# Assignment 1 – Self-Reflection Paper

Nabin Timilsina

U.S. Satellite Laboratory

Adams State University

# Self-Reflection

My early childhood education took place in one of the remotest parts in Nepal. Janata Elementary School, the only school in the area served two villages, and was 45 minutes away from our house. As I recall the memories of my early childhood, this school had a tin metal roof that made the classroom hot as an oven in sunny days and noisy as a drum in rainy days. The dust from the blackboard would fill the classrooms with no windows. We sat on the floor, and often on the playground outside, and wrote on little rocky blackboards made of slate and used chalk-sticks as pencils and palm as an eraser. Due to its remote location, no qualified teacher would want to work there. School was run by couple of teachers who didn't even have high school diplomas.

Fortunately, my father was a Headmaster at another school, and I did most of my studies at home. My father's school was in another village which was about two hours walking distance away from our home, and it was too far for me. There was no transportation, and walking was the only option. My father worked as a teacher his whole life and served areas like this that needed most help. He was successful in establishing number of schools in different locations and registering those with the government of Nepal. It's been over 50 years now, and those schools are still running as major schools, serving thousands of students who come from the disadvantaged families.

My father, a government schoolteacher, lived a selfless life, educating thousands of people and eradicating ignorance, illiteracy, and superstition. I saw him going to school every day before anyone would get up and getting back home late in the evening. That was his identity and his culture. It's because of his inspiration that I chose to become an educator, embraced his methods, and took the same path. It's because of the culture my father instilled in me, I wake up

every day with same determination, passion, and dedication so I can change the lives of my students and provide them the best education. My students often ask me why I always show up to work early, leave late, wear a suit and tie, never get late, and always stand smiling at the door. I tell them that it's just me being happy and proud to be their teacher.

It was during those early days that I developed love for science. That 45 Minutes' walk to school was the best experience I ever had as a child. Despite being a remote place, my village was naturally gifted. Janata Primary School was right by the longest river of Nepal, Karnali, a swift flowing river originated from Himalayas. The beautiful snow-covered mountains were just behind the hills of the valley. Green vegetation, extraordinary topography, diverse flora and fauna, and immense natural resources were abundant. This little valley in the far western part of naturally beautiful country Nepal cultivated a unique and different perspective in my mind. That was when I developed strong connection with nature. I enjoyed and appreciated that life-style as a kid and this bond with nature inspired me to study science. I often told my father that I wanted to be a protector of Nature. I was curious, but getting answers required knowledge of science.

As I proved to be academically outstanding, my father decided to send me to a very good school in the capital city of Kathmandu after 4$^{th}$ grade. I got my high school diploma in Science with major Biology. Then I came to the United States to pursue higher education in Sciences. I Graduated with Bachelors in Biological Sciences with concentration Ecology, Evolution, and Conservation. I received two summer fellowships during college to study the Ecology of carnivorous pitcher plant and effects of herbicides and prescribed fire on restoration of pine savanna located in Nature Conservancy of Abita Springs, Louisiana. My research was focused on conservation and my extensive work with one of the respected Ecologists was published in a prestigious journal. I loved being out in the field for over 10 hours. That hot Louisiana

temperature and rain didn’t bother me. That was just me being a learner of science. I was determined, passionate, hardworking, and I was always fascinated by methods of science and it’s approaches.

My experiences made me the educator I am today. These experiences have taught me to teach science to increase understanding among students and support them in successfully transferring their knowledge to different settings. I strongly focus on hands-on activities, experiments, field work, and various other activities that help my students find answers to their questions. Understanding of my own culture has also changed a lot over the course of time. Now I see science as one of the components of STEM. I have come to an understanding that it’s only through the integration of different subjects that we can achieve effective scientific results.

My STEM learning history began the moment I went to school the first day. One of the earliest memories of my childhood consists of making inquiries, creating hypothesis, and building inferences. All of it began with the nature that was around me when I grew up. The earliest memory I have doing science is collecting eggs of butterflies from the leaves on the way to school and saving them in the geometry box with a small leaf for the larva to feed on. I cared for it until it developed into a pupa, and I would eventually release it to the nature when it was well developed. It was just a fun thing to do for a kid. I merely did realize that I was indeed experimenting on the life cycle of an insect.

