Portraying my Research Journey from Positivist to Post-Modernist

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Abstract

This paper delves into the philosophical underpinnings of various educational research paradigms, spanning from Positivism to Post-Modernism. Through an exploration of the researcher's pedagogical journey, it aims to elucidate the interconnections between epistemology, ontology, axiology, and methodology within each paradigm. Beginning with Positivism, characterized by its emphasis on empirical observation and objective truths, the paper navigates through the evolution towards Post-Positivism, which acknowledges the role of subjectivity and context in knowledge production. Interpretivism is examined next, highlighting its focus on understanding the subjective meanings and interpretations individuals attach to their experiences. Criticalism emerges as a paradigm that critiques power structures and seeks to empower marginalized voices in research. Finally, the paper delves into Post-Modernism, which challenges grand narratives and embraces pluralistic perspectives. Each paradigm is illustrated with examples from the researcher's own experiences, demonstrating how research within each framework is justified and legitimized. Through this exploration, the paper contributes to a deeper understanding of the diverse philosophical perspectives that inform educational research methodologies.

Keywords: Paradigm, Positivism, Post-positivism, Interpretivism, Criticalism, Postmodernism etc.

Introduction

In educational research the term paradigm is used to describe a researcher's 'worldview' (Mackenzie & Knipe, 2006) this worldview may be a school of perspective, school of thought, or set of shared belief (s), that informs (s) the meaning of the world of research participant (s). Generally, the research process is guided by the four fundamental dimensions; epistemology, ontology, axiology, and methodology (Creswell, 2012; Blanche et al., 2006). A research paradigm is an all-encompassing system of interrelated practice and thinking that define the nature of investigation. Epistemology and Ontology commonly concern as a person's worldview which has a significant influence on the perceived relative importance of the aspects of reality. These different ways of seeing the world have repercussions in most academic areas; yet, none of these views is considered to be superior to the other. Both may be appropriate for some purposes and insufficient or overly complex for other purposes. Thomas Kuhn (1962) a renewed American philosopher and educationist probably

first used the word 'Paradigm' to mean a philosophical way of thinking, originating from the Greek meaning 'Pattern'. Selecting an appropriate research paradigm is critical for novice researcher (s). Pioneering personalities in social science research; Guba and Lincoln (1994) define a paradigm as, "a basic set of beliefs or worldview that guides research action or an investigation" (p. 107). Similarly, another pioneering personality Denzin and Lincoln (2000) define paradigms as, "human constructions, which deal with first principles or ultimate indicating where the researcher is coming from to construct meaning embedded in concern data" (p. 195). Paradigms are thus important in any research work because they provide beliefs and injunctions for researchers in a particular discipline, influence what is to be studied, how it is studied, and how the results obtained of the study should be interpreted (Denzin & Lincoln, 2000). So, all the research is based on assumptions about how the world is perceived (Cohen, et al., 2018) and how we can best come to understand it (Creswell, 2012). It should therefore recognize, in the first place, that there is no best type of research paradigm ever described in social science research. There are numerous research paradigms exist in the social science research field. The context, assumptions, values, norms, perspectives, and worldview decide the types of research paradigm to be used to conduct a particular research to the world of the researcher. Among them, the most noticeable research paradigms are: Positivist, Post-positivist, Interpretivist, Critical, Post-modern, and Integral. Among them, five paradigms; Positivism, Post-positivism, Interpretivism, Criticalis,m and Post-modernism, their assumptions, research process, theoretical stances, quality standards, and researcher's practice with examples are discussed in this article.

Positivism Research Paradigm

The positivism paradigm of sightseeing societal reality is grounded on the philosophical thoughts of the French Philosopher, August Comte. According to Comte, observation and reason are the superlative belongings of understanding human performance; true knowledge is grounded on the involvement of senses and might be achieved by observation and test (Addae, & Quan-Baffour, 2015). From the ontological stand, positivists undertake that reality is objectively known (Greener, 2008) and is quantifiable using properties that are free from the investigator and research instruments (Creswell, 2012). Objective and quantative (Hunziker, & Blankenagel, 2022) knowledge is acquired in the positivist research paradigm. Accept scientific methods of inquiry and arrange the knowledge creation process measuring in numbers and figures of characterization of quantification to boost accuracy (Kothari, 2004) in the account of restrictions and unfolding the relationship between them. So positivist paradigm is concerned with the recognition of truth and clamming it by empirical means (Henning, Van Rensburg & Smit, 2004). Similarly, Walsham (1995b) argues that the positivist view that facts constitute scientific knowledge, whereas its ontology regards reality as being independent of a social entity (Saunders, & Lewis, 2012). A realist ontology (Patomäki, 2006), or the belief in an objective, real world,

and a detached epistemological stance (Antwi, & Hamza, 2015) based on the belief that people's perceptions and statements are either true or false, right or wrong, are illustrations of an "objectivist" perspective that a researcher may adopt if their research study involves a stable and unchanging reality (Saunders, & Lewis, 2012). They can also use a methodology that depends on control and manipulation of reality (Greener, 2008).

