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Employability Status of Bachelor of Science Mathematics Graduates in a Polytechnic State College in the Philippines

Rowel S. Ramos

Camarines Sur Polytechnic Colleges, Camarines Sur, Philippines
E-mail: rowelasher@cspc.edu.ph

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ABSTRACT One potent tool to gauge the effectiveness of a program is through a tracer study which determines its significance in a graduate's employability. This study aimed to assess the Bachelor of Science Mathematics graduates' employment status, their acquired skills from the program, and their assessment of its curriculum. Descriptive statistics was employed utilising frequency counts, percentages, and weighted means to analyse the data. Of 78 graduates surveyed, 67 are already employed locally, with half of them asserting the relatedness of their program to their job. Acquired competencies like problem-solving, people skills, and personality development are perceived to be the most useful to their job. Teacher-student relationship, professors' knowledge of the subject matter, and quality of instruction are the most impactful in rating the program. Recommendations include the addition of finance-related and education-related courses, and internships in the curriculum. This also highlights the need for community exposures, in-depth research pursuits, engaging extra-curricular activities, and available laboratories.

INTRODUCTION

People have been investing in education, recognised as one of the key elements for socioeconomic development. A significant task of the developing nation's higher education institutions [HEIs] is to prepare the workforce for the needs of the country's progress as well as to inculcate and nurture the relevant and appropriate knowledge, skills, and attitudes that will allow each person to contribute to society in a valuable way and find gainful employment.

In order to assess and evaluate whether HEIs are of great help in the employability success of the graduates, tracer study is one of the instrumental tools to achieve the purpose. In 2024, the Commission on Higher Education [CHED] institutionalised the conduct of graduate tracer studies across HEIs. This ensures that there is a systematic collection of data on employment rates, job and program relevance and alignment, and even waiting time to help the respective institutions be informed for policy interventions (CHEDRO III Memorandum No. 189 2024). Tracer studies are versatile and can be adapted to different educational levels, from basic education to higher education as well as vocational training programs. The results of tracer studies are valuable for educational institutions, policymakers, students, and researchers who have interest in understanding the outcomes and impacts of education and training on individuals and society. Schomburg (2003) asserted that a tracer study is beneficial in providing valuable information in the evaluation of the results of the education and training of a specific HEI. This information may be used to further improve the institution as much as quality assurance is concerned.

Tracer studies are essential to assess the needs of the effective offering of a program, which later on will benefit the graduates as they seek jobs in the future. In a recent review conducted by Fahmy et al. (2025) on the implementation of graduate tracer studies, it revealed three themes that highlighted the findings of these studies, which includes the employability of graduates, technical innovations, and competency development. The results from different scholarly articles on tracer studies emphasised the essentiality of bridging the gap between academic institutions and industry in enhancing the employability of graduates. Initiatives like internships, industry partnerships, and work-integrated learning programs are needed to fill this gap. Critical thinking and communication skills are highly valued by employers and are considered significant contributors to graduate employability. Therefore, academic institutions should prioritise the development of these competencies through various pedagogical approaches, such as experiential learning, group activities, and case studies.

Tracer studies are conducted sometime after producing graduates or some years after graduation. Its focus is to unfold and shed light on various topics such as work entrance, learned and acquired competencies, work entrance, work transitions, bonds on various education institutions, and current occupation (Balingbing 2023). The purpose of a tracer study is multifaceted. It serves several important objectives, primarily focusing on tracking the educational and career paths of individuals who have completed a specific program, the employability of graduates has always been associated with the effectiveness of their degree program at the tertiary level. The enterprise value in education can be clearly integrated in the curriculum by considering suitable pedagogical changes, as stated by Ehiyazaryan and Barraclough (2009), in a manner that will also make students' academic degrees relevant to their intended employability experience.

