



A Researcher's Journey: An Experience of a Researcher in Masters of Philosophy in Mathematics Education

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ARTICLE INFO	ABSTRACT
Published Online: 02 January 2023	This paper focuses on my study of a narrative research inquiry and interpretative paradigm under a qualitative research approach of in-service secondary level mathematics teachers in Kavrepalanchok district in Nepal. This article reveals my perspective as a researcher by articulating my research agenda during an academic journey in my degree of Master of Philosophy in Mathematics Education at Nepal Open University. My research was entitled "Assessment in Secondary Level Mathematics: A Narrative Inquiry" and submitted to NOU to acquire the degree. This paper explores my study, explaining about learning of mathematics and assessment experience in various academic environments from secondary level to university education as a mathematics student, teacher, and teacher educator. Similarly, I proceed by describing the source of my motivation for my study, as well as how I became interested in pursuing assessment-related research in mathematics. Furthermore, in the paper, I explain the context of my study, the rationale for the study, the purposes of the study, and the research questions. Moreover, in this article, I explore discussions on my research journey, research agenda, and formulation of questions, theoretical referents, and methodological map of the research. Finally, I will complete the journey with discussion and conclusion of my study.
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INTRODUCTION

According to Ginsburg (2009), mathematics instruction is complicated and challenging and it has the maximum chances of failure in any classroom at any time. During my secondary schooling and in university level, I wanted to learn mathematics through discussion and collaboration. I am gregarious by nature and expected to have a collaborative conversation. I cannot recall the rote-learned mathematical problems even some weeks or months. I prefer to work everything out for myself with deep learning. Conceptual knowledge, as well as interpreting and generating real meaning, lasts longer for me. Similar to Luitel & Taylor (2005), I also faced that unless we completely understood the countless formulae and definitions, and the teacher would show us various dreadful scenarios. As a result, my hope of learning mathematics through constructivism faded somewhere on the horizon with the passage of time and the tides. In other words, teaching learning in my secondary level as embarked by Freire (2000) was like a banking activity in which the instructor served as the depositor, while the

students participated as deposits. Without any discussion in this pedagogy, the teacher provides the accumulation of knowledge to the students, which they accepted, recalled, and replicated.

I started my teaching journey after the completion of Bachelor in Science, as a part-time mathematics teacher, followed by a government school permanent secondary level science and mathematics teacher. I was facing the dilemma in my preliminary years of teaching. In this regard, Acharya (2015) discussed that even the competent teachers were carrying out the traditional evaluation process and reproducing the knowledge that they had previously known, which caused problems with the students' mathematics learning. Initially, I viewed constructivist and collaborative learning as unimportant to mathematical education (Dahal, 2017). According to Belbase (2015), traditionally, teaching mathematics entails teacher-centred instruction that includes presentations, exercises, and examples. Because of my misunderstanding of educational ideologies and pedagogical approaches, I have always been vehemently opposed to such

views. When I realised that constructive practices could help students learn mathematics faster, I started formally implementing them.

I taught mathematics and science to many students at the secondary level in many tuition centres, and as a mentor during my career. My attitudes, mathematical skills, and teaching strategies evolved immensely as I pursued the graduate level in mathematics. Contrary to my previous assumption, mathematics education is not only a subject for gifted students, but also a platform for investigating a variety of interesting mathematical topics for all types of students. I want my students to be successful in their academic and professional endeavors. In my opinion, we should teach mathematics to increase learning of students because it can facilitate in career development of teachers. In my twenty-five years of experience in teaching career, I frequently fully grasped the significance of assessment in the classroom. Those circumstances from my nostalgic school days have radically changed. They have been prompting me to pursue assessment in mathematics classrooms as one of my research priorities.

As stated by Dawadi (2018), “Now, I came to know that my practice of labelling students as 'good' or 'weak' in mathematics was empowering neither me nor my students, and hence I began to realise such a heightened consciousness after joining M Phil Program” (p. 18). Based on personal experience, my primary pedagogy for using various types of assessments has always focused on students' learning of mathematics. Similar to Dahal (2017), I had no knowledge until lately that mathematics might be constructed by our interactions and activities. Students in my secondary school were voiceless and never had any responsibility for classroom learning activities. Instead, they faced autocratic mathematical practices. I encountered the similar pedagogy of mathematics in my secondary level.

