

Professional Competencies of Mathematics Education Graduates under a Constituent Campus of Tribhuvan University: A Quantitative Analysis

Shree Prasad Ghimire 

Lecturer

Department of Mathematics Education

Mahendra Ratna Campus, Tribhuvan University Nepal

shreeprasad.ghimire@mrc.tu.edu.np

Krishna Chandra Paudel* 

Lecturer

Department of Mathematics Education

Mahendra Ratna Campus, Tahachal

kcpaudel@trinitycollege.edu.np

Hem Bahadur Rai 

Research Scholar

Mathematics Education

Mahendra Ratna Campus, Tribhuvan University Nepal

raihemant04194@gmail.com

Corresponding Author*

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Abstract

Background: Tribhuvan University and other universities of Nepal has produces huge number of graduates every year by providing necessary knowledge and skills to the graduates. In this context, there was more scarcity of teacher candidates in different schools and colleges. It was needed to publish the (notice) advertisement for teacher's multiple times in different subject, especially in mathematics. In the same time, some of the graduates were facing the problem of unemployment which is more contradictory issues. Therefore, this study has been identifying the gaps between unemployment and scarcity of teacher candidates by identifying their competencies and the expectation of job market.

Methods: This study examines the professional competencies, pedagogical preferences, instructional challenges, and professional development needs of 32 mathematics education graduates using a descriptive quantitative survey design. For this examination, the quantitative data were collected through a structured questionnaire combining Likert-type competency scales and dichotomous checklist items, and analyzed using descriptive statistics (frequencies, percentages, mean, standard deviation, and variance).

Results: The results of the data analysis showed that graduates had a strong alignment toward teaching careers (78.1%). It was found that graduates had higher proficiency in algebra (Mean $\bar{x}$ = 3.97, SD = 0.933) than in calculus (Mean $\bar{x}$ = 3.22, SD = 1.184). They had a strong preference for problem based learning (Mean $\bar{x}$ = 4.41, SD = 0.756) over direct instruction (Mean $\bar{x}$ = 3.19, SD = 1.176). Around 78.1% mathematics graduates described insufficient time and student struggle in limited resources were their main obstacles in learning geometry. They also stated their difficulties of large class sizes (68.8%). Graduates had 12.5% to 18.8 % access in the use of innovative teaching method by using ICT.

Conclusion: These findings have been interpreted against professional development competences of teacher which implied to teacher education programs, school administrators and policymakers. This study has been identifying the actual professional insufficiency of mathematics graduates to meet the demand of job market.

Keywords: mathematics education, problem-based learning, professional development, teacher competencies, teacher preparation.

Introduction

Teachers' professional competence is one of the strongest determinants of instructional quality and students' achievement in mathematics education ([Blömeke et al., 2015](#)). Contemporary frameworks emphasized content knowledge, pedagogical content knowledge, and general pedagogical knowledge as interdependent components of teaching expertise ([Shulman, 1986, 1987](#)), while competence itself is best understood as an evolving range shaped by disposition and context rather than a fixed trait ([Weinert, 2001](#)). As mathematics education graduates transition from preparation programs into professional classrooms, documenting their self-perceived strengths, preferences, and the conditions under which they must teach offers a valuable evidence base for improving preparation, induction support, and policy.

A substantial body of literature addresses teachers' competence in the abstract through large-scale international assessments such as TEDS-M ([Döhrmann et al., 2012](#)) or through conceptual frameworks describing the components of professional knowledge ([Shulman, 1986, 1987; Weinert, 2001](#)). Similarly, considerable research documents the effectiveness of specific pedagogical approaches, such as problem-based learning ([Collins et al., 1989; Schettino, 2016](#)) and the structural barriers to effective teaching, such as large class sizes and resource scarcity ([Fortes & Tchanchane, 2010; Ling & Mahmud, 2022](#)). However, comparatively little empirical work integrates these strands competency self-assessment, pedagogical preference, resource and technology access, and professional development need within a single cohort of graduating mathematics teacher candidates, particularly within educational contexts where

class sizes are large and instructional technology is scarce. Moreover, few studies triangulate quantitative self-reported data on content knowledge, curriculum literacy, and assessment practices with graduates' own accounts of the systemic obstacles they anticipate or encounter. This study addresses that gap by presenting an integrated, descriptive quantitative profile of mathematics education graduates across these interrelated dimensions, using a single validated survey instrument administered to a defined cohort.