Individual learning has a definite connection with institutional integration of enterprise, personal, and professional development, according to studies that have looked into the relationship between enterprise education in universities and succeeding employability and career development (Rae 2007). Academic administration and culture, employer attitudes, institutional experience and expectations, and student behaviour are found challenges addressed in the whole integration. In order to promote rapport between university students, faculty, and administration, Rae's study (2007) advises utilising progressive pedagogical strategies incorporating both extracurricular and curricular activities.

Tracer studies stand out as one of the most potent tools for measuring the success of a course or educational program. Considering this, Ramirez et al. (2014) assessed the relevance of the field of specialisation of graduates and their acquired skills in the program to their present employment. The findings revealed that their knowledge, academic-acquired competencies contributed significantly to their job performance. This study is similar to the present study to determine the relevance of the program's curriculum to the current employment of the graduates.

Numerous studies have dealt with tracer studies, and higher education in the country is no exception. Calpa et al. (2021) conducted descriptive research to assess the employability of the BS Mathematics graduates of the College of Science, University of Eastern Philippines, batches 2001 to 2015. Results showed that the majority, or 91 out of 110 graduates are employed. Most of them are on a contractual basis and are working within the country. The majority are professional teachers at the secondary and tertiary levels. Problem-solving skills are the most impactful acquired competency in their personal and professional growth. The most rated facet that contributed to the program as they finished in the institution was the teacher-student relationship.

Subsequently, Basista et al. (2021), as a follow-up to the study by Calpa et al. (2021) at the same university, performed a descriptive study to ascertain the performance of the BS Mathematics graduates who were currently working, specifically on the skills related to their job performance. The employers of the BS in Mathematics graduates gave them highly satisfactory ratings for their growth in technical abilities, numeracy abilities, logical and analytical abilities, and computer literacy, as well as for their level of oral and written communication abilities, listening abilities, and leadership abilities. Employers regarded the BS in Math graduates as exceptional in terms of professionalism and teamwork, and they concluded that the BS Math graduates' employability skills displayed a favourable response from the employees.

A tracer study was also conducted by Batac (2016) with the BS Mathematics and Bachelor of Secondary Education major in Mathematics at Philippine Normal University to determine their employment status, competency and skills development, and evaluation of their academic programs. Findings revealed that the pre-service training of the graduates was sufficient and relevant to their current work. It was also revealed by the graduates that they were utilising such skills to a great extent such as in knowledge and technical, communication, human relations, leadership, research, problem-solving, and information technology skills.

As one of the state colleges in Bicol, Camarines Sur Polytechnic Colleges (CSPC) often conducts tracer studies for each baccalaureate program, especially those recently producing the first batch of graduates. One of these programs is the Bachelor of Science in Mathematics, a program which started in 2018 and has been accepting en-

rollees up until now. This study aimed to acquire feedback from the pioneer batch of the program who graduated in the year 2022 and 2023. The study would like to unleash the employability status of the graduates and other information that would greatly help to enhance the BS Mathematics program.

This tracer study aims to find data on the professional status of the BS Mathematics graduates, the impact of the program in their professional and personal development, as well as their evaluation of the BS Mathematics program in CSPC. Results can be a basis for future curriculum revision to determine what gaps are still to be filled and what improvements to be made considering the students' needs. Moreover, this employability study is also an essential requirement during program accreditations as an evaluation of its performance as far as curriculum and graduates are concerned. Considering the aims of this study, this can be a helpful tool in addressing the fourth sustainable development goal, which is quality education. The researcher believes that constant updates and revisions of curriculum is a powerful response to an ever-changing educational landscape, and one of the ways to do this is by having this kind of employability study for the program's graduates.

Objectives of the Study

The study aimed to assess the present employment status of the BS Mathematics graduates of CSPC for the batches of 2022 and 2023. Specifically, this employability study seeks to determine the following:

1. The current professional status of the BS Mathematics graduates
2. The impact of the program on its graduates' personal and professional growth
3. The graduates' assessment of the program along the different areas of its curriculum

RESEARCH METHODOLOGY

Research Design

With the main purposes of determining the impact of the program in their graduates' professional and personal growth, and their assessment of the program, it is considered that this tracer study utilises a descriptive research design.