In recent years, students have been learning mathematics in a collaborative environment as they go through the educational process. I am interested in the quality and method of using assessment to motivate and encourage students to participate and obtain feedback on mathematical ideas. Now I understand that constructivism and knowledge transmission are the best to shape these activities. Students and teachers must engage to achieve them. Therefore, perceptions and practices of teachers on assessment in mathematics are the focus of my dissertation.

My Experiences before Research

I have divided my research article into two major sections. These include my experience before the journey of my research and afterward its completion.

My Inspiration for the Research: Like a Plunge Deep into the Ocean

I am from the eastern part of Nepal. When I was preparing for School Leaving Certificate, a national level

examination held at the end of Grade X in Nepal, twenty-five years ago, I remembered this incident. It was about a simple task that I had to perform in the mathematics classroom. My respected mathematics teacher routinely encouraged me to solve mathematics questions on the chalkboard. From that very moment, I began to realise the importance of assessment in the mathematics classroom. As a class topper, and with my monotonous, linear-bank knowledge of mathematical logarithms, I could easily solve 'the gigantic tasks' for other students in a matter of minutes. From this courageous task, I could earn applause from my colleagues. The situation made me realise the necessity of assessment in mathematics.

Ernest (2010) stated that mathematics is weird and wonderful, and all of us who work with and around it have a contradictory nexus of feelings of fascination, love, and hate. The same was the phenomenon of mathematics for my dearest classmates and me. It is true to say that, mathematics is the stern parent we love and hate at the same time as our emotions. I used to think of myself as a mathematical hero among my poor performing colleagues because I was the best among all students in the classroom at solving mathematical problems.

During my secondary school years, teachers consistently emphasized rigid practices, textbook problem-solving, strict discipline, and physical punishment. The mathematics teachers were very harsh and aggressive. I hardly recall them smiling or engaging in two-way conversations in the classroom. If they did, it was not about mathematical content or ideas to motivate us. In my student life, I felt uneasy about raising any questions about assessment with mathematics teachers. The social and academic dimensions of mathematical activities were performed in such a way that they were worthless to others. Almost every one of my classmates shared similar attitude regarding mathematics. We could easily notice similar characteristics in teachers of other subjects as well. I could further concretize my current beliefs about mathematics by encountering similar ideology and traits frequently.

The students could not raise any questions for consultation and discussion in the mathematics classroom in my schooling. Teachers took it as a sign of defiance. Barrow & Woods (2006) highlighted that the teachers in the paradigm example intended to implant unshakable belief. Silence of students and one-way delivery of mathematical contents by the teachers in mathematics classes governed during my mathematics learning in the school. The mathematics classes were overwhelmed with the goal of encouraging students to solve problems. The students had little opportunity to exchange ideas and build new understandings in a collaborative and cooperative setting. Teachers imposed mathematics knowledge on students as learning standards. The students had prepared routines for remembering the formulas and completing the assignments as per the strong instruction given by the teachers. Many essential

mathematical concepts are even now missing from Nepalese mathematics course (Panthi & Belbase, 2017). In our schools, there is a lack of specialized strategies to make concrete linkages between cultural issues and mathematics.

The circumstances during my secondary schooling unknowingly pushed me towards a negative attitude in mathematics. In this regard, Lamichhane (2018) stated that low performance of students in mathematics, negative mathematical beliefs, and attitudes are strong factors in a vicious circle of negativity and stress in mathematics learning. The students were treated inhumanely as a result of teaching methods, textbook selections, and boards in the front of the classroom (Budhathoki, 2017). It is true, as stated by Luitel (2009) that in my experiential world, the notion of mathematics as a jumble of useless symbols was gaining momentum. Such expectations, ideas, and instincts have always disappointed me. In our mathematics classrooms, teachers, textbooks, and blackboards form a triangle-like relationship. I also had no option other than to continue pre-constructed schemas regarding mathematics and mathematics learning (Dahal, 2017). As a result, I was unable to study domestic and practical mathematics or answer household mathematical problems by using techniques in my mathematical education.

