CHILDREN'S SCHOOLING IN THE CLIMATE CHANGE VULNERABLE COMMUNITY OF MADHESH PROVINCE, NEPAL

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A Dissertation

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AN ABSTRACT

of the dissertation of *Chandra Bhushan Yadav* for the degree of *Master of Philosophy in Education (Development Studies)* on *5 December 2024* entitled *Children's Schooling in the Climate Change Vulnerable Community of Madhesh Province, Nepal*.

APPROVED BY

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Humans have started experiencing climate change disregards to their geographical location. The rise in the temperature of 1.1 degrees Celsius has altered most natural climatic phenomena into disasters. Moreover, because of climate change, the intensity and frequency of climatic disasters have increased worldwide, which has kept school children vulnerable because of more exposure, high sensitivity, and less adaptive capacity. With the increase in exposure to climatic disasters, the schooling of school children is at risk. School children from high vulnerable communities are primarily at the forefront of climatic disasters. Climatic disasters threaten school children in climate change-vulnerable communities as they cannot access their schools during those disasters. Their learning is also affected during disasters like floods, inundations, heat waves, and cold waves.

Nepal's government has also identified each district's climate change vulnerability level and ranked each district based on the vulnerability score. The thesis entitled "Children's Schooling in the Climate Change Vulnerable Communities of Madhesh Province" aimed to see the relationship between climatic disasters and school children's schooling (access and learning).

To meet the purpose of the study, the researcher formulated three research questions. The first research question intended to see the effect of climatic disasters on the schooling of school children. At the same time, the second research question focused on the effect of climatic disasters and demographic variables on school

children. Similarly, the third research question helps to see the relationship between the schooling of schooling children and the climate change vulnerability of districts. The study was conducted in the two districts of Mahesh province. The researcher used a quantitative research method grounded on the post-positive research design. Under the quantitative research method, the researcher used a survey as a data collection approach. 336 children from 12 schools from two districts were selected for the data collection. Similarly, 12 schools and 336 children were selected based on the multistage random sampling methods from two districts of Madhesh province. Descriptive statistics, mean, correlation, cross-tabulation, chi-square, t-test, ANOVA, and logit regression analysis were used to analyze the data.

Among them, 42% were male and 58% were female children. 25.3% of children belong to Terai Dalits communities, 3.9% from the Terai Bhramin community, 0.6% from Terai Janjatis communities, and 70.5% from the major ethnicity of Terai communities. Similarly, 95.2% of children were from the Hindu religion, and 4.8% were from the Islam religion. Only 2.4 of school children's parents were earning more than NPR 100000. Majority of children parents' monthly income was between NPR 20000 to NPR 50000. And most of the children's family were engaged in agriculture.

Floods, inundations, heat waves, and cold waves have moderate impacts on the access part of school children. Similarly, in the learning part of schooling, inundation, heat waves, and cold waves also have a moderate impact. The lowest impact was seen in the learning part during the flood and highest impact was during in learning during cold waves. Male children were facing more problems while going (access) to school in comparison to female school children during floods, inundations, heat waves and cold waves. In the learning part also, male children were more affected than female during flood, inundation, heat waves but not during the cold waves.

Floods, heat waves, and cold waves were the reason for the male children's absenteeism. Male children seek family support to go to school during the heat waves times. Likewise, the access part of the schooling of school children the High Vulnerable (HV) district was more affected by the impact of climatic disasters than the Low Vulnerable (LV) district during a flood, heat waves, and cold waves but not during inundation. Further, the learning of school children from the HV district was

also more affected by the climatic disaster during inundation, heat waves and cold waves but not during the flood.

The result of logit regression shows that, access and learning during the heat waves was less affected in the low climate change vulnerable district than access and learning of school children from high climate change vulnerable district.

In conclusion, climatic disasters have affected the schooling of school children. The schooling of school children was aligned with the climate change vulnerability level of the district. Which means that the schooling of school children was more affected by the climatic disasters who belong to a more vulnerable district. More research needs to be done to explore the impact of climatic disasters and schooling in the coming days. Inclusive implementation of the national climate change policy is recommended for the better schooling of school children. Further, school communities need to be aligned with the national climate change policy and develop relevant adaptation strategies against the climatic disasters that affect the schooling of school children. As climate change is dependent on the geographical locations, most vulnerable communities need to develop their own plans and policies to overcome the implication of climate change.

…… 5 December 2024

Chandra Bhushan Yadav

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शोध सार

विकास अध्ययनमा दर्शनशास्त्रको स्नातकोत्तर डिग्रीको चन्द्र भुषण यादवको शोध प्रबन्धको शीर्षक "जलवायु परिवर्तनबाट नेपालको मधेश प्रदेशका जोखिममा परेका समुदायका बालबालिकाहरूको विद्यालय शिक्षा" २० मङ्सिर २०८१ मा प्रस्तुत गरिएको थियो।

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उप.प्रा. लिना गुरुङ, पीएचडी

शोध निर्देशक

भौगोलिक तापमानमा १.१ डिग्री सेल्सियसको वृद्धिले अधिकांश प्राकृतिक जलवायु सम्बन्धि घटनाहरूलाई प्रकोपमा परिणत गरिदिएको छ । जलवायु परिवर्तनका कारण प्राकृतिक प्रकोपहरूको तीव्रता र आवृत्ति विश्वभर बढ्दै गएको छ । यसले विद्यालय जाने बालबालिकाहरूलाई बढी जोखिमयुक्त बनाएको छ किनभने तिनीहरूमा संवेदनशीलता र प्रभाव बढी हुने र अनुकूलन क्षमतामा कमी हुने गर्दछ । जलवायुजनित प्रकोपहरूमा वृद्धि भएसँगै विद्यालय जाने बालबालिकाहरूको अध्ययन-अध्यापन पनि जोखिममा परेको छ । बाढी, डुबान, अत्यधिक गर्मी तथा शीतलहर जस्ता विपत्तिहरूको समयमा विद्यालय जान नपाउने स्थिति सिर्जना हुँदा बालबालिकाहरूको शिक्षामा प्रत्यक्ष असर परेको देखिन्छ ।

नेपाल सरकारद्वारा प्रत्येक जिल्लाको जलवायु परिवर्तनको संवेदनशीलता तथा जोखिमस्तर निर्धारण गरी जोखिम मापनका आधारमा जिल्लाहरू श्रेणीबद्ध गरिएको छ । 'मधेश प्रदेशका जलवायु परिवर्तनको जोखिममा परेका समुदायका बालबालिकाहरूको विद्यालय शिक्षा' शीर्षकको यस शोधले मधेशका जिल्लाहरूमा जलवायुजन्य प्रकोप र विद्यालय शिक्षण बीचको सम्बन्ध केलाउने प्रयास गरेको छ । शोधको उद्देश्य पूरा गर्नका लागि, शोधकर्ताद्वारा तीनवटा अनुसन्धानका प्रश्नहरू तय गरिएका थिए । पहिलो प्रश्नले जलवायुजनित प्रकोपले विद्यालय शिक्षामा पार्ने प्रभाव पहिचान गर्न खोजेको थियो । दोस्रो प्रश्नले जलवायुजनित प्रकोप र जनसांख्यिकीय चरहरू विद्यालय शिक्षामा कसरी प्रभाव पार्छन् भन्नेमा केन्द्रित रहेको छ । त्यसैगरि तेस्रो प्रश्नले विद्यालय शिक्षण र जिल्लाको जलवायु परिवर्तन जोखिम स्तरबीचको सम्बन्ध पत्ता लगाउने प्रयास गरेको छ । अनुसन्धान मधेश प्रदेशका दुई जिल्लामा केन्द्रित थियो । यस अनुसन्धान ले पोस्ट-पोजिटिभ अनुसन्धान डिजाइनमा आधारित मात्रात्मक अनुसन्धान विधिको प्रयोग गरेको छ । तथ्याङ्क सङ्कलनका लागि सर्वेक्षण विधि अपनाइएको थियो, जसअनुसार दुई जिल्लाका १२ विद्यालयका ३३६ बालबालिकाहरूलाई बहु-चरणीय नमूना छनोट विधिबाट चयन गरियो । तथ्याङ्क विश्लेशणका लागि वर्णनात्मक तथ्याङ्क, माध्य, सह-सम्बन्ध, क्रस-टेबुलेशन, काइ-स्कायर, टी-टेस्ट, एनोभा, र लजिस्टिक रिग्रेसन विश्लेशणको प्रयोग गरियो ।

तथ्याङ्कअनुसार, सहभागीमध्ये ४२% बालक र ५८% बालिका थिए । २५.३% बालबालिकाहरू तराई दलित समुदायका, ३.९% तराई ब्राह्मण, ०.६% तराई जनजाति, र ७०.५% तराईका प्रमुख समुदायका थिए । ९५.२% बालबालिकाहरू हिन्दू धर्म मान्ने र ४.८% इस्लाम धर्म मान्ने समुदायका थिए । बालबालिकाका अभिभावकमध्ये केवल २.४% को मासिक आम्दानी एक लाख नेपाली रुपैयाँभन्दा माथि थियो भने अधिकांश अभिभावकको आम्दानी बीस हजार देखि पचास हजार रुपैयाँको बीचमा रहेको थियो । अधिकांश बालबालिकाका परिवार कृषि पेशामा आवद्ध थिए ।

बाढी, डुबान, अत्यधिक गर्मी, र शीतलहरले बालबालिकाहरूको विद्यालय शिक्षाको पहुँचमा मध्यम प्रभाव पार्ने देखिएको छ । त्यस्तै, सिकाइको पाटोमा पनि उल्लेखित प्रकोपहरूले मध्यम प्रभाव पारेको देखियो । बाढीका समयमा सिकाइमा न्यून प्रभाव देखियो भने शीतलहरको समयमा सिकाइमा सबैभन्दा बढी प्रभाव परेको पाइयो । प्रकोपको समयमा बालकहरूलाई बालिकाहरूको तुलनामा विद्यालय जान अधिक समस्या परेको पाइयो । त्यस्तै सिकाइको पाटोमा, बाढी, डुबान, अत्यधिक गर्मीमा बालकहरू बढी भए भने, शीतलहरमा त्यस्तो भएन । बाढी, डुबान, अत्यधिक गर्मी, र शीतलहरकै कारण बालकहरूको अनुपस्थितिको दर उच्च रहेको पाइयो । बालकहरूले विशेषगरी अत्यधिक गर्मीको समयमा विद्यालय जान परिवारको सहयोग आवश्यक पर्ने बताए । उच्च जोखिम भएका जिल्लाका बालबालिकाहरूको पढाइ बाढी, अत्यधिक गर्मी तथा शीतलहरका कारण बढी प्रभावित भएको देखियो भने डुबानको समयमा भने उल्लेखनीय प्रभाव परेको देखिएन ।

लजिस्टिक रिग्रेसनको नतिजाहरूले देखाएअनुसार, कम जोखिमयुक्त जिल्लामा शितलहरको समयमा विद्यालय शिक्षामा पर्ने असर उच्च जोखिमयुक्त जिल्लाको तुलनामा न्यून रहेको पाइयो । अन्ततः जलवायुजनित प्रकोपहरूले विद्यालय शिक्षालाई प्रभाव पारिरहेको छ । विद्यालय शिक्षाको अवस्था जिल्लाको जलवायु परिवर्तन जोखिमस्तरसँग जोडिएको देखिन्छ । उच्च जोखिमयुक्त जिल्लाका बालबालिकाहरू जलवायुजनित प्रकोपहरूबाट बढी प्रभावित भएका छन् । जलवायुजनित प्रकोप र विद्यालय शिक्षाबीचको सम्बन्धलाई अझ गहिराइमा बुझ्न थप अनुसन्धान आवश्यक देखिन्छ । विद्यालय शिक्षालाई प्रभावकारी बनाउन राष्ट्रिय जलवायु परिवर्तन नीतिको समावेशी कार्यान्वयन अनिवार्य छ । साथै, विद्यालय तथा समुदायहरूले राष्ट्रिय जलवायु परिवर्तन नीतिसँग समायोजन हुने गरी जलवायुजनित प्रकोपहरू विरुद्ध उपयुक्त अनुकूलन रणनीति विकास गर्नु पर्दछ । जलवायु परिवर्तनको प्रभाव भौगोलिक अवस्थासँग सम्बन्धित हुने भएकाले उच्च जोखिमयुक्त समुदायहरूले आफ्नै सन्दर्भअनुसार जलवायु परिवर्तनको प्रभाव न्यूनीकरण गर्न विशेष योजना तथा नीतिहरू निर्माण गर्न आवश्यक छ ।

..... २० मङ्सिर २०८१

चन्द्र भुषण यादव

उपाधि उम्मेदवार

This dissertation entitled *Children's Schooling in the Climate Change Vulnerable Community of Madhesh Province, Nepal*, presented by *Chandra Bhushan Yadav* on *5 December 2024*.

APPROVED BY

…… 5 December 2024
Asst. Prof. Lina Gurung, PhD
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I understand that my dissertation will become a part of the permanent collection of the library of Kathmandu University. My signature below authorizes the release of my dissertation to any reader upon request for scholarly purposes.

…….. 5 December 2024
Chandra Bhushan Yadav
Degree Candidate

DECLARATION

I hereby declare that this dissertation is my original work, and it has not been submitted for candidature for any other degree at any other university.

…….. 5 December 2024

Chandra Bhushan Yadav

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DEDICATION

This dissertation is dedicated to my mother

Dulari Devi Yadav

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Chandra Bhushan Yadav
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ABBREVIATION

CBS	Central Bureau of Statistics
CCVI	Climate Change Vulnerability Index
CCVR	Climate Change Vulnerability Rank
CO_2	Carbon Dioxide
CoP	Conference of Parties
EFA	Education for All
EiE	Education in Emergency
FGD	Focus Group Discussion
GCRI	Global Climate Risk Index
GISS	Goddar Institute for Space Studies
HDI	Human Development Index
HV	High Vulnerable
LV	Low Vulnerable
LAPA	Local Adaptation Plan for Action
MHA	Ministry of Home Affairs
MoFE	Ministry of Forest and Environment
MoPE	Ministry of Population and Environment
MPI	Multidimensional Poverty Index
NAPA	National Adaptation Program of Action
NASA	National Aeronautics and Space Agency
NDC	Nationally Determine Contribution
NPC	National Planning Commission
PPM	Parts Per Million
REED	Reducing Emission from Deforestation and Forest
SAR	Sixth Assessment Report
SSRP	School Sector Reform Program
UN	United Nation
UNFCC	United Nations Framework on Climate Change
UNISDR	United Nation International Strategy for Disaster Reeducation
VIF	Variance Inflation Factor
WMO	World Metrological Organization

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CHAPTER I
INTRODUCTION

In this chapter, the researcher first of all gives the backdrop of carbon dioxide concentration after the Industrial Revolution, which is the root cause of global warming. Further, the researcher has discussed the recent disasters and their relation to global warming and precipitation as a climate change. The chapter has also discussed efforts made by the government of United Nations (UN) member countries and the government of Nepal to mitigate the effect of climate change. Further, this chapter also contains issues and problems in the education sector of Nepal; changing nature of disasters and their effect on the education sector. This chapter also discusses the consequences of climate change in the context of Nepal in general and Madhesh in particular. At the end of this chapter, there is statement of the problem, the purpose of the study, research questions, significance, and delimitation with the research hypothesis.

Background of the Study

With the help of consecutive scientific proofs (Houghton, 2001; Schellnhuber, 2008) on global warming, climate change projection under several model and the discovery of easily relatable consequences and indicators of climate change, people agree that climate change is happening. After the Industrial Revolution, scientists found that humans had emitted lots of carbon dioxide into the atmosphere, which warmed the earth's temperature. It is said that the present concentration of Carbon dioxide is above 400 parts per million (ppm) (Hashimoto, 2019) but during the industrial time, the concentration of carbon dioxide was only 278 ppm. The excessive carbon dioxide gas which is emitted after the industrial time, traps heat warming the temperature of the earth. The continuous emission of carbon dioxide into the atmosphere and the process of trapping heat have increased in the current days. The scientist called this process as global warming and because of this, the earth's mean surface temperature has increased and will continue increasing in the coming days.

Few years ago, massive flood hit Pakistan, and it is said that the cause of the massive flood is climate change. Excessive precipitation over the flood-affected region causes massive floods, and shortly, few places of Pakistan was heavily affected by the massive flood and heavy precipitation caused by global warming (Nanditha et

al., 2022). Several such disasters are being caused by climate change. Over time, researchers have found that the carbon dioxide emitted into the atmosphere and in the ocean has warmed the earth's temperature. According to Hamza et al. (2020), human-emitted carbon dioxide is warming the earth's temperature along with the natural warming process.