Practice Being a Positivist Researcher

I have been working as an assistant professor as well as a research assistant at BernHardt Educational Network for a decade where my practice is teaching Statistics and Research Methodology to graduate and postgraduate students and facilitating as a research guide. I supervised more than two dozen master's thesis and more than two hundred bachelor thesis (research works) of undergraduate students in this institution for the last ten years. In this journey, my pedagogical practices as a research guide observed as positivist and published several articles independently and jointly with my students as a co-researcher. Among them one of the positivist research papers where my role as co-researcher as independent from the research respondent is described in the following paragraph. A research paper entitled, "Comparative Study on Deposit Mobilization of Nepal Bank Limited and Sanima Bank Limited" (Shrestha & Aryal, 2022) was published being co-researcher with my master's student Manisha Shrestha and this study focused on and compared with the deposit mobilization condition of Nepal Bank Limited and Sanima Bank Limited of the study period 2011 to 2020 taking two banks namely Nepal Bank Limited and Sanima Bank Limited as a sample. This study explored the effects of profitability and loan and advance on deposit mobilization using a secondary source of data, taking, "How do profitability and loan and advance affect the total deposit mobilization of Nepal Bank Limited and Sanima Bank Limited?" as a main research question. The single and objective ontological reality in this research was quantifiable and measurable data of the ratio order being independent of the researcher and instruments (Okesina, 2020) having objective epistemology, that the researcher may get knowledge via reasoning independent of the research participants (Panta, 2014). The objective reality is the epistemological knowledge in this research, as we considered the source of data as secondary published by the Nepal Rastra Bank. So, for the proof of the epistemological assumption, data were published and verified by Nepal Rastra Bank. Similarly, in my opinion, axiology is that supportive knowledge that helps to gain by which we should give value to obtain knowledge from the study. In this research, the axiological foundation was deposit mobilization, which is the collection of cash or funds by a financial institution from the public through its current, savings, fixed, recurring accounts, and other banks' specialized schemes. The result of the study described the statistical data shows that the success of the banking greatly lies on the deposit mobilization performance of the bank as the deposits are normally considered as a cost-effective source of working funds as described by the secondary data that financial performance has a positive and significant influence on company reputation, and has a positive and significant effect on

firm value, reputation has a positive and significant influence on firm value, and reputation mediates the influence financial performance on firm value. To maintain reliability and validity, the statistical significance of the coefficients is attested to the connected independent variables' capacity for an explanation. The percentage of the dependent variable's overall variation that can be accounted for by each of the explanatory variables individually was calculated using the modified coefficient of determination. This total explanatory power was subjected to statistical significance using assigned statistical test statistics (Greener, 2022). As a research guide, my role might be reflected as an 'aloof gardener' independent of the research result where "reproduced knowledge is transferred from my head to my co-researchers head rather than involving in meaningful engagement, critical awareness and think of an alternative mode of inquiry that might better understand by his/her society" (Aryal, 2023, p. 17) and try to provide, "learning capsules…and expected to receive the capsules without questioning" (Aryal, 2022, p. 68). An aloof gardener observes plants from a distance and tries to employ someone's picture of it and forecast the plant's future assuming the hypothesis set by some other. In the whole research process, my role was to confirm the results obtained from the assigned statistical machine as tools in the research process and was guided by the established principles, and my co-researcher and I were bound by the assigned established theoretical notions.

Post-Positivist Paradigm

According to Morgol (2001), positivism is grounded in the assumption that reality exists independently of the knowing subject. Positivist researchers believe in attaining a comprehensive understanding through experimentation and observation (Ryan, 2006). Post-positivism, an evolved form of positivism frequently utilized in social sciences research, retains the notion of objective truth and experimental inquiry methods. However, it acknowledges the influence of context and situational variability. Post-positivists advocate for the recognition of diverse perspectives, valuing pluralism in understanding the world. As Kim (2003) notes, post-positivism asserts that truth is not static and can vary across different conditions or contexts.