I experienced mathematics focusing on the transmission of knowledge system as a student, until I got my bachelor's degree. In my teaching and learning practices, I have discovered constructivism and social constructivism theories in mathematics. With my growing discontent with the teaching and assessment methods followed by mathematics teachers, I became accustomed to educational approaches initially and subsequently. As a result, I believed that mathematics assessment was the result of rote memorization of mathematics information. Students had to pour these memories over the answer sheet in examinations. I could not escape from such a negative mathematical understanding inside me. I had a belief that learning mathematics is securing the highest score in an examination. Likewise, I began to believe that reproduction was the only way to learn mathematics, and even practised it accordingly in my early days.

I have always been among those who hold the belief that mathematics is not our own, it is just a hegemonic imposition. The range of mathematics learning is not even restricted to contemporary instruction for many professionals. I was not also far from such misconception. I did not feel a sense of ownership of the mathematical contents provisioned in the textbooks and curriculum. Educational leaders regard mathematics as a theoretical and absolutist subject despite its maximum uses in human daily-life of people. I attempted to strengthen classroom practices by using banking pedagogy as the primary teaching method in classroom practice because of my ignorance of teaching pedagogy. Teachers who were aware of constructivist

approaches to mathematics were also constrained to using traditional techniques similar to mine. Budhathoki (2017) mentioned that he got disappointments by the absence of student engagement, participation in designing and managing learning activities, and possession of skills and development. These responsible factors bitter for meaningful learning of mathematics drew my attention. As a result, I have envisioned an ongoing investigation into assessment as a key tool. I am able to appreciate the value of assessment in mathematics after a thorough discussion about it, and I became even more eager to pursue research in the assessment field.

I admitted in a one-year Bachelor of Education in mathematics program to become a qualified and professional teacher after the completion in Bachelor of Science. With the successful completion of Masters of Science in Mathematics, I worked as an academic coordinator of +2 programs in Morang and Kavrepalanchok districts for more than a decade. The support of numerous academic personalities inspired and guided me to enrich my vision in the assessment. The privilege provided to me for administering different board examination for six years in a row really aided my understanding of public assessment system in Nepal. To conduct a regular, disciplinary, and fearless public assessment, I investigated and studied existing policies, acts, and regulations, as well as the assessment code of conduct. As a result, I felt the need and importance of assessment in the mathematics classroom. Furthermore, my interest in the advancement of research grew, as I contributed to the preparation and moderation of secondary school level mathematics and science question papers in the SLC/SEE and NEB examinations. These experiences from my professional life inspired me to conduct this research.

How did I Contextualize Curiosity of my Research Issue?

Assessment in mathematics has been an essential component in educational system in recent years. Mc Tighe & Ferrara (2000) stated that by having access at the start of the lesson, students become assessment partners with the teacher. According to Acharya (2019), assessment has a significant role in improving educational standards in terms of instruction, understanding, and attainment of educational purposes set by the curriculum. Assessment results are applicable to determine the success or failure of teachers and schools. As stated by Dahal et al. (2017), the degree of student learning achievement has been a major concern in reform and development of school system. Along with instructional activities, assessment promotes problem solving, reasoning, and understanding. Students should construct models that link mathematics to real, actual life as part of this process. Further, they should regularly solve issues of mathematics on their own instead of depending on others. For this, I explored and excavated untold hidden stories of mathematics teachers at the secondary level from grade IX to grade XII (Education Act, 1971).

“The overemphasis on scores and the narrowly conceived notion of achievement are problematic in Nepalese school education in general and particularly in mathematics” (Pant, 2015, p.194). When discussing assessment, teachers come across different types of assessment. All of them have the same purpose of promoting academic achievement of students through proper classroom instruction. Thompson et al. (2018) stated that students should demonstrate their understanding, aptitude, and skills in any learning process or assessment. In this context, Poudel (2016) stated that assessment of students is the method of gathering and analysing data regarding performance of students and providing them feedback.