The descriptive design of research in conducting tracer studies is highly significant, as it provides a detailed, accurate, and systematic account of graduates' career outcomes, skills development, and job satisfaction. This design allows researchers to document trends, identify gaps in skill development, assess curriculum effectiveness, and track long-term employability outcomes. The results of this tracer study can serve as a valuable resource for improving curriculum responsiveness, ensuring that the higher education institution, specifically the Camarines Sur Polytechnic Colleges, is effectively preparing the students for the labor market demands.

Respondents

The respondents in the study are 78 graduates of BS Mathematics of CSPC with 41 and 37 graduates for 2022 and 2023, respectively. They were best candidates to be the respondents of the study because it is advised to carry out follow-up research at least 2 years following the pioneer batch. Since this study focuses primarily on the employability of the graduates, it is acceptable that the majority of them are still in the job searching process.

Research Instrument

The study used a questionnaire anchored by the CHED tracer study as the main instrument in gathering the needed data, modified and used to fit the BS Mathematics graduates of CSPC. This underwent a validation process with 3 experts, leading to a content validity rating of 0.94. The questionnaire consists of the respondents' profile in the first section, employment data of the graduates in the second section, the competencies acquired for their personal and professional growth, and their evaluation of the BS Mathematics program curriculum, in the third and fourth sections, respectively. Another instrument that was utilised in this study was the old and existing curriculum of the BS Mathematics program to contextualise graduates' responses and suggestions.

Data Collection and Analysis

A consolidated list of BS Mathematics graduates was obtained from the Student Registration and Records Office of the state college. The partic-

ipants were informed formally and clearly regarding the objectives of the tracer study through a letter of consent. They participated in the tracer voluntarily and participants were assured of the security of the information that was gathered from them. The questionnaire was administered virtually through emails or other social networking sites. The data gathered in the study were tabulated and analysed utilising statistical tools, including frequency counts, percentages, and weighted mean, to interpret the impact perceptions of the graduates in their professional and personal growth, and evaluation of the BS Mathematics program that was extracted from their responses to the questionnaire administered. The analysed data were interpreted unbiasedly to assure the credibility of the results. Based on the findings and conclusions, recommendations were relayed to the college for possible revision of the curriculum to be done by the program chair of the BS Mathematics, the dean of the college, curricular reforms committee of the institution, and other authorities concerned in the curriculum revision.

RESULTS AND DISCUSSION

Profile and Professional Status of the BS Mathematics Graduates

There were 78 graduates who participated in the study dominated by female respondents at 53 or 67.95 percent, and males at 25 or 32.05 percent. Of this sample, 67 or 85.90 percent are already employed, all are working locally or within the country. From this, 60 graduates or 76.92 percent are working fulltime and the rest are working part-time. In terms of occupational classification, familiar are those employed as clerks with 9 respondents, or 13.43 percent, and 6 or 8.96 percent of employed are under the official government and special-interest organisation. Meanwhile, 37 graduates or 55.22 percent are working under other occupational classifications who did not fall on the classifications provided. A significant number of the workplaces of the graduates are in government offices, private schools, private sales and marketing companies, lending companies, and BPO-service agencies.

Meanwhile, in terms of their years of stay in their job, 29 or 43.28 percent are employed for below 6 months, 17 or 25.37 percent have been employed in their company or agency for 6-12 months, and 21 or 31.34 of respondents have been employed for more than 12 months already. As noted by the graduates, 34 or 50.75 percent of them revealed that their current employment is their first job since their graduation. Significant reasons of the employed graduates for staying in the job are to gain more knowledge and experience or career growth, good working environment, good employment benefits, to support financial needs, convenience in the work setup and distance of residency to the workplace, for self-fulfillment, and return of service due to their baccalaureate scholarship.

