Lived experience of pedagogical boomerang in mathematics teaching-learning

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Article Info	ABSTRACT
	The purpose of this study was to explore the critical life-events of the first author's journey of learning and teaching mathematics that prompted critical thinking about his past experiences as a student and teacher. It portrays a paradigmatic shift from a traditionalist thinker to a constructivist actor in the classroom from the critical life-events within and out of classroom experiences by using autoethnography as the writing and research genre by connecting his personal experiences in the social, cultural, and teaching/learning contexts of Nepal. The major themes emerged from the autoethnography were-- Thinking Narratively: Joining a School and Dropping Out; Thinking Narratively: Back to School and Dropping In; Thinking Interpretively: Dropping out of School; Thinking Poetically: Dropping in School; and Nightmare of the First Teaching: A Pedagogical Boomerang. These themes portrayed a pedagogical boomerang in learning and teaching mathematics from a remote village in Western Nepal to the neighborhood of the capital city Kathmandu.

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1. INTRODUCTION

Mathematics teaching and learning in Nepal (and possibly other places) seem to have several issues, challenges, and ongoing problems despite efforts to reform curriculum, teaching-learning practices, and assessments to integrate traditional cultural relevance to the classroom or modern technological advances of digital gadgets and Internet. The notion of the traditional cultural relevance of mathematics teaching and learning emphasized local context and practices without constructing critical mathematical tasks for higher-level reasoning and thinking [1, 2]. The integration of modern technological advancement with mathematics teaching-learning has not yet been fully realized in mathematics curriculum and pedagogy. However, educational institutions and teachers have emphasized using such tools [3] despite challenges in meaningful construction of lessons, engagement of students, and radical shift in the classroom designs and practices. The National Curriculum Framework (NCF) of Nepal [4] emphasized a traditional and modern approach to teaching-learning with both open and regular classroom-based education in Nepal. The traditional approach to education highlighted the cultural values, long-held traditions, vernacular and local knowledge. In contrast, the modern approach to education emphasized the notion of globalization and global village balancing the

knowledge construction and dissemination through empowerment, equity, access, relevance, and local interest [4].

Despite policies to integrate local knowledge and ICT in education for meaningful teaching and learning of mathematics, there is still traditional chalk and talk instructional approach as a dominant method of teaching-learning mathematics in Nepal amid issues of social, cultural, technological, pedagogical, and political implications [5]. Alternative approaches, for example, anticolonial voice to school education in Nepal, circumscribed the issues around local and global within participatory learning and action [6]. The contextualization, empowerment, and equity agendas have not been fully realized in the school mathematics despite decolonization voices and visions due to lack of clear guideline and practical action-oriented pedagogical models of critical pedagogues and scholars [7]. In this context, it is a meaningful effort to observe how a mathematics teacher was developed through learning and teaching mathematics from early schooling to higher education and how these learning experiences implied to the professional practices in a reflective way. The research question for the study was: How were the experiences of learning and teaching mathematics emerged from life events to influence the researcher's professional practices?

This study focused on the first author's personal-professional journey as a mathematics learner to a teacher in a transformative process from an authoritarian to a collaborative teacher. There were many ups and downs with disturbances and hindrances in the mathematics learning and teaching journey. Many factors with rooted beliefs and philosophies influenced his early experience of mathematics to be authoritative and non/collaborative. This research helped him to reflect on such dis/empowering factors related to non/collaborative practices. He found himself in a state of changing his role from an instructive teacher to a constructive facilitator. Therefore, the study was guided by transformative education as a theoretical referent. Transformative education emphasizes ecological consciousness and mindfulness of social justice, equity, and socio-cultural values [8]. The transformative education theory explains how we make sense of our experiences with the world from the subjective perspectives embedded in communicative learning [8] as a critically reflective practice on one's intentions, values, beliefs, and feelings [9]. In this context, transformative educational theory guided the study allowing the first author to reflect on his assumptions and values in mathematics education. Transformative learning theory emphasizes the practical knowledge and skill through the education that may question the unjust practices in society [10]. In this context, critical reflection on one's own teaching-learning is a gateway for transformative learning and professional development [8]. The transformative teaching-learning is a theoretical referent in this study in making sense of various experiential episodes reflecting critically on the presumptions underpinning the first author's personal values, beliefs, and dispositions toward mathematics learning and teaching [11]. In the rest of the paper, the first person pronouns 'I, my, me' refer to the first author.

2. METHOD OF STUDY

This study portrays my own experiences from early schooling to university education. I applied autoethnography as a method of research and writing for transformative teaching and research [12]. According to Ellis [13, 14], "autoethnography is an approach to research and writing that seeks to describe and systematically analyze personal experience in order to understand cultural experience (ethno)" (p. 148). Therefore, I chose myself as a primary participant of the study to explore my personal experiences of mathematics learning and teaching at different moments and categorize them with meanings in the forms of narratives. The central questions in this study were: How did I learn mathematics? How did I teach mathematics? I wanted to change/transform myself through the 'heartful' reflexive inward and outward juxtaposition of my experiences [15]. In this study, I presented my experience as a student, teacher, researcher, and teacher educator. These past experiences helped me come out from traditional concepts, philosophy, and mathematics teaching/learning practices. This autoethnography helped me change my conception of teaching mathematics from traditionalism to constructivism [16]. Moreover, "an autoethnography is one of the approaches that acknowledges and accommodates subjectivity, emotionality, and the researcher's influence on research, rather than hiding from these matters or assuming they don't exist" [17]. It reflected my voice, feelings, beliefs, emotions, and values based on my experiences to make sense of my identity as a student and a mathematics teacher that are decisive in meaning-making avoiding a narcissist, a self-centered, views [18], being conscious of my role and being aware of a priori structures and emergent categories and their meanings [13]. This way, I used autoethnography as a means to express myself as a researcher and researched at the same time bringing my experiences upfront in the context of Nepal bridging the educational issues of past four decades to the recent raising voice to call for a change [19, 20].

I wrote reflective-narrative anecdotes of my lived experiences of learning mathematics from school to the university level. Then, I thematized the narratives based on the critical points of experiences. The first episode, 'my joining to school and dropping out,' is based on my early schooling experience. In this narrative,

I presented my early experiences of school life. On the first day of my school life, the teacher scolded me for not respecting him. Mote-Marshaap was the first teacher who gave me a bitter experience on the first school day. I quitted school. After quitting school, I used to go nearby jungle as a shepherd. The second episode was 'back to school: dropping in,' in which I presented my lived experience of being a shepherd and the inspiration and motivation of Daari-Baa (an old aged shepherd) to join the school. I constructed a third narrative to interpret the experience of drop out relating with reference to concurrent problems from the literature. The fourth narrative is related to the poetic interpretation of dropping in. Then, the fifth narrative is a critical reflection on my early teaching experience in a school. I used the notion of 'Thinking Qualitatively' to generate the meaning of my episodic experiences by "applying a particular set of thinking patterns and mental operations throughout the stages of qualitative inquiry" [21] while making meaning and interpretations of my narrative themes.