Statement of the Problems

Besides reliable emphasis on content and pedagogical knowledge in teacher education, mathematics education graduates continue to report uneven mastery across mathematical domains, which has limited familiarity with curriculum and assessment frameworks, and constrained ability to enact student centered pedagogies in real classrooms. Graduates often feel confident in foundational areas of mathematics such as algebra and arithmetic but less confident in calculus and trigonometry. The large enrollments of students in one class, scarcity of materials, and limited digital access were the frequently implementing problem based and technology integrated pedagogies and their training encourages. The findings of the research by [Döhrmann et al. \(2012\)](#) addressed teacher competencies in the specific pedagogies skills such as problem based learning ([Collins et al., 1989](#); [Schettino, 2016](#)), or structural barriers such as class size ([Fortes & Tchanchane, 2010](#); [Ling & Mahmud, 2022](#)) separately, but comparatively few studies integrated competencies of teachers, pedagogical preference, self-assessment, access of resource, and professional development need within a single cohort. This study investigated the gaps by presenting an integrated, descriptive quantitative profile of mathematics education graduates across different dimensions.

Review of Empirical and Theoretical Alignment

[Shulman, \(1986, 1987\)](#) has described the teachers' competencies as the foundational work identifies content knowledge, pedagogical knowledge, and pedagogical content knowledge as core components for the expertise in teaching, later extended by ([Blömeke et al., 2015](#)) into a field of model spanning disposition, situation specific skill, and observable performance. Empirically, [Hill et al. \(2005\)](#) established the teachers' mathematical knowledge for teaching achievements predicts students' large-scale studies such as Teacher Education and Development Study in Mathematics (TEDS-M). It confirmed that content and pedagogical content knowledge could be measurable across teacher education programme ([Döhrmann et al., 2012](#)). A persistent explanatory concept is the double discontinuity ([Kaiser et al., 2017](#)) such as the disconnect between abstract university mathematics and the concrete demands of secondary teaching, which reasonably explains the rate of graduates competencies in calculus lower than foundational domains of algebra. ([Blömeke & Klein, 2013](#)) showed the contextual factors related to school leadership, trust, and appraisal moderate the beginner teachers could apply their knowledge in practice.

According to cognitive apprenticeship theory and relational problem based pedagogy support learner centered, cooperative approaches that improve students' ability to apply mathematical knowledge ([Collins et al., 1989](#)). It provided the theoretical backdrop for graduates' own strong preference for problem based learning ([Schettino, 2016](#)). However, structural constraints could

limit the implementation in large class sizes reduce flexibility and individualized attention ([Fortes & Tchanchane, 2010](#)). The limited resources and infrastructure were commonly mentioned obstacles in mathematics classrooms ([Ling & Mahmud, 2022](#)). A insightful change occurs from industrial to a knowledge base competencies of graduates. The global initiatives increasingly bring the face of 21st century competences ([Dumont, Istance & Benavides, 2010](#)). Technology integration could be best understood as mentioned in TPACK framework, which treats effective digital pedagogy as residing the intersection of technological, pedagogical, and content knowledge rather than as an additive skill ([Mishra & Koehler, 2006](#); [Tømte et al., 2015](#)). Finally, effective professional development has been most impactful if focused in content, job-embedded, and sustained rather than uneven or generic ([Darling-Hammond et al., 2017](#); [Darling-Hammond et al., 2009](#); [Desimone, 2009](#)), and situated, collaborative reflection on practice is itself a central mechanism of competence growth ([Blömeke et al., 2017](#)). This literature has framed teacher competence as multidimensional, contextually contingent, and dependent on the alignment between pedagogy, resources, and sustained professional support in interpretive lens. The findings of the research by [Ghimire \(2025\)](#) suggested the potential experience-related pattern in commitment of the teachers that may imply professional development activities and educational policy.

Objectives of the Study

1. To determine intended professional career paths and proficiency of graduates across the domain of core mathematical content.
2. To examine understanding of graduates about curriculum frameworks, objectives, and pattern of evaluation.
3. To identify preferred and used pedagogical strategies, and challenges for implementing diverse teaching methods.
4. To access the use of instructional technology and professional development/support needs of graduates

Research Questions

The following research questions have been set to fulfill the above objectives:

1. What are the content proficiency areas of graduates?
2. How well do graduates understand existing curricula and assessment systems?
3. What pedagogical strategies do graduates prefer, and how do they face the barrier?
4. What kind of instructional technologies and professional development support receive from the institution?