To reduce human-induced climate change, every year, the governments of UN member countries sit together in the Conference of Parties (COP) to limit climate change and its impacts. Besides that, 197 countries worldwide have also signed an agreement named the United Nations Framework Convention on Climate Change (UNFCC) to reduce the emission of greenhouse gasses produced by human activities. After the gradual discussion and development of technology, countries made Nationally Determined Contributions (NDC) to reduce the emissions from anthropogenic activities. Besides that, countries have also prepared their Local Adaptation Plan of Action (LAPA), National Adaptation Program of Action (NAPA), and Climate Change Policy to act on the impact of climate change.

Nepal has also prepared its NDC, LAPA, and climate change policy. Besides that, climate-related issues are included in Nepal's different sectoral policies (National Education Policy, 2019). The government of Nepal has also taken many initiatives related to climate change, like curriculum reform and the implementation of REED and the REED Plus program in Nepal. In 2016, the Central Bureau of Statistics (CBS) conducted a National Climate Change Survey to know how changing climate affects people's lives. In August 2022, the Government of Nepal, in collaboration with the National Planning Commission (NPC) and CBS, developed 260 indicators to measure climate change (CBS, 2022). The present preparation and activities conducted previously clearly indicate the threat from climate change.

Nepal is a country of diversity. Diversity can be easily seen in the geography, culture, language, and development of the country. If we look at diversity from the lens of educational development, we will find few highly developed places in the country. Schools and colleges are located very short distances in the highly developed places. On the other hand, there are few places where students still have to walk for long hours to reach school. Students from the hilly and mountainous regions must walk a few hours on a narrow road to reach school. Due to the long hours of distance,

early-grade students drop out comparatively more than students from higher grades (Sharma & Levinson, 2019).

Similarly, Sherpa (2022) has found that the distance from home to school also affects a student's performance. Just because of long distances, school children do not perform well in their studies. It is well-known that students from the Karnali region do not receive educational materials on time because it is difficult to carry them. Still, school children from Kathmandu and other developed places can easily get educational materials on time. Still, there are a large number of public schools that do not have good school buildings and infrastructure. The school buildings are not disaster resilient. To make those schools resilient to disasters, the government of Nepal has developed one guideline under the School Sector Reform Program. Similarly, there are a few other major problems such as poverty trap, lack of teachers in school, discrimination between girls and boys, and so on.

If we refer to a few research articles that focus on the education condition of Nepal, Acharya et al. (2013) say there are several reasons, such as geographical region, caste, home language, and parents' education, that affect children's schooling. Similarly, Pant (2020) says that the socio-economic status of parents causes poor student performance because parents with low socio-economic status give very little priority to education and more to jobs. A study conducted by Dahal et al. (2019) found that a lack of proper policy implementation causes students to leave their schooling. Poor policy implementation can be easily seen in the plains of Terai. Students from well-off families go to private schools, and students from low-income families normally go to public schools. A similar finding was found by Thapa (2013). He found that rich families send their children to private schools. In terms of facilities, most private schools provide school buses, but students from public schools have to go to school either by bicycle or on foot.

If we dive deep, we can find that school distance, family income, educational material, mother's education, geographical location, and socio-economic status are not the only factors that affect schooling. The growing number of climatic disasters and their consequences are also affecting students' schooling. In Nepal, the intensity and frequency of those disasters have increased and caused half of the total economic and human losses per year (Awasthi & Owen, 2020). According to Bagale et al. (2021), the number of drought events in Nepal has become frequent since 2005; from 1977 to

2018, the number of extreme droughts was eight. Similarly, Karki et al. (2017) said that the low land of Terai is experiencing a high intensity of precipitation, but the frequency of precipitation is low. The authors also said that the precipitation rate in Nepal varies across the country, with region-based risks of flood. The climate projection conducted by (Chapagain et al., 2021) shows that the low land of Terai will be hotter during the summer, with longer hot days and fewer cold days. The frequency and intensity of precipitation events will also increase in the coming days.

People have recently started observing those events in their day-to-day lives. This indicates that those events occur at regular intervals, but Seneviratne et al. (2021) say extreme weather events are those that do not occur most often at any place and time of year. The definition of extreme weather events contradicts people's day-to-day life events. Cutter (2021), in his study, also agrees that the intensity and frequency of those events have increased in the present day. He further says that the intensity and frequency of those events are transformed into annual and seasonal time intervals.

According to Aryal (2014), Nepal is one of the most vulnerable countries from the perspective of disaster, with a growing trend in the number of disasters. In Nepal, more than 80 percent of people are threatened by natural hazards like floods, drought, Glacier Lake Outburst Flood (GLOF), earthquakes, landslides, and fire (Shreebastav et al., 2019). Due to the diversity in the topography of Nepal, the low land of Terai is more prone to flood and drought than landslides and other natural disasters. According to Somos-Valenzuela et al. (2015), the GLOF also increases the threat of flooding downstream in the context of changing climate. Similarly, Aryal (2014) after analyzing the data on disaster incidents in Nepal from 1900 to 2005 has found that the people of Nepal suffer from long exposure to disasters and are more vulnerable to the impact of those disasters. Due to the installation of early warning systems in rivers, people get time to react, but during the monsoon, the rain-induced floods become devastating.

Over time, districts of Madhesh have witnessed several floods and inundations as a result of heavy and unpredicted rainfall. The floods and inundations that occur every year have affected people's physical resources and lives. According to Adhikari (2013), people living in the plains of Terai are forced to live in floods and inundation for many years. The districts that have more rivers and are closer to the rivers, like Bagmati and Koshi, are more prone to flood and inundation. Besides that, there are

many small and big rivers that flow from the mountain to the plain land, and those rivers increase the chances of flooding and inundation in the plain land of Terai. In the changing climate, the probability of flooding has also increased in the plains of Terai. A study conducted by Bhattarai (2014) in a Dhondra River watershed found that climate change has influenced the pattern of flooding and its related disasters, particularly in the Siwalik region of Nepal. The study of Bhattrai also indicates that Terai's land is more prone to flooding, especially in climate change. In the last few years, the rainfall pattern has changed suddenly, resulting in inundation in the plain land of Terai.

Similarly, several incidents are recorded as massive floods with huge economic and life losses, particularly in Madhesh province. In 1993, there was a massive flood that affected the Sarlahi district. The number of Dams and embankments construction being carried out by the government of India in Bihar to block and control flood water that originates from the rivers of Nepal will further create a problem of inundation in the future (Adhikari, 2013). Once we stop the natural flow of river water, it may create a huge inundation problem, particularly in the plain land of Terai.

It is not new that people worldwide have started experiencing the impact of climate change. In Nepal, people have also experienced climate-related changes over time (CBS, 2017). In the Climate Change Impact Survey report, it is also stated that most people in Nepal are experiencing drought, a rise in the temperature, and changes in the monsoon rainfall. Particularly in the context of Madhesh province, the increasing temperature in summer, extreme cold in winter, heavy and unpredicted rainfall, flood, and inundation have become major problems in the schooling of school-going children.

Problem Statement

There are several pre-identified problems for school children, particularly in low land of Terai viz poverty, student-teacher ratio, parent's education, early marriage, family income (Neupane, 2017), and so on but those socio-economic conditions are not only the problem in the schooling of school children. From the study conducted in Nepal (Chaudhary & Timsina, 2017) and several studies conducted internationally (Kagawa, 2022; Sahani et al., 2021), Researchers can claim

that unavoidable and ongoing climate change and its related consequences have also created problems in the schooling of school children.

The report published by MoFE (2021) has identified 11 types of disasters related to climate change. Based on the nature of the disaster, those disasters can be seen based on the topographical structure of the country. The prevalence of a few disasters like heavy rainfall, flood, inundation, heat waves, and cold waves can be easily seen in the Madhesh province. Due to the increase in the intensity and frequency of those disasters, they are slowly becoming some of the major problems for people living in the Madhesh province. Also, because of the topographical structure, people living in the low land frequently experience floods, heavy rainfall, heat waves, cold waves, and inundation. Most of the time, these phenomena are only known for economic loss, loss of infrastructure, loss of human lives, and effects on human health. But, in fact, climatic hazards, climatic disasters, and climatic variabilities are affecting the schooling of school children in both visible and invisible forms.

As the low land of Terai lies at a low sea level altitude, rivers flow from the hill, and mountains passing through the land. Only in the Madhesh province there three major rivers, namely Kamala, Koshi, and Bagmati, which include several small rivers. During heavy rainfall, floods put school children in difficulty, particularly those living in the Madhesh province, because it lies in the low land of the Terai. Most schools remain closed because students find it difficult to attend classes due to heavy rainfall, floods, and inundated situations. With the increasing occurrence and intensity of rainfall, floods and inundation within very short time intervals have become major obstacles for school children. A large number of children remain at home due to flood and inundation. A study conducted by Ardales et al. (2016) has found that classes were disturbed by irregularity in classes and poor presence of students in the classroom. They also found that students pay less attention inside the classroom, which results in their poor performance. In the Madhesh province, schools are destroyed and damaged, and they remain closed during heavy rainfall, flooding, and inundation situations. Students' absenteeism can be easily seen inside the classroom. Parents do not send their children to school during flood time because of fear of floods. A study by Chaudhary and Timsina (2017) in the Mahottari districts of Terai has found that floods affect children's schooling and eventual academic

performance. They found that floods damaged students' houses and school infrastructure; most students do not get access from home to school due to floodwater, affecting their academic performance and attendance. Nepal is one of the 11th countries in the world in disaster vulnerability (Dilley et al. 2005, as cited in Shrestha et al. 2020) and the second country in South Asia from the risk of flood (UNDP, 2009 as cited in Shrestha et al., 2020). As a result, children's schooling get affected by flood.

The problem for students' schooling is not limited to climatic disasters viz flood and inundation. Another problem for them is climate variability, such as heat and cold waves. Due to global warming, Nepal's mean average temperature in Madhesh province is increasing (Department of Hydrology Metrology, DHM, 2017). For school-going children, it is difficult to attend school during the scorching heat in summer and thrilling chill days in winter. School children suffer from health consequences. The extreme temperature inside and outside the classroom affects learning. Most schools lack facilities to deal with extreme heat inside the classroom, which leads to poor teaching and learning practices inside the classroom. Students struggle with teacher lectures because of low concentration inside the classroom.

The concern regarding floods, inundation, and rise in temperature concerning school education is the increase in the frequency and intensity of floods, inundation, heat waves, and cold waves. It is projected that the warming of Nepal will be raised by 1.4 degrees Celsius by the end of 2040 if the world emits even the lowest emission projection rate (Climate Risk Country Profile Nepal, 2021). Similarly, a study by Solomon et al. (2009) says that the carbon already emitted in the atmosphere will continue warming the earth's temperature for the next 1000 years. In fact, countries are still emitting carbon dioxide into the atmosphere, which will further increase the earth's temperature. Besides that, Nepal is the top ten most affected countries from 2000 to 2019 (Global Climate Risk Index GCRI, 2021). It is assumed that by the next decades, around 175 million children will be affected by any disaster brought by climate change.

Due to poor infrastructure, less access to resources and knowledge regarding the adaptive measures against the impact of climatic disasters and climatic hazards, and poor institutional capacity at the local level (Regmi and Bhandari, 2013) will be barriers to adaptation to climate change. As a result, school children will suffer to the

possible extent, and their studies will be affected in the long run. As per the prediction, shortly, they will be more vulnerable to unavoidable climate change and its consequences.

Purpose of the Study

The purpose of the study is to investigate the relationship between climatic disasters and their impact on the access and learning of school children belonging to the climate change vulnerable communities. Further, the study explores whether the most vulnerable district of Madhesh Province is related to students' schooling.

Research Questions

1. To what extent is schooling (access and learning) of school children affected by climatic disasters (flood, inundation, heat waves, and cold waves)?
2. To what extent is schooling of school children (access and learning) different across school children's age, gender, ethnicity, and socio-economic variables?
3. What is the relationship between the level of climate change vulnerability of the district and the schooling of school children?

Hypothesis

The hypotheses below were formulated based on the above-mentioned research questions.

H0 1: There is an effect of climatic disasters in the schooling of school children.

H0 2: There is more effect of heat waves in the schooling of school children in comparison to flooding, heavy rainfall, and cold waves.

H0 3: There is more effect of climatic disasters on girls compare to boys in schooling.

H0 4: There is a difference in school children's schooling based on the district's climate change vulnerability level.

H0 5: Climate change vulnerability of the district is a contributing factor in the schooling of school children.

Operational Definitions

Climate change vulnerability: When the system, people, or community is unable to cope with the adverse effects of climate change, climate-related hazards, and climatic variability, it indicates the vulnerability of the system, people, or community's vulnerability to climate change. The system's vulnerability is assessed based on exposure, sensitivity, and adaptive capacity.

Schooling: For this study, schooling means attending formal education where school students have to attend school regularly. Schooling also involves regular teaching and learning activities based on the curriculum within the school premises. Further, it includes students' activities like assignment completion at home; it also includes reaching out to school and coming back home and appearing in exams to assess students' academic achievement at the end of the academic year.

Heat Waves: Heat Wave is a duration of extreme hot weather, where school children suffer from health and mental consequences when they get exposed to hot temperature for minimum next 2 consecutive days or longer. Heat waves create heat stress and several health consequences which affect the schooling.

Cold Waves: Cold waves is a duration (minimum 2 consecutive days) of extreme cold weather in which school children get hit by cold air, fog, invisibility with several health consequences as well cold stress that affect school children in access and learning.

Significance of the Study

Climatic disasters are now seen in the Nepalese context as well. Climatic disasters have effects globally, particularly in the schooling of school children. Moreover, it also affects the schooling of school children in Nepal. Both schools and school children have to face huge loss every year. Every year, seasonal and non-seasonal disasters affect children's schooling; but very little has been identified in this area, particularly in the Nepalese context. It is predicted that in the near future, the rate of disaster related to climate change will increase. In this context, this study has helped to know the current situation of children's schooling during the climatic disaster. Because of the prevalence of climatic disasters at frequent intervals, many places are highly vulnerable to climate change. The study has also explored the effects of those vulnerable places in the schooling of school children. The literature review section shows that climatic disasters affect the children from highly vulnerable places more. This study tested whether the climatic disasters affect children from the vulnerable communities.

Delimitation of the Study

The schooling process is a complex system where many stakeholders are engaged. Besides that, several activities need to be performed for schooling. The primary activities are teaching and learning, student assessment, curriculum design,

etc. In reference to context, schooling get affected by several factors. This study is limited to climatic disasters which are more frequent in the study area and affect the schooling of school children. Further, this study is limited to only access and learning of schooling from the public-school children who belong to grades 9 and 10.

CHAPTER II
LITERATURE REVIEW

In this chapter, the researcher reviews existing literature on climate change, the present situation of climate change, studies related to the prediction of climate change based on the current scenario of carbon emission, present and future consequences of climate change, climate change vulnerability, and climate change vulnerability in the context of Nepal. The impact of climate change is seen in the form of disaster and climate variability. To make conceptual understanding clearer, both climatic disasters and climatic variability were reviewed concerning climate change. Further, the researcher has done an in-depth study of climate-induced disaster consequences about schooling and children's education from the perspective of climate change vulnerability.

Climate Change

Climate change is the most discussed and used phrase in the literature. Understanding climate change varies from person to person and place to place. For most people, climate change means a rise in the temperature or global warming. Sometimes, people use global warming as a synonym for climate change. To some extent, understanding is true because people easily notice extreme heat. Most of the world's population is suffering from a rise in temperature-related issues, that is why they have built this understanding. While doing the literature review, the researcher found that understanding of people is more in line with the definition given by the UNFCCC instead of the Intergovernmental Panel on Climate Change (IPCC). UNFCCC (2011) defines climate change as changes brought into the global atmosphere, which are observed after a long time by direct or indirect human activities. Researchers believe people's understanding is more similar to the definition given by UNFCCC because people feel changes in the global temperature caused by the excessive production of greenhouse gasses. The definition of UNFCCC focuses only on human activities. However, the definition given by IPCC (2012) includes both natural activities and direct and indirect human activities.