I critically presented my personal experiences in the form of narratives. These experiences helped me come out from traditional concepts, philosophies, and mathematics teaching/learning practices. Therefore, I applied the autoethnographic method to make sense of my experiences in different contexts and help the readers to make sense of their lived experience [16]. I chose myself as a primary participant of this study to write my lived experience of learning and teaching mathematics in the form of real-life stories that might help in animating and becoming the change that myself and others seek as a professional and practitioner [20]. I chose personal narrative as a research writing genre to re-enliven myself on the memories and e/motions for the future [22]. At first, I presented my own experiences in the form of narratives to represent my experiences in episodic events with my "selfhood and subjectivity" to portray the subtle moments of challenges and changes in both personal and professional identity [23]. I expressed my autobiographies, experiences, and events about teaching and learning mathematics at different times. Meaning-making and interpretations of narratives with respect to social constructivist view, knowledge constitutive interest, and transformative learning theory led this research in a meaningful way. Quality standards are maintained in the forms of verisimilitude, trustworthiness, transferability, praxis, pedagogical thoughtfulness, and critical reflexivity. As a researcher, it is necessary to have sufficient knowledge of ethical issues. Ethics designates a code of professional conduct or norms for conduct that designates what is acceptable and what is not. An ethical issue in educational research makes the research more ethical, valuable, and applicable. So, I was aware of these aspects. I maintained my professional qualities in reporting, giving credit, avoiding plagiarism, maintaining the authenticity of my experiential anecdotes, and protecting the identity of the persons related to my experience [24]. I presented my narratives and interpretations without any bios with appropriate citations and references linking theory and practice within my lived experiential episodic anecdotes.

3. THINKING NARRATIVELY: JOINING A SCHOOL AND DROPPING OUT

Far Western Nepal is naturally beautiful, but it is far from sufficient development until now compared to other parts of the country. Born as a Baitadian in 1986 in Far Western Nepal, my childhood was joyful with playing different games with other children in the neighborhood. My father always worshiped the Gods and Goddesses every morning and evening, chanting mantras that I tried to imitate sitting beside him. My home was the first school where I learned many things. My parents were my first teachers who taught me many family values, discipline, and several other things before joining the school formally.

I saw my four elder brothers always reading, writing, and singing rhymes in the evening. I was interested in reading and writing with them. Sometimes I used to look at my brother's book, but they did not allow me to touch their books, notebooks, and pens. Parents, too, used to scold me if I touched my brother's books. I used to watch pictures on their books with deep interest. I wanted to go to the school with them, but they did not allow me to do so, thinking that I was still a little boy who might not be able to walk up and down along the mountain walking trails. I used to cry while my brothers were going to school. Sometimes, I used to follow them up to a certain distance until they disappeared from my sight. They might hide behind the bushes or trees on the way so that I would not follow them. That hiding and searching made me more curious to go to school.

It was a day of winter in 1990. I was eager to go to school and followed my brothers without slippers and proper uniforms for the school. However, I could not find them on the way. I could not go further across a dark forest and frightening hissing sound from the pine tries (e.g., https://www.youtube.com/watch?v=3Pzp5nZ00cE). I returned home. I asked my parents to enroll me in the school. My parents decided to send me to school with my elder brothers. The next morning, they gave me a big *pati* (a wooden board) to carry it with me to the school for writing. I was very happy to get a chance to go to school for the first time. After walking a long distance, I felt tired. I was unable to walk. My brothers teased me by saying, "Do you know how difficult it is to go to school?" I cried for a while. I was unable to

walk further a single step. Finally, they helped me to walk to the school. It took nearly two hours to reach the school by crossing a dense forest and climbing up and down the hills.

After crossing a dense forest and climbing up and down the hills on foot, I was thrilled to reach the school for the first time. I had never seen a school before. I even did not know what a school would look like and how the teachers were. I saw many students in the playground. There was a big playground within the school boundary. Some students were throwing away and catching a ball made of clothes packed into an old sock. Other students were playing with a rope skipping and jumping around. Even others seemed busy running around, chasing, and touching each other. That seemed a great fun place for the children.

Ting, ting, ting…. the school bell rang. All the students lined up in queues grade-wise. I was not sure where to standby. My elder brother took me to a line with little boys and girls. All the students chanted a song and a pray. I did not know the song and prayer on the first day. After the song and pray, all the students entered their classes line by line. I followed the line where I stood with other students and entered one room. My brother came into the room and said, "This is your class and you have to sit here." Then, he went back to his class. All the students of the class looked at me as if I was from another planet. None talked to me or spoke to me. I sat down on a bench and kept on sitting there bowing my head down-- confused.

A student ran into the class, and all the students were alert. After a few seconds, a big fat man entered the class with a long stick in one hand. All the students in the class stood up except me. I did not know what to do. Nobody told me that I should stand up when a teacher enters the room. He shouted at me, "Hey boy! Why are you not standing? Stand up." I was frightened with his look at me, and I obeyed him. He showed the stick at us as if it was a symbol of his power. He told us about many classroom rules that students should obey. According to him, doing any kind of activity, like going to the toilet or going to drink water without permission, was not allowed. Moreover, he threatened us that if anybody did not follow the rule, then he/she would be whipped with the stick or get slapped. That big man was my first formal teacher in life. We used to call him Mote-Marshaap. I was afraid of him and his stick. His fearful appearance was the first image of a teacher in my childhood.

After the instruction on classroom rules, the teacher called upon Dinesh (one of the students in that class) to clean the blackboard (a chalkboard). Dinesh cleaned the board with a piece of old cloth. Then, the teacher went near the board and announced: "Now, I am going to write counting numbers one to ten on the board. First, you all look at these numbers carefully and copy each of them on your small board or on a notebook. If anybody fails to write correctly, then he/she will get punishment with this stick" (he showed the big stick to us). He wrote the counting numbers 1-10 in Nepali on the blackboard with clay chalk. After writing the numbers, he went out of the room and sat on the ground in the sunshine. All the students seemed busy copying the numbers on their little wooden or slate boards or thin notebooks. They looked at the board and wrote the numbers as similar as possible they appeared on the board. I, too, tried to copy the numbers on my wooden board. After a few minutes, the teacher entered the room.

> *"Did you finish writing the numbers?"* (Teacher)
> *"Yes, Sir (in a chorus, but it seemed that all of us were scared)."* We (Students)
> *"Then, show me your works one by one."* (Teacher)

One of the students went ahead to show his work. The teacher looked at his work on the little wooden board. His face turned dark and angry. He whipped the student three times on his hand with the long bamboo stick without mercy. The student screamed and cried loudly that made all of us too terrified. He asked another student to go to the front of the class to show his work on his little board. The teacher repeated the same action to him and other students in the class. Except for a few students, all the other students were whipped with the stick. When it was my turn at the end, I was afraid of showing him my work. I went to the front of the class near the teacher. He barely watched at my work, shouted at me, and whipped thrice on my palms. I cried loudly. I had copied all the numbers as he wrote, but he checked my writing and beat me on my palms with the stick as punishment for writing *three* (three=३) like a six (six=६) and vice versa. I was painfully whipped. That was a bad experience of school. I thought all the teachers were the same in manner. I ran away from the school during break time. I did not tell my elder brothers that I was going home. Other students might have informed them that I left the school early. I did not like the teachers and the school. I did not go to school the next day. My parents did not force me to go to school again. Instead, they sent me for grazing cattle in the jungle. I felt that grazing cattle in the forest was more fun than going to school. I realized the school was the wrong place for children. It was a dreadful experience with my first teacher in the first class on the very first day in school.

4.　THINKING NARRATIVELY: BACK TO SCHOOL AND DROPPING IN

There was a big pine forest above our village. I regularly went to graze goats with neighborhood children and adults. Many shepherds used to gather at an open place in that forest. We used to pass our time by singing songs and playing games with pebbles, mud, sticks, and other things. There was not any tension of assignment or fear of any teachers. We were free to play, act, dance, swim, and do whatever we liked to make our time full of joy. I found more enjoyment as a shepherd in the forest than as a student in a school classroom.