Furthermore, it was gleaned from the data that 50.75 percent or 34 of the respondents are employed as regular workers in their respective jobs, 24 or 35.82 percent are contract of service employees, while others are employed under the casual and temporary nature of employment. In terms of salary or income, 40 respondents, or 59.70 percent, have a monthly income ranging from 10,001 to 20,000 pesos. Additionally, those employees categorised with a monthly income below 10,000 pesos, and 20,001 to 30,000 pesos, both have 13 or 19.40 percent of graduate respondents. It can be concluded that the graduates' income is not that competitive. Hence, this implies that they still need to gain more years of experience and attain the qualifications required for salary increases. Aside from the monthly income they receive, other benefits are also enjoyed by the employees. A portion of the graduates, or 21.15 percent of those who responded in an item with regard to the reasons for staying in the job, stated that they are staying because of employment benefits.

On the subject of the relatedness of their program to their current job, 34 or 50.75 percent of the respondents' jobs are related to their program, while 33 or 49.25 percent said otherwise. This indicates that despite the availability of job opportunities in the country, it is still a challenge for them to look for careers that would actually align with their completed degree, especially if a huge part of their decision to work is their convenience and distance. Considering this, they might pursue jobs in other distant workplaces, or they would decide to be employed in careers that are not related to their completed degree. This finding is also a result of the limited exposure of the graduates in the field. As the pioneer graduates of the program, they were also confused about where they would be after graduation. This is also supported by the employ-

ment status of the graduates being employed in various sectors and fields, as mentioned in the type of organisation they are involved with.

Currently, of 78 total graduates, 7 have been pursuing a master's degree, with 4 of them pursuing Master of Science in Mathematics degree at Batangas State University, and 3 are pursuing a master's degree in mathematics education in the local universities in the region. Moreover, 16 are licensed professional teachers and 10 are planning to take the same direction of becoming licensed mathematics teachers as they are obtaining units under the teacher certificate program. Table 1 presents the frequency and percentage distribution of the graduates according to their post-baccalaureate endeavours.

This implies that a significant portion of the graduates of the program chose to be in the education field, as it is more feasible and responsive to the need of mathematics teachers in the community. Also, another reason for this is the availability of career opportunities within the locality aligned in the program. Though a majority are employed, it can be noted that they are working outside the region. It is also noteworthy that there are still employees who are not in regular status, most of them do not receive competitive income, and almost a half portion considers their job not related to their career. With these reasons, graduates tend to pursue units in education and take licensure examinations in mathematics teaching instead so their completed degree does not go to waste. To support this, 15 graduates are already practicing the teaching profession in different public and private schools in the region.

This result suggests the possibility of adding education courses as elective courses in the curriculum to cater this shift on the employment of the graduates. With this, graduates of the program taking these elective courses need not to take any more courses in the teacher certificate program from other schools just to obtain a license in teaching. In Silliman University (n.d.), the BS in Mathematics program offers 6 education-related elective courses in the curriculum.

Impact of the BS Mathematics Program on the Graduates' Personal and Professional Growth

The findings in this study indicates that BS Mathematics graduates perceive problem-solving skills as the most impactful competency in their professional roles, with a weighted mean of 3.66. This emphasises the significant role of problem-solving abilities in enhancing employability. Employers consistently prioritise candidates who can demonstrate strong problem-solving capabilities, as these skills are essential for critical thinking and informed decision-making. A study by Tushar and Sooraksa (2023) highlights that problem-solving, self-esteem, and teamwork are among the top employability skills expected by employers.

In addition to problem-solving, respondents identified people skills, personality development, learning efficiency, and communication skills as significant contributors to their current professions. While technical proficiency in mathematics is essential, these competencies align with the soft skills increasingly sought after by the employers in the modern workforce. These are increasingly recognised as critical components that complement technical knowledge and prepare graduates for diverse professional environments. Mahmud and Wong (2022) emphasises that employers value graduates who exhibit critical thinking, effective communication, and the ability to collaborate within teams. The integration of these skills into the BS Mathematics curriculum likely enhances the adaptability and versatility of graduates across various sectors. The high ratings on these soft skills echo the findings of some of the studies (Victorino et al. 2022; Andaya et al. 2024), which emphasised problem-solving, critical thinking, and communication skills are consistent to be most useful competencies in actual workplaces.