Poudel (2016) further claimed that the major focus of assessment is to make education systems accountable for the learning of students. Different ways to assess students such as facial expressions, writing work, asking questions, listening to their views, supporting discussions, observing activities, and offering various other tasks are enough for them to succeed (Dahal, 2017). Consequently, social and economic upbringing, attitudes, assumptions, traditions, and values of students influence the learning process, which in turn serve as the foundation for classroom assessment.

What was the Rationality of the Study?

Assessment is crucial in communicating clearly and concisely about learning of student and the operation of educational systems in response to the national call for educational outcomes. Acharya (2015) stated that assessment creates competition among students to flourish the learning environment. However, experts in the field of educational assessment argue that traditional assessment methods, like our existing public exams, cannot measure several attributes that are highly valued in modern education (Khaniya et al., 2015). In this scenario, assessment should be the academic guiding mechanism. It plays a critical role in supporting students and parents in assessing academic performance.

Assessment is increasingly used to categorize, forecast, and rank students in order to improve student learning as well as to ensure accountability (National Research Council, 1993). With the paradigms shifts in education, the viewpoints of stakeholders on mathematics assessments have remained unchanged. Mathema & Bista (2006) stated that assessment of learning of students at the end of ten years of school education serves primarily two purposes as the certification of students and selection of students for higher education or jobs. Furthermore, they stated that SLC scores are vital indicators to know learning of students and the strengths and weakness of the prevailing education system. In this context, this study incorporates the worthwhile information regarding existing assessment perceptions and practices in mathematics classrooms adopted by mathematics teachers over a period of twenty-five years from 1995 AD to 2020 AD in the local context in Nepal.

What was the Significance of my Study?

According to Poudel (2016), “Student assessment provides a chance to reshape the delivery system and improve student learning by recognizing strengths and problems in classroom instruction” (p. 9). In this context, my study is crucial and a leading roadmap for constructing appropriate assessment methods in mathematics as a major academic challenge and attracting the attention of educationists, curriculum designers, and policymakers. This research has its rationale for conducting various other researches related to assessment construction and pedagogy refreshment. Further, it serves as a milestone for developing refined curriculum and assessment issues to promote change in educational policy at secondary level as well as for higher-education policymakers. It is a motivational research for novice teachers and researchers facing many challenges in the research field.

In my discourse on this study, I believe that assessment of students is a significant for ensuring mathematics instruction as a new strategy for acquiring and expanding mathematics knowledge. “Assessment practices are linked with the ways of classroom teaching” (Pant, 2015, p. 202). To improve the mathematics teaching process and increase the interest of students, mathematics teachers should have a rich knowledge of contents and pedagogical skills. Multiple modalities of teaching, including classroom discussions, group work, hands-on practical activities, and project work are the best pedagogy to provide the good concept of mathematics knowledge.

My research agenda lays the foundation for seeking out the ways of mathematics assessment. Through diverse assessment strategies, the teaching profession should concentrate on improving students' knowledge with activities supported by suitable skills and intelligence. Participation of students in developing and implementing learning activities, collaborative and creative participation, equitable treatment, and accessibility for all students, and their ownership of learning and constructed knowledge are responsible aspects of mathematics assessment (Dahal, 2017). Besides, the mathematics empowerment of students provides students the power with the mathematics language, symbols, knowledge, and skills. They contribute to achieve high-esteemed values and the mathematics learning purposes as well. Analysing these issues, I provide a framework for the assessment of secondary level mathematics as a new paradigm shift in the twenty-first century mathematics pedagogy.

What was the Statement of the Problem?

Assessment of students possesses a very important position in an instructional program, especially for assessing the taught curriculum (Khaniya et al., 2015). The issue of assessment has been a hotly debated issue in the context of Nepal. As soon as the results are published for the secondary level board examinations for grades X, XI, and XII, the issues of assessment get top headlines in the national news (Dixit, 2019). The SLC/SEE results frequently reveal that most