It was a day of summer in 1992 when I went to graze goats and met all the friends there at the open space in the forest. Suri, Rajendra, and Junkari (Pseudo names) were friends of my age. There was a grand-pa from the same village as our regular friend. He had a long white beard. Therefore, we used to call him *Daari-Baa* (bearded father). He was in his fifties. He used to tell us fairy tales. He sometimes asked us tricky or puzzling questions. He used to play with us in our group. He used to sing songs too. He was an easy-going, simple, friendly, romantic, and funny person with all the shepherd kids. He was like one of our friends, though he was old.

One day, the weather was nice with fresh cool air. One of my friends asked *Daari-Baa* to tell us something interesting. He was quiet for a while. He said nothing. He only smiled at us. We all insisted him to tell us something interesting, like a joke or story. He was ready to ask us some questions. He asked us to count the total goats that were grazing around there.

Furthermore, he told us, "If you give the correct answer, I'll give you sweets; and if you are unable to answer correctly, you have to look after my goats for five days." We agreed on his condition. Then we started counting the goats like one, two, three, four…, up to ten. Similarly, we repeated the same process of counting. Some children could count up to fifteen or twenty. We could not use numbers above twenty. We repeated the twenties. Then, we forgot how many twenties we counted. We tried repeatedly, but we were not able to find out the total number of goats. Finally, we accepted our defeat to *Daari-Baa*. He was also not happy with our answer. He asked us, "Why are you unable to count goats?" We looked at each other's faces. He again said, "Listen, my lovely children! I know why you are unable to count goats. You never went to school and you didn't learn how to count. If you had been to school, you would be able to count and learn more." He even touched around his mustache gently with his right hand and smiled at us as if we were fooled not to know counting above twenty. He said, "Look at me. All my friends are in a good position. I got this fate because I am illiterate. Be careful boys and girls. Your life will be like me. I advise you to go to school. Gain more knowledge and be a good person." He looked at us, smiled wide, and chuckled up with his wide grin. He looked back at the goats nearby us. He chanted again, "If you go to school, then I will help you by taking care of your goats. I want to see your progress, boys and girls." *Daari-Baa* stooped down his knees and covered his face with tears in his eyes. We did not have a word to say. We all kids were silent. Only a gentle breeze flattered some fallen leaves, and a hissing sound from a nearby pine tree broke the silence and echoed around us. We did not have anything to tell our *Daari-Baa*. "I let you take care of my goats for today and from tomorrow you all have to go to school. Now, I am going home for some important tasks", said *Daari-Baa* to us and returned home by giving us the responsibility of his goats.

I told my parents what *Daari-Baa* advised them regarding my schooling. My father, mother, and brothers inspired me to go to school. I wanted to go to school but not the same school I went to before and scared with the teacher on the first day. My parents decided to send me to another primary school in the next village. The next morning, my mom and dad suggested that I not look after goats at our pastureland, but take a bath, put on clean clothes, put a *pati* (wooden board) in a bag with a few chalk sticks, and go to school. By eight in the morning, I had my breakfast. One of my elder brothers was waiting for me to take me to the school. He said, "Let's go." I followed him. I watched at the pen before moving ahead. A strong goat smell came from the pen. The goats smelled sharp on my nose for a while, especially the male goats. A few months later, I realized that *Daari-Baa* had inspired my parents to send me to the school. He had visited my parents after leaving us in the forest, asking us to look after his goats.

5.　THINKING INTERPRETIVELY: MAKING SENSE OF DROPPING OUT OF SCHOOL

Initially, I was very keen to join the school because my brothers used to go to school, and I wanted to be able to read and write. However, on the first day of my school life, the teacher scolded me for not respecting him and punished me for not writing a three and six correctly. The first day's experience with strict punishment for not copying as similar as he wrote on the board was a painful experience. Due to the bitter experience of the first day, I quitted school. The narrative of 'dropping out' shows that adjustment in a new environment and unwelcoming behaviors were the major problems for me in the early schooling. Other factors for many children quitting schools could be teacher dominance, excessive misuse of the teacher's power, rules and regulations of school that were not student-friendly, the personality of the teachers,

punishment from the teachers, and rote learning as a method, and rude attitude of the teachers. In my experience, children were interested in going to school. Every student wanted to go to school for learning with the entertainment or playing. Unfortunately, they found the school environment not suitable as per their interest. The school environment might make many students drop out from the schools in remote areas of Nepal. It was not my personal problem to drop out of school. It was a general phenomenon.

Many research findings showed that drop out of students from elementary to university level is a major problem in almost the majority of the countries in the world [25-27]. Drop-out is a major problem for schools in Nepal too. The national census of 2011 revealed that out of a total of 8 million children aged 5-16, 1.2 million (15 %) children were not attending schools. Likewise, the national statistics showed that 6.5 percent of children drop out from the same class and the rate of drop out in each grade ranged from 3 to 6 percent [28]. Similarly, the statistics also show that the dropout of children from public schools in Nepal is very high. Two-thirds of all children in Nepal attending public schools, and 70 percent of them dropout of the school system before taking the Secondary Education Examination [29]. According to the Ministry of Education [29], the school dropout rate at the elementary level (grade 1-5) is 4.0%, grade 6-8 is 4.9% and grades 9-10 is 5.4%. The class repetition rate is 7.8% in grade 1-5, 4.4% in grade 6-8, and 3.2% in grade 9-10 [30]. It shows that a considerable number of students are dropping out of elementary, middle, and high schools in Nepal. In this context, Rumberger describes, "More than a million kids drop out every year" [31].

According to Rumberger [31], there are two reasons for dropping out of school-- individual characteristics of students and institutional factors. I realized that individual factors like students' educational performance, teacher and student behaviors, teacher's attitudes, and student's backgrounds are the individual factors. Among these, the factors such as family structure, family resources, school environment, access to school, and family practices are institutional factors responsible for dropping out of school in Nepal. Coming back to my lived experience of 'dropping out,' I left my school on the first day due to institutional reasons. I did not get an appropriate environment in school on the first day. The teacher slapped me on the very frist day. Therefore, I quitted school. In my experience, students of Nepal drop out due to an unsupportive school environment, household workload, and rude and unfriendly behavior of the teachers with new students. Corporal punishment, such as slapping students in the classrooms seemed to be acceptable that time although such inhumane practice made several students leave the schools [32, 33].

Many reasons for drop out in Nepal are the same as Rumberger [31] reported, like social, individual, and institutional factors. Lamsal [34] stated that lack of parental education, household workload, cultural practice, social and economic status of the family, and physical disturbance are some of the primary reasons for the high dropping out rate at the school level in Nepal. In addition, in my experience, the school environment, teaching-learning process, and teacher's behavior also determine the dropping out of school. Students in most cases cited boredom and disengagement as the main reasons for dropping out. Further, Fall and Robert [35] argued that financial factors, poverty, early marriage, boredom, missing too many days, peer pressure, lack of parent's involvement, and poor academic performance are the factors of dropping out students. As per my own experiences, some of my friends (Suri and Dhirendra) were not admitted to school due to a lack of their parent's awareness and poor economic condition.

In my experience, entering a new environment is another problem for dropping- out of students. As a student entering a new environment leads to problems of adjustments. Students leave their parents and home, and they should adjust to a new environment. Teachers, friends and all the people are new to them. When they start school, they may face some challenges leaving home with unfamiliar people, managing on their own, being independent, and meeting different people [36]. Some children may not be able to adjust to the school environment and are forced to drop out. Similarly, I felt uncomfortable to adjustment in the new environment. My teachers ignored newly admitted students. Some of them discouraged the students with rude behavior. For me, the teachers guided by traditional behaviorist philosophy and 'technical interest' forced students to drop out. These teachers acted opposite to social constructivism [36] and did not offer a constructive zone of development.