There is a huge debate about whether natural activities cause climate change or whether human activities are causing climate change. It is said that both natural and human activities are responsible for climate change. The main human activity that

causes climate change is carbon emissions to the atmosphere. Humans burn fossil fuel for different purposes, which accumulates in the earth's atmosphere. According to Yue and Gao (2018), both natural and human systems emit carbon dioxide into the earth's system. However, natural activities that emit carbon dioxide are forest fires, oceans, wetlands, permafrost, mud volcanoes, and earthquakes. The authors said the natural system emits 181.3 to 393 Mt CO_2 -eq per year, whereas anthropogenic emission is 54.33 to 75.5 Gt CO_2 -eq per year. If we look at the percentage of CO_2 emissions, humans contribute around 55.4 %, slightly more than the natural system. According to the National Oceanic and Atmospheric Administration (NOAA) (2022), the concentration of CO_2 in the atmosphere was around 281 ppm during the Industrial Revolution, i.e., between the 17th and 18th centuries. While at present, the concentration of CO_2 is more than 410 ppm. The logic behind calculating the concentration of carbon dioxide in the atmosphere is that if there are more carbon molecules, they will absorb more heat and warm the earth's temperature. According to Solomon et al. (2009), the increased number of carbon molecules (410 ppm) will warm the earth for the next 1000 years, and the present temperature of the earth will not fall for the next 1000 years.

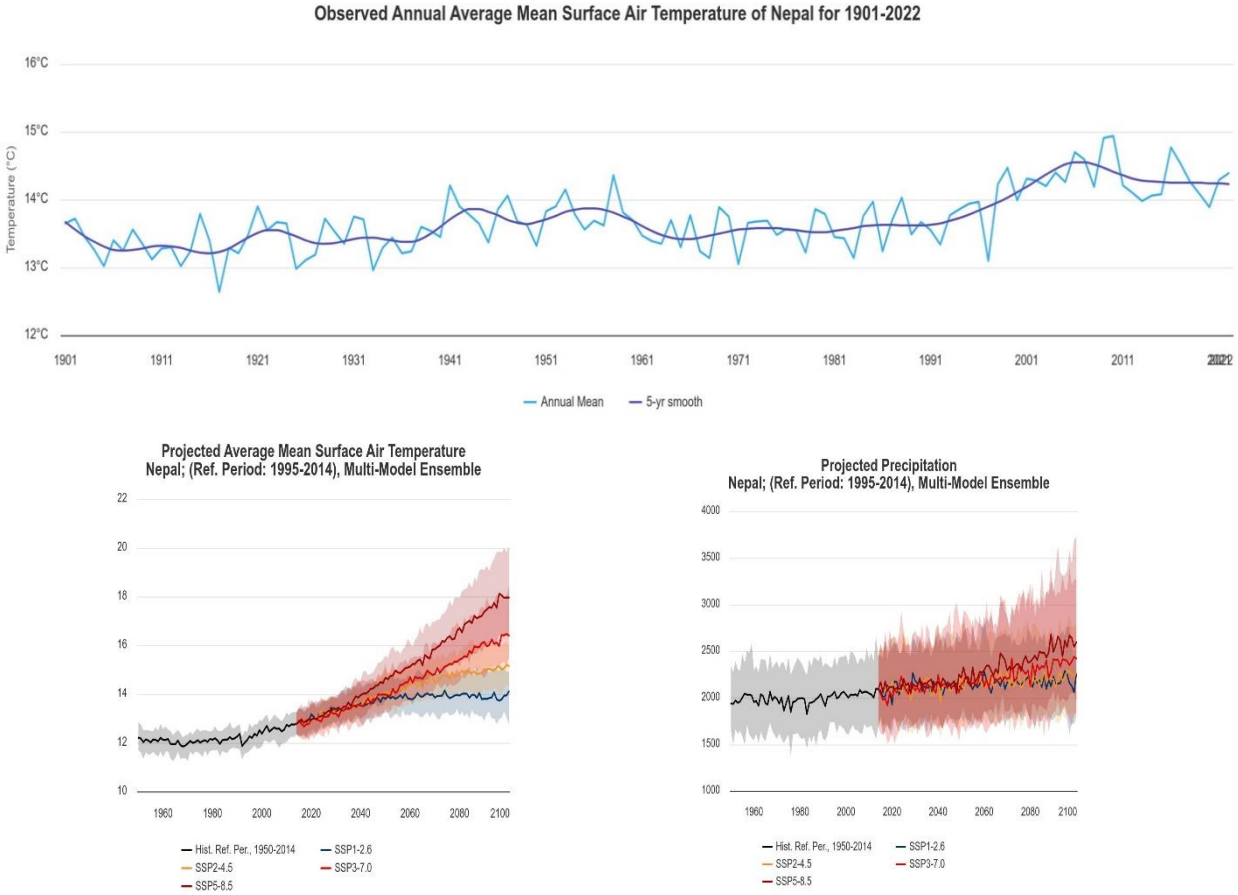
UNFCCC says climate change will be seen after a long time, but IPCC says the changes can be seen in a few decades or over a long time. Instead of observing the changes in the climate over an extensive period, there are shocking changes in the climate during the last few decades. According to IPCC's (2021) Sixth Assessment Report (SAR), there is no doubt that human activities have changed the global atmosphere. After 2011, there has been a huge change in the global atmosphere compared to changes before 2011 and after 1750. The major change in the climate was the rise in the temperature after 1850. According to the IPCC (2021) report, during the duration of two decades (2001 to 2020), the temperature increased by 0.99 degrees Celsius compared to from 1850 to 1900.

In Nepal, a temperature rise was observed in different parts of the country. According to Upadhyaya (2019), a change in temperature pattern was observed in the Kaski district of Nepal. He found that the temperature rise sped up after 1998, which affected the environment, society, and economy of the Kaski district. According to DHM (2017), the temperature of Nepal is increasing at the rate of 0.059 degrees Celsius per year. Similarly, a study conducted by Luitel et al. (2020) shows that the

temperature at high altitudes increases significantly more than at lower altitudes. Due to an increase in the temperature over the different parts of Nepal, the melting of glaciers is found at a significant rate. Bajracharya et al. (2006) has found that glaciers had melted by 5.5 percent of their total volume in the last 30 years. With the growing climate change, the temperature in the most of the places of Madhesh provinces reached around 40 degrees Celsius particularly during the April, May and June.

Figure 1

Observed Annual Average Mean Surface Air Temperature, Projected Average Mean Surface Air Temperature, and Projected Precipitation of Nepal



(World Bank, 2024)

The figure 1 shows that annual average mean surface temperature of Nepal is increasing. After 1991, the temperature has increased drastically. In between the years 2001 and 2011, the annual average mean surface air temperature was more than 14.5 degree Celsius. The same figure also shows projected average mean surface air temperature of Nepal under SSP1-2.6, SSP2-4.5, SSP3-7.0 and SSP5-8.5. The projection under the different model shows the growing trend of average mean surface

air temperature. Similarly, the projection of precipitation under the SSP1-2.6, SSP2-4.5, SSP3-7.0 and SSP5-8.5 show the increasing trend of precipitation in Nepal.

Climate Change Attribution to Disasters

The change in the climate has contributed to many kinds of disasters. There are a few examples of disasters that were the result of climate change. According to the Goddard Institute for Space Studies (GISS) of the National Aeronautics and Space Administration (NASA) (2015), as cited in Lozep (2015), the 2011 flood in Thailand, Hurricane Sandy in the United States in 2012, and Typhoon Haiyan in the Philippines in 2013 are a few examples of climate-induced disasters. According to the World Meteorological Organization (WMO, 2021), 50% of disasters are caused due to weather, climate, and water-related hazards. United Nations International Strategy for Disaster Reduction (UNISDR, 2009) links climate change and disaster. According to UNISDR, when there is global warming and an increase in atmospheric water vapor, it leads to an increase in the frequency of heavy precipitation.

Similarly, when there are changes in the temperature of the sea surface, changes in wind patterns and decreases in snow cover cause intense and longer droughts. According to Lopez et al. (2015), the link between climate change and disaster can be understood from three different perspectives. Firstly, greenhouse gasses alter the atmospheric concentration, which alters the climate variable viz temperature and precipitation. Secondly, altered climate variables further alter the frequency of climate-related disasters. Thirdly, increased climate-related disasters increase the risk of natural disasters. The IPCC (2013) report states that the increase in the global average temperature from 1951 to 2010 was due to an increase in anthropogenic greenhouse gas concentrations.

In Nepal, along with environmental degradation, climate change has increased the number of disasters, which is an increasing trend. According to death wise, the flood was one of the major disasters in 2017/18, which was more frightening in Koshi provinces and Madhesh. (Ministry of Home Affairs [MHA], 2019).

Disasters and Climatic Disasters

A disaster refers to a severe interruption in the normal functioning of a community or society, resulting in extensive human, material, economic, or environmental damage. The scale of these losses is so significant that the affected communities or society cannot manage or recover using their resources alone.

Disasters often overwhelm local capacities, requiring external assistance or intervention to address the immediate and long-term impacts. These events can lead to widespread suffering, displacement, and social disruption while straining infrastructure and services and causing long-lasting economic and environmental consequences (UNISDR, 2009). At the same time, climatic disasters are the disasters that are caused, triggered, or worsened by the effect of climate change. The government of Nepal has floods, landslides, glacier lake outburst floods, droughts, forest fires, wildfires, avalanches, cold waves, heat waves, heavy rainfall, snowstorms, thunderstorms, windstorms, hailstorms, and epidemics as climate-related disasters (NPC, 2022).

Climatic Disasters and School Education

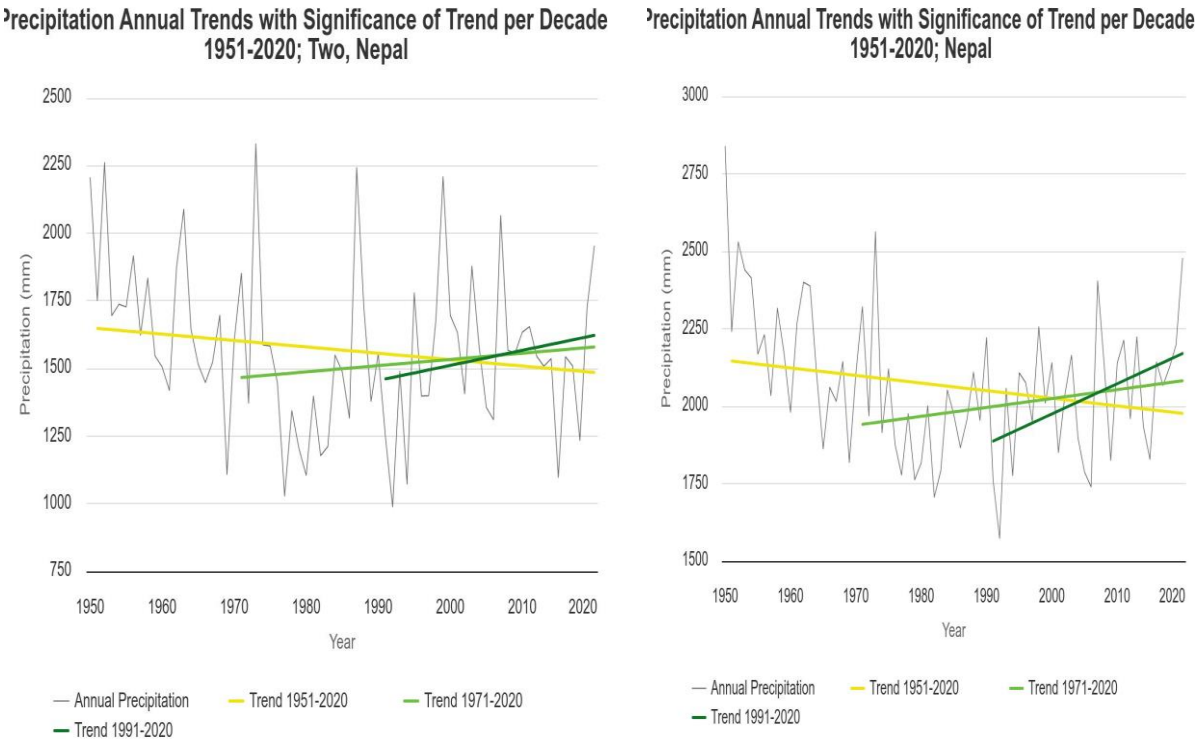
There are several climates change-related disasters that affect school education. But in this study, disasters that are included to this study are only discussed. To be more specific, disasters that are prevalent in the study area are reviewed for better understanding.

Flood and Inundation

When disaster hits a human settlement, it hits every part of the human settlement and effect on the settlement is based on its preparedness. Whenever disaster hits a school, loss depends on school infrastructure and preparedness. Still, most schools are not well prepared and do not have sufficient strong infrastructure to prevent massive disasters. According to government of Nepal MoHA (2019), flood is one of Nepal's major causes of disasters. In the case of Nepal, fluvial floods, flash floods, and glacial lake outburst floods have been seen. Terai districts are more prone to fluvial floods, whereas hill and mountain districts are more prone to flash floods and glacial lake outbursts. According to Munsaka & Mutasa (n.d.), floods hit school education in curriculum completion, increased the cost of education for parents, destroyed school infrastructure and transport infrastructure, canceled school, led to student dropout, increase absenteeism, had mental effect on school children and teachers, and reduced access to quality education. Similarly, a study conducted by Conteh (2015) says that floods reduce the school enrollment rate, (particularly at the primary level), quality level of education, cause students to leave their exams, and engage in child labor.

Figure 2

Annual Trend of Precipitation of Madhesh Province and of Nepal



(World Bank, 2024)

The figure 2 shows the trend of annual precipitation of Nepal and Madhesh province, the dark green line in the figure indicates the trend of precipitation is increasing. There is huge upward incline in the dark green line (trend 1991 to 2020) of Madhesh province and of Nepal. The upward inclination in the trend shows increasing trend in the precipitation of Madhesh province and Nepal.

Heat Waves and Cold Waves

It is normal to expect a hot day in summer, but when the weather conditions are much hotter than the normal summer days, it is called heat waves. When the temperature for a few consecutive days remains high, it warms the night duration, which causes more negative consequences for humans. According to the World Meteorological Organization (WMO, n.d.), as cited in Yin and Wang (2017), when the thermal condition or unusually hot days of any place goes above the given threshold for three successive days, particularly in the summer season, is known as heat waves. The definition given by the WMO clearly states that the definition of heat waves varies from country to country. Particularly in the context of the Terai district,

heat waves are felt during the summer season and the pre-monsoon period. In the local language, the heat wave is also known as Loo. Like flood and inundation, there is likely to be an increase in the events of heat waves as there is an increase in the earth's global temperature (IPCC, 2021). It is expected that with the rise of 3-degree Celsius temperature with the baseline of pre-industrial level, heat waves will occur every year (Naumann et al., 2020).

