cater a maximum of 300 students or audience. However, the mathematics education graduates agreed that the university clinic need to be given attention by the university. This might be due to the fact that classes in the graduate school are held on Saturdays and sometimes the university physician might sometimes not present during weekends and for the BSEd Mathematics graduates, they might experience long queues because there had been an increase of the population of the university and there is only one university physician. Hence, the administration might consider hiring additional physician for the university and so that Monday to Saturdays they will be present to attend the medical needs of the entire USTP community.

Figure 9: Level of Satisfaction of the Mathematics Education Graduates on USTP Facilities

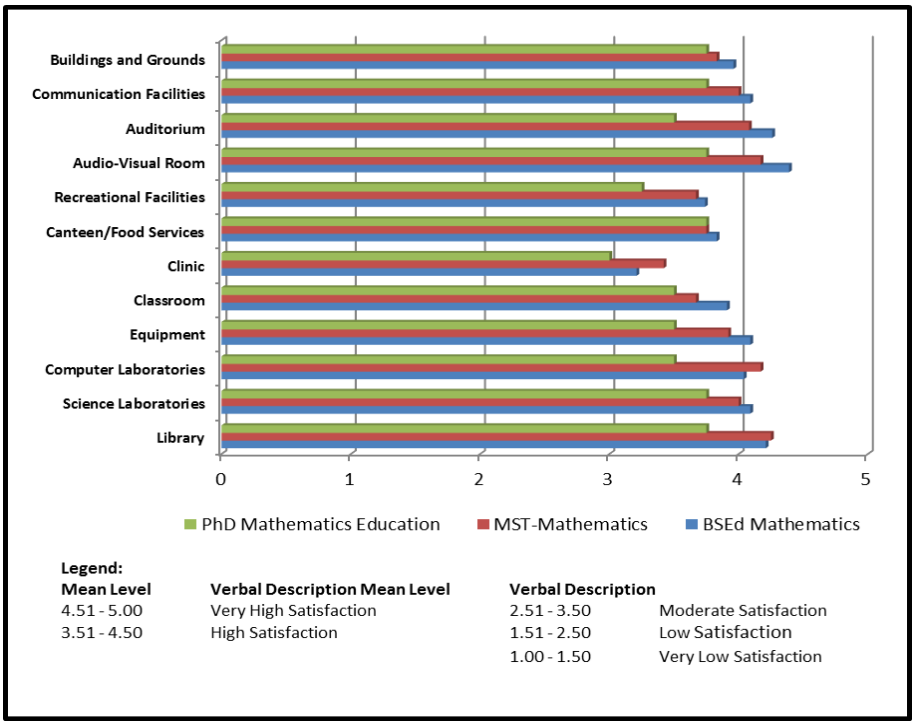
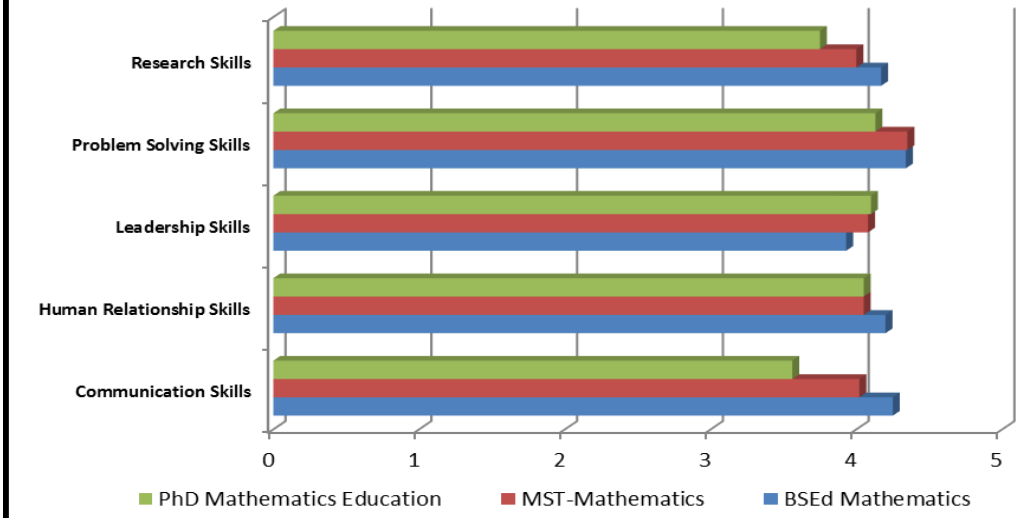