In the context of Nepal, there are many factors for dropping-out students from schools. Transport is one of the vital issues in Nepal's rural areas where travel distances are large, and many children cannot reach school simply due to distance [37]. My experience also reveals that rural areas lack transport facilities like trails, bridges, and paved roads, making accessibility to schools more challenging. As a student, I faced the problem of traveling at least one and a half hours to reach school daily. Hunt [38] presented factors influencing dropout were household income and financial circumstances, school fees and indirect costs of schooling, child-work, migration, and factors related to gender. In Nepal, students of the higher level were dropping–out due to financing problems, household workloads, and economic problems. The new education plan, the School Sector Development Plan (SSDP, 2016/17-2022/23), has envisioned free and compulsory basic education in the country [29]. According to UNICEF [39], there are several factors for determining dropout in Nepali schools, such as the lack of schools within geographical reach, lack of classrooms and

sitting space in available schools, greater distance to school, lack of proper transportation facilities, and absence of clean water and sanitation facilities. These factors might have affected the enrolment, retention, and survival rates of children in schools.

Similarly, teaching medium or language is another element for dropout in the context of Nepal. There were mixed language students in the schools, but schools were using Nepali as a language of instruction. In the same way, the gender issue is another problem for dropout. In Nepali culture, students, mostly girls, left school after an early marriage, and many girls students are absent in schools during menstruation, severely affecting their educational performance [40, 41].

6.   THINKING POETICALLY: MAKING SENSE OF DROPPING IN SCHOOL

After quitting school, I became a shepherd to bring cattle to the jungle and nearby grassland. I felt comfortable being a shepherd without the tension of teachers and the cognitive tasks. Being a shepherd was more enjoyable than going to school. Life as a shepherd passed smoothly and with much joy with other children around the forest and the cattle. One day, when I was busy in plays with other children, some goats mixed up with other herd and I lost some of them from ours. I did not know how many of them I lost. I could not count our family's goats. This event taught me the importance of learning to count. *Daari-Baa* was an aged man in our shepherd group. One day, he taught us (other young shepherds and me) many useful things with interesting stories of his life. Finally, he inspired me to rejoin the school. I was motivated to rejoin the school. He inspired me that education was only the thing that might make my life better. I was ready to read and write, like my elder brothers. By that time, I was able to sense the difference between the children who went to school and others who did not go to school. The children who attended schools seemed smarter and more intelligent than those who did not. These differences, together with *Daari-Baa's* motivation, encouraged me to rejoin school. Sometimes, children do not know the benefit of education, reading, and writing, and other adults (parents, elder siblings, and teachers) have to encourage them with examples and informal activities for learning.

When I remember that time now, I think it was better to be at school than in the jungle. However, I chose to be a shepherd instead of a student. Now, I feel that should every school be as joyful as it was, my joyful moment full of plays and excitements in the jungle with other kids. I wish our teachers were like *Daari-Baa*, who would engage us in learning with stories and plays and inspire us in learning. Every student would be happy if they could be free as a shepherd, and they got teachers like *Daari-Baa*. In the jungle, I learned to climb rocks and trees, swim, construct model houses, and play hide-and-seek, among many other things. Searching wild berries and catching fish in small ponds was a natural childhood activity. No one taught us how to sing a song, dance, and play different games. At that moment, we became free to do anything and learn from each other. We learned many things, including survival skills, by searching wild-fruits, nuts, and yams (tarul) during childhood with each other's help. In my opinion, a school should be like a jungle (full of joy and learning) that gives fresh air, clean water, and peace of mind. Therefore, to me, a jungle was my natural school. Poetic thinking about the relation of a jungle and the school came to my mind to compare them.

Although shepherd life was tension-free and romantic to some extent, I was inspired to go to school after listening *Daari-Baa*'s motivational story. I realized the difference between educated and uneducated persons. I thought I should rejoin the school, and I would know many things and get the skills to read, write, and count. Now, I think inspiration and motivation are essential factors for everybody to get success in any field. I would not be writing these lines if *Daari-Baa* did not inspire me. The poetic reminiscence of 'a jungle and the school' as illustrated in Figure 1 helped me to connect the meaning of learning as a natural phenomenon.

A Jungle and the School

A jungle and schools are not the same,

The jungle has no boundary, but the school has,

The leader of shepherd and head-teacher are same,

They both controls others, but differently,

Shepherds and teachers are the same,

Shepherd control the cattle, give them wider direction,

Teachers control students and lead them to narrow path to discipline,

Shepherds are symbol of freedom, but teacher are symbol of dead-end,

Alash! Cattles and students are the same,

They both would inspire others to find new path,

Shepherds left cattle in free area of a jungle,

Teachers kept students within school boundary,

Cattles have freedom, but poor students didn't,

'Daari-baa' and 'Mote-Marshap' at opposite poles,

Guiding or mis-guiding the pristine young souls.
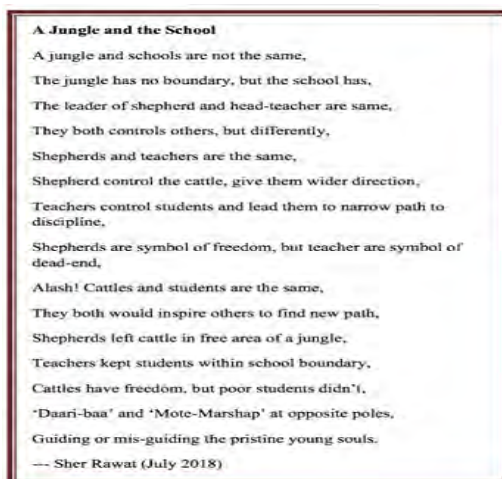
— Sher Rawat (July 2018)

Figure 1. Poetic reminiscence of 'a jungle and the school'

According to Bandura [42], motivation is a central part of a student's educational experience from preschool onward. Educational motivation drives inner state that energizes educational activities, facilitate learning and channel behavior towards achieving educational goals [43]. In spite of these elements of motivations, there are many de-motivational factors for a student that leads students towards drop out. The intrinsic and extrinsic motivation are the major elements in human life. I was motivated intrinsically and extrinsically for study [44]. The teacher's role is critical in students' school life and staying students in schools. The teachers oriented to constructivist philosophy may help students bring their internal potentiality out with creativity and learning through facilitation [36]. In this situation, I realize that a constructivist teacher is better in many aspects than a traditional teacher. A constructivist teacher pays attention to the student's interest, ability, and psychology. A constructivist teacher guided by emancipatory interest [44] of education and transformation-oriented pedagogy can empower students through inquiry-based teaching in a natural way by creating a learning environment.

7. THINKING CRITICALLY: MY FIRST TEACHING EXPERIENCE

After completing my Master's Degree in Mathematics Education, I was appointed as a mathematics teacher at a governmental school in Nuwakot district of Nepal. On the first day of my teaching, I thought of the school, students, other teachers, and my role as a new teacher in the school. Questions came to my mind. How to start the course? I thought of teaching methods. Which methods should I apply? How can I make mathematics teaching and learning effective? I had the theoretical knowledge of mathematics contents and various teaching techniques. However, I did not have the practical skill to apply them in the classrooms besides a short experience during the teaching practicum.

It was the morning of February 2011. My first period was in grade ten. That was my first class for the day. I had to teach 'area and volume' of the cylinder from the unit 'mensuration.' I prepared a tentative lesson plan before going to the class. I wanted to teach with a student-centered method making them active in learning through group works. Therefore, I collected some instructional materials, which I found in one of the cupboards in the teacher-staff room. Other teachers were watching at me while I was collecting the materials, and they seemed to be surprised with those materials in my hand. Perhaps they were curious about how I would use them in a mathematics classroom. I entered the class with instructional materials like a cylinder, cardboard, scissors, aluminum pipe, and a piece of bamboo.