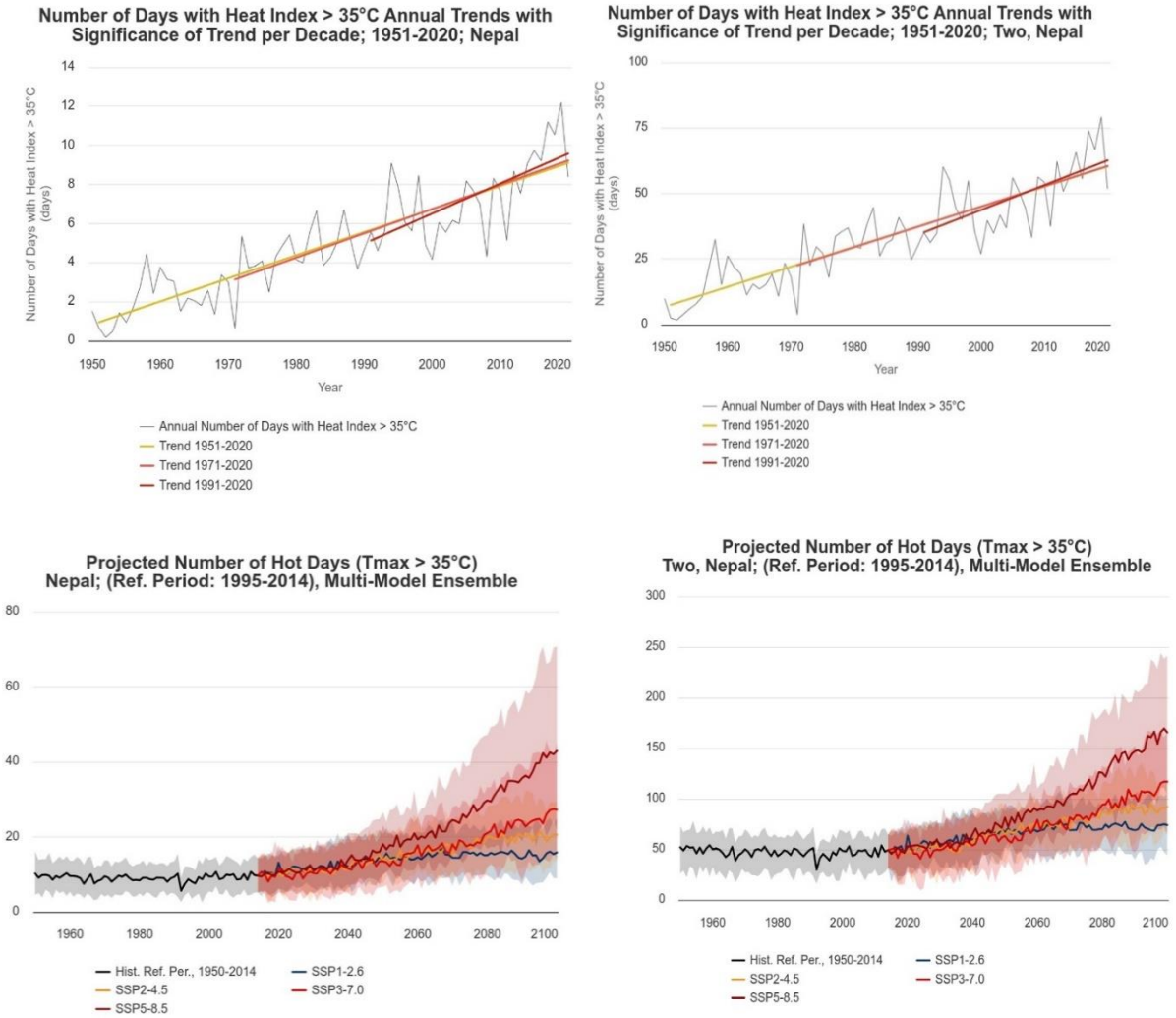
Similarly, a study conducted by Russo et al. (2014) states that heat waves have affected most parts of the earth in recent decades, with an increased probability of those events in the coming days. They also state that the last decades of this century will be more affected by the impact of heat waves. Similarly, a study conducted by Junk et al. (2019) in three European cities has found a gradual increase in the intensity and frequency of heat waves over the region. Similarly, a study by Nissan et al. (2017) has found an increase in mortality due to increasing heat waves in Bangladesh. According to Sharma et al., (2022), South Asian regions are at a high risk of heat waves with the annual rise in the average temperature. They further say that the population of South Asian countries is more vulnerable to the impact of heat waves because of their low infrastructural development and high dependency on natural resources for their livelihood. Besides that, it is well-studied that the impact of heat waves has negative consequences like death and illness to people (Guirguis et al., 2014; Arbuthnott & Hajat, 2017).

Like heat waves, cold waves have been established as a global climatic disaster that affects lives. It is predicted that the intensity and frequency of cold waves will also increase with global climate changes. Lu et al., (2015) mapped out a number of populations that are affected annually cold waves and found that cold waves have kept a large number of populations at risk. They grouped all of the countries into five categories. They kept the country in the first group, whose majority of the population is at risk from the cold waves, and the least affected group of the population annually in the fifth group. Unfortunately, Nepal is in the second group, which shows that the majority of the population is at risk from the cold waves. Like other climatic disasters, cold waves have not been researched. This is still the area for exploration. Researchers like Nguyen et al., (2023) and Lopez-Bueno et al., (2021) have studied the association between cold waves and mortality. They conclude that people are vulnerable to cold waves. A study by Pradhan et al., (2019) showed that the frequency

of cold waves has increased in the Terai region of Nepal. The cold waves have caused several deaths over a period. They also found that the cold waves have become one of the serious issues for vulnerable communities like children and elderly people.

Figure 3

Number of Heat Index Days Trend of Nepal and Madhesh province and Number of Hot Days of Nepal and Madhesh Province



(World Bank, 2024)

The figure shows the trend for the number of days with heat index and projected number of hot days in the Mahesh province of Nepal. The trend (dark red line) shows that number of days with heat index is around 60 days in the Madhesh province and around 10 days in Nepal. Similarly, the projected number of hot days in the Madhesh province will be around 70 in Madhesh province and 15 in Nepal. Higher the hot days, more will be the exposure to school children.

Understanding Schooling

Schooling is a process that involves teaching and learning activities between students and teachers at school. Besides that, there are several activities, such as students completing their assignments at home, traveling to school every day to take classes, the school management committee managing teachers, classes, student activities, and so on. Bidwell and Kasarda (1980) define schooling as a process in which teaching and learning occur among teachers and students with the help of classrooms, curriculum, and other school bodies. Similarly, Gobby and Millie (2017) define schooling as a process whereby teachers formally educate children based on the curriculum. I agree that teaching and learning, curriculum and classroom are the major activities, and facilities are a major part of schooling, but there are several other activities besides teaching and learning like classroom and curriculum, which are equally important for schooling. Researchers believe that 'what' part of schooling, but there is also 'how' part of schooling which they have not included (Bidwell & Kasarda, 1980; Gobby & Millei, 2017). Researchers believe that how part of schooling is also equally important for school children. With the change in context and location, how part of schooling varies. The schooling process in Kathmandu is different from that of other parts of the country. In underdeveloped places like Karnali district, students have to walk for an hour to reach school, but in Kathmandu valley, students go to school either by public vehicle or vehicles provided by the school. It does not make much difference in schooling of those students who live in the developed part of the country. Students from an under developed part of the country miss their classes during time of disasters. Besides that, there is also 'who' part of a school, like the engagement of parents, school staff, community, and other related stakeholders.

Climate Change Vulnerability

It is believed that climate change vulnerability is both the characteristics and situation of a system or people from the potential threat of climate change. Climate change vulnerability shows the existing situation and capacity of that system or people. The existing situation means people's exposure and sensitivity to the climatic disaster. At the same time, capacity means the adaptive capacity of people to cope against exposure and sensitivity. Exposure, sensitivity, and adaptive capacity factors are involved in the vulnerability. That is why vulnerability is also the function of

exposure, sensitivity, and adaptive capacity (Garba et al., 2022). Therefore, Garba et al., (2022) define climate change vulnerability, keeping the words exposure, sensitivity, and adaptive capacity in the definition of climate change vulnerability. According to them, climate change vulnerability is defined as the degree to which people lack adaptive or coping capacity against climate change impact, which is evaluated by the function of people's exposure, sensitivity, and adaptive capacity of people. IPCC, the authorized body for climate change science, defines climate change vulnerability as, "The propensity or predisposition to be adversely affected and vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt" (IPCC, 2014).

Similarly, Yohe et al. (2006a) say that vulnerability is a degree of risk from the negative impact of climate change. The vulnerability from exposure and sensitivity is termed bio-physical vulnerability, whereas vulnerability due to less adaptive capacity is termed socio-economic vulnerability. With the increasing incidence of climatic disasters and diversity in people's socio-economic conditions, people from poor socio-economic conditions are becoming more vulnerable to climate change. Places where people belong to poor socio-economic conditions and face many climatic disasters are considered more vulnerable to climate change. Due to the increased number of climatic disasters, people's exposure and sensitivity have also increased, but the adaptive capacity is still lacking in people's behaviors.

Table 1

Climate Change Vulnerability Rank (CCVR) and District of Madhes Province Vulnerability Level

CCVL*	Districts of Madhesh Province
Very High (0.778 to 1)	No district from Madhesh province
High (0.623 to 0.777)	Mahottari
Moderate (0.502 to 0.622)	Siraha and Sarlahi
Low (0.179 to 0.501)	Dhanusha, Saptari, Bara and Parsa
Very Low (0 to 0.178)	No district from Madhesh province

*CCVL=Climate Change

(Ministry of Forest and Environment [MoFE], 2021)

The table 1 above shows the climate change vulnerability level of district of Madhesh province. This is designed from the latest study conducted by MoFE named Vulnerability and Risk Assessment and Identifying Adaptation Options, a summary of policymakers. In the study, it was found that the Mahottari district of Madhesh province is the most vulnerable. Mahottari district falls in the category of high vulnerability with a score of 0.623 to 0.777. Similarly, Dhanusha, Saptari, Bara, and Paras districts are less vulnerable districts in Madhesh province**.**

Table 2

Disaster and Its Frequency in Madhesh Province

	Flood			Heavy Rainfall			Cold Waves			Heat Waves
	NI	NFA	TND	NI	NFA	TND	NI	NFA	TND	NA
Districts										
Dhanusa	32	320	10	10	16	0	4	0	4	-
Mahottari	43	87	21	33	43	0	15	0	15	-
Parsa	24	313	15	10	16	0	-	-	-	-
Bara	34	425	17	46	262	2	2	0	2	-
Rauthat	59	423	37	69	101	4	63	24	63	-
Sarlahi	41	36	33	75	129	1	-	-	-	-
Sirha	22	26	10	24	34	2	11	5	11	-
Saptari	51	2958	19	21	31	0	19	19	19	-

*Source: DHM, 2022, *Number of Incident=NI, *Number of family affected=NFA, *Total number of deaths=TND, Not available=NA*

The above table 2 presents the status of climatic disasters in the Madhesh province. The number of incidents represents exposure from the respective disaster, and the number of affected families that represents sensitivity to that disaster. From the table, people living in the Rauthat district of Madhesh province have the highest number of exposures to the flood. The people living in the Saptari district are both exposed and sensitive to the flood. People living in the Bara district are sensitive to heavy rainfall. Similarly, people living in the Rauthat district have both exposure and sensitivity to the cold waves.

Education in Emergency

The concept of Education in Emergency (EiE) evolved to respond to systematic efforts that aimed to ensure continuity, quality, and inclusivity during a crisis. It continues to be a critical component of humanitarian action, recognizing education as a fundamental right that must be upheld even in the worst challenging situation. EiE ensures that education should continue even when schools are disrupted. This involves setting up temporary learning spaces, providing distance learning options, or integrating education into humanitarian aid efforts. In other words, EiE refers to the provision of learning opportunities in crisis-like disasters. The growing emphasis was on ensuring education quality, relevance, and sustainability. It can be done by providing meaningful education that meets educational standards despite the challenges posed by emergencies, which include several adaptation strategies. According to Crisp et al. (2001) education in emergency (EiE) is a situation where school children do not have access to the education system due to human causes or natural disaster consequences.

The growing causes for education in emergency are climate change and disaster related to it. The countries that are vulnerable to the impact of climate change can have more probabilities of suffering from education in emergencies. Recently, a massive flood of Kathmandu and other part of the country interrupted the schooling of school children. Due to climate change and related disasters, children around the world do not have access to education. Climate-induced disasters like floods, heat waves, cold waves, heavy rainfall, and drought have increased recently, and there are more likely to be more disasters in the coming days. This indicates that there is a high probability of education in emergency condition in the future. According to Burde et al. (2016), education in an emergency covers three aspects of education, i.e., access to education, learning, and protection of school children concerning conflicts and disasters. Children living in disaster-affected areas lack access to school and are affected by no learning in school. Sometimes, students who live in highly disaster-prone areas are at risk due to disaster. Due to floods, cyclones, droughts, heat waves, severe storms, and earthquakes, 175 million children are affected yearly (Lai & Greca, 2020). Burde et al. (2016) say that the concept of education in an emergency is to provide access to school, engage children in learning activities in class, and provide children a safe environment from disasters.

It is believed that continuing educational services during crises mostly affects the low-age group of students; students from low-earning families, mainly female students are more affected. Because of limited resources, female students face greater barriers to accessing education compared to males. To continue educational services, several efforts are needed, such as providing safe spaces and menstrual hygiene management. Several consequences have been observed, like dropouts and early marriage in the case of female students. Students from poor families may lack transportation facilities, which creates barriers to access school; but education in emergency aims to remove financial barriers and ensure that education remains accessible to all, regardless of economic status. Such investment helps to break the poverty cycle and contribute to long-term economic resilience for the affected communities.

Further, geographical location is also a barrier to continuing school children's schooling. School children belonging to highly climate-vulnerable communities are more affected. The highly vulnerable communities lack transportation facilities, parents fear sending their children, there are insecure learning spaces for girls, and which hinder continuation of schooling of school children. In such situations, education in emergency concepts promotes the provision of financial assistance and school supplies such as notebooks, books, and uniforms. This ensures that all children can access education regardless of their economic status.

Policy Review

There are a few policies, acts, and regulations related to climate change and education. The National Education Policy 2019 and the National Climate Change Policy 2019 are the two major policies in this area. The National Climate Change Policy 2019 (GoN, MoFE, 2019) promotes climate change-related training and activities to the focal person in schools so that they will disseminate the acquired knowledge related to climate change in school to other members of the school. This will further increase the knowledge among the students, which will finally lead to an increase in students' resilience. It has helped them to cope with climate change and environmental crises. At the same time, the National Education Policy 2019 (GoN, MoST, 2019) promotes the concept of green schools and the involvement of students in child clubs. The promotion of green schools helps to mitigate the impact of climate change. Similarly, the involvement of students in child clubs increases students' knowledge and adaptive capacity.

The government of Nepal has made the provision of free and compulsory education through the Constitution of Nepal 2015 and The Act related to Compulsory and Free Education 2018 so that students continue further education. The logic behind free and compulsory education is to help them begin their education. Once they are educated in early childhood, they will make their own decisions to continue further education. However, uncertainty like climate change is a barrier to further children's education. To make the education system better: equitable, and efficient, the government of Nepal has been making efforts. For that, the government has implemented Education for All (EFA) from 2004 to 2009.

Similarly, the School Sector Reform Program (SSRP) was implemented from 2009 to 2016. From then on, the School Sector Development Program (2016-2023) was implemented to provide quality, equitable, and efficient education during the periods of 2016 to 2023. The program aims to promote access to education, participation, better learning outcomes, a better learning environment, and a minimum standard of teaching and learning environment for children of all groups. In 2021, the government launched the School Education Sectoral Plan to continue the School Sector Development Program. This plan aims to ensure access to and participation in school education for all children and increase the quality of education. For that, several aspects have been included. One of the major aspects is school safety. For school safety, there is the provision of school reconstruction, school retrofitting, model school, comprehensive school safety, and monitoring of school safety so that students will have a better learning environment. Further, this plan will prevent students from experiencing harsh climates so that their school attendance will not be missed. The Comprehensive School Safety Implementation Guidelines (2075) also aimed to improve access to education and provide a better learning environment for the resilience of the education system.