Post-positivism facilitates knowledge generation by accepting the fluidity of truth over time. New theories or experiences can challenge existing beliefs, leading to a continuous evolution of understanding. The adoption of multiple perspectives or triangulation in research acknowledges the complexity of reality, where no single truth prevails. Post-positivists recognize that while the world operates under generalizable laws, the application and outcomes of these laws are often context-dependent (Biedenbach & Muller, 2010).

Philips (as cited in Floden, 2009) underscores the post-positivist approach, which prioritizes seeking appropriate warrants for conclusions and upholding standards of truth and falsity. Post-positivists view research outcomes as negotiated results influenced by the perspectives of both investigators and participants (McKelvey, 2002). They contend that

all observations are theory-laden and researchers are inevitably biased by their cultural backgrounds and worldviews. From the ontological stand, positivists undertake that reality is objectively known (Greener, 2008) and is quantifiable using properties that are free from the investigator and research instruments (Creswell, 2012). Objective and quantative (Hunziker, & Blankenagel, 2022) knowledge is acquired in the positivist research paradigm

In the field of social sciences, post-positivism refers to a group that rejects the possibility of achieving an entirely objective viewpoint. Post-positivists eschew the traditional elements of justification logic, including generalization, prediction, replication, and falsification, which aim at self-correction (Saunders, & Lewis, 2012). A realist ontology (Patomäki, 2006), or the belief in an objective, real world, and a detached epistemological stance (Antwi, & Hamza, 2015) based on the belief that people's perceptions and statements are either true or false, right or wrong, are illustrations of an "objectivist" perspective that a researcher may adopt if their research study involves a stable and unchanging reality (Saunders, & Lewis, 2012). They can also use a methodology that depends on control and manipulation of reality (Greener, 2008).

My Practice as being Post-Positivist Researcher

A study conducted by my master's student aims to 'Identify the Factors Influencing Investors' Decision-making in the Context of the Nepalese Stock Market and Evaluate their Impact on Investors' Decision-making Patterns taking, "What are the factors affecting investors' perceptions and how do these factors affect the investors' decision-making pattern in the stock market of Nepalese stock market ?". This research employed a mixed-method research design, where researcher practice was reflected as post-positivist and as co-researcher my role also reflected as same, utilizing both primary and secondary data collected through a scheduled questionnaire administered to a sample of 150 investors in the Kathmandu Valley who actively invest in the Nepalese stock market. To characterize current events and gather information about individual ideas, attitudes, and behaviors, this study uses surveys from a sample.

Mean score, Pearson's correlation, regression analysis, and chi-square test methods were utilized to analyze the data and address the research objectives assigned for the study. The study examined various factors that affect investor decision-making, specifically, financial performance, brokers' recommendations, and informal information. The findings of the study contribute to the existing literature on investor behavior and decision-making and provide insights into how investors in the Nepalese stock market make investment decisions. The findings reveal that a significant majority of investors analyze the prevailing market conditions before making investment decisions, as evidenced by a high correlation between the financial performance of entities, brokers' suggestions, and investment choices. This suggests that a considerable portion of investors have transitioned towards informed decision-making based on thorough analysis, deviating from the practice of relying on

rumors. However, despite the positive trend towards informed decision-making, some investors in the Nepalese stock market still rely on rumors and fail to analyze the financial performance of companies before investing. This highlights the existence of a segment of investors who may not be adopting rational investment practices. To complete the study, objective reality was observed, variables are measurable, controllability and patterning in nature and further results are predictable in nature, and outcomes are produced through the statistical procedure as suggested and assigned in the study and construction of laws and rules of behavior in patterning in position for all subject of inquiry, and the ascription of causality.