Figure 10: Level of Adequacy Training on the Different Skills Received by Mathematics Education Graduates



Legend: Mean Level	Verbal Description	Mean Level	Verbal Description
4.51 - 5.00	Extremely Adequate	2.51 - 3.50	Adequate
3.51 - 4.50	Very Adequate	1.51 - 2.50	Somewhat Adequate
		1.00 - 1.50	Not Adequate

It can be gleaned from the figure that the mathematics education graduates received very adequate to extremely adequate training that effectively develop their communication, human relations, leadership, problem-solving and research skills. Noticeably, the mathematics education graduates acknowledged the fact that their problem solving skills was develop primarily based on the training they received in the academic years in the university. The mathematics education graduates are perceived to be good in mathematics because one major characteristics of a mathematics teacher is to possess strong subject matter knowledge or mathematics content knowledge and to possess this kind; he or she should have strong analytical and problem solving skills. This is very true because in the first place, teachers cannot teach what they do not know. As expected, mathematics education graduates in the graduate programs should have developed and received adequate training on communication and more importantly on research skills. Research skills are expected to have internalized and practiced by these graduates because their thesis and dissertation writing course allows them to be immersed in the area of research. Moreover, the university who is very active on research and innovations, held regular research colloquiums and conferences where the graduate students are expected to be present so that they will be exposed on the trends or innovations in research, get ideas on researchable topics and learn how to present their research outputs because one major requirement for graduation for the graduate programs is to either present or publish their research outputs in an appropriate conference and in some reputable indexed journals here and abroad. The university also gives assistance to these graduating graduate students to present or publish their research outputs for dissemination.

5. Conclusions

Based on the analysis and findings of the study, the researchers conclude that the BSEd Mathematics, MST-Mathematics and PhD in Mathematical Sciences major in Mathematics Education graduates are highly employable in government (DepEd) and private institutions (first job). Second, the BSEd Mathematics and MST-Mathematics graduates are mostly permanently employed in DepEd secondary schools while the PhD in Mathematical Sciences major in Mathematics Education graduates are employed in higher education institutions in the region, both public and private. Further, the program curriculum was very relevant to their present jobs, hence, the PEOs and POs of the program are successfully attained. The graduates have acquired and applied vital skills (problem solving, research, communication, leadership & human relations) during their academic years in the university which are vital for their career. In turn, the graduates are highly satisfied with the USTP services, learning environment, facilities and the skills acquired. Hence, the mathematics education programs (both undergraduate and graduate) of USTP are responsive and sustainable to the needs of the community.

6. Recommendations

Based on the findings and conclusions of the study, the researchers recommend the following:

a) USTP, through the College of Science and Technology Education (CSTE) may consider implementing an intensive in-house review for the BSEd Mathematics graduates to ensure 100% passing rate in the annual professional examination for teachers. The university may also continue giving incentives, recognition and awards to those students who will emerge as topnotchers in the national board examination.
b) The mathematics education graduate programs may consider reviewing the curriculum by reducing the number of pure mathematics courses and change it with leadership and technology innovation courses which is consistent with the USTPs mandate being a science and technology university.
c) The mathematics education graduate programs may also consider reviewing the curriculum by accommodating the needs of those elementary mathematics teachers who has less mathematics courses in their baccalaureate degrees.
d) The mathematics education department may continue those relevant activities, trainings and extension work which actively involves all mathematics education students in both undergraduate and graduate level.
e) The university may also improve their medical and dental clinic services especially for the graduate students whose classes are on Saturdays.

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Conflict of Interest Statement

The authors declare no conflicts of interests.

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