Limitation and Delimitation of the Study

This study has the limitations related to small class size ($N = 32$) from a single programme of B.Ed. level, dependence on self-report rather than observed performance or objective testing, context-specific findings that may not generalize, and a cross-sectional design that cannot capture developmental change. Future research should pursue longitudinal designs which follows the graduates into practice, triangulate self-report with objective content assessment and classroom observation, and compare those findings across multiple teacher education programme.

Methodology

This section analyzed the methods and procedures for finding the results of the study. This section contains: Research design, population and samples, construction and validation of tools, data collection and analysis procedures, results and discussion and finally conclusion.

Design of the Study

In this study, we used a descriptive, cross-sectional quantitative survey design, appropriate for systematically documenting a characteristics of population at a time rather than testing causal relationships ([Döhrmann et al., 2012](#))

Population and Sample

The population comprised mathematics education graduates completing their teacher preparation program during the study period under Tribhuvan University. Due to small, clearly bounded population, census method of sampling technique was used for entire class. All 32 eligible graduates were invited for giving a 100% response rate. This maximizes representativeness relative to the parent population but it limits statistical power and generalizability beyond comparable programs with small and absolute sample size.

Construction and Validation of Tools

Data were collected using a structured, self-administered questionnaire comprising a) demographic and career-intention items b) six-items were in five-point Likert scale assessing proficiency across mathematical content domains c) categorical items on curriculum and assessment understanding d) dichotomous checklist items on pedagogical strategies, challenges, technology use, needs of support, differentiation, and reflective practice. The content validity was assured by reviewing by 3 professors and 2 associate professors of mathematics education at Tribhuvan University to revised or removed items based on the feedback provided by the expert's groups. Face validity was checked via piloting to the students at one affiliated community campus of Tribhuvan University among sixteen students, who were not in sample list. After conducting pilot test, the each of the confusion in the items were made edited and made more practicable and understandable. The final items were in the form of checklist than internal consistency statistics, since they measured distinct, largely independent behaviors.

Data Collection Procedures

Institutional permission and informed consent were taken from the respondents in written form prior to data collection. Further, final questionnaire was administered to all 32 graduates in a single scheduled session (approximately 40–50 minutes), allowing real-time clarification of ambiguous items and ensuring complete responses with no missing data requiring exclusion.

Data Analysis and Interpretation

All the responses were coded and analyzed by using SPSS 27 with means, standard deviations, and variances were computed for Likert-type items, and frequencies/percentages for categorical and dichotomous items. No inferential tests were conducted, consistent with the descriptive design. Results were organized into thirteen summary tables and interpreted against the theoretical and empirical literature reviewed in review section.

Results and Discussion

This section presents each survey table with a brief, deep analysis, followed by a combination of the overall pattern across findings. The following [Table 1](#) gives the intended profession of graduates in future.

Table 1.

Intended Profession for Future

Intended Profession	Frequency	Percentage (%)
Teachers	25	78.1
Civil Service (Loksewa)	3	9.4
Educational Administration	3	9.4
Business	1	3.1
Total	32	100.0

From the [Table 1](#), it was found that, 78.1% of graduates intended to become a teacher, whereas the other graduates intended to get different types of profession such as: civil service, educational administration (9.4% each), and business (3.1%) in future. This indicates that the graduates have strong, clear commitment to the teaching path, with strong professional identities ([Blömeke et al., 2015](#); [Weinert, 2001](#)). This remarkable motivational attitude in teaching suggests that most graduates enter the program with clear pedagogical career goals, which is consistent with the importance placed on professional identity formation within teacher-competence frameworks ([Blömeke et al., 2015](#)). A strong target into teaching profession is a favorable precondition for the investment of effort required to develop and sustain professional competence over time ([Weinert, 2001](#)). In the analysis of the professional competencies into different areas of mathematics has found in the [Table 2](#).

Table 2.