Similarly, a study conducted by a healthcare management student under my supervision entitled "Perception of Patients towards OPD Service of Gynecology Department in Private and Public Hospital of Nepal" (in press) taking *"How do patient perceptions of gynecology services differ between government and private hospitals in Kathmandu?"* as a main research question, tries to investigate the perception of patients of government and private hospitals. Patient satisfaction is an essential indicator of healthcare quality, significantly impacting patient outcomes. A descriptive, cross-sectional research design was employed, involving 330 patients (165 from each hospital) who were selected using purposive and non-probability convenience sampling. Data were collected through the Patient Satisfaction Questionnaire (PSQ-18) using a five-point Likert scale and analyzed via SPSS using different statistical tools. Descriptive research focuses on accurately depicting phenomena as they naturally occur, offering a clear view of current conditions. In contrast, the cross-sectional design is particularly effective for measuring the prevalence of diseases, attitudes, and knowledge among patients and healthcare personnel, as well as for validating comparisons between these groups. The findings revealed significant differences in patient satisfaction between the two hospitals. Private hospitals outperformed public hospitals in general satisfaction, technical quality, communication, and accessibility ($p < 0.001$). However, public hospitals scored better in terms of financial aspects, indicating a lower financial burden for patients (i. e. private hospitals generally had higher satisfaction scores across most domains, except for financial aspects, where public hospitals scored higher (8.38 vs. 5.98), reflecting a lower financial burden for patients). Overall, patients visiting private hospitals expressed greater satisfaction with the services provided, while those in government hospitals reported relatively lower satisfaction levels. These results suggest that improving the quality of care in government hospitals, particularly in communication and interpersonal interactions, while maintaining affordability, could enhance overall patient satisfaction.

Interpretive Research Paradigm

The interpretive research paradigm focuses on understanding individuals within society (Cohen et al., 2018). Central to interpretive research is the exploration of meaning, seeking

to comprehend how social actors define situations (Luitel, 2009) and the motives behind people's actions like behavior or interaction with others. This paradigm believes study it is all about understanding the complex world of 'lived experiences' from the point of view of those who live it (Sengupta, 2006) and further believes that how the world understands the subject is, for the researcher's, subjective and has something to do with the process rather than the product. Hence, the interpretive paradigm focuses on action. In this respect Cohen, et al., (2018) advocate, "Actions are meaningful to us only in so far as we are able to ascertain the intentions of actors to share our experiences" (p. 19).

Intreprevist rejects the belief that human behavior is governed by general, universal laws and characterized by underlying regularities (Cohen et al., 2018). Moreover, Intreprevist would agree with the common stand that the social world can only be understood from the standpoint of the individuals who are part of the ongoing action being investigated (Cohen et al., 2018) and that their model of a person is an autonomous one, not the version favored by positivist researchers and further meet on the same view that such a view is allied to constructivism (Creswell, 2013) and to interpretive approaches for the social science.

Thus, the paradigm of interpretivism facilitates the researcher to engage in the research field of understanding the cultural perspectives of research participants. It helps to explore the viewpoints or perspectives (Schwartz-Shea, & Yanow, 2013) of participant to understand their world. It provides the researcher space to adopt the emergent nature of his inquiry (Kivunja, & Kuyini, 2017). The interpretive paradigm enables researchers to delve into the cultural perspectives of participants, exploring their viewpoints and understanding their world (Chalmers et al., 2005). It offers flexibility for researchers to adapt to the emergent nature of their inquiry, fostering a deeper understanding of the complexities inherent through meaningful social interactions (Gautam, 2019) in the participant's world.

My Practice being an Intreprevist Researcher

After completing my M. Phil. from Kathmandu University in 2021 AD I joined Kathmandu University as a part-time lecturer and facilitated a subject "Curricula in Mathematics Education" for the two years M. Ed. students and teaching different pedagogy of the curricula connecting to Mathematics education, taking special objectives of the research is, "*With creatively and actively facilitates the students to understand the concept, effectively conduct project and meaningful completion of the implanted project plans with intended learning outcomes*". My role was facilitating the course and awarding the students the opportunities and challenges of the present school curricula of Nepalese schools. We discussed different curricular activities and their weaknesses in our class on the prescribed curriculum and tried to make an innovative and visionary school curriculum in the class. While discussing a visionary curriculum model a visionary model clicked in my mind, "Developing and Implementing STEAM Integrated Project Plan: Opportunities and Challenges". I started to work on it and at the end of the session, an innovative and visionary school curriculum