Resilience Theory

Resilience theory encompasses the ideas and principles that describe how system communities and individuals can anticipate, prepare for, respond to, and recover from the impact of climate change (Carlson et al., 2012). This theory integrates vulnerability, exposure, sensitivity, and adaptation capacity of any entity. Researchers have used resilience theory to understand the schooling of school children. As described in the literature review section, schooling is a day-to-day

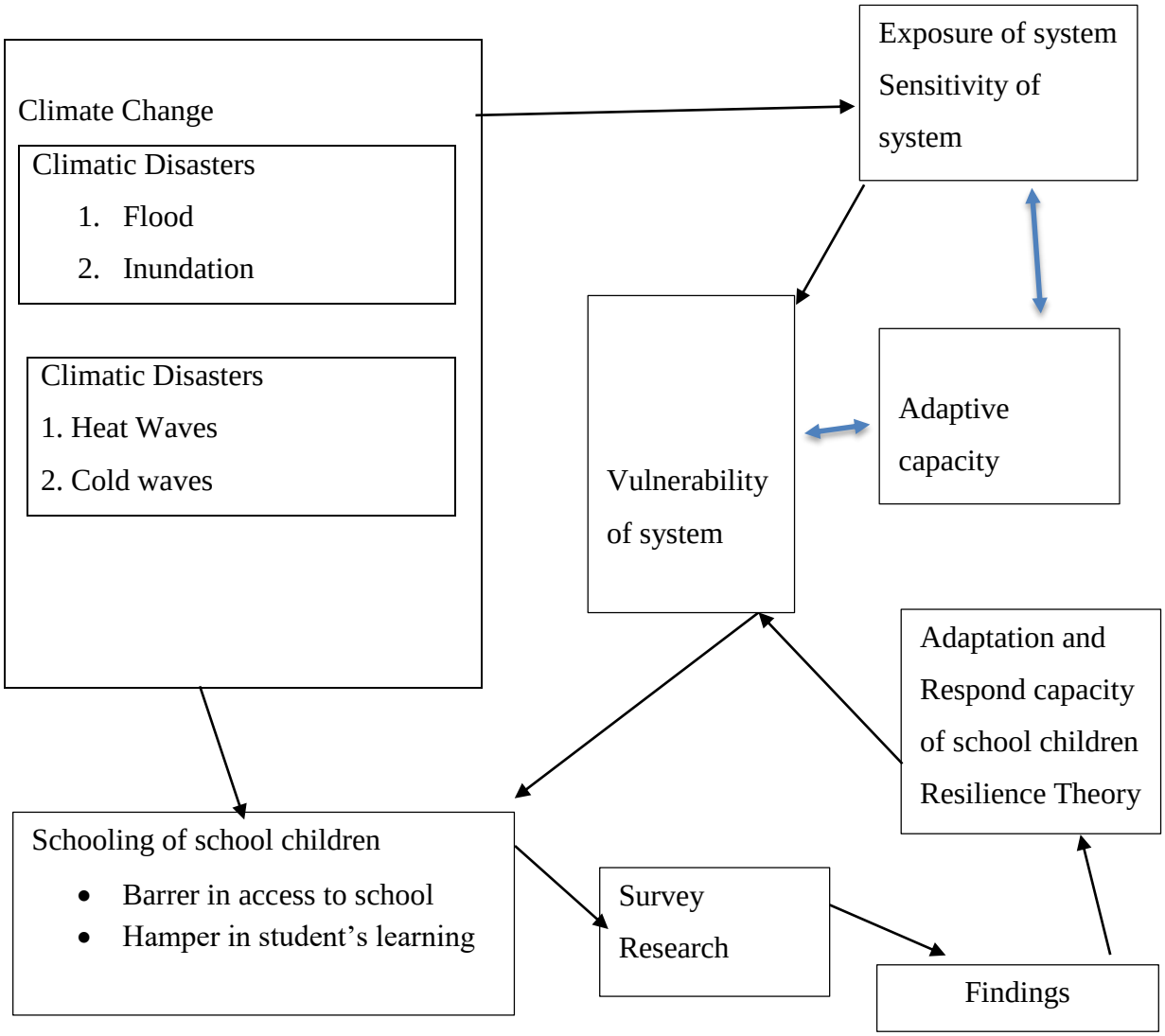
activity in which children have to be involved in several activities, such as completing assignments, going to school, and learning. In doing so, they face several problems individually, particularly during climatic disasters. Resilience theory helps to see how school children continue their schooling during a climatic disaster. This theory originated in the 1850s, and at that time, it was most used for child psychiatry and development psychology. With time, scholars and researchers from diverse fields started using resilience theory. Researchers from the physical world refer to resilience as the ability to bounce back, and social science researchers use resilience as an adaptation strategy during disasters and vulnerable conditions (Zaman &Raihan, 2023). According to Asher (1984), resilience theory explains the nature of the schooling process, its relationship with climatic disasters, and the challenges students face in their schooling (as cited in Kivunja, 2018).

During schooling, school children have to face several shocks and surprises, which can affect some students negatively. On the other hand, those children who have the potential to bounce back or cope with those shocks and surprises might be affected less. It indicates that those students who can bounce back have more resilience capacity. In this regard, Masten (2018) says that resilience is the capacity of students to adapt to any shocks and surprises successfully. It is necessary to know the existing adaptive capacity of students because the growing frequency and intensity of climate change create further climate crises in case of less adaptive capacity, less use and availability of technology, less knowledge regarding climate change, and so on. It is a situation where people have only two options: mitigation and adaptation. If children have better adaptation options, their resilience against the climate crisis will increase. Once the children have better resilience, the climate crisis might have less impact on the schooling of school children. For this study, the researcher saw the schooling of school-going children through the lens of resilience theory, which has helped researcher to see the relation between the variable ‘schooling of school children’ with another variable ‘climatic disasters’ and helped researcher to figure out the resilience of students during and post-disaster events. The resilience theory helps to see the current ability of school children to anticipate, resist, absorb, respond, adapt, and recover from climatic disasters during their schooling (Carlson et al., 2012). This definition of resilience contains pre- and post-abilities, which help school children in their schooling during climatic disasters.

Conceptual Framework

Figure 4

Conceptual Framework of Study



(Modified from IPCC AR4, 2007)

The above conceptual framework is modified from assessment report of IPCC. The impact of climate change, like climatic disasters and climatic variability, are the two major impacts that affect the schooling of school children. Because of less adaptive capacity and high exposure and sensitivity, it creates a vulnerable system for school children. The frequent and intensified impact of climate change has increased the vulnerability of a few palikas. Because of the vulnerability of a few Palikas where school children have to continue their schooling, they might be affected in access and learning.

Research Gap

In Nepal, study related to climate change, disasters associated to climate change and their impact mostly focuses on the water basin (Bista et al., 2018), biodiversity (Dahal, 2006), health and livelihood (Kapoor, 2021), and agriculture (Giri & Dahal, 2021). Only a handful of studies are related to climate change and its impact, particularly in the education system. A study was conducted by Kawaga (2022), which identified a few impacts of climate change-induced disasters that school children face, but that study was conducted using the tool Focus Group Discussion (FGD) with a limited number of participants. In 2017, a quantitative study was conducted by Chaudhary & Timsina (2017) among 100 students from three different schools, but that study only focused on floods as climate change-induced disasters. Studies carried out by Gautam et. al (2021) and Adhikari et. al (2019), which were related to climate change, but those studies focused on knowing the perception of students regarding climate change and its impacts. Researchers believe that to understand more about the impact of climate change, such a study needs to be scaled up.

Further, with the increasing temperature, people have started experiencing several other forms of climatic disaster. In fact, there are a number of consequences that climate change-induced disasters can bring (Heat Waves, Floods,) and those consequences may vary according to disaster-affected areas and disaster-non-affected areas. Researchers believe there might be a few other consequences that may not have been discovered in the Nepalese context.

As discussed in the theoretical review section, the resilient theory helps to see the current ability of school children through their preparedness, mitigation strategies, response strategies, and recovery mechanisms. In the previously conducted study, mostly mixed types of studies were found, and all the stages were discussed. Despite all the stages being equally important to know the overall resilience of any community researchers believe that response stages play a crucial part in knowing the resilience of any community or entity. That is why, this study has emphasized the response (adaption during the climatic disaster time) stage of resilience.

CHAPTER III
RESEARCH METHODOLOGY

In this chapter, the researcher describes the methodological aspects adopted to conduct this research. As described by Kothari (2004), research methodology is how the researcher solves the research problem. As said by the author, the researcher has described all the ways like the philosophical consideration, research paradigm, and research methods used by the researcher, the logic of selecting study areas, study sample size, data collection methods, and data analysis, along with ethical considerations taken during this study.

Philosophical Considerations

In this study, the researcher's philosophical approach was aligned with the post-positivist approach. Based on the research objective, this post-positive research paradigm was selected (Husen, 1988). To explore the schooling of school children during the climatic disaster, the researcher used a post-positivist approach to study the schooling of school children during the climatic disaster time. According to Panhwar and Shah (n.d.), a positive research paradigm helps researchers conduct research in several contexts using proper research tools and techniques. Kivunja and Kuyini (2017) define a research paradigm as a worldview that includes perspective, thinking, and beliefs that help researchers elucidate the meaning of research data. In this regard, Wills (2007) has defined a research paradigm as a belief system, or framework that helps to orient research while conducting research

Similarly, Bhattacherjee (2012) explains that paradigm is a researcher's orientation and belief system, which helps them to think from a certain perspective during the research process. From the definition of the research paradigm, it can be concluded that it matters how researchers think about any issue or topic on which they conduct research. It also becomes necessary because it matters how researchers perceive meaning when entangled with any issue, problem, or thing. The meaning generated from anything depends on the researcher's perception; in other words, the meaning of anything depends on the researcher's philosophical orientation (Kivunja & Kuyini, 2017). Additionally, while discussing the research paradigm, it is necessary to explain the researcher's ontology, epistemology, and axiology position because the

research paradigm differs in the reality of knowledge, knowledge relationship, and how knowledge is constructed by the researcher (Aliyu et al., 2015).

Ontology

Ontology is associated with the nature of reality and existence. Scott and Usher (2004) explain that ontology is a branch of philosophy related to the reality present in certain events or things. It is necessary because it gives the researcher an understanding of the reality of children's schooling during climatic disasters. I believes that my ontological orientation towards anything has a single (objective) reality. Researcher believes that disasters associated with climate change affect school children's schooling. The disasters associated with climate change, like floods, inundations, heat waves, and cold, affect the schooling of school children. Researcher in this study has figured out the reality that school children have been facing problems during their schooling due to the consequences of climate change-related disasters in the form of objective reality with children's perception of their schooling (subjectivity). The researcher has studied the schooling of school children under the growing threat of disaster related to climate change. Keeping the research problem in mind, researcher has found the objective reality of children's schooling from the perspective of climatic disasters.

Epistemology

Epistemology refers to the theory of knowledge (knowing), which may differ from person to person and generates knowledge like everyone. Cunningham and Fitzgerald (1996) writes that epistemology is concerned with the theory of knowledge. Here, my epistemology is my own experience and the perception of my respondents. That means the researcher has generated information from literature and from the data collected from respondents because the source of knowledge can be anything like belief, intuition, people, books, and any organization (Slavin, 1984).

Axiology

Axiology is the philosophical approach to ethics which is valuable as it helps researchers in ethical decision-making while engaging in research (Killam, 2013; Kotlyarova et al., 2015). Researchers maintain ethics and values by following proper research ethics and conducting research in a proper setting with school children with no harm or risk. In this study, the researcher has not influenced the research process to maintain his biases as much as possible by independently filling the questionnaire by

school children with prior consent from the school children. Once the school children filled the questionnaire, their confidentiality was maintained by giving code numbers to each school and school children.

Research Design

Research design is the strategic plan that outlines a study, ensuring it is addressed systematically. It defines the methods for data collection, measurement, and analysis, thus guiding the entire research process. A well-structured design enhances the validity and reliability of findings by aligning the research objectives with the methodology. There are various research designs, such as cross-sectional, experimental, and longitudinal, each suited to specific research inquiries (Creswell & Creswell, 2018; Bryman, 2012). Cross-sectional designs, for instance, are particularly useful in observational studies, where data is collected at a single point of time to assess relationships between variables (Kumar, 2019). The selection of a research design depends on the nature of the research question and the study's goals, ensuring that the approach is appropriate for the phenomena being investigated.

Survey

Based on the purpose set for this study, the researcher used a quantitative survey strategy. To answer the research questions, the researcher used surveys as a research design to get data from the sample population, and a questionnaire was administered to the sample population. To know the condition of students in Madhesh province, the study gathered quantitative data on different demographic variables. For that, the researcher implies a cross-sectional design to collect student data (Odoz et al., 2014). In this line, Kelley et al. (2003) state that survey research helps to study the effects of climatic disasters on children's schooling under different climatic disaster conditions within the selected situation, such as behavior, attitudes, experience, and knowledge of students.

Study Area

Madhesh province is selected as the study area for this study. It is one of the provinces of Nepal, which lies in the lowland of Terai. This province has eight districts, i.e., Saptari, Siraha, Danusha, Mahottari, Sarlahi, Bara, Parsha and Rauthat. The researcher couldn’t collect data from all eight districts of Madhesh province, so the researcher decided to select those districts that represent the whole of Madhesh

province. To represent Madhesh province, two districts, i.e., Mahottari and Dhanusha districts, were selected for the study area from which data was collected.

The reason for selecting Madhesh province as the study area is that most of the districts from this province are prone to the impact of climatic disasters. Districts like Mahottari, Saptari, and Rauthat are comparatively highly vulnerable to the impact of climate change in comparison, and the rest of the districts are also more vulnerable to the impact of climate change. As discussed in the literature review section, there are a few factors that have association between climate change vulnerability, exposure to climatic disasters, sensitivity to climatic disasters, and adaptive capacity; the study areas for this study is selected based on the level of climate change vulnerability, degree of exposure to the climatic disasters, sensitivity from the climatic disasters and adaptive capacity from the climatic disasters. Realizing the situation of climatic disaster impact and the need for an adaptive capacity role during the climatic disaster conditions, a report published by MoFE has suggested the implementation of an integrated vulnerability risk-based approach for adaptation to reduce the impact of climate-induced extreme events and hazards in the few districts of Madhesh province (MoFE, 2021a).

Besides that, Madhesh province has the second lowest Human Development Index (HDI) (NPC, 2020). This suggests that people living in the district of Madhesh province have a low life expectancy, indicating poor healthcare and living conditions, low levels of education, limited access to quality schooling, and low-income levels, reflecting widespread poverty and limited economic opportunities. Based on the Multidimensional Poverty Index (MPI), 24.2 percent of poor people live in Madhesh province (NPC, 2021), which shows that a significant portion of people living for this reason experience multiple forms of deprivation simultaneously. In the Madhesh province, 24.2 percent of people face severe and widespread challenges in these key aspects of life, leading to poor overall quality of life and limited opportunities for improvement, particularly in health, education, and living standards. Similarly, according to economic survey report of 2022/23, 22.53 per cent of people live in absolute poverty (Ministry of Finance, 2022). In the regions with low HDI and higher absolute poverty, climatic disasters could have a devastating impact, exacerbating existing vulnerabilities and making it even harder for schooling. In such areas, people are more vulnerable to climatic disasters because they lack the financial resources to

help mitigate the impact of climatic disasters. Many children who do not go to school, and even parents are not interested in sending their children to school. Despite having good connectivity and many educational institutions, this district has remained undeveloped for a long time, with the second-lowest score on the HDI.

Table 3

Vulnerability, Exposure, Sensitivity and Adaptive Capacity Level of District

SN	Criteria	Level of Criteria	Value	Name of district
1	Climate Change Vulnerability	Very High	0.778-1	No district from Madhes Province
		High	0.623-0.777	Mahottari
		Medium	0.502-0.622	Siraha and Sarlahi
		Low	0.1.79-0.501	Dhanusha, Parsa, Saptari, Bara and Rauthat
		Very Low	0-0.178	No district from Madhesh Province
2	Exposure	Very High	0.778-1	No district from Madhesh Province
		High	0.623-0.777	Bara and Saptari
		Medium	0.502-0.622	Mahottari, Dhanusha, Rauthat, Siraha, Sarlahi and Parsa
		Low	0.1.79-0.501	No district from Madhesh Province
		Very Low	0-0.178	No district from Madhesh Province
3	Sensitivity	Very High	0.778-1	No district from Madhesh Province
		High	0.623-0.777	No district from Madhesh Province
		Medium	0.502-0.622	Mahottari

		Low	0.1.79-0.501	Rauthat, Siraha, Bara, Dhanusha, Sarlahi
		Very Low	0-0.178	Parsa
4	Adaptive Capacity	Very High	0.778-1	No district from Madhesh Province
		High	0.623-0.777	Dhanusha, Rauthat, Siraha, Bara, Sarlahi, Saptari
		Medium	0.502-0.622	Mahottari, Parsa
		Low	0.1.79-0.501	No district from Madhesh Province
		Very Low	0-0.178	No district from Madhesh Province

(MoFE, 2021b)

The table 3 contains four main categories with five subcategories for the districts of the Madhesh province. Mahottari district has the moderate adaptive capacity, and Dhanusa district has the high adaptive capacity, which will help in comparison (table 1). Lastly, with the help of indicators of exposure, sensitivity, and adaptive capacity, the overall vulnerability index of Nepal was calculated based on overall vulnerability index of Nepal, districts are classified into five categories ranging from very low (0.0.178), low (0.179-0.501), moderate (0.503-0.622), high (0.623-0.77), and very high (0.778-1). Among those eight districts, Mahottari district is in the high vulnerability category, and Dhanusa is in the low vulnerability category.

Table 4

Vulnerability Level of District

Criteria	Level of Criteria	Name of district
Climate Change Vulnerability	Very High	-
	High	Mahottari
	Medium	-
	Low	Dhanusa, Parsa, Saptari, Bara and Rauthat
	Very Low	-

The table 4 shows the vulnerability ranking of district of Madhesh province. In the table above, there is no any district in the Madhesh province which lies in the very high category, in the medium category and in the very low category. One of the districts of Madhesh province lies in the high category and rest of the district lies in the low categories.