Professional Competencies in Different Areas of Mathematics

Area	N	Mean	SD	Variance
Algebra	32	3.97	0.933	0.870
Probability & Statistics	32	3.69	0.821	0.673
Arithmetic	32	3.59	0.911	0.830
Geometry	32	3.50	0.950	0.903
Trigonometry	32	3.31	0.998	0.996
Calculus	32	3.22	1.184	1.402

From the [Table 2](#), it was found that algebra domain was found the highest competencies with (Mean $\bar{x}$ = 3.97, SD = 0.933), followed by probability and statistics, arithmetic, and geometry, with lower proficiency was found in trigonometry and calculus rated lowest (Mean $\bar{x}$ = 3.31 and Mean $\bar{x}$ = 3.22, respectively). The comparatively more variance was found in the competencies of calculus. The high (variance = 1.402) in calculus indicates the substantial heterogeneity in advanced mathematical competence among graduates. This pattern is consistent with the double discontinuity as described by ([Kaiser et al., 2017](#)), whereby

university mathematics coursework often fails to connect adequately with the demands of secondary level teaching, leaving less confident of graduates in more abstract content areas. It also said by ([Darling-Hammond et al., 2009](#)) with his argument that teachers require sustained opportunities to build deep knowledge of both mathematics content and how students come to understand it in different opportunities that may be less available for advanced topics such as mentioned in calculus. In the context of mathematical achievement, the study of ([Ghimire, 2026](#)) found there was no effect of gender in the achievement of mathematics. To explore the mathematical competencies of graduates, it was necessary to analyze the understanding levels of graduates in the curriculum, objectives and SEE questions format. The following [Table 3](#) gives the analysis levels of graduates' understanding in curriculum literacy and pedagogical Strategies.

Table 3.

Understanding of Curriculum, Objectives, and SEE Question Pattern

Curriculum Materials	Poor (%)	Somehow Familiar (%)	Well (%)	Very Well (%)
Curriculum Framework	6.3	50.0	25.0	18.7
SEE Question Pattern	0.0	21.8	62.6	15.6
Curriculum Objectives	3.1	9.4	68.7	18.8

In the analysis of [Table 3](#), it was found that Only 18.7% of participants have their understanding on the curriculum framework *very well*, while half (50.0%) indicated being only *somehow familiar* on it. Regarding Secondary Education Examination (SEE) question patterns, it was found that 62.6% reported understanding them *well*, but only 15.6% claimed to understand them *very well*. These findings suggest that curriculum and assessment literacy receive insufficient emphasis during teacher preparation concerning the effective teaching that depends on a deep functional understanding of curricular objectives and assessment standards ([Hill et al., 2005](#)) according to the specified level. Similarly, the different strategies of graduates were analyzed in the following [Table 4](#).

Table 4.

Strategies Used for Analysis of Mathematical Concepts

Strategies	Used (%)	Not Used (%)
Real-World Examples	46.9	53.1
Step-by-Step Breakdown	43.8	56.3
Visual Diagrams/Charts	37.5	62.5
Technology Demonstration	31.2	68.8
Hands-on Activities	21.9	78.1
Analogies/Metaphors	9.4	90.6

The analysis of [Table 4](#) explores the different strategies of graduates applied in their teaching mathematics. It was found that there was no single strategy which was applicable everywhere in teaching mathematics. Among different strategies, use of real-world examples was the most preferable strategy of graduates whereas the least percentage (9.4 %) used analogies/ metaphors (9.4%) the use of hands-on activities was found (21.9%) which was also found rarely used

strategy. This indicates that, a narrow instructional toolkit relative to the diverse modeling strategies recommended in cognitive apprenticeship research ([Collins et al., 1989](#)). Likewise, the [Table 5](#) below presents graduates' preferences regarding the use of different teaching methodologies, revealing a clear hierarchy favoring student-centered approaches.

Table 5.

Analysis of Preferred Teaching Method in Mathematics

Method	N	Mean	SD	Variance
Problem-Based Learning	32	4.41	0.756	0.572
Group Work	32	3.75	0.950	0.903
Technology Integration	32	3.31	1.306	1.706
Direct Instruction	32	3.19	1.176	1.383
Manipulatives	32	3.12	1.129	1.274

From the analysis of the [Table 5](#), it was found that problem-based learning emerged as the most strongly preferred method (Mean $\bar{x}$ = 4.41, SD = 0.756), for group work with (Mean $\bar{x}$ 3.75), technology integration (Mean $\bar{x}$ =3.31), direct instruction (Mean $\bar{x}$ = 3.19), and manipulatives (Mean $\bar{x}$ = 3.12) respectively. This strong preference is encouraging in light of evidence that teachers trained in problem-based learning strategies implementation and produce measurable improvements in students' ability to apply mathematical knowledge, relative to traditional direct-instructional approaches ([Schettino, 2016](#)). The relatively high standard deviation for technology integration (SD = 1.306) indicates considerable variability in graduates' comfort with technology-based pedagogy. To apply the different innovative teaching method and new strategies in learning geometry, it was needed to face the different types of challenges. The following [Table 6](#) shows the different challenges which are as follows:

Table 6.