"(They stood up from their seats and greeted me.) Good morning Sir." (Students)
"(I too greeted them back.) Good morning class. Sit down." (I)
"Thank you, Sir." (Students)
"Before starting the class, let us start silent seating for a minute." (I)
"Okay, Sir." (Students)

They sat silently. After the silent seating for a minute was over, I asked a few questions to know their background and see if they had the pre-requisite knowledge to learn about the surface area and volume

of a cylinder. I exhibited solid models of cylinders by showing them an aluminum pipe (that was cylindrical) and another piece of bamboo, which was cylindrical, shown in Figure 2.

Figure 2. Cylindrical pieces of bamboo and aluminium

> *"What is the shape of these objects?"* (Teacher (I))
> *"They have a cylindrical shape, Sir."* (Class)
> *"How do we find the surface area of these cylinders?"* (Teacher (I))

The students were silent for a while. Some of them seemed whispering to each other, but none of them said anything. I walked to the back of the class. I watched everybody's face. They seemed nervous too.

> *"Dear students! Do not worry if you do not know about the surface areas of the cylinders. Today, we are doing some activities to find the surface area of a cylinder. Let us start this activity in groups. [So, all the students sitting together in the pairs of benches formed one-group.]"* (Teacher (I))
> *"(Most of the students seemed excited, although some of them seemed puzzled with forming groups.) Okay, Sir, we are ready."* (Class)
> *"Now, let us make a cylinder ourselves from the pieces of paper. Then, we will discuss how to find the surface area of cylinders."* (Teacher (I))

I distributed some pieces of paper, pencils, scissors, and glue-tapes to each group. Moreover, I gave instructions about making a cylinder out of a sheet of paper. All the students seemed busy with their group work of making a cylinder from a sheet of paper. They were engaged in cutting the sheet of paper into different sizes, and others were turning them and fitting end-to-end or edge-to-edge into a cylindrical form and fixing them with a piece of glue-tape, shown in Figure 3. I was providing them support (as needed) and observing them making paper cylinders. I was facilitating them in deriving the curved surface area of a hollow cylinder from the rectangular sheet of paper. Due to such class activities with student discussions, movements and interactions, the classroom was noisy.
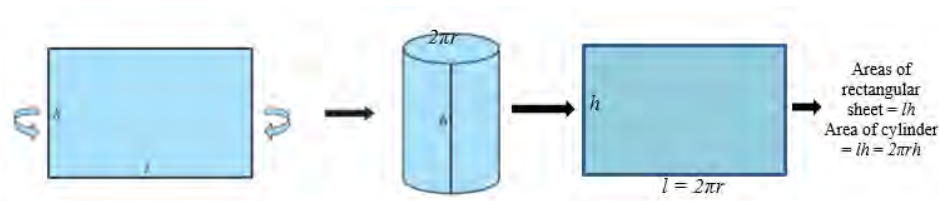

Figure 3. Making a cylinder by folding a sheet of paper for area formula derivation

At the same time, the English teacher, Mr. Dong, who was teaching in the next class nearby, came to the classroom door and asked me about our activities in the class.

> *"Sir, what are you doing this? Students are making noise and disturbing my class in another room."* (Mr. Dong)
> *"Sir, I am teaching students how to find the surface area of a cylinder. Before that, they are making a paper cylinder on their own. It is a practical method of teaching mathematics by making objects*

and using them for deriving formulas and solving problems. Students are learning by doing, so it is a little bit noisy." (I)
"The class should be silent. We should not allow students to make a noise and move here and there in the classroom." (Mr. Dong)
"Is it, Sir? However, it is a part of their learning. I allowed them to discuss and work together." (I)

Mr. Dong went to the school principal's office. I thought that he complained to the school principal about the students making noise in my class. After a few minutes, the school principal came to observe my class. He observed the class for a while and returned to his office without saying anything. I continued my teaching. Three groups out of four were able to make cylinders, and I helped the fourth group complete their task of making a cylinder. The bell rang for the next period. I left the class by telling them to keep these materials safe for the next day's class. I went to the office to drink water before joining another class. Most of the teachers of the school used to take a short rest in the office after finishing one period. I saw all the teachers were there in the office. All of them were looking at me as if I made a big mistake. I sat down on a chair. I pulled a water bottle and drank almost half of it. I was ready to go to the next class. At the same moment, the principal stopped me.

"Sir, take a seat for a moment. I have to talk to you a little. [I took the seat and looked at him with a questioning eye.]" (Principal)
"How did you teach grade ten this morning? When I observed your classroom from outside, all the students were moving here and there, and they were making noise?" (Principal)
"Yes Sir, students' noise was too loud and could be heard even in my class. I asked him not to let the students talk and make a noise, but he (pointing at me) denied. [All the teachers were looking at me as if I did a crime. I was confused about what to say.]" (Mr. Dong)
"Sir, I was teaching the surface area of cylinders by the practical method. They were busy making cylinders out of a sheet of paper. When there are interaction and discussion in the class, it may create a little noise. That is not wrong. Students can discuss and learn from each other, especially when working in groups and making something by themselves in the class." (I)
"Sir, there is no value of such a practical method in this school. Guardians (parents) do not accept such noise in the school. We should keep the students in control and make them silent while teaching. You should write the formula and solve questions on the board. The class should be silent every time. Okay, Sir, you can go to your class." (Principal)

I entered another class. However, I felt uneasy about teaching the next period. I was not excited to teach because I did not experience what I wanted in the classroom. I learned various student-centered methods for teaching mathematics. I knew that student-centered methods could have a positive effect on student achievement. I wanted to be a constructivist teacher, but the school principal and some other teachers wanted me to be a traditional (instructivist) teacher. I was in a dilemma. Should I continue my job as a traditional teacher, or should I try to convince them of my methods, and if they disagree, then quit the job. Quitting a job was not an easy choice because it was my first job after my master's degree. Continuing to follow the traditional method was also not easy because I could not go against my learned methods and practices, which was my whole purpose of doing B.Ed. and M.Ed. in mathematics. It was 'a pedagogical boomerang' that turned to me as my knowledge of theory and teaching method clashed with the tradition of the schoolteachers and the principal.

8. DISCUSSION ON PEDAGOGICAL BOOMERANG

My early experience of school was not very positive. The teacher domination in the classroom through the one-way chalk and talk method and physical punishments for making mistakes always made learning mathematics difficult with a negative image to the school, teachers, and the subject itself [45]. These negative images are further rooted in the negative attitude toward mathematics with prolonged anxieties due to constant fear of the teachers, examinations, and its impacts in the future career [46]. The school was not as fun-place as it was in the jungle with other shepherd children. Remote areas of Nepal still today may have these problems due to lack of good teachers, resources, public awareness to education, ethnic and language issues [47]. These issues are further linked with social justice in mathematics education [48]. The attitude of Mote-Marshaap, *Daari Baa,* and the School Principal, all in my experience, are related to social in/justice in teaching-learning mathematics as a novice student to a novice teacher bringing me into the cycling process of a pedagogical boomerang.