Table 5

Vulnerability Level of District Based on Exposure, Sensitivity and Adaptive Capacity

Exposure	Very High	-
	High	-
	Medium	Mahottari, Dhanusa, Rauthat, Siraha, Sarlahi and Parsa
	Low	-
	Very Low	-
Sensitivity	Very High	-
	High	-
	Medium	Mahottari
	Low	Rauthat, Dhanusa,
	Very Low	Parsa
Adaptive Capacity	Very High	-
	High	Dhanusa, Rauthat,
	Medium	Mahottari,
	Low	-
	Very Low	-

The table number 5 includes the vulnerability level based on exposure, sensitivity and adaptive capacity and name of district. Based on the climate change vulnerability level, Mahottari district from the high sub-category is selected for the study area, and Dhanusa from the low sub-category area is selected for the study area. However, there are a few other districts in the low sub-category. To avoid the sampling basis, further categories were taken into consideration. As mentioned in table 3, Bara and Saptari are in the high exposure category. As discussed in the literature review section, exposure is about the degree to which people are exposed to any climatic disaster. As Bara and Saptari fall in the high exposure category, people living in that district are more exposed to climatic disasters. This means people living in those two districts might feel more vulnerable to climatic disasters, but infants have

more adaptive capacity and less sensitivity to climatic disasters. So, the Bara and Saptari districts are not selected for the study area. Parsa district was also not selected because it has very low sensitivity. This means that people living in this district face significantly less impact from the climatic disaster. Now, two districts, i.e., Dhanusa and Rauthat, have the same sensitivity and climate change vulnerability level. So, the researcher selected the Dhanusa and Mahottari districts. Despite having different climate change vulnerability levels, they share the same border as a line of separation. The details of exposure, sensitivity and adaptive capacity of the districts are clarified in Table 5.

Table 6

Trend of Climatic Variability and Vulnerability Factors in Madhesh Province

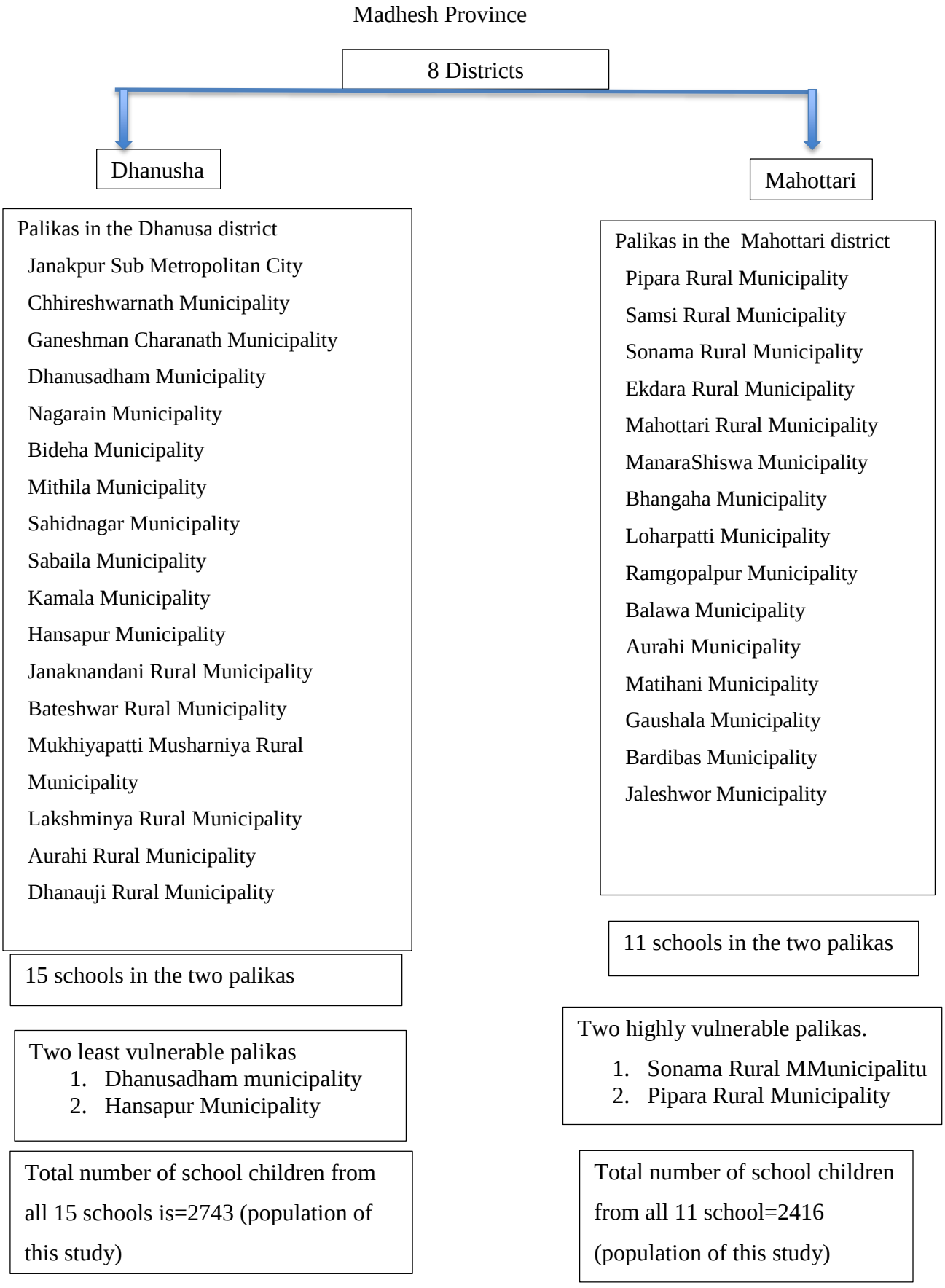
Indicators	Dhanusa	Mahottari	Sirahа	Sarlahi	Bara	Parsha	Rautahat	Saptari
Annual precipitation trend	Increasing	Increasing	Decreasing	Decreasing	Decreasing	Decreasing	Decreasing	Decreasing
Extreme events	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

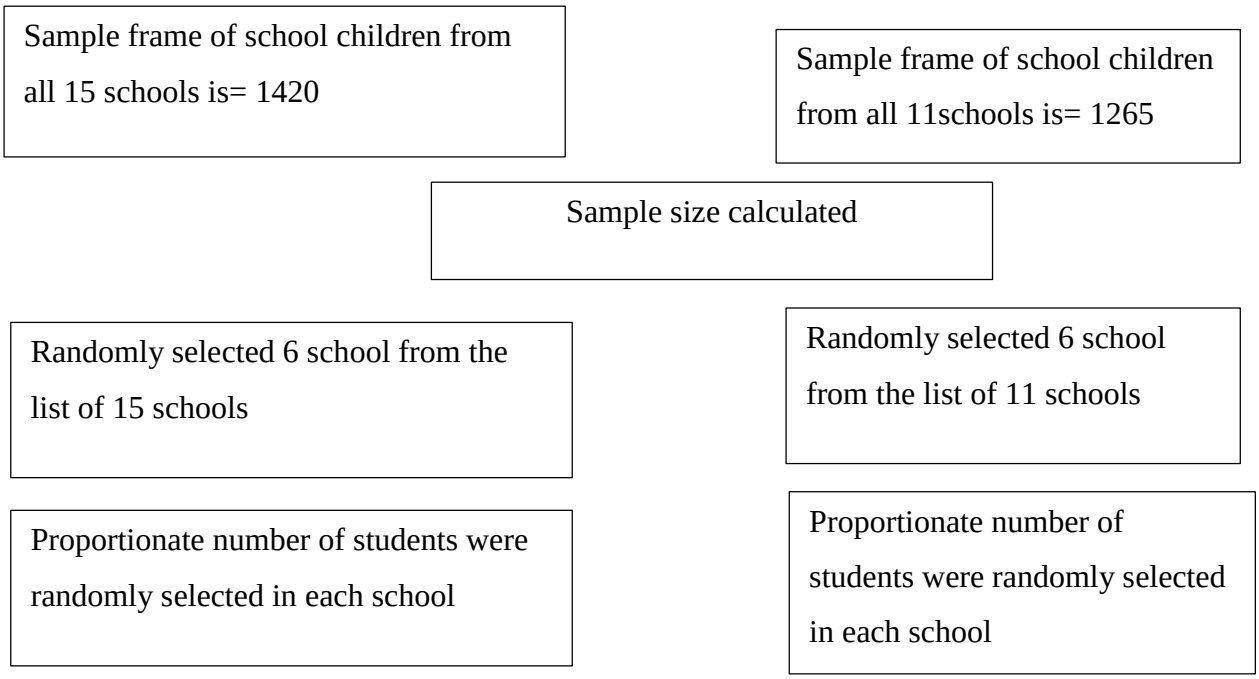
(MoFE, 2021b)

From the table number 6, we can see that only two districts of Madhesh province experience an increasing trend of annual precipitation, whereas another remaining district is experiencing a decreasing trend. In all districts, there is the occurrence of extreme weather events.

Study Population and Sampling

Figure 5
Multistage Sample Selection





As presented the above figure 5, sampling process of the study was conducted. To meet the objective of research questions, multistage random sampling was used. In the first stage of sampling, researcher selected 2 districts (Dhanusa and Mahottari). The district was selected based on climate change vulnerability level (mentioned in table 3). Dhanusa district was selected from low climate change vulnerability group and Mahottari was selected from high climate change vulnerability group. This selection of districts was done in such way that the selected district represents the climate change vulnerability level of whole Madhesh province. From the list of low climate change vulnerability, Bara and Saptari were not selected because they have very low sensitivity. The low value of sensitivity shows that school children face less climatic disasters despite these districts fall under the low climate change vulnerable district. Similarly, Parsa district was excluded from the sample because children from this district get less affected despite falling under the low climate change vulnerability group. Whereas Dhanusa and Rauthat district have same climate change vulnerability, exposure, sensitivity and adaptive capacity values. The same value for all indicators shows that they both have same and any one of them can be used for sample selection. In between Dhanusa and Rauthat, the researcher selected Dhanusa for further

sampling. This selection has helped researcher to save time and resources. The detailed value of each indicator is presented in the table 3, 4 and 5. As shown in the table 6, researcher found that annual precipitation is increasing in the Mahottari and Dhanusa districts. While in the rest of district, the precipitation was in a decreasing rate. This also helped researcher to select Dhanusa and Mahottari districts.

In the second stage of sampling, researcher needs to identify palikas from the selected district so that he can select schools and later on school children as a sample. During the palika selection process, researcher took support of palika's climate change vulnerability level. The MoFE (2021) has calculated the climate change vulnerability level of each palika of Nepal. Researcher listed out all the palikas of Dhanusa and Mahottari district and put those palikas in the order of highest climate change vulnerable palikas to lowest climate change vulnerable palikas. From the list, Dhanusadham and Hanspur palikas were least vulnerable from low climate change vulnerability district Dhanusa. Similarly, Sonma palika and Pipra palika from the list of high climate change vulnerable palika of Mahottari district were selected. The reason for selecting 2 lowest climate change vulnerable paliks of Dhanusa and 2 highest climate change vulnerable palikas of Mahottari was to Dhanusa and Mahottari as a representative of whole Madhesh province as well as to select right sample of school and later right sample of school children from those palikas. This has also helped researcher to reach out to those palikas that represnt/show the right palikas that have impact of climate change and represent Dhanusa and Mahottari as a whole Madhesh province in the form of climate change impact place.

In the third stage, researcher lists out the name of all public schools from those 4 palikas. While listing out the names, researcher found that there were 15 schools in the 2 palikas of Dhanusa district and 11 schools in the 2 palikas of Mahottari district. 15 schools of 2 palikas of Dhanusa district have 2743 school children in grade 9 and 10. Similarly, 11 schools of 2 palikas of Mahottari district have 2416 school children. The population of study was calculated by adding the total number of school children from 15 schools from the 2 palikas of Dhanusa district and total number of school children from the 11 school of 2 palikas of Mahottari district was 5159. After adding number of school children from all the school of 4 palikas, number was 5159 and this number is the population of the study. The number was collected from the respective head teacher of each school. Without the sample frame, it was not possible to

calculate the sample size, so researcher asked with the head teachers of each school to provide him the name list of school children who were regular in school. In doing so, researcher got to know that 1420 students were regular in the 15 schools of Dhanusa district and 1260 from the 11 schools of Mahottari district. The total number (sample frame number) became 2680. Based on the sample frame number, researcher uses Krejcie & Morgan formula to calculate sample size. The detailed process is given below.

Sample Size (SS) is calculated by using the formula of Krejcie & Morgan (1970) (ss) = n/1+(n-1/N)

Where, N=2680, n=384

$$SS = \frac{n}{1+(\frac{n-1}{N})}$$

$$= \frac{384}{1+(\frac{384-1}{2680})}$$

$$= \frac{384}{1+(\frac{383}{2680})}$$

$$= \frac{384}{1+(0.1429)}$$

$$= \frac{384}{1.1429}$$

$$= 335.98$$

Therefore, sample size (ss)= 336 students

After the researcher calculated the sample size, he randomly selected 6 schools from the list of 15 schools from Dhanusa district and 6 schools from the list of 11 schools from the Mahottari district. During the random selection of schools, 50% of schools were selected from both districts.

Table 7

School and Sample Size

Cluster	Name of District	Name of Palika	Name of School	Proportionate Sample Size
High Vulnerability Level				
	Mahottari	Sonama	School A	19
			School B	40
			School C	28
		Pipra	School D	11
			School E	27
			School F	24
Low Vulnerability Level				
	Dhanusa	Dhanusadham	School G	33
			School H	33
			School I	33
		Hanspur	School J	29
			School K	33
			School L	26
		Total Proportionate Sample		336

The table 7 presents the name of school and number of samples from each school. For the proportionate representation of school children from each school, researcher calculated the proportionate number by multiplying sample size (336) and number of school children from each school (92 for school A, 200 for school B, 141 from school C, 49 from school D, 131 from school E, 115 from F, 162 from School G, 163 from school H, 163 from school I, 146 from school J, 163 from school K and 125 from school L), and dividing the multiplied result by the total number of population (1653) of 12 randomly selected schools.

Further, the researcher used proportionate random sampling methods for the school children selection. In doing so, researcher used lottery methods, where he gave small piece of paper to each school children and requested them to write their names in the paper. After they wrote their names, he collected all the name written pieces of paper and later requested one of the school children to pick name of school children. In this way, the researcher selected proportionate number of school children from each school.

Data Collection Tool and Technique

The researcher has used structured survey questionnaires to collect data from respondents. The survey questionnaire included multiple choice questions to determine the prevailing effect of climatic disasters on the schooling of schoolchildren. The questionnaire was prepared with the help of previously conducted similar studies in different parts of the world in general, and studies conducted in countries with similar socio-economic and weather conditions like Pakistan, Bangladesh, and India. Due to the climate change, India is also experiencing climatic disasters. The study was conducted in India, with particular emphasis on extreme weather and its effect on the schooling of school children. It was used to construct a structured questionnaire.

Similarly, studies conducted in Pakistan and Bangladesh with an emphasis on flood and inundation concerning the schooling of school children were also used to construct questionnaires. Keeping the objective in mind, the researcher chooses items from the previously conducted study that would fulfill the study's objective. The data collection tool was divided into flood, inundation, heat, and cold waves. In each section, items related to access and learning were incorporated to know school children's perception of their schooling, ensuring relevance and contextual accuracy. By adopting validated items, the questionnaire aimed to capture nuanced perspectives on how climatic disasters affected the children's educational experience, including their overall adaptation to crisis. In all sections of the questionnaire, there was a seven 6-point Likert scale (most likely, most often likely, likely, less likely, very less likely and very rarely), allowing participants to express varying degrees of agreement or disagreement with the statement presented. Also, the researcher used a reversed questionnaire to minimize the acquiescence bias and enhance the data reliability. Once the questionnaire was prepared, the researcher conducted a pilot study among

the school children in one of the schools so that changes could be made before collecting data from respondents. After the finalization of the survey questionnaire, it was distributed to the study sample population for the final data collection. The final questionnaire is in the Annex I.

Pilot Study

Despite climate change, its impact is not new to school children, but the items used in the questionnaire might be new or unknown to school children. To mitigate this challenge, a pilot study was conducted before collecting the final data. A pilot study helped the researcher collect good-quality data and make the research of higher quality (Doody & Doody, 2015). The researcher conducted a pilot test of the data collection tools to identify any potential issues in measuring the impact of climate change among school children. This pilot study involved 34 children and was designed to pinpoint any deficiencies in the data collection tool. During the pilot study, feedback from the school children was collected to improve the quality of the questionnaire. At the time of feedback collection, the researcher included the issues of questionnaire language, pattern of the questionnaire, and words related to climate change. Subsequently, the researcher identified a few issues with complete Nepali words and carefully addressed each while considering the final research questionnaire. The complete Nepali words were translated into English, and those English-translated words were written in brackets just next to the Nepali words. Words like absent, disturb, deprived off, course complete, temporary, fan, and generator were added right next to the Nepali version so that they understand the questionnaire. Incorporation of feedback from the school children helped to modify the main study tool, which led to an increase in the quality and efficiency of the main study tool (In, 2017). After the pilot study, data was entered into SPSS, and Cronbach's alpha was calculated. The details of the test are in the reliability and validity section.