Challenges to Implementation of Diverse Teaching Methods

Challenge	Reporting as Barrier (%)
Time Constraints	78.1
Limited Resources	75.0
Large Class Size	68.8
Lack of Proper Training	59.4

In the analysis of the above [Table 6](#), it was found that *time constraints* (78.1%) and *student resistance* (78.1 %) were highlighted as the biggest challenges for the implementation the new method of teaching mathematics. Around 78.1% of graduates, closely followed by *limited resources* (75.0%) as their challenges whereas it was found that large class size (68.8%) was also found to apply the new and innovative strategy. These findings have aligned closely with ([Ling & Mahmud, 2022](#)) observation that limited teaching resources, inadequate infrastructure, and large student numbers routinely prevent teachers from establishing favorable learning environments. These are largely structural skill-based obstacles, consistent with class size and scarcity of resource and instructional flexibility ([Fortes & Tchantchane, 2010](#); [Ling & Mahmud, 2022](#)). Similarly, for the use of technology in teaching, the implementation of

effective teaching strategy access the professional development needs of graduates. In this context the following descriptive [Table 7](#) found the available and use of technology in their teaching and learning mathematics.

Table 7.

Analysis of Available and Used Technology based Resources

Technology	Used (%)	Not Used (%)
Scientific Calculator	71.9	28.1
Computer/Laptop	65.6	34.4
Internet Access	46.9	53.1
Smart Board	18.8	81.2
Projector	15.6	84.4
Interactive Whiteboard	12.5	87.5
Educational Software	12.5	87.5

From the above [Table 7](#), the clear gradient was evident between widely accessible basic technologies (scientific calculators, 71.9%; computers/laptops, 65.6%) and scarce advanced instructional technologies (interactive whiteboards and educational software, each 12.5%). This gap has been consistent with ([Mishra & Koehler, 2006](#)) argument that effective technology-integrated teaching depends on the intersection of technological, pedagogical, and content knowledge (TPACK), even where graduates may own relevant pedagogical intent, as suggested by their moderate preference for technology integration. The following [Table 9](#) shows the knowledge update strategies of graduates for effective teaching and learning mathematics.

Table 8.

Analysis of Knowledge Update Strategies of Graduates

Strategies	Yes (%)	No (%)
Reading Textbooks/References	81.3	18.7
Online Courses/Tutorials	21.9	78.1
Professional Workshops	9.4	90.6
Collaboration with Colleagues	6.2	93.8

From the analysis [Table of 8](#), it was shown that how graduates update their knowledge and skills for their professional development activities. It was found that, the heavy dependence on independent textbook reading (81.3%), combined with minimal engagement in collaborative learning (6.3%) and formal professional development workshops (9.4%), suggests a degree of professional isolation among graduates. This pattern is related to ([Blömeke & Klein, 2013](#)) finding of collaborative teaching practice and reflective processing. In the same pattern the following [Table 9](#) indicates the preferred professional development activities and their applied skills for effective teaching and learning mathematics.

Table 9.

Descriptive Analysis of Preferred Professional Development Activities of Graduates

Professional Development Activity	Frequency	Percentage (%)
Technology Integration	13	40.6
Subject Content Knowledge	6	18.8
Teaching Methods	6	18.8
Classroom Management	5	15.6
Assessment Techniques	1	3.1
Other	1	3.1
Applied Strategies	Yes (%)	No (%)
Extra Practice for Slow Learners	62.5	37.5
Advanced Problems for Fast Learners	28.1	71.9
Different Assignments	15.6	84.4
Individual Guidance	15.6	84.4
Peer Tutoring	6.2	93.8

The above [Table 9](#) shows the technology integration was the clear priority for future professional development (40.6%), well ahead of subject content knowledge and teaching methods (18.8% each). This finding reflects both the increasing status of digital pedagogy in mathematics education and graduates' own recognition, evident in the technology-access data as presented in [Table 10](#), of their limited practical capacity in this area. A pattern squarely consistent with the TPACK framework's highlighting on developing technological competence in cycle with content and pedagogy ([Mishra & Koehler, 2006](#); [Tømte et al., 2015](#)). For the use of effective teaching learning strategies in mathematics, the following [Table 10](#) shows the different strategies that were followed by the understanding of students in learning and teaching mathematics.