It was my first day of formal teaching life, so I was excited to teach in a class of grade ten. I had a bitter experience of learning mathematics in childhood. As I stated already, I found learning mathematics was difficult for me due to the teaching strategy of the teachers. My intention was to change my teaching strategy from teacher-centric to student-centric. Therefore, I started teaching students with a student-centric approach using group works in the class. I used group-work as a method to teach 'area and volume of cylinders.' My first teaching experience and the response from other teachers and the school principal created a nightmare for me at the beginning of my teaching career. First of all, I faced the problem of preparing students for 'group-work' or collaborative learning. They were habituated to follow lectures and apply a similar algorithmic process as the teachers did. The students expressed hesitation to participate in group-work. They denied sitting in groups. I faced problems to motivate them towards practical work in mathematics. I told them the benefits of collaborative learning, as discussed by Esmonde [49], that it provides students more opportunities to learn mathematics. I told them that they would learn mathematics by doing group interaction, questioning, discussing, problem-solving, observing, and learning by doing as explained by Davis [50]. It is obvious that in collaborative learning, all students get opportunities to learn mathematics through interaction, sharing, and collaborating in learning from each other. I motivated them to sit in a group by telling them the benefits of collaborative activities. It took me some time to convince the students to participate in the group-work. Finally, they were ready to sit in the groups and participate in group activates.

While they agreed to sit in groups, I felt a problem in group formation. There were ninety-three students in the same grade in one room in the school. The students were from different communities and cultural backgrounds. All of the students had their own beliefs, traditions, cultures, and mathematical practices. Sometimes they denied teachers instruction to sit in a group without their interest. I faced many problems like 'how to form' an effective group? How do I manage a group with students' ability? How can I manage infrastructures (desk, benches, whiteboard, etc.) for group work? How do I manage instructional materials? I came out of such a situation by trying to form groups since the first day. I gave priority to the students to form their own groups in their own interest. Then after a few days, I formed their groups according to the ability of students. I used their class position (standing based on performance) and competencies in mathematics, classroom behavior, friendship, race, and gender to group students in the class [49]. The formation of homogenous groups was much problematic than heterogeneous groups thinking that it was better to form homogenous groups than the heterogeneous groups for better learning [49]. So, I tried to form homogeneous groups of all students according to their performance and learning ability. As a teacher, I formed homogeneous groups with talented, normal, and slow learners in different groups so that I could provide them guidance in three different cognitive levels. However, it was difficult for me because there were many students in the same classroom.

It was not easy to manage the classroom for collaborative teaching. There were no good desks and benches for all the students. Besides this, it was impossible to manage the desks and benches as per need for group works because these were fixed and difficult to move and reorganize their position for group work. I managed the sitting arrangement of students by joining two benches with each other. I did not get any instructional materials in the school. Therefore, I managed the required materials by my effort by collecting locally available materials. I provided all of the instructions and related materials for the group-work. In this context, classroom management was the combination of approaches and processes which I used for maximum achievement in the class [49]. Classroom management was art for making instructional activities meaningful. While I used a collaborative teaching strategy in the classroom, students were busy with practical work. They were doing practical work within groups and interacting with friends and the teacher (I). As a teacher, I was helping them to come out of their problems. Due to these types of interaction and discussion, the classroom environment became a bit noisy. Simultaneously, the English teacher from the next class objected to my teaching style on the first day. All of the school teachers seemed unhappy with what I was doing because I let them talk and discuss, that made class noisy for others. I think teachers' empowerment is a major aspect for effective collaborative teaching.

A teacher may create a meaningful teaching environment with autonomy, problem-solving activities, and students' self-responsibility through empowerment. Empowered teachers are more motivated to make classroom instruction effective. In my experience, those teachers in the school were not empowered. They did not have any authority, right, and even many ideas to try new methods except the routine of instructivist teaching. They did not have the authority to leave students free in the classroom for collaborative discussion. Not only this, they did not have the right to permit students to speak to each other in the class. The teachers of that school were, in the words of Giroux [51], using the 'one size fits all' approach to teach students. Therefore, they were not familiar with the different aspects of collaborative teaching and learning approaches that created an uncertain environment for my early collaborative practice in the school.

Some of the teachers seemed familiar with such collaborative teaching, but they did not use it in their practical life. In my opinion, they were not practicing such methods due to 'de-professionalization' and

'di–skilling' of the teachers for conducting student-centered teaching [52]. I think they either did not have the interest to make teaching effective or did not have the appropriate skills for conducting such classes. At the time, most of the mathematics teachers in Nepal were overloaded with teaching. I had to teach all seven periods in a day in the school. Therefore, it was not fascinating to teach for such a long hour each day. This was the context in Nepal, as Giroux [51] described, that teachers had to control the large classes, overloaded with teaching load, and had less or no opportunities for promotion. The word of my principal touched my heart *"Sir, here is no value of such practical method. Guardians (parents) do not accept such noise in the school. We should keep students in control and make them silent while teaching. You should write formula and solve questions on the board. Class should be silent every time"*. I found such types of directions disempowering from the headmaster of the school for my collaborative teaching. At the same time, the school management committee and guardians/parents also made a similar decision. They all agreed that 'classed should be silenced.'

After listening to them, I was not excited to teach because I learned various student-centered methods for teaching mathematics. I knew that student-centered methods could have a positive effect on student achievement. I wanted to be a modern constructivist teacher, but the school principal and some other teachers wanted me to be a traditional teacher. I felt much pressure and tension due to 'a pedagogical boomerang' in the sense that I was turned to the same place where my first teacher Mote-Marshaap began teaching me and compelled me to drop out of the school. I agree that teacher's work is affected by school administration. In my case too, the school administration wanted to interfere my teaching styles pushing me back to instrumental teaching as preaching. I knew that it was not good approach for the students, but as a novice teacher it was a critical situation for me. The school administration gave me a moral pressure [46]. In this sense, it is necessary to understand the role of administration either that is helpful for teachers or not. Helpful administration should provide incentives and rewards to the teachers for their betterment in teaching with creativity and student engagement. Ironically, it was truly 'a pedagogical boomerang' for me to return to decades ago when I was a child instructed by the teacher to follow him in copying the numbers despite my interest to be a constructivist teacher to apply the transformative approach to education. The feeling of stuck held me away from the progressive lens of education in general though I was aware of the fact that it was not a good practice [53-55].

The school administration structure was bureaucratic, as presented by Fajardo-Dack [56]. He argues that the bureaucratic structure does not pay attention to the interest of students and teachers. The school forced me to stop my collaborative teaching practices. Like me, other teachers might have been demoralized due to the administration's interference in their work. Research shows that teacher demoralization is related to teacher disempowerment structurally caused by the school administration [56]. According to Tsang and Liu [57], "demoralization is the experience of being unable to cope, together with associated feelings of helplessness, hopelessness, meaninglessness, subject incompetence and diminished self-esteem" (p.24). I was in a similar condition of helplessness and hopelessness. For me, sometimes it gave a negative emotional experience towards teaching job. It seems that a significant number of the administrators and teachers of Nepali schools had a lack of sufficient knowledge of content and pedagogy, causing 'a pedagogical boomerang' blocking the transformative approach to teaching and learning mathematics. Therefore, I experienced harsh punishment of Mote-Marshaap in the childhood leading me to drop out of the school, and Mr. Dong and a school principal who opposed my collaborative approach to teaching mathematics. What might have caused many children in Nepal to be out of school or drop out due to long distance of home to school significantly increasing the travel cost (not necessarily money but time and effort) in terms opportunity and benefit to attend to schools [58, 59].