Data Analysis

For the data analysis, the collected data from the field was entered into the Statistical Package for Social Science (SPSS) after properly coding each set of questionnaires. For example, questionnaires collected from the highly vulnerable schools were coded as HVS1, and questionnaires from the low vulnerable schools were coded as LVS1. This has helped researchers to mislead the interpretation of

findings. The version of SPSS used in this study was 24. Once the data was entered into the software, it was cleaned to avoid distraction during the analysis time to avoid the probability of getting the wrong result. For ease of analysis, categorical variables were coded into numerical values. Before conducting data analysis, the normality of the data was checked so that the researcher could go with either a parametric or non-parametric test. The collected data passed the normality test, and the researcher used statistical tests to produce results. The homogeneity of variance was tested before data analysis to determine the variance within the groups. Also, a test of linearity and multicollinearity was tested for the analysis, such as regression analysis; for the data analysis, the researcher used descriptive statistics, cross-tabulation, t-test, correlation, and regression analysis. Descriptive statistics (mean and standard deviation) was used for the first research question. For the second research question, cross-tabulation, chi-square test, t-test, and ANOVA were used. Similarly, t-test and logit regression analysis were used for the third research question. To interpret the mean result, the mean value was categorized into three categories based on the level of climate change's impact on the schooling of school children. To categorize the level of mean value, Best's criteria were used as cited in Shabbir et al. (2014)

$$\text{Level Mean Value} = \frac{\text{Higher Score} - \text{Lower Score}}{\text{Number of Levels}}$$

$$= \frac{6-1}{3}$$

$$= \frac{5}{3}$$

$$= 1.66$$

The three-levels of mean value were grouped in low-level, medium level and High level

The value for each level is:

Low= 1 to 2.66

Medium= 2.67 to 4.33

High= 4.34 to 6

The researcher used a correlation analysis test to know the association between the schooling of school children and the socio-economic condition of

children's parents. The researcher took the correlation coefficient value ranging from -1 to +1 for that. Karl Pearson's correlation analysis was used to determine the association between the schooling of school children and the family's monthly income. The assumption for the correlation coefficient of two scale variables was met before conducting the association between the two-scale variables, along with data from random sampling, and both variables should be continuous, and the variable should be normally distributed (Schober et al. 2018). Similarly, the chi-square test was used to determine if there is a significant association between the schooling of school children with family support and children's absenteeism. For the chi-square test, the variables were mutually exclusive, the schooling of school children, family support, and children's absenteeism was independent, and the value of cell expected was more than 5 in 80 % of the cells (McHugh, 2013). Researcher also test, test of normality and found that value of skewness and kurtosis was between -2 to +2 for schooling of school children during each climatic disaster. The researcher used ANOVA to compare the means of three or more groups to determine if there were any statistically significant differences among them. It has helped the researcher to assess whether the variation between the schooling of school children varies due to the parent's occupations. For that, a test of homogeneity of variance was conducted and found that the variance within each group was similar. The researcher also used logit regression analysis to predict the schooling of school children in the climate change vulnerability level of the district affect the schooling of school children. The assumption of logit regression like linear relationship between the variable, normality of dependent variable. For that Q-Q plot was used to check the normality of data, and issues of no multicollinearity were also tested. To run the logit regression, the independent, i.e., climate change vulnerability of district variables, should not be too tightly correlated to each other. The Variance Inflation Factor of collinearity statistics was 1, which shows that there were no multicollinearity issues. The assumption of homoscedasticity was also checked before running the linear regression analysis. It was done with the help of a scatter plot. The plot shows no homoscedasticity issues (the residuals are equal across the regression line) (Gregory & Bader. 2018).

Table 8

Collinearity Statistics

Variable	Collinearity Statistics	
	Tolerance	VIF
Climate Change Vulnerability	1.000	1.000

Table 9

Research Question 1

Research Question -1	Test/ Data type	Dependent/Independent variable
1. To what extent schooling (access and learning) of school children is affected by climatic disasters (flood, inundation, heat waves and cold waves)?	**Test** Descriptive statistics (Mean and Standard Deviation) **Data Type** Scale Data: Schooling	**Dependent Variable** Schooling (access and learning)

Table 10

Research Question 2

Research Question - 2	Test/ Data Type	Dependent/ Independent Variable
2. What is the relationship between schooling of school children (access and learning) with school children's personal age, gender, ethnicity and socio-economic variable (economic status of family, educational background of family)?	**Test** Cross tabulation, chi-square test, t-test and ANOVA **Data Type** Scale Data: Schooling, and Family Income Categorical Data: Gender, Ethnicity, Age, Religion, and Parent's Occupation,	**Dependent Variable** Schooling (access and learning)

Table 11

Research Question 3

Research Question -3	Test/ Data Type	Dependent/ Independent Variable
3.What is relationship between level of climate change vulnerability and schooling of school children?	**Test** t-test **Data Type** Scale Data: Schooling Categorical Data: Schooling (later scale data was categories in to low and high affect for the logit regression analysis)	**Dependent Variable** Schooling **Independent Variable** Level of Climate Change Vulnerability level

Reliability and Validity

According to Surucu and Maslakci (2020), reliable and valid tools help to achieve reliable and valid results, which makes quality research. They further explain that the valid and reliable tool also helps capture the essence that researchers want to capture in their research. To maintain the quality of research, Cronbach's Alpha value greater than 0.7 was only accepted. Checking the reliability of tools was an important part of quantitative research as it helped the researcher measure the consistency of tools. To check the tool's reliability, Conbach's Alpha test was conducted after collecting the data from a few students in one of the districts of Terai. The Cronbach's Alpha value was found 0.961, which was a good score to ensure the reliability of the tool. The detail of test is in the below given table.

Table 12

Reliability Test of Pilot Study

Case Processing Summary			
		N	%
Cases	Valid	33	100.0
	Excluded[a]	0	.0
	Total	33	100.0

Reliability Statistics	
Cronbach's Alpha	N of Items
.961	72

The above table shows the reliability test of the instrument that was used before the data collection. Cronbach's Alpha value of the instrument was 0.961, indicating that the instrument was reliable enough to use for the study.

Table 13

Reliability Test of Final Study

Case Processing Summary			
		N	%
Cases	Valid	336	100.0
	Excluded[a]	0	.0
	Total	336	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.921	79

After collecting data, Cronbach's alpha was calculated to assess the instrument's internal consistency. The value of Cronbach alpha shows that the instrument is reliable enough to capture the internal consistency of the study.

Like reliability, validity is another aspect of research. Even after getting the good value of Cronbach's alpha, the researcher cannot rely on this value because the researcher also needs to be aware of whether the developed questionnaire is sufficient to measure what is intended to be measured. According to Surucu and Maslakci (2020), even if the scale is reliable, it will not measure what it intends to measure. To get the desired result, the researcher also ensures the validity of the questionnaire used for the study. Surucu and Maskakci (2020) further state that the validated research questionnaire helps to interpret the findings of the study more efficiently. While reviewing the literature on validity, several types of validity have been used in the research. In this study, the researcher has used content validity and construct validity.

To meet the criteria of content validity, the researcher included all the major disasters (Floods, inundations, heat waves, and cold waves) as climatic disasters. Further, two major aspects of school (learning and access) are also included in this study. With the support of a similar study, all the challenges and problems school children face are included in this study, particularly during floods, inundation, heat waves, and cold waves.

Ethical Consideration

While conducting research, researchers collect data from school children as respondents. Disclosure or publication of those data might cause harm or stress to the respondent. According to Cacciattolo (2015), researchers must be aware of not creating any type of stress or harm to the respondent. The researcher used structured survey questionnaires in which respondents expressed their problems and challenges during the climatic disasters by selecting multiple-choice and dichotomous questions. To maintain ethical considerations, researchers first took time with the head teacher to explain the study. After explaining the nature of the study, head teachers were requested to make school children available at the children's preferred time and schedule in the respective school. It was also shared that the schooling of schoolchildren should not be disturbed. Based on the availability of school children's time, the researcher went to every school and explained the study. During the explanation of the study, the researcher repetitively told school children about voluntary participation in the study. A letter received from the university was shown to every head teacher before the data collection. The same letter was also shown to schoolchildren to inform them about the study. With consent from the respective school head teacher and later from each respondent explaining the purpose of the research study, the data collection process was moved ahead. The student filled out the questionnaire with the consent letter as a consent form for each respective student. As said (Rana & Dilshad, 2021), this process helps reduce respondents' stress.

After the data was collected from the school children, all the filled questionnaires were codded with the numerical value, and later, those codded questionnaire's data were corded in the SPSS file to maintain the privacy and confidentiality of school children and data, respectively. Upon the successful completion of this study, data gathered in the hard copy will be disposed of

permanently. Further, to collectively represent the school children's voices, data were analyzed and reported without altering the school children's responses.

Chapter Summary

This chapter started with philosophical considerations, in the positive research paradigm was discussed. Based on this research paradigm, a survey as a methodological consideration was conducted with the 336 school children of classes 9 and 10 from one least vulnerable district and one highly vulnerable district of Madhesh province. Before the data collection, the reliability of the survey questionnaire was tested. The detailed process of data collection and analysis was discussed. The research question and statistical procedure were also discussed in this chapter. At the end of the chapter, research ethics were mentioned for this study.

CHAPTER IV
EFFECT OF CLIMATE CHANGE IN SCHOOLING

This chapter analyzes the respondents' demographic status of school children from high-vulnerable and low-vulnerable districts. The status of school children based on their sex, age, ethnicity, community, religion, parents' occupation, monthly income, and a number of family members is explained in this chapter. Further, this chapter explains the schooling experiences of children from high and vulnerable districts based on the variable age, sex, ethnicity, community, religion, parent's occupation, parent's monthly income, and number of family members.

Statistical Test- Results

Descriptive, inferential, and chi-square tests were performed for the statistical analysis. Based on the need for research questions, the above-mentioned tests were performed to see the relationship between climatic disasters and the schooling of school children. For each climatic disaster (flood, inundation, heat waves, and cold waves) and schooling of school children, mean, SD, and inferential statistics (t-test, chi-square, and ANOVA) results were calculated to see if schooling has significant differences between climatic disasters and schooling of school children. All of the above-mentioned inferential statistics tests were conducted using the two-tailed test with an alpha value of 0.05. Before moving forward with the above-mentioned parametric test, the assumption (random sampling, test of normality, equal variance across groups) of the t-test and ANOVA were met. The assumption of normality was tested with the help of skewness and kurtosis value, whereas the equal variance assumption was tested by Levine's test of equality of variance.

Socio-demographic Descriptions of School Children

This section covers the demographic description of school children. The demographic section covers age, gender, ethnicity, religion, number of family members, number of brothers, number of sisters, monthly income, and occupation of parents. It is said that the impact of climate change varies from place to place, person to person, and other socio-demographic conditions. In this study, students from different socio-demographic conditions were included to explore the impact of climate change on them.

School Children Personal Information

In the personal information section, the age, ethnicity, religion, and gender of school children have been discussed. In the study of climate change, these variables are considered to be the determining factors. It is said that the impact of climate change varies with age, caste and ethnicity, gender, community, and religion.

Table 14

School Children Personal Information

Variables	Categories	*N*	*%*
Age			
	14 and below	84	25
	15 and above	252	75
	Total	336	100.0
Gender			
	Male	141	42
	Female	195	58
	Others	0	0
	Total	336	100.0

Table number 14 shows the categories of school children's age groups and gender of school children. The age group was categorized into two groups: i.e., 14 and below and 15 and above. As mentioned in the study of Acharya (2018), the official age group (5 years to 14 years) of school was grouped into one category, and the non-official age group was categorized into another. In the study, the maximum number (75%) of school children is aged 15 and above, whereas only 25% are aged 14 and below. The age group 14 and below is almost one-third of the age group 15 and above. As shown in the table, females constitute the majority, 195 (58%) and 141 (42%) school children male.

Table 15

Ethnicity and Religion of School Children

Variables	Categories	*n*	*%*
Ethnicity			
	Major Ethnicity of Terai	236	70.2
	Terai Dalits	85	25.3
	Terai Bhramin	13	3.9
	Terai Janjatis	2	.6
	Total	336	100.0
Religion	Hindu	320	95.2
	Islam	16	4.8
	Buddhists	0	0
	Christians	0	0
	Total	336	100.0

The table number 15 presents the data of ethnicity and religion of school children. Based on religion, the majority number (320) of school children were Hindu. This constitutes 95.2% according to religion. At the same time, only 16 (4.8%) school children were from the Muslim religion. Based on ethnicity, a maximum number of 236 (70.2%) of school children belong to the ethnicity (Yadav, Shah) of Terai, followed by Terai Dalits with 85 (25.3%) and Terai Brahmin with a number of 13 (3.9%). Only two (0.6%) of school-going children were from Terai Janajatis.

Table 16

Family Members Details

Variables	**Categories**	***n***	***%***
Number of Family Members	Up to 5	117	34.8
	6-10	189	56.3
	Above 10	30	8.9
	Total	336	100.0
Number of Brothers			

	Up to 3	328	97.6
	4 and above	8	2.4
	Total	336	100.0
Number of Sisters			
	Up to 3	317	94.3
	4 and above	19	5.7
	Total	336	100.0

Source: Field survey, 2023

The above table number 16 depicts the details of the family members. The variable, family member, was categorized into three categories: up to 5, 6 to 10, and above 10. Based on these three categories, a maximum number of 189 (56.3%) of school-going children have 6 to 10 members in their family, followed by 117 (34.8%) school-going children who have less than 5 members in their family. Similarly, 30 (8.9%) of school children have more than 10 family members in their family. Family members were further grouped based on the number of brothers and sisters. As shown in the table, a maximum number of 328 (97.6%) and 317 (94.3%) school-going children have up to 3 brothers and sisters, respectively. Only 8 ((2.4%) and 19 (5.7%) school children have 4 and above brothers and sisters, respectively.

Table 17

Monthly Income of Parent's

Income Range	***n***	***%***
Less than 10000	61	18.2
10000 to 20000	115	34.2
20000 to 50000	138	41.1
50000 to 100000	14	4.2
Above 100000	8	2.4
Total	336	100.0

Table 17 shows that the monthly income of school children's parents was categorized into five categories. Out of 336, the majority (41.1%) of school children's parents were earning between 20000 to 50000, followed by 115 school children's parents or 34.2% were earning between 10000 to 20000. Also, the evident number is 61 (18.2%) of school children's parents who earn less than 10000. Only 4.2% of

school children's parents were earning between 50000 to 100000, followed by least percentage (2.4%) of school children's parents whose parent's monthly income was above 100000.

Table 18

Details of School Based on Vulnerability Status

Number of School	*n*	*Vulnerability Status*
Schools in Mahottari	6	High
Schools in Dhanusa	6	Low
Total	12	

The table 18 shows that, the total number of schools selected for the study was 12. Out of 12 schools, 50% schools were selected from the Mahottari district, which lies in the high-vulnerable district cluster, and the rest of the 50% of schools were selected from the Dhanusa district, which fall under the low-vulnerable district cluster.

Table 19

Children's Parents Occupation

Occupation Categories	***n***	***%***
Agriculture	199	59.2
Business	53	15.8
Private Service	31	9.2
Foreign Employment	34	10.1
Daily Wages	7	2.1
Public Service	7	2.1
Others	4	1.2
Total	336	100.0

The above table number 19 shows that 199 (59.2%) of school-going children's parents were engaged in agriculture. This number shows that more than 50% of school children belong to the agricultural family. Similarly, 53 (15.8%) of school children's parents are in the occupation business, followed by 34 (10.1%) school children's parents are in foreign employment. Parents of 7 (2.1%) children's

occupations are daily wages and public service. Parents of 4 (1.2%) children are engaged in other occupations.

Schooling and Climatic Disasters

In this section, the schooling of school children, which is measured in terms of access and learning, is assessed with climatic disasters (flood, inundation, heat waves, and cold waves). School children's access was calculated in different climatic disaster conditions to know when to know in which climatic disaster school children face more problems. Similarly, the learning of school children was also calculated to know the climatic disaster condition is a dominating factor that affects the learning of school children.