Table 1: Frequency and percentage distribution of the respondents according to their post-baccalaureate endeavours

Post-baccalaureate endeavours	*f*	*%*
With units in masteral study	7	8.97
Licensed professional teachers	16	20.51
With units in Methods of Teaching / Teacher Certificate Program	10	12.82
Practicing teachers (licensed or non-licensed)	15	19.23

Effective interpersonal and communication abilities are indispensable in the professional realm. A study (Basista et al. 2021) assessing the performance of BS Mathematics graduates from the University of Eastern Philippines highlighted that employers rated graduates as "very satisfactory" in communication skills, leadership skills, and interpersonal skills. This positive feedback underscores the importance of these competencies in meeting workplace expectations and facilitating career advancement. Similarly, research focusing on mathematics education graduates (Paler and Roble 2021) revealed that graduates were "highly satisfied" with the communication and human relation skills acquired during their academic tenure. These skills were deemed crucial in their roles as educators and professionals, enabling them to convey complex concepts effectively and collaborate efficiently with colleagues and students.

Personality development, encompassing traits such as leadership, adaptability, and self-motivation, significantly influences employability. A study conducted at St. Paul University Surigao (Arpilleda et al. 2021) identified leadership skills as a predictor of employability among Bachelor of Secondary Education in Mathematics graduates. The research suggested that leadership qualities enable graduates to share knowledge effectively and contribute positively to their work environments, thereby enhancing their employment prospects.

Another highly contributing skill is the learning efficiency. The capacity for continuous learning and efficient knowledge acquisition is vital in today's rapidly evolving job market. Employers of BS Mathematics graduates from a university in the country expressed high satisfaction with the graduates' analytical and problem-solving abilities, indicating that these competencies are crucial for adapting to complex tasks and challenges in the workplace (Basista et al. 2021).

Conversely, the data reveals that competencies related to opportunities abroad and exposure to the international community are perceived as less contributory. With the weighted means of 3.00 and 3.01 respectively, this result suggests a gap in the program's global engagement. Though the findings revealed these competencies were the lowest contributing factors, it is still believed that international experience has been linked to improved employability, with studies indicating that graduates with such exposure often secure better job opportunities. Knutsen et al. (2024) notes that international graduates in China navigate their employability and vocational development through their global experiences. It is also highlighted in the ASEAN Secretariat study by Lim et al. (2022), that student-mobility programs, through international linkages and opportunities abroad, enhance employability outcomes, however, access remains limited across HEIs.

To address this, the program could enhance its international linkages, providing students with opportunities for global exposure, such as international internships, study abroad programs, or foreign institution collaborations.

Moreover, the third lowest contributing among the areas is the exposure to local community within the field of specialisation, with the weighted mean of 3.21. It is evident that the percentage of entrants in the program, when compared to other programs in the situation, is lower. One of the reasons for this low enrollees is that the community does not actually know the focus of the program and the career opportunities in line with it. Even the enrolled students find it hard to clearly determine what specific jobs are waiting for them in the future. In line with this, results of the study shows that among those who gave responses along the recommendations for further curriculum improvement, 15 out of 42 or 35.71 percent has suggested to include internship or practicum in the curriculum, which includes field and teaching experiences. The existing curriculum does not include a course intended for this purpose which for Kalaw (2019) believes the importance of integrating practical experiences, like internships or practicum components in enhancing graduates' readiness for the workforce. These enhancements aim to align the BS Mathematics program with evolving industry requirements and improve graduate employability. Fahmy et al. (2025) emphasised that there should be a strong bond between academic institutions and industries, and this connection is essential in enhancing the graduates' employability. To fill this gap, initiatives such as industry partnerships, internships, and work-integrated learning programs are needed. The World Bank (2025), which disclosed the skills to jobs mismatch in the country, also emphasised that HEIs should boost industry-relevant curricula and encouraged the provision of more hands-on experiences to reinforce the employability of graduates.