Table 10.

Analysis of the Strategies to Explore Students' Understanding

Method	Yes (%)	No (%)
Asking "Do You Understand?"	81.3	18.7
Immediate Practice Problems	34.4	65.6
Questioning Techniques	31.3	68.7
Observing Facial Expressions	18.7	81.3
Quick Assessments	6.3	93.7
Seeking Students' Feedback	10	31.3
Keeping a Teaching Journal	8	25.0
Self-Evaluation after Lessons	8	25.0
Discussing with Colleagues	6	18.8

From the analysis of above [Table 10](#), the heavy reliance on the simple comprehension check *Do you understand?* (81.3%), relative to the minimal use of quick, structured assessments (6.3%), indicates the limited formative assessment knowledge. This finding also suggests that teacher preparation programs should place greater emphasis on assessment strategies that

generate specific, actionable diagnostic information about student learning, consistent with [\(Hill et al., 2005\)](#) broader argument linking with teachers' pedagogical content knowledge to the quality of instructional decision making.

A consistent pattern across all the tables, emerges graduates show strong motivation and sound foundational knowledge, but a narrow pedagogical range, resource driven barriers, and a recurring thread of professional isolation. This integrated pattern has supported the views of the teachers competencies that have been best understood as a field of knowledge, disposition, and contextual conditions [\(Blömeke et al., 2015\)](#). By considering together of these findings shows mathematics education graduates who possess solid foundational content knowledge, strong career commitment, and a clear pedagogical preference for student centered instruction problem based, structural barriers of large class sizes, limited resources, scarce advanced technology, and time pressure that are likely to constrain their ability to enact these preferences in practice. The relatively weaker proficiency in calculus, combined with gaps in curriculum literacy and assessment complexity, points to specific areas where teacher preparation curricula might be strengthened. At the same time, the low levels of collaborative professional engagement in updating knowledge, differentiation, and reflective practices similar to professional isolation, rather than lack of awareness, may be the more immediate obstacle to sustained competence growth of graduates in profession. These patterns have collectively supported [Blömeke et al. \(2015\)](#) view that the competence of teacher must be understood as a continuum in which knowledge, disposition, and enacted performance interact with contextual conditions, rather than treating any one of these components in isolation.

Conclusion and Implication

This study reported 32 mathematics education graduates' competencies, pedagogical preferences, challenges, and professional development needs. The graduates demonstrated strong career commitment, solid foundational content knowledge, and a clear preference for problem-based, student-centered pedagogy, but report a persistent proficiency gap in advanced domains such as calculus, incomplete curriculum and assessment literacy. Substantial barriers of large class sizes, limited resources, scarce advanced technology, and time constraints are the elements that obstruct the translation of pedagogical preference into classroom practices. The low engagement in collaborative professional learning and reflective practices have further suggested that, professional isolation compounds these basic constraints. For the findings of teacher education programs, it is necessary to strengthen advanced content knowledge (particularly in calculus), integrate sustainable curriculum development and assessment literacy instruction. The teacher education programme expand practicum exposure to diverse analytical strategies, connected with TPACK-based technology training, and build formative assessment expertise. For school systems, the findings highlighted in reducing class sizes if it is feasible, investing an accessible instructional technology, establishing professional learning communities to counter isolation and providing sustained, job-embedded professional development. For policymakers, these findings would support in increased funding for the

development of materials and technology infrastructure, enforceable limits of class-size, and structured instruction and mentoring programs for early-career mathematics teachers.

Delimitation of the Study

As this research was conducted to identify the actual competencies to the mathematics graduates to meet the demand of job market. Therefore, the sample of this study has taken only one constituent campus of Tribhuvan University which was a delimitation of this study. In this context, this study can be generalized in the similar context rather than establishing the universal truth.

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Conflict of Interest

The authors declare that there is no any conflict of interest related to the publication of this research.

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Authors' Contribution

Since this is a collaborative research work conducted by three authors, all researchers have contributed simultaneously for the completion of this collaborative research. The First author prepared the draft of research proposal and the second and third authors put their input to make it in the final form. Similarly, all three authors contributed for the collection of data. The final draft was prepared by the first author, whereas the second and the third authors put their necessary input to edit and finalize it. The co-author second has special contribution in language editing, data collection, and construction and validation of tools. The initial draft of the research report was prepared by the first and the third author. Hence, each of the authors have contributed simultaneously to complete the research work within the specified time frame.

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