9.   CONCLUSION

In the first episode, we presented the first author's early school experience and how he dropped out of the school due to lack of student-friendly behavior of teachers and severe punishment for small mistakes in the learning process. The second and third episodes presented the inspirational aspects of an elderly shepherd who encouraged the first author in the rejoinder to a school. The fourth episode presented the first author's struggle at the beginning of his teaching career due to a mismatch between his approach to constructivist teaching and school expectation for traditional instructivist teaching. The final discussion integrated the episodic pedagogical boomerang of the first author's early learning experiences with early teaching experiences. The episodic interpretations of his learning and teaching mathematics experiences showed that Nepali schools have a deeply rooted traditional pedagogical approach that has not changed significantly in the last 30-40 years despite many advances in educational plans and policies focusing on the schools and higher education. The episodic reflective-narratives portrayed in this study may open up a critical discourse in mathematics education in Nepal against the cycle of the same instructional wheel, suggesting a

transformative approach to teaching and learning mathematics through a balance of local and global knowledge for equity, access, and empowerment with knowledge, skills and positive dispositions of both the students and teachers.

REFERENCES

[1] Acharya, B. R., Kshetree, M. P., Khanal, B., Panthi, R. K., and Belbase, S., "Mathematics educators' perspectives on the cultural relevance of basic level mathematics in Nepal," *Journal on Mathematics Education*, vol. 12, no. 1, pp. 17-48, 2021. https://doi.org/10.22342/jme.12.1.12955.17-48

[2] Pradhan, J. B., "Mathematical ideas in mat weaving: Connecting ethnographic field study and classroom teaching," *Educational Innovation and Practice*, vol. 4, no. 1, pp. 36-51, 2020. [Online] Available: https://www.sce.edu.bt/wp-content/uploads/2020/11/EIP-Vol-4-Issue-1.pdf

[3] Khanal, B., Belbase, S., and Joshi, D. R., "Effect of digital awareness on mathematics achievement at school to university levels in Nepal," *Mathematics Teaching Research Journal*, vol. 12, no. 4, pp. 47-68, 2021. [Online] Available: https://commons.hostos.cuny.edu/mtrj/wp-content/uploads/sites/30/2021/01/v12n4-Effect-of-Digital-Awareness-on-Mathematics-Achievements.pdf

[4] Ministry of Education, Science and Technology (MoEST), National curriculum framework for school education 2076. Government of Nepal, MoEST, 2019. [Online] Available: http://nepaknol.org.np/cdc/elibrary/pages/view.php?ref=2451&k=#

[5] Panthi, R. K and Belbase, S., "Teaching and learning issues in mathematics in the contenxt of Nepal," *European Journal of Educational and Social Sciences*, vol. 2, no. 1, pp. 1-27, 2017. [Online] Available: https://dergipark.org.tr/en/download/article-file/532794

[6] Wagle, S. K., Luitel, B. C., and Krogh, E., "Irrelevance of basic school education in Nepal: An anticolonial critique and prospects," *Dhaulagiri Journal of Sociology and Anthropology*, vol. 13, pp. 31-39. 2019. https://doi.org/10.3126/dsaj.v13i0.24032

[7] Breuing, M., "Problematizing critical pedagogy," *International Journal of Critical Pedagogy*, vol. 3, no. 3, pp. 2-23, 2011. [Online] Available: http://libjournal.uncg.edu/ijcp/article/view/246/113

[8] Mezirow, J., *Transformative dimensions of adult learning*. Sage Publication, 1991.

[9] Pant, B., *Pondering on my beliefs and practices on mathematics, pedagogy, curriculum and assessment (Unpublished M Phil dissertation)*, Kathmandu University School of Education, Lalitpur, Nepal, 2015.

[10] Custer, D., "Autoethnography as a transformative research method," *The Qualitative Report*, vol. 19, no. 21, pp. 1-13, 2014. [Online] Available: https://www.nova.edu/ssss/QR/QR19/custer21.pdf

[11] Luitel, B. C., *Culture, worldview and transformative philosophy of mathematics education in Nepal: A cultural-philosophical inquiry. (Doctoral dissertation)*, Curtin University of Technology, 2009. [Online] Available: https://espace.curtin.edu.au/bitstream/handle/20.500.11937/682/136903_Luitel,%20Bal%20%20full.pdf?sequence=2&isAllowed=y

[12] Belbase, S., Luitel, B. C., Taylor, P. C., "Autoethnography: A method of research and teaching for transformative education," *Journal of Education and Research*, vol. 1, no. 1, pp. 86-95, 2008. https://doi.org/10.3126/jer.v1i0.7955

[13] Ellis, C., *The ethnographic I: A methodological novel about autoethnography*. AltaMira Press, 2004.

[14] Ellis, C., "Telling secrets, revealing lives: Relational ethics in research with intimate others," *Qualitative Inquiry*, vol. 13, no. 1, pp. 3-29, 2007. https://doi.org/10.1177/1077800406294947

[15] Ellis, C., "Heartful autoethnography," *Qualitative Health Research*, vol. 9, no. 5, pp. 669-683, 1999. [Online] Available: https://journals.sagepub.com/doi/pdf/10.1177/104973299129122153

[16] Belbase, S., *My journey of learning and teaching mathematics from traditionalism to constructivism: A portrayal of pedagogical metamorphosis (Unpublished M.Phil. dissertation).* Kathmandu University, 2006. [Online] Available: https://files.eric.ed.gov/fulltext/ED502252.pdf

[17] Ellis, C., Adams, T. E., and Bochner, A. P., "Autoethnography: An overview," *Forum Qualitative Social Research*, vol. 12, no. 1, 2011. https://doi.org/10.17169/fqs-12.1.1589

[18] Sparkes, A. C., "Autoethnography and narratives of self: Reflections on criteria in action," *Sociology of Sport Journal*, vol. 17, no. 1, pp. 21-43, 2000. https://doi.org/10.1123/ssj.17.1.21

[19] Poulos, C. N., "The perils and the promises of autoethnography: Raising our voices in troubled times," *Journal of Autoethnography*, vol. 1, no. 2, pp. 208-211, 2020. https://doi.org/10.1525/joae.2020.1.2.208

[20] Pelias, R. J., "An autoethnographic construction," *Journal of Autoethnography*, vol. 1, no. 4, pp. 395-398, 2020. https://doi.org/10.1525/joae.2020.1.4.395

[21] Saldaña, J., *Thinking qualitatively: Methods of mind*. Sage Publications, 2015.

[22] Jones, S. H and Harris, A. M., *Queering autoethnography*. Routledge, 2019.

[23] Adams, T. E and Herrmann, A. F., "Expanding our autoethnographic future," *Journal of Autoethnography*, vol. 1, no. 1, pp. 1-8, 2020. https://doi.org/10.1525/joae.2020.1.1.1

[24] Belbase, S., "Contemplating my autoethnography: From idiosyncracy to retrospection," *Research as a transformative learning for sustainable futures*, Brill, 2019. https://doi.org/10.1163/9789004393349_007

[25] Mughal, A. W., Aldridge, J., and Monaghan, M., "Perspectives of drop-out children on their dropping out from public secondary schools in rural Pakistan," *International Journal of Educational Development*, vol. 66, pp. 52-61, 2019. https://doi.org/10.1016/j.ijedudev.2019.02.004

[26]   Alvarez-Roldan, A., Parra, I., and Gamella, J., "Reasons for the underachievement and school drop out of Spanish Romani adolescents. A mixed methods participatory study," *International Journal of Intercultural Relations*, vol. 63, pp. 113-127, 2018. https://doi.org/10.1016/j.ijintrel.2018.02.001

[27]   Hughes, J. N., Cao, Q., West, S. G., Smith, P. A., and Cerda, C., "Effect of retention in elementary grades on dropping out of school early," *Journal of School Psychology*, vol. 65, pp. 11-27, 2017. https://doi.org/10.1016/j.jsp.2017.06.003