The graduates also emphasised that exposure to financial mathematics and accounting experiences is helpful in their current job employment and even in the career calling of the program, suggesting that the curriculum shall enhance these skills along its courses. Currently, the program curriculum includes one business-related course, the Theory of Interest, which is being taken during their 4th year of study.

Overall, the BS Mathematics program is viewed positively, contributing significantly to both personal and professional growth, as reflected by a total weighted mean of 3.40. To further enhance graduate employability, the program might consider integrating more opportunities for students to develop international competencies and global awareness. This could involve establishing partnerships with institutions in neighboring countries, facilitating student exchanges, and incorporating global perspectives into the curriculum. Such initiatives would prepare graduates to compete more effectively in an increasingly interconnected global job market. Moreover, the findings also revealed that while the institution effectively fosters development of soft skills, it is suggested that interventions in ICT, research capabilities, and international exposure may be targeted to help graduates measure up in increasingly global and technology-driven labour markets. This parallels with the study of De Jesus et al. (2025), which emphasised that gaps between academic experience and professional requirements persist in technical competencies and global employability readiness.

Table 2 presents the competencies acquired by the respondents in their baccalaureate degrees that highly contribute to their jobs.

Graduates' Assessment of the BS Mathematics Curriculum

The data indicates that BS Mathematics graduates place significant emphasis on teacher-student relationships, professors' subject matter expertise, and the quality of instruction, with ratings of 3.65, 3.60, and 3.56 respectively. These facets are crucial in shaping the educational experiences and employability of graduates.

Strong teacher-student relationships cultivate an encouraging learning environment, which enhances student engagement and motivation. At the moment, Awoniyi and Butakor (2021) emphasise that positive interactions between teachers and students significantly impact academic performance and personal development, which are critical for employability. Moreover, a study evaluating the quality of graduates from teacher education institutions in the country highlighted that effective delivery of programs and having qualified faculty contribute to better teaching performance among beginning teachers. This underscores the importance

Table 2: Competencies acquired by the respondents in their baccalaureate degree

Personal and professional growth	*Weighted mean*	*Interpretation*	*Rank*
Academic profession	3.49	Highly contributing	7
Research capability	3.27	Highly contributing	9
Learning efficiency	3.57	Very highly contributing	4.5
Communication skills	3.57	Very highly contributing	4.5
People skills	3.62	Very highly contributing	2
Problem solving skills	3.66	Very highly contributing	1
ICT skills	3.22	Highly contributing	10
Meeting present and future professional needs	3.35	Highly contributing	8
Exposure to local community within field of specialisation	3.21	Highly contributing	11
Exposure to international community within field of specialisation	3.01	Highly contributing	12
Critical thinking skills	3.55	Very highly contributing	6
Opportunities abroad	3.00	Highly contributing	13
Personality development	3.61	Very highly contributing	3
General Weighted Mean	**3.40**	**Highly contributing**	

Interpretation: 1:00-1.49, Poorly contributing; 1.50-2.49, Fairly contributing; 2.50 3.49, Highly contributing; 3.50-4.00, Very highly contributing

of positive interactions between educators and students in developing competencies essential for employability (Olvido et al. 2024).

The second top-rated area of the curriculum is the professor's knowledge of the subject matter. The depth of a professor's knowledge directly influences the quality of education delivered. Research has shown a strong correlation between teachers' subject matter expertise and student learning outcomes. Bonney et al.'s study (2015) examining the relationship between teacher qualifications and pupil performance found that subject matter knowledge is a critical variable related to teacher effectiveness, which in turn affects student achievement.

Quality of instruction is the graduates' third top-rated area in the curriculum. Effective instructional strategies are vital for deepening students' understanding of complex mathematical concepts. A tracer study of BS Mathematics graduates from the University of Eastern Philippines (Kalaw 2019) revealed that the quality of teaching significantly influenced graduates' satisfaction and their preparedness for employment. The study emphasised the need for continuous enhancement of instructional methods to align with industry demands.