students fail in mathematics (Mathema & Bista, 2006). As mentioned by Panthi & Belbase (2017), the majority of students accept mathematics as one of the most difficult or time-consuming disciplines because of obsolete learning and assessment mechanisms that are inescapable in schools. Khadka (2017) stated, “School education in Nepal, over the past few years, has exhibited a gradual improvement in pass percentage as revealed by SLC examination results. Yet, this performance cannot be considered optimum” (p. 7). Every year, the government spends a substantial amount of money on education, but satisfactory outcomes are still far away. The methods, instruments, and standards should have proper applications to achieve the genuine achievement of learning outcomes envisioned in the curriculum. Teachers and students have constrained perspectives on assessment fairness and reliability, and they believe a single assessment or examination can reveal the truth in the achievement of stakeholders (Dixon & Haigh, 2009). In this regard, Panthi & Belbase (2017) asserted that the assessment system emphasizes rote learning, memorization of facts to get good marks in the examinations. It does not provide enough value to the experience of students and thus necessitates new modality of assessment in mathematics.

What were Objectives of the Study?

The first purpose of this study was to explore the perception of mathematics assessment of in-service secondary level mathematics teachers as a student. The second purpose of the study was to narrate current practices of assessment in mathematics of secondary level mathematics teachers in their career.

What were my Research Questions?

My research explores teachers' perceptions and practices of assessment in mathematics at secondary level schools from grade IX to grade XII in Nepal. Within these assessment contexts, the research had the following research questions:

1. How do in-service secondary level mathematics teachers perceive mathematics assessment during their secondary school years as students?
2. How do teachers narrate current practices of assessment in mathematics at secondary level in their careers?

My Experiences after Research

In this section, I have a discussion on my research journey, research agenda, research questions, theoretical referents, and methodological map of the research, discussion and finally on my conclusion.

Recapturing my Research Journey

As I concentrated my study on assessment in secondary level mathematics, I consulted my colleagues, teachers, researchers and shared my interest in this particular area of research. They expressed their happiness and thanked me for choosing a relevant and worthwhile research issue. I

transformed my issue into a scheduled action plan for research. I was assured that a good research is not just about writing for the sake of promoting career; it is about contributing to the knowledge to the society (Gadon, 2006). My supervisor's helpful and constructive feedback constantly encouraged me to pursue my study in mathematics assessment. As a result, my interest, motivation, ideas, efforts, and activities for my research work in the field of assessment in secondary level mathematics were in my research proposal, approved by the research committee of NOU. Accordingly, I interviewed my respondent participants, collected data, and analysed them with qualitative data analysis tools. Finally, with my continuous and untiring effort, I was able to seek the answers of my quest over the research questions of my study related to the assessment in secondary level mathematics through narratives inquiry.

Envisaging my Research Agenda

My experiences in mathematics teaching and learning helped me to view mathematics inquiry through constructivism. I was motivated in this study by Mackenzie & Ling (2009) because they stated that a comprehensive research voyage will pique our interest in doing more research, and in this manner, the entrance to the research arena and all of its numerous routes and perspectives will be unlocked. I regard it as the discourse of constructing mathematics knowledge. As per my understanding and experience, the major problems in mathematics teaching and learning are related to assessment issues.

I felt in my career that in the context of Nepalese mathematics, classrooms are powerless, and their learning goes without their consent and decision. The decisions made by teachers are often obligatory for students. In these context, Lamichhane (2018) regretted that they produce great ambiguity and contradiction concerning assessment procedures and viewpoints in mathematics. Many Nepalese teachers are powerless because they lack the authority to choose textbooks, assess their students, and are obliged to follow several instructions from higher levels of government, whether on pedagogical issues or student assessment. As a result, even if teachers are aware of knowledge-constructing mathematics-teaching approaches, they are obligated to keep traditional teacher-centred teaching and must treat students as such, ending in the distressing situation of low learning achievement of students.

Formulation of Research Questions

Research questions are essential components of the research process by helping the researcher to focus on the particular chosen area of study. Using my academic experience as a research scholar and an educational professional, I focused on articulating and developing my research questions. Similarly, my initial visit to the field also provided clear insight to formulate the research question. I

was aware as stated by Agee (2009) that poorly crafted or designed questions are more likely to trigger issues that affect all stages of a study. In the process of formulating my research question in the preliminary phase, I focused on investigating the concept of assessment in the mathematics classroom even with my pedagogical practices and experiences.