[28]   Ministry of Education, School sector development plan 2016/17–2022/23, 2016. [Online] Available: https://www.globalpartnership.org/sites/default/files/2019-05-nepal-education-sector-plan.pdf

[29]   Teach for Nepal, Education in crisis, 2017. [Online] Available: https://www.teachfornepal.org/tfn/education-in-crisis/

[30]   Ministry of Education, Education in figure 2016: At-a-glance, 2016. https://www.moe.gov.np/assets/uploads/files/Nepal_Education_in_Figures_2016.pdf

[31]   Rumberger, R. W., "High school dropouts: A review of issues and evidence," *Review of Educational Research*, vol. 57, no. 2, pp. 101-121, 1987. https://doi.org/10.3102/00346543057002101

[32]   Khanal, J and Park, S.-H., "Corporal punishment in the private schools: The case of Kathmandu, Nepal," *Journal of Education and Practice*, vol. 7, no. 26, pp. 53-61, 2016. https://files.eric.ed.gov/fulltext/EJ1115861.pdf

[33]   Mishra, N., Thakur, K. K., Koirala, R., Shrestha, D., Poudel, R., and Jha, R., "Corporal punishment in Nepalese school children: Facts, legalities and implications," *Journal of Nepal Pediatric Society*, vol. 30, no. 2, pp. 98-109, 2019. https://doi.org/10.3126/jnps.v30i2.2929

[34]   Lamsal, H.P., *Description of educational development of Nepal*. Kathmandu: Aashis Book House, 2016.

[35]   Fall, A. M and Roberts, G., "High school dropouts: Interactions between social context, self-perceptions, school engagement, and student dropout," *Journal of Adolescence*, vol. 35, no. 4, pp. 787-798, 2012. https://doi.org/10.1016/j.adolescence.2011.11.004

[36]   Vygotsky, L., "Interaction between learning and development," *Readings on the Development of Children*, vol. 23, no. 3, pp. 34-41, 1978. [Online] Available: https://innovation.umn.edu/igdi/wp-content/uploads/sites/37/2018/08/Interaction_Between_Learning_and_Development.pdf

[37]   Lee, V. E and Burkam, D. T., "Dropping out of high school: The role of school organization and structure," *American Educational Research Journal*, vol. 40, no. 2, pp. 353-393, 2003. https://doi.org/10.3102/00028312040002353

[38]   Hunt, F. M., Dropping out from school: A cross country review of literature. Consortium for Research on Educational Access, Transitions, and Equity. University of Sussex, Centre for International Education, 2008. [Online] Available: https://core.ac.uk/reader/2709552

[39]   United Nations Children's Fund (UNICEF), All children in school: Global initiative on out of school children – Nepal country study, 2016. [Online] Available: https://www.unicef.org/nepal/sites/unicef.org.nepal/files/2018-07/All%20children%20in%20school-report%202016.pdf

[40]   Roenitzsch, S., *Dropping out of school because of menstruation? – An analysis of factors of success for menstrual hygiene management projects in low and lower-middle income countries. Masterarbeit*, Phillips-Universitat Marburg, 2015. [Online] Available: https://www.susana.org/_resources/documents/default/3-2200-7-1425980186.pdf

[41]   Sekine, K and Hodgkin, M. E., "Effect of child marriage on girls' school dropout in Nepal: Analysis of data from the multiple indicator cluster survey 2014," *PLOS One*, vol. 12, no. 7, 2017. https://doi.org/10.1371/journal.pone.0180176

[42]   Bandura, A., *Social cognitive theory of human development*. Sage, 1996.

[43]   Roeser, R. W and Peck, S. C., "An education in awareness: Self, motivation, and self-regulated learning in contemplative," *Educational Psychologist*, vol. 44, no. 2, pp. 119-136, 2009. https://doi.org/10.1080/00461520902832376

[44]   Habermas, J., *Knowledge and human interests*. Heinemann, 1971.

[45]   Lamichhane, B. R and Belbase, S., "Images of mathematics held by undergraduate students," *International Journal on Emerging Mathematics Education*, vol. 1, no. 2, pp. 147-168. http://dx.doi.org/10.12928/ijeme.v1i2.6647

[46]   Belbase, S., "Images, anxieties, and attitudes toward mathematics," *International Journal of Education in Mathematics, Science, and Technology*, vol. 1, no. 4, pp. 230-237, 2013. [Online] Available: https://www.ijemst.net/index.php/ijemst/article/view/14/14

[47]   Panthi, R. K., Luitel, B. C., and Belbase, S., "Teachers' perception of social justice in mathematics classrooms," *Journal of Research in Mathematics Education*, vol. 7, no. 1, pp. 7-37, 2018. https://doi.org/10.17583/redimat.2018.2707

[48]   Panthi, R. K., Luitel, B. C., and Belbase, S., "Strategies for promoting social justice in math classroom," *International Journal on Emerging Mathematics Education*, vol. 2, no. 1, pp. 17-38, 2018. http://dx.doi.org/10.12928/ijeme.v2i1.6809

[49]   Esmonde, I., "Mathematics learning in groups: Analyzing equity within an activity structure," *Journal of the Learning Sciences*, vol. 18, no. 2, pp. 247-284, 2012. https://doi.org/10.1080/10508400902797958

[50]   Davis, R. B., *Constructivist views on the teaching and learning of mathematics. Journal for research in mathematics education: Monograph no. 4*. National Council of Teachers of Mathematics, 1990.

[51]   Giroux, H., *Teachers as transformative intellectuals. In K. Ryan, & C. J., Kaleidoscope: Contemporary and Classic Readings in Education (pp. 35-40)*. Cengage Learning, 2009.

[52]   Frostenson, M., "Three forms of professional autonomy: De-professionalization of teachers in a new light," *Nordic Journal of Studies in Educational Policy*, vol. 2015, no. 2, pp. 20-29, 2015. https://doi.org/10.3402/nstep.v1.28464

[53] Ramsdal, G. H and Wynn, R., "How young people who had dropped out of high school experienced their re-enrolment processes," *International Journal of Educational Research*, vol. 106, 2021. https://doi.org/10.1016/j.ijer.2021.101732

[54] Ramsdal, G. H., Bervik, S., and Wynn, R., "Long-term dropout from school and work and mental health in young adults in Norway: A qualitative interview-based study," *Cogent Psychology*, vol. 5, no. 1, pp. 1-17, 2018. https://doi.org/10.1080/23311908.2018.1455365

[55] Chikungu, L., Kadzamira, E., Chiwaula, L., and Meke, E., "Tackling girls dropping out of school in Malawi: Is improving household socio-economic status the solution?" *International Journal of Educational Research*, vol. 103, pp. 1-2, 2020. https://doi.org/10.1016/j.ijer.2020.101578

[56] Fajardo-Dack, T. M., "Teacher disempowerment in the education system of Ecuador," *World Journal of Education*, vol. 6, no. 3, pp. 82-89, 2016. https://doi.org/10.5430/wje.v6n3p82

[57] Tsang, K. K and Liu, D., "Teacher demoralization, disempowerment, and school administration.," *Qualitative Research in Education*, vol. 5, no. 2, pp. 200-225, 2016. https://doi.org/10.17583/qre.2016.1883

[58] Acharya, L., "Educational aspiration, dropout, and TEVT," *Journal of Training and Development*, vol. 2, pp. 69-78, 2016. http://dx.doi.org/10.3126/jtd.v2i0.15440

[59] Sharma, S and Levinson, D., "Travel cost and dropout from secondary schools in Nepal," *Transportation Research Part A: Policy and Practice*, vol. 130, pp. 385-397, 2019. https://doi.org/10.1016/j.tra.2019.09.010