The abovementioned results in the program ratings are affirmed by the study of Victorino et al. (2022), which revealed that faculty competence together with classroom rapport strongly influence the graduates' readiness in employment. Moreover, Andaya et al. (2024) emphasised that the faculty's adaptability in instruction is an important factor to sustain the employability skills of computing students.

On the other hand, graduates rated the lowest in extracurricular activities. Despite this, it is important to consider the significant role extracurricular activities play in developing transferable skills such as leadership, teamwork, and time management. Engagement in these activities has been linked to enhanced employability. Paler and Roble (2021) highlighted that participation in extracurricular activities, although rated lower, contributes to the holistic development of graduates, equipping them with practical skills valued by employers.

Since the program establishment of the League of Elite Math Enthusiasts (LEMEN), it has also founded an organisation exclusively membered by the students under the program. However, due to low population, the organisation also suffered inactivity in its early years since students were quite focused in academics rather than in institutionalised extracurricular activities. The low population also equates to low funds, which cannot suffice holding more program-related activities. Furthermore, the graduates of these batches were those who were affected by the COVID-19 pandemic, which limited the conduct of face-to-face activities not only in the institution but in the whole country as a whole.

Meanwhile, another area with a lower rating is the utilisation of laboratory resources, closely rated at the lowest with a weighted mean of 3.10. During the graduates' stay in the institution, they were only utilising a computer programming laboratory from another college. They were allowed to make use of the facility only on their respective schedule since the other computer-related programs also use it. The limited time of usage also limits them to maximise their computer and programming skills. This reason affirms the result of their rating in ICT skills as their 4th lowest competency acquired in the program. In addition to the lack of a computer laboratory, chemistry and physics laboratories, which are essential in these non-math foundational courses, are also not available in the college to be exclusively used by the students in the program. Laboratories for chemistry and physics-related activities can only be borrowed from another college, yet still lacking equipment, thus not maximised. According to Kalaw (2019), laboratory resources are essential for providing hands-on experience and fostering the practical application of theoretical knowledge. Adequate laboratory facilities enable students to engage in experiential learning, critical for developing problem-solving skills pertinent to the workforce. It is also recommended in the study that improvements in laboratory resources should be done to better prepare graduates for industry challenges. As of this writing, the program already has its own computer laboratory, though sufficient, containing 30 units of computers installed with some mathematical programs necessary for their courses. However, chemistry and physics laboratories exclusive for the program are still yet to exist.

Lastly, the graduates perceived lower experience in research opportunities, with a weighted rating of 3.13. It is understandable that students perceive lower in this area since they were the first graduates of this program. Since there were no

references and existing papers available in the library, they still had no idea of what pure mathematics papers look like. For this reason, the first batch graduates were given a special problem task that was not like the typical pure mathematics paper outputs as compared to the thesis outputs of other schools offering the same program. Starting from the batch of 2023, the expository paper output was changed to an original special problem output, which is paper requiring the formulation of new mathematical concepts that need to be proven through constructive and existing mathematical ideas and properties. This innovation in their thesis outputs continually challenge the students' critical thinking in pure mathematics, and help the students to redirect the academic focus of the program in comparison to other mathematics-related programs, such as the mathematics education.

To address this gap, the graduates recommended the conduct of seminars that would help the students enhance their research prowess in alignment to the mathematics program. Along with this, graduates also recommended to conduct seminars focusing on in-depth content to help the students in their research pursuits as well as the graduates when they decide to continue higher study. Involvement in research projects enhances critical thinking and analytical skills. A study on the employment and employability skills of graduate school graduates in the Philippines (Cruz and Cruz 2023) found that research involvement during academic years significantly contributed to graduates' competencies, making them more competitive in the job market.

These concerns on the lack of in-depth research pursuits and limited resources were also raised in the study of De Jesus et al. (2025), who found that research competencies and technical resource access are often less prioritised in many HEIs, thus, limiting the preparedness of the graduates to encounter such innovation-driven workplaces.