In narrative research inquiry, the continuing process of questioning is critical to comprehending the lives and views of others as they unfold. I was in a dilemma about choosing my research questions, which is a pertinent component in research. According to Gadon (2006), to broaden horizon of knowledge people and push the borders of their discipline into new frontiers, it is necessary to develop the research questions with possible risks. I was aware that narrative inquiry is something that would be ongoing and continual. Therefore, my role is clearer in the process. Further, I talked with my supervisor as she shared that field reality could support researchers to shape and focus on reformulating or finalizing the research questions. I followed the same process for finalizing research questions, with continuous feedback and suggestions from the supervisor. I arrived at conclusion after deciding my research questions related to assessment in secondary level mathematics.

Theoretical Referents

I chose two theories as referents. Those theories were constructivism and social constructivism. In this section, I have discussed how those theories guided my study. My career itself is relevant on constructivist learning theories, which tend to rely on a knowledge construction roadmap to provide the effective reinforcement of students through assessment. One way that constructivist theory has now been conceptualized in relation to classroom practice is through collaborative learning methods of education (Ampadu, 2012). In this research, the assessment instructional technique in mathematics classrooms improves students' acceptance of teacher-student interaction. According to Vintere (2018), the constructivism theory drastically modifies the teaching and learning process in mathematics, linking it with everyday life, rather than teaching simply mathematical formulas and employing an unique approach to mathematical problem solving. This is possible by using assessment to address their values, beliefs, and opinions about mathematics teaching in the classroom. Thus, constructivism became powerful motivating theory for me to conduct this study.

My research was also guided by a social constructivist approach, which regards learning as a process that occurs when the learner, or student, encounters events in the instruction. Assessment in mathematics needs an active engagement and participation as learning of it (Rust et al., 2005). This engagement is the process of social constructivism. Students are encouraged to think critically about how these new concepts integrate into their existing notions or conceptions resulting from experience. In this

situation, the teacher's responsibility is to motivate students by judging their ability to think critically about the concepts at hand.

Constructivism and social constructivism encourage students to think rationally, and students actively enhance learning by associating innovative ideas to existing ideas (Behera, 2017). I used these theories because they are linked to pedagogical practices that encourage active learning, or learning by doing. As students' social interaction improves, their responses provide the teacher with a clearer picture of the students' present level of understanding, allowing them to take control of their mathematics learning. Hence, assessment practices suggest facilitating students to repeatedly shape and reshape through the maturity of intellectual tools and attitudes about mathematics knowledge. It helps to offer a multidisciplinary approach to mathematics classroom culture, which combines perspectives of different views that students have through assessment.

Methodological Map

My study followed a narrative inquiry method. To find seek the answers to my questions, I made selection of five in-service mathematics teachers from private and public schools in Kavrepalanchok district. Roulston (2010) mentioned that a criterion-based selection strategy is appropriate for narrative inquiry. I used this strategy to choose my participants to be involved in this research. Therefore, I could get easy access to participant teachers and collect their stories about the perception and practices of mathematics assessment in the secondary level. Further, the use of narrative inquiry facilitates the collection of a wide variety of data. Besides the five respondent participants (one female and four male mathematics teachers) as the central to my research study, I also talked to educational stakeholders even after completing those stories by relating them to my research.

Rahatzad et al. (2017) consent that notes recording informal conversations, events, images, or feelings can be just as useful in a narrative inquiry as formal interviews that can help to reflect narrative stories in richness. Thus, there was a challenge I faced with the collection of data in the narrative inquiry. The challenge was to make the data creative and dynamic. The data should also include richer and meaningful stories from the participants' narratives. In the context of research, the issue of assessment in mathematics classrooms in Nepal seemed particularly appropriate to use narrative methodologies because this methodology helped me to explore mathematics teachers' perceptions and practices of assessment in the mathematics classroom.