model was prepared for school children. I discussed it with my program coordinator and shared it with him. He liked it a lot and did further work on it. The final model was prepared and it was implemented in a school and reflections from the teacher and students were collected. Now this paper is being published. This project-based research aims to investigate and utilization of STEAM Project Based Learning as a means of enhancing students' mathematical literacy and connecting it with other subjects. This research focuses on the implementation of project-based learning for students in grades six to eight and their teachers, using the example of 'garbage collection and promoting effective disposal' as a way of making connections to real-life situations and encouraging students to inquire about their learning world and then critical thinking on it. The study involved 75 students, six class teachers, and two researchers from a school in the Kathmandu Valley. The researchers sought to investigate how the integration of STEAM was incorporated into the learning process of garbage collection to promote effective disposal. This project-based activity employed a qualitative approach to explore how STEAM was integrated into Mathematics, Science, Social Studies, English, and Nepali subjects, with an emphasis on encouraging deep engagement, creative and critical awareness, and higher-level thinking. This study paradigm is essentially concerned with understanding phenomena through different lenses and attempting to understand and interpret the world in terms of its actors involved in the project. However, the study encountered challenges in integrating Mathematical concepts with other STEAM-related subjects and aimed to empower both students and teachers in promoting deep engagement and inquiry about the subject of inquiry and then critical thinking in their world. Learners are engaged using 4R's model to save the environment i. e. refuse, reduce, reuse, and recycle, and mathematics to correlate it with daily life activities and my role as a researcher was a teacher like….. As a researcher, I believe that after completing this project-based learning learners refuse to buy items that contain single-use, buy products with less packaging and choose the most sustainable options, reuse something again that would normally be thrown away, and collect, separate, and change items into something new. Quality standard criteria like credibility, transferability, consistency, and conformability are used to complete research. Credibility criteria involve establishing whether the results are credible or believable from the perspective of participants involved in the research. Truth value is commonly acquired from the discovery of human experiences as they are lived and perceived by informants and increased through the description of source data and fit between the data and emerging analysis in addition to by 'thick descriptions' of the subject of inquiry. It is done when the investigator gives adequate information about self and also the research context, processes, members, and research participant connections to make it possible for the reader to decide how the findings may transfer. Consistency is an in-depth chronology of research activities and processes; influences on the data collection and analysis; emerging themes, classifications, or models, and analytic memos being research guides as 'teacher as involved gardener', "creating a learning environment and attempting to provide them with opportunities to participate in

activities might help them to have a meaningful and deep engagement in their learning world" (Aryal, 2022, p. 77). The teacher as an involved gardener goes around the garden, talks individually with the plants, and asks individually how they have been doing, feeling, thinking, valuing, and being in the garden. In the similar fashion, my practice reflected interacting with my participants individually on how they felt about their learning in their world, what their huddles of learning are, and ultimately what opportunities they get while learning, and so on. My main focus on the research process was how they have been doing and how the lives of the plants in the garden. It deals with the issue that the 'finding should signify, as far as possible, the specific situation being investigated as opposed to the beliefs, pet theories, or biases of the researcher. It is accounted to the perspectives that the integrity of results is based on the data and that the researcher must properly tie together the data, analytic processes, and findings in a manner that the reader is in a position to confirm the adequacy of the findings.

Critical Research Paradigm

The Critical Research Paradigm serves as a powerful lens through which researchers can interpret the intricate power dynamics present in society (Cohen et al., 2018). It recognizes the pervasive inequalities and injustices that pervade the world, giving rise to hierarchical structures where power mediates our thoughts and perceptions. Within this paradigm, the researcher adopts a critical standpoint, scrutinizing situations to unveil the power hierarchies at play.

The paradigm of positivism and interpretivism is not enough to deal with the injustice, domination, suppression, and discrimination faced by research participants in their world (Rai, 2019). Thus the paradigm of Criticalism helps the researcher to explore the voices of injustice, the voices of suppression, exploration of critical selfhood, and transformative sensibilities (Luitel, 2012). This paradigm always helps the researcher to explore the voices of injustice, and the voices of suppression, so this paradigm is also called the advocacy paradigm (Rai, 2018) and supports the advocacy of the claim of knowledge. Moreover, it enables the researcher to empower the research participants in regard to their dominant world. Also, the paradigm of Criticalism helps the researcher to consent to the practice of hegemony of a culturally decontextualized world (Luitel, 2012). In the view of Cohen et al., (2018), "critical research is itself value-laden, it abandons neutrality; it has an explicit social agenda that, under the guise of examining values, ethics, morals, and politics, which operates in a particular situation, is aimed at transforming the status quo" (p. 448). Hence the interpretive paradigm seeks to liberate the disempowered, to amend inequality, and to promote individual freedoms within a democratic society. So the interpretive paradigm always talks about deep democracy. In the words of Hamersley (2013), "It focuses not only on individuals and groups, but also on society and its institutions and social arrangements, and it uses both evaluative and descriptive concepts" (p. 30) such as exploitation, empowerment, class division, emancipation, justice, interests and such like, to bring about

specific political aims: equality, social justice, deep democracy, freedom from oppression and exploitation, and the transformation of society to an emancipated democracy within which people are empowered to take control over their own lives and life choices (Cohen, et al., 2018).