Overall, indicators obtained high to very high ratings, indicating that the program's implementation is highly effective, as perceived by the graduates. The grand perception mean of the graduates of the curriculum along these areas is 3.35, which still signifies a commendable curriculum yet can still be improved. The data in Table 3 discloses the BS Mathematics respondents' rate of their baccalaureate degree in college.

CONCLUSION

Findings revealed that most of the graduates are already employed, with all of them employed within the country. A major portion of them are working full-time in various professions such as clerks, workers in government and special-interest organisations, and technicians. Slightly more than half of the employed are working on a regular basis, varying from below 6 to more than 12 months. It is indicated that they earn a stable yet modest income level. It is also revealed that only half of them are employed in a job related to their previous program. Moreover, of the total respondents, some have been pursuing a master's degree, a fifth of them are already licensed professional teachers, while some are still obtaining units under the teacher certificate program. Some of the employed are already practicing the teaching profession in different public and private schools in the region.

Table 3: Rate of the baccalaureate degree program

Program rating	*Weighted mean*	*Interpretation*	*Rank*
Range of courses	3.30	High	8
Relevance to your profession	3.17	High	9
Extracurricular activities	3.09	High	12
Premium given to research	3.13	High	10
Interdisciplinary learning	3.40	High	6
Teaching and learning environment	3.45	High	4
Quality of instruction	3.56	Very high	3
Teacher-student relationships	3.65	Very high	1
Laboratory resources	3.10	High	11
Class size	3.38	High	7
Professor's pedagogical expertise	3.42	High	5
Professor's knowledge of subject matter	3.60	Very high	2
General Weighted Mean	**3.35**	**High**	

Interpretation: 1:00-1.49 Poor; 1.50-2.49 Fair; 2.50 3.49 High; 3.50-4.00 Very high

In terms of personal and professional growth, the graduates concluded that the highest contributing competencies of the program in their current jobs are problem-solving skills, people skills and personality development. However, the competencies that the graduates believed to have the lowest impact on their growth are the opportunities abroad, and exposure to international and local communities within the field of specialisation. Generally, the graduates' perception on the impact of the program is highly contributing.

In terms of the graduates' assessment of the program, the indicators with the very high ratings include teacher-student relationships, the professor's knowledge of subject matter, and quality of instruction. On the other hand, though considered high, graduates perceived the lowest in the program's facets of providing opportunities for extracurricular activities, laboratory resources, and premium given to research. Overall, the respondents rate the program generally as high.

RECOMMENDATIONS

In order to further improve the program and create an institution with graduates who are prepared for the workforce, the college should enhance the curriculum of the Bachelor of Science in Mathematics program. To realise this, the curriculum should be reviewed with the administration, stakeholders, and the presence of representatives from various industries.

In the area of content, the curriculum has to focus on in-depth discussions of contents specifically on proving methods, especially when students would want to pursue higher studies. It is also recommended to add courses that will highlight financial mathematics and accounting, as well as education courses that can lead those who want to pursue teaching. To better prepare the graduates for industry, the curriculum can also be added with internships or practicum. Activities and programs that will help them be exposed in the local and international community and open doors for opportunities abroad are vital to their learning experience. Aside from community extension programs, on-the-job training should be included and international linkages should be strengthened through international internships or collaborations with foreign institutions.

For holistic development, aside from problem-solving skills and mathematical proficiency skills, a learning environment should also ensure the development of soft skills such as people skills, personality development, and communication skills.

Furthermore, extracurricular activities should be enriched to provide a medium for the students to be engaged in a meaningful learning experience. Allowing them to participate in such activities boosts their confidence and esteem in a highly collaborative way of learning. The provision of laboratory facilities is also a significant recommendation to consider. While there is already an existing computer laboratory, chemistry and physics laboratories still need to be provided. Lastly, research opportunities and exposure should be given to the students. Aside from their research course, attending research conferences and seminars can help them elevate their skill in this area.

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