As an adult science learner, I focused on Ecology. It all started during the summer undergraduate research fellowship at Louisiana State University, Baton Rouge. I worked with my mentor Dr. William J. Platt to study the Ecology of the carnivorous pitcher plant. This was the most fascinating thing I did as a science learner. My work required me to go to field work to sample plots and collect data every single day. Those 8-10 hours in the scorching sun of

Louisiana didn't bother me at all. I used to feel like Charles Darwin who would set on similar adventures. I was defining myself not as a scientist but as a naturalist who would actually go into the nature and establish that bonding to get the best possible results. There were several challenges in conducting that research. We were low on budget, research site was almost two hours away from the university, we needed more interns to complete the research on the given time, and Louisiana weather was very unpredictable. But we overcame those challenges as a team. I along with my co-researcher were able to present our findings in the annual symposium of Louisiana State University at the end of summer 2013. This experience and Dr. Platt's mentorship transformed me not only as a science learner but also as a human. My bond with the nature was already strong, but that summer gave me new perspectives. I became very focused and my goals were clearer to me. I spent rest of my time in college continuing my research and focusing only on Ecology, Conservation, and Evolution. Graduating wasn't only a goal, I focused on taking higher level courses that allowed me to better understand Ecological concepts. While my eventual goal was to pursue a Ph.D. in Ecology, it could be because of my father's inspiration that I ended up being a school science teacher.

My mentor and this experience truly changed my perception of Ecology, Conservation, and Evolution for better. I had the required factual knowledge and passion for it, but my mind was everywhere. It helped me narrow down my choices and move forward. I started viewing Ecology as one of the strongest disciplines in STEM, and truly believed that our world could benefit from more Ecologists and Conservation Biologists. Then I developed a keen interest in Restoration Ecology, and the integration of Mathematics, Technology, and Engineering in this field made it even more fascinating.

My teaching style is greatly influenced by the above research experience. I have learned to acknowledge the choices of my students and support them in achieving their goals. I make them understand that science is not objective, and it's not about factual knowledge. It's about understanding and transferring that knowledge to other settings. I make them believe that science is fun, and it gives us answers to all questions.

I strongly believe that culture plays a strong role in teaching and learning of science. My native culture emphasizes on factual knowledge. While I disagree with this, I also think that it's important to achieve mastery of contents to develop understanding of concepts. My students require a formula sheet, a periodic table, and reference sheets for every test they take, while we were not given any of those when I was in school back in Nepal. I still remember all the formulas I had memorized when I was a kid. It proved to be very helpful when I came to the States for college. While many of my classmates were struggling with College Algebra, I was taking Calculus 2 despite being a Biology major. I have learned to apply the positives of my STEM culture in my classroom to ensure that my students are not only relying on given resources but also the information on their mind. I agree with Leah Shafer's post on Harvard Graduate School of Education's website that science should be much more than the rote memorization of theories, formulas, and vocabulary. It should be an education in problem solving and collaboration. But at the same time, teaching STEM should also focus on strategies that can make understanding processes simpler through prior mastery and understanding of those theories, formula, and vocabulary. Many of my students who understand the formation of formulas and scientific terms do not memorize those. They can even make sense of it even without my explanation. My belief that understanding and memorizations should co-exist is a strong component of teaching STEM. As written by Marc Smith on Teacher's blog in *The Guardian*, memorizing facts can build the

foundations for higher thinking and problem solving. Constant recitation of times tables might not help children understand mathematical concepts, but it may allow them to draw on what they have memorized in order succeed in more complex mental arithmetic. Memorization, therefore, produces a more efficient memory, taking it beyond its limitations of capacity and duration.

Culture does not only play a role in teaching, it also plays a strong role in learning. For example, South Asian culture of education puts focus on STEM, so students are pressured to go into one of these fields. Over the years, this has evolved as a norm. It’s because of this culture that Asian-American students always do well in STEM as compared to students of other cultures. In my experience as a classroom teacher, I would never have been able to produce results if I hadn’t made learning and understanding cultures of my students a top priority. Not only it helps teaching STEM, this is also a key to maintaining a solid classroom structure.

References

Smith, M. (n.d.). Why memorising facts can be a keystone to learning. Retrieved July 7, 2018, from https://www.theguardian.com/teacher-network/teacher-blog/2012/nov/21/memorising-facts-keystone-learning-psychology

Shafer, L. (2015). Why Science? Harvard Graduate School of Education. Retrieved July 7, 2018, from https://www.gse.harvard.edu/news/uk/15/11/why-science.