My Practice as being Critical Researcher

I was a Master's (Two years M Ed in Mathematics Education) student of Kathmandu University during the period of 2008 AD to 2010 AD. During two years of my Master's journey, I pursued my research inquiry entitled, "Learning Geometry of Visually Impaired Students in Integrated Setting: A Critical Ethnographic Study" (Aryal, 2011). My interest increased on the mentioned topic because there was a lack of research in this area at Kathmandu University till my M. Ed. study.

Being a Critical researcher, I selected the research topic, "Learning Geometry by Visually Impaired Children in High School" which was shaped when I met with a group of visually impaired children discussing in a group about a topic related to geometry without any reference materials suitable to them. "How is geometry learned by visually impaired children?" and "To what extent do they feel comfortable learning geometry?" were the main research questions. To answer these questions I have selected a co-educational school where visually impaired as well as sighted students study together in an integrated setting. I have used a qualitative research approach to pursue the study in which I used 'critical ethnography research design' to search for possible answers to "what is" to "what could be". I used in-depth interviews with the visually impaired students and their mathematics (geometry) teacher, classroom observation, reflection writing, and composite construction to collect the primary data. I spent 4 – 5 hours a day for 10 days taking interviews with my research participants and sample class observation to collect primary information. Coincidentally, I taught two hours to them by using essential educational materials and gained a new experience spent with the visually impaired children in their classroom. I transcribed the data collected from the field that were in the form of audio records and wrote reflections on each day. My axiological foundation in the research was that the reality is that visually impaired students of high school level were not considered the same as normal students in the context of the ability to learn geometry. It is really difficult to read and write as normal children did because they cannot see the physical world and geometry is related to the perception of two and three-dimensional figures. Similarly, I considered the source of data as the lived experience of visually impaired students in learning geometry. How did they learn? How do they behave in geometry in their context? What were their suggestions for the teaching-learning process? What strategies did children apply for learning geometry? What opportunities did they get in learning geometry? Were the criteria to observe them inside the classroom? As well as I am concerned about their math (geometry) teacher who taught them and tried to get their views also. So, for the

proof of my epistemological assumption, I am directly concerned with the stakeholders in the field. In this research, my axiological foundation was that visually impaired students also can perform, as sighted students did but the vision to look at them should be changed by changing perceptual approaches and ways of evaluations as well. Now in my research work to maintain the credibility and trustworthiness of the content I shared the interview schedule with my research guide and accepted all the constructive comments to develop a valid interview schedule. Trustworthiness is the correction of an item, scale, or instrument with the hypothetical one, which truly measures what it is supposed to measure, and is the correction of an item, scale, or instrument with the hypothetical one, which truly measures what it is supposed to measure was maintained as follows: (i) Bringing different data source of information by examining evidence. (ii) Member checking to determine the accuracy of the qualitative findings through taking the final report. (iii) Take themes back to participants and determine whether these participants feel that they are accurate. (iv) Peer debriefing to enhance the accuracy of the account and (v) clarifying the positionality the researcher brings to the study. This self-reflection creates an open and honest narrative that will resonate well with readers.

During my research work, I found that most of the regular subject teachers' intentions were always negative toward the visually impaired students and found that they were unfamiliar with and not cooperative with them. Teachers taught the lessons ignoring them even though they advocate the inclusive educational system. I have just tried to search the problems the visually impaired students were facing, and their geometry learning strategies employing critical ethnography. Finally, my research concludes that geometry can be a readable subject for visually impaired students too and they can learn as well as sighted students if it is taught by applying effective essential educational materials under skilled-trained teachers who have positive thinking towards them. I tried to maintain ontological assumptions in this research to explore the subjective epistemology, value-laden axiological perspectives through critical reflexivity, critical ethnography, critical narrative thinking, and critical auto/ethnographic multiple methods of inquiring about the world of visually impaired students and try to focus on raising critical awareness and consciousness about the teacher's creative thinking, designed curricula, assessment system, culture sensitivity, and socially responsible in their world. The criteria of verisimilitude is maintained as suggested by Marcus (1994) who clarifies that, "verisimilitude can be described as the mask a text assumes as it convinces the reader has conformed to the laws of its genre; in so doing it has reproduced reality in accordance with those rules" (p. 580).