I selected narrative inquiry as the most appropriate methodology for my study because I was exploring the meanings of experiences of mathematics teachers' assessment strategy. Despite its lengthy philosophical tradition in research, narrative inquiry is frequently being used in studies of classroom instruction (Connelly & Clandinin, 1990). At

the same time, the process itself was a series of experiences and a journey. I faced complexity and confusion. Thus, behind every story, there is always another story, and beyond every layer, there is always another layer. There was also a risk of lingering in the stories rather than being concentrated in my area of study. However, this methodology helped me find out the foreground assessment practices of mathematics teachers. I expect that this methodology, as well as the content of this study, will be useful in influencing the international community, Nepalese academics, and policymakers.

DISCUSSION

The respondent participants in my study as students were not satisfied with traditionally situated teaching and the transfer of knowledge. They preferred to understand experience, engage, and make sense of mathematics in assessment. Learning and assessments both emphasize projects, reflections, and performances as the tools. Such practices regard students as equally knowledgeable as teachers, and teachers often perform as facilitators and as co-learners with the students. As a result, assessment acts as a strategic plan for teachers and students to organize learning toward a destination (Adam et al., 2014). The assessment practices even link classroom mathematical practices with real-life situations, problem-solving, employing mathematical games, and lively activities. The respondent mathematics teachers inspired their students with their experiences of mathematics learning, cumulative and emerging experiences of mathematics teaching, the knowledge, and ideas acquired through several exposures and discourses.

The mathematics teachers emphasized the construction of knowledge and related mathematics teaching to real-life contexts. However, the assessment system in Nepal places a greater emphasis on academic parts of learning and pays less consideration to practical components of learning (Bhandari, 2016). Despite this bitter fact, the responding teachers even shared how they employ regular assignments, class work, feedback and motivation, and extra classes in their mathematics assessment. They regarded it as even useful for engaging students and providing them with the opportunity to use their mathematical skills to solve real-life problems. They expressed that these assessment tools were helpful for establishing connections between different subjects and chapters as well. Most of the time, the participant teachers are found appreciating their students' learning by reinforcing and awarding them for their successes and providing opportunities to share their stories of successes. Such activities offer various ways to review their concepts and misconceptions and to reform their performances accordingly, serving both as learning and as assessment.

The provisions of assessment also add to the challenges of implementing the mathematics curriculum

properly in Nepalese mathematics classrooms. In this regard, Pant (2015) demanded that assessment should be a spontaneous component of the instructional process in mathematics classrooms and continuous assessment system having the greatest impact on learning of students. However, the assessment practices in Nepal are largely paper-pencil test based and generally emphasize students' recalling and reproducing abilities. The participant teachers even regarded that unless the assessment practices emphasize the implication of knowledge in real-life contexts, the assessment practices in mathematics teaching is incomplete. Assessment in mathematics enhances the resources and scope of mathematics learning and transforms mathematical practices away from textbook-dependency culture and by providing students with ownership of their learning.

CONCLUSION

Mathematical pedagogy in the twenty-first century needs to be in accordance with the requirements for the assessment process. Mathematics teachers teach mathematics in order to strengthen students' understanding through various assessment methods. My insight from this study incorporates the vision of mathematics assessment to facilitate mathematics learning effectively. The mathematics teachers are required to follow the student-centered assessment method with the notion of constructivism and a focus on transfer of knowledge. A constructivist teacher can change his/her pedagogical plans and activities, based on the corresponding experiences, changes in belief systems, and learning abilities of students. For the purposes of students' understanding and construction of knowledge, teachers need to employ several learning activities focusing on students' active participation and engagement in learning. Mathematics teachers empower students for their learning experiences and internalize interactive activities and active engagement as the basis for the construction of mathematical knowledge.

There is a necessity for the provision of practical assessment in both compulsory mathematics and optional mathematics at secondary level to address the mathematical skills of the students. The teachers have the responsibility to design assessment activities so that each student gets equitable opportunities to enhance their learning. Mathematical assessment practices provide opportunities for students to participate in the meaning making process and construct knowledge through mutual and shared consensus. Communication, coordination, and collaboration among the students are the essential skills to construct knowledge by participating in different activities, posing their own ideas and defending them, refuting others with logic and developing mutual understanding. I anticipate that mathematical assessment practices will prioritize formative rather than summative assessments of mathematics learning.

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