My critical memos were metaphorically guided by being a researcher, a 'teacher as an activist gardener', and a 'teacher as catalyst gardener'. A catalyst teacher creates confusion at first and then arouses interest in the learner's mind and then tries to solve the

"controversial problem from the students' side through deep involvement in their learning world" (Aryal, 2023, p. 20). Similarly teacher as an 'activist gardener' goes around the garden and encourages the plants to speak up, paying attention who are not growing well, protecting those plants that have suffered from the various huddles and helping them to grow well, and compositing them water, mulching, sunlight the favorable environment for their growing and always stood to create a favorable environment for them to be their identity in the garden to my research participant. As a researcher I was encouraged to destroy the saying to my research participant, a famous saying since the Platonic period, "*Let no one enter here who is ignorant of Mathematics, especially geometry*" and "*There is no royal road to Geometry*". By the same token, my participant student, one who said, "*Learning geometry for visually impaired children is just like cracking an iron almond*". I tried to break down such negative feelings towards reading geometry to my participants' visually impaired students and critically aware them of geometry if you visualize well using appropriate geometrical tools, ICT technology then can be easily read, understood, and applied in their daily life.

Post-Modern Research Paradigm

The post-modern research paradigm, characterized by a departure from rigid structures and a rejection of a single, universal truth or fixed patterns, stands in contrast to the traditional "rule of law" approach (Saldana, 2011). At its core, post-modernism challenges the notion of universal truth and asserts that reality is not a fixed entity but is instead constructed by individuals. This construction is influenced by language, culture, and power dynamics, underscoring the fluid and dynamic nature of knowledge (Taylor, 2014). Postmodern theory questions established ideas of objectivity and impartiality, encouraging contemplation of the societal and cultural forces that shape our perception of reality. Rooted in the understanding that there is no singular, absolute pattern or theory applicable across various disciplines, postmodernism places a strong emphasis on subjectivity, advocating for the consideration of diverse viewpoints and interpretations (Taylor et al., 2009). Thus, Postmodernism is not a school of thought but rather a unified intellectual movement with a definite goal or perspective and can be the set of ideas that tries to define or explain the state of affairs in society (Travers, 2006) or a word used in many different contexts to cover many different aspects. Postmodern theory sets about dismantling most of our normal ways of thinking about how meaning, interpretation, and reality work (White, & Cooper, 2022). This dismantling process is also visible in education and educational research and recent arrival from the arts i. e. critical literary studies, art and agriculture, and media studies (Taylor, et al., 2009).

In the realm of postmodern research, a multi-perspective design is embraced, allowing for the representation of various disciplines to capture the complexity of the world (Stewart,

et al., 2021). The absence of a clear window into our minds, as highlighted by Taylor and Medina (2011), suggests that true understanding of the intricacies and nuances of thoughts and intentions is elusive. This paradigm acknowledges the inherent diversity in human experiences (Boje, 2006) and perspectives, challenging the idea of a singular, objective reality.

My Practice as being Post-modernist Researcher

I am going to describe my research journey inquiring about being a post-modernist researcher being critical and a critical reflection of my experiences. It was an unfolding journey through which I learned to connect to my entire work of inquiry. I never thought such an in-depth connection about the pedagogical practices envisioning and empowering learners and teachers regarding the development of professional careers. I think it was both an academic as well as professional self-realization for me.

This study was started through the different journey metaphors of my life. It is all about the mixture of ups and downs, joys and sorrows, and pleasure and pain. After graduating from the Bachelor level, I tried to jump into the 'ocean of teaching field' without knowing its essential pedagogical knowledge i. e. group learning, collaborative teaching-learning, and constructivist learning to name a few, and applied procedural approach and axiomatic approach (Pant, 2017) on my pedagogical practices. I enjoyed and practiced my conventional pedagogical approach before joining and being aware of the emerging alternative STEAM approach at Kathmandu University. I used to feel proud of myself as a genius teacher having a 'basket of tricks and techniques' to solve different mathematical problems using the teacher-centric 'banking model', 'factory model', 'paper pencil test model', and 'didactic teaching model' to name a few. I was disappointed with my pedagogical journey where my practices were under the hegemony of conventional educational settings treating learners as having 'empty minds' that appeared to shape my identity as a student and teacher to practice uncritically emphasized teacher-centric pedagogical practices.

My pedagogical journey was guided as learners' knowledge gets fragmented as subject-centric from primary education level to university education. My pedagogical journey as described above metaphorically appears to be guided by a teacher of 'aloof gardener', 'teacher as a dictator', 'teacher as mind-and-behaviour controller', 'school as factory', 'teachers as factory worker', 'students as factory product', 'classroom as knowledge transmission station', 'school as a station of rote memorization', 'curriculum as race track', 'curriculum is assembly line' etc. and leveled as 'subject centric'.

In the research, I have critiqued inequality, injustice, and oppressed pedagogical practices for the practices of meaningful and deeply engaging, critical, innovative, and interactive

practices related to our teaching/learning world. The pedagogical journey of meaningfully engaging, critically aware, and ultimately innovative was described by different metaphors like, 'teacher as a scaffold', 'teacher as a wise gardener', 'teacher as a catalyst', 'teacher as a nurturer', etc.

During the research, I believed that critical thinking might foster the creativity of the learners and the phenomenal changes might motivate the learners for lifelong education. Moreover, visionary thinking might be beyond critical thinking (Ratner, 2007), where pedagogical practices might have futuristic vision-making and foster critical discourses and innovation leading to transformation. Implementing different visionary (Taylor, 2015b) plans during the study might articulate transformative learning that enables the learners to develop innate potential and become more fully human (Taylor et al., 2012) by expanding conscious awareness of those who are meaningfully, deeply, and critically involved in such plans to practice deep democracy. I constructed different metaphors to describe the teaching-learning scenario of such a visionary teaching classroom. Different metaphors like 'teacher as a scaffold', 'teacher as an involved gardener', 'teacher as a doctor', and 'teacher as an artist', etc. were constructed of such classroom scenarios. The 'teacher as a doctor' metaphor might suggest that the teacher should remedy faults and heal ailments. The relationship between doctors and patients might shed light on the teacher-student relationship. The sick people go to doctors to get better or get rid of their suffering. To get better, the doctor provides good remedies or healing, and the patient follows the doctor's advice as students follow teachers, then the problem they suffer might be solved. In such a way, a teacher should know more than their students, not only about what has to be taught but also how to teach, when to teach, why to teach, and so on. The teacher must know how pupils learn as a doctor must know about the human body and the causes of health and diseases and how to cure them. Similarly, as a doctor diagnoses a patient, the teacher's duty is to diagnose his pupils and prescribe medicine. Teachers might have a similar illness that people have for mental illness, blaming the effect as if it is their fault. The teachers might be like doctors as they both need to test their clients' condition, prescribe remedies, prevent problems, and heal. Some special patients might not be healed based on the physician's knowledge and skills and must be referred to a specialist. Some students need special attention to solve their problems. Some illnesses of patients and problems of the students might take more and longer intervention to bring about good results so the students must see teachers as doctors. The patients as well as students must play some part in the healing process and their positive attitudes must influence the ability of the doctor/ teacher to help. In both cases, ignorance is like a lack of nutrition, exercise is like applying knowledge and disease is like destructive thinking. In this way, schools and teachers might help students depending on their condition when teachers see them and might depend on what can be done to help. Similarly, scaffold teachers support their students in the learning process. A teacher demonstrates and supports his students in every aspect of his learning being a

scaffolder how to encourage them to solve a given problem by taking students' learning at the Centre and working with alternative effective solutions. The scaffold teachers might create challenges and opportunities for the learners. Such challenges involve the learners in exploring new ideas and also in critical creative activities that might help the learners to go in-depth to explore

To maintain the quality of this study I as a researcher did at every stage an original and inspiring interpretation of the notion of pedagogy, one that searches for its roots in the experience of reading the research report. I presented an experiential analysis of the relation between pedagogical reflection and action and explored how pedagogical tact manifests itself, what tact accomplishes, and how it does.

I believe that this research might be a source of inspiration for any teachers and might stand out to be a platform for motivation towards successful and transformative pedagogy applied in the classroom and also want to make this topic a global issue, by presenting it at different national as well as international conferences. Right now, this topic has been an ordinary research topic with only a few limited social theories linkage. Furthermore, I want to make it loud and deep by linking it to the different theoretical perspectives and also would like to develop a new theory out of it.

Final Thought

Paradigms are the specific logical connections and coherent positions about the different components of the paradigm's epistemology, ontology, axiology, and methodology in any research work. Thus, how methodology is guided by the different philosophical components influences any researcher. Thus, the choice of a paradigm implies a near certainty about particular methodologies that flow from that paradigm. This relationship is very important because the methodological implications of paradigm choice permeate the research question/s, participants' selection, data collection instruments and collection procedures, as well as data analysis. Thus, the choice of a paradigm implies a near certainty about particular methodologies that flow from that paradigm. This relationship is very important because the methodological implications of paradigm choice permeate the research question/s, participants' selection, data collection instruments and collection procedures, as well as data analysis. However, the choice of the right methodologies needs to be informed by a good understanding of the different aspects of research paradigms.

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