Table 20

Schooling of School Children During Climatic Disasters

Schooling of School Children	***N***	***M***	***SD***
Access During Flood	336	2.95	0.98
Access During Inundation	336	2.79	1.17
Access During Heat Waves	336	2.74	1.26
Access During Cold Waves	336	2.77	0.96
Learning During Flood	336	2.59	0.76
Learning During Inundation	336	2.96	1.21
Learning During Heat Waves	336	3.12	0.82
Learning During Cold Waves	336	3.17	1.04

The table number 20 presents an analysis of the impact of various climatic disasters on the schooling of school children, specifically focusing on access and learning. Mean and standard deviation values are provided for each aspect related to schooling during flood, inundation, heat waves, and cold waves. The mean value is divided into three categories, i.e., low (1 to 2.66), moderate (2.67 to 4.33), and high (4.34 to 6), to acknowledge the level of impact of climatic disasters on the schooling of school children.

The mean values of children's access during the flood (2.95), access during inundation (2.79), access during heat waves (2.74), and access during cold waves (2.77) indicate a moderate level of difficulties for school children in accessing schools during these climatic disasters. Notably, the standard deviation values of 0.98, 1.17,

1.26 and 0.96 during flood, inundation, heat waves and cold waves respectively show higher variability in assessing schools for school children.

The table provided offers a comprehensive analysis of the impact of various climatic disasters on the education of school children, with a particular focus on both learnings. Mean and standard deviation values are detailed for each aspect, encompassing learning during floods, inundations, heat waves, and cold waves. Mean values such as 2.58 for learning during flood show a low impact on the learning of school children. Meanwhile, the mean value of 2.96 for learning during the inundation, the mean value of 3.12 for learning during heat waves, and the mean value of 3.17 for learning during cold waves suggest moderate difficulty in the learning process during climatic disasters.

The impact of climatic disasters on the learning of school children is perceived to be moderate (3.17) during the cold waves and relatively low (2.58) during the flood situation. Resilience capacity is a function of adaptive capacity, exposure to the disaster, and climatic disaster (Subiyanto et al., 2020). From the above table, it can be observed that school children possess comparatively more resilience capacity during access than learning. Particularly during the heat and cold waves, in the case of learning, they show less resilience capacity. This shows that school children have less adaptive capacity and more exposure to continue their schooling during cold and heat waves.

Association between Schooling and Climatic Disasters

Statistical tests such as the t-test, chi-square, and ANOVA were employed to test the hypothesis. The assumption related to t-test and ANOVA was confirmed before running the test. School-going children of classes 9 and 10 were randomly selected as samples to meet the prerequisites for ANOVA. Testing for normality is crucial for obtaining reliable results in statistical analysis. All the statistical assumptions for the t-test and ANOVA were tested before the statistical test. For the t-test, variables were grouped into dependent and independent variables, and a dependent variable (schooling) normality distribution was conducted, which explains whether the data follows a normal distribution. The Homogeneity of Variance was also calculated for the ANOVA, including a normality test. Finally, random sampling was done to collect data from the field to meet the requirements of the t-test and ANOVA.

Schooling of School Children during Climatic Disasters

The study involves analyzing data collected from school children to assess the impact of climatic disasters on their access to education and learning. Mean and standard deviation were used as the basis for analysis, and a t-test was conducted to identify significant differences in the education of school children affected by climatic disasters.

Table 21

Age and Access During Climatic Disasters

Schooling of School Children	**Age Grouped**	***n***	***M***	***SD***	***t***	***p***
Access During Flood						
	14 and below	84	2.94	1.01	0.262	0.794
	15 and above	252	2.95	0.97		
Access During Inundation						
	14 and below	84	2.72	1.09	-0.62	0.53
	15 and above	252	2.82	1.19		
Access During Heat Waves						
	14 and above	84	2.58	1.14	-1.40	0.161
	15 and below	252	2.80	1.30		
Access During Cold Waves						
	14 and below	84	2.96	0.85	2.06	0.04*
	15 and above	252	2.71	0.99		

The table number 21 presents the data of school children access and age categories. An independent sample t-test was conducted to compare in the access of age group 14 and below and 15 and above in the access of school children during the climatic disasters. The mean value (2.95) of age group 15 and above was equal to the mean value (2.95) of age group 14 and below in the accessing the school during the flood. This shows that both age groups face a similar impact due to climatic disasters while accessing the school. The result (t=0.262, p=0.794) shows that there is no difference in accessing school based on the age group during the flood time.

The mean value of the age group 15 and above (2.82) in accessing the school during the inundation time is slightly higher than the mean value (2.72) of the age

group 14 and below. This mean value shows that a higher age group of school children have to face little bit more challenges in accessing the school during the inundation time. The result (t=-0.628, p=0.530) shows no statistical difference in accessing the school during the inundation time.

The mean value (2.58) of the age group 15 and above is also higher than the mean value (2.80) age group 14 and below. This indicates that the higher age group of school children have slightly difficulties accessing the school during the heat waves time compared to the lower age group of school children. The result (t=-1.40, p=0.161) shows that there is no statistically significant difference in accessing the school during the heat waves time based on the age of school children.

The mean value (2.96) of the age group 14 and below is higher than that of the mean value (2.71) of age group 15 and above. This means, the lower age of school children is comparatively having more problem accessing the school during the cold waves time. The result (t=2.06, p=0.04) shows that there is statistically significant difference between accessing school during the cold wave.

Based on the above result, it is difficult for the researchers to claim that the low age group of school children face more problems in accessing school than the higher age group. Therefore, the researcher fails to reject the null hypothesis and retain the null hypothesis.

Table 22

Age and Learning During Climatic Disasters

Schooling of School Children	**Age Grouped**	***n***	***M***	***SD***	***T***	***p***
Learning During Flood						
	14 and below	84	2.58	0.69	-0.14	0.88
	15 and above	252	2.59	0.78		
Learning During Inundation						
	14 and below	84	3.07	1.26	0.95	0.33
	15 and above	252	2.92	1.20		
Learning During Heat Waves						
	14 and below	84	3.22	0.89	1.39	0.164

	15 and above	252	3.08	0.80		
Learning During Cold Waves						
	14 and below	84	3.33	1.12	1.66	0.09
	15 and above	252	3.11	1.01		

The table number 22 presents the data of school children's learning and age categories. The mean (2.59) value of age group 15 and above is higher than the mean (2.58) of age group 14 and below. The age group 15 and above has a slightly higher value, indicating that the higher group has to face a little more difficulty in learning during the flood. However, the result (t=-0.14, p=0.88) indicated no difference in learning due to flood between the age groups of school children.

In the case of inundation, the mean (3.07) value of the age group 14 and below is higher than the mean (2.92) value of the age group 15 and above. This shows that in the case of inundation, the low-age group encounters more challenges in learning during the inundation time. However, the result (t=0.95, p=0.33) independent sample t-test reveals no statistically significant difference in school children's learning during the inundation time based on age group of school children.

During the heat waves time also, low age group of children have to struggle in their learning. The mean (3.22) value of the age group 14 and below is higher than the mean (3.08) value of the age group 15 and above. The result (t=1.39, p=0.16) of the independent sample test shows that there is no significant difference in the learning of school children between the age group 14 and below and 15 and above.

Similarly, during the cold waves, a small group of school children struggled more in learning. The mean (3.33) of age group 14 and below is higher than the mean (3.11) age group 15 and above. Though the mean value is higher for the age group 14 and below, the result (t=1.66, p=0.09) of the independent sample t-test indicates that there is no significant difference between the lower age group of school children and the higher age group of school children in the learning of school children during the cold waves time. Particularly in the case of learning, the result of the independent sample t-test shows that age is not a significant factor in the schooling of school children during the climatic disaster time. Therefore, the researcher fails to reject and retain the null hypothesis.

Gender and Schooling during Climatic Disasters

To elucidate the connection between the gender and academic performance of school children in the aftermath of climatic disaster, an examination of data about gender, access, and learning was conducted. The outcomes related to access and learning were specifically segregated and subjected to a t-test for comparison. Table 20 shows the result of gender and access during climatic disasters, whereas Table 21 shows the relation between gender and learning of school children during climatic disasters.

Table 23

Gender and Access During Climatic Disasters

Schooling of School Children	**Gender**	***n***	***M***	***SD***	***t***	***p***
Access during Flood						
	Male	141	3.11	1.04	2.48	.001*
	Female	195	2.84	0.91		
Access during Inundation						
	Male	141	3.13	1.16	4.65	.000**
	Female	195	2.55	1.11		
Access during Heat Waves						
	Male	141	3.10	1.23	4.60	.000**
	Female	195	2.48	1.22		
Access during Cold Waves						
	Male	141	2.84	1.00	1.16	.0.24
	Female	195	2.72	0.94		

*P<0.05, **P<0.01

Table 23 illustrates that the mean scores for male children (3.11, 3.13, 3.10, and 2.84) were higher than those for female children (2.84, 2.55, 2.48, and 2.72) across all climatic disasters. The highest mean value throughout these disasters indicates that male children encounter more difficulties accessing schools than their female counterparts. The value of independent sample t-test for access during the flood (t=2.48, p=0.001), inundation (t=4.65, p=0.00), and heat waves (t=4.60, p=0.00) show that there is significant difference between the access of school children during the climatic disasters like flood, inundation and heat waves. However, the result for

access during cold waves (t=1.16, p=0.24) was not statistically significant. From the above table, it can be observed that when climatic disasters hit school children, male school children get affected more while accessing the school but not during the cold waves time. The mean value of access during the climatic disaster like flood, inundation, and heat waves shows male have comparatively less resilience capacity during the different climatic diesters. The finding of the study also shows that disasters do not affect everyone in the same ways. Generally, females are more affected because they have less resilience capacity against climatic disasters. However, in this study, female school children were less affected by climatic disasters, posing better resilience. The researcher did not find any similar study that aligns with the findings of this study, but most of the studies mainly focus on females and show that females have less resilience than males. The finding of this study contradicts the previous study conducted by Phuong et al. (2023). This might be because of the better socio-economic condition of female school children (Zutshi et al., 2019). Besides that, there are several other factors like proper communication channels, early information about the disasters, social engagement, and family support (Ostadtaghizadeh & Ardalan, n.d.). However, the study by Singh et al. (2021) states that females have better resilience capacity than males because their involvement in socio-economic activities has increased, making them more resilient.

Table 24

Gender and Learning During Climatic Disasters

Schooling of School Children	**Gender**	***N***	***M***	***SD***	***t***	***P***
Learning during Flood						
	Male	141	2.70	0.79	2.42	.0.01*
	Female	195	2.50	0.73		
Learning during Inundation						
	Male	141	3.14	1.13	2.24	.0.01*
	Female	195	2.82	1.24		
Learning during Heat Waves						
	Male	141	3.16	0.76	0.781	.0.43
	Female	195	3.09	0.87		
Learning during Cold Waves						
	Male	141	3.15	0.97	-0.241	.0.81
	Female	195	3.17	1.09		

*P<0.05, **P<0.01

Table 24 shows the learning status of school children based on their gender during climatic disasters. The mean values for male children (2.70, 3.14, 3.16) were higher than those for female children (2.50, 2.82, and 3.09) during floods, inundations, and heat waves. The higher mean value for males shows that male children face learning problems during floods, inundations, and heat waves. The results (t=2.42, p=0.01) and (t=2.24, p=0.01) of independent sample t-test shows that of children learning during flood and inundation were more affected and differences were statistically significant. However, the result (t=0.781, p=0.43) for children's learning was not statistically significant during the heat waves time. The result of independent sample t-test show that the difference was not statistically significant.

However, during the cold waves, the mean (3.17) value for females and the mean (3.15) value for males are almost equal. This shows that school children's learning is equally affected during the cold waves. The result (t=-0.241, p=0.81) of independent sample t-test shows that the result was not significant for learning during the cold waves times. In the case of learning conditions, it is also observed that female school children have comparatively more resilience capacity during different climates. This shows that female schoolchildren have good adaptive capacity against different climatic disasters. As discussed above, because of several socio-economic conditions, the resilience of female school children might be greater than that of male schoolchildren.

Religion and Schooling during Climatic Disasters

In order to explain the relationship between religion and the schooling of school children during the climatic disasters, an analysis of data concerning religion, access, and learning was carried out. The results of access and learning were distinctly separated and subjected to a t-test for comparison. The findings for the connection between religion and access during climatic disasters are presented in Table 7. Similarly, table 8 outlines the correlation between religion and the learning outcomes of school children in the aftermath of such disasters.

Table 25

Religion and Access During Climatic Disasters

Schooling of School Children	**Religion**	***n***	***M***	***SD***	***T***	***P***
Access During Flood						
	Hindu	320	2.95	.98	-0.05	0.95
	Islam	16	2.96	1.03		
Access During Inundation						
	Hindu	320	2.77	1.18	-1.64	0.11
	Islam	16	3.14	.85		
Access During Heat Waves						
	Hindu	320	2.71	1.26	-1.94	.05
	Islam	16	3.34	1.36		
Access During Cold Waves						
	Hindu	320	2.77	.97	-0.52	.60
	Islam	16	2.90	.92		

*P<0.05

The table number 25 present the data of access during the disasters and religion of school children. As indicated in Table 25, a statistical analysis was conducted to investigate religion's impact on children's schooling. The findings from the independent sample t-test reveal that children affiliated with the Islam religion experience slightly more challenges during climatic disasters. Specifically, the mean scores of accesses during inundation (3.14), heat waves (3.34), and cold waves (2.90) suggest that children belonging to the Islam religion encounter more difficulties in reaching school during such events. However, the independent sample t-test value does not show that the mean difference is statistical significance in the case of access during heat waves (*t=-1.94, p=0.05*), inundation (t=-1.64, p=0.11) and cold waves (t=-052, p=0.60).

Table 26

Religion and Access During Climatic Disasters

Schooling of School Children	Religion	*n*	*M*	*SD*	*t*	*P*
Learning During Flood						
	Hindu	320	2.59	.76	0.48	0.62
	Islam	16	2.49	.81		
Learning During Inundation						
	Hindu	320	2.93	1.21	-1.49	0.13
	Islam	16	3.40	1.16		
Learning During Heat Waves						
	Hindu	320	3.10	.82	-1.43	.15
	Islam	16	3.41	.86		
Learning During Cold Waves						
	Hindu	320	3.16	1.04	-0.81	.41
	Islam	16	3.37	.97		

As shown in table 26, a statistical examination was undertaken to explore the influence of religion on children's educational experiences. The results from the independent sample t-test indicate that children associated with the Islamic religion encounter slightly higher difficulties during inundation, heat waves and cold waves in their learning. Specifically, the mean scores for learning during inundation (3.40), heat waves (3.41), and cold waves (3.37) suggest that children from the Islamic religion face increased challenges in learning during such occurrences. However, in the case of floods, Hindu children encounter obstacles in learning. It is important to note that statistical significance is not evident in the context of school children's learning during floods (t=0.48, p=0.62), inundation (t=-1.49, p=0.13), and heat waves (t=-1.43, p=0.15) and cold wave (t=-0.81, p=0.41).

Parent's Occupation and Schooling

To investigate the relationship between the occupational status of school children's parents and the impact of climatic disasters on their schooling, an analysis was conducted on data about school children's access and learning experiences. The parents' occupations were categorized into agriculture, business, private service, daily wages, public services, foreign employment, and other fields for the data collection.

The ANOVA test was applied to know whether schooling of school varied based on the occupation of children's parents.

Table 27

Parent's Occupation and Access During Flood and Inundation

SSC	Occupations	*n*	*M*	*SD*	*F*	*P*
Access during Flood						
	Agriculture	199	2.86	0.95	0.92	0.47
	Business	53	3.14	1.00		
	Private Service	31	2.95	1.03		
	Daily Wadges	7	3.26	1.35		
	Public Service	7	3.01	1.00		
	Foreign Employment	35	3.07	0.97		
	Others	4	3.34	1.00		
Access during Inundation						
	Agriculture	199	2.76	1.14	1.13	0.33
	Business	53	3.02	1.10		
	Private Service	31	2.63	1.07		
	Daily Wadges	7	3.51	1.54		
	Public Service	7	2.28	1.16		
	Foreign Employment	35	2.74	1.31		
	Others	4	2.87	1.91		

SSC= Schooling of School Children

Table 28

Parent's Occupation and Access During Heat Waves and Cold Waves

SSC	Occupations	*n*	*M*	*SD*	*F*	*P*
Access during Heat Waves						
	Agriculture	199	2.74	1.29	0.30	0.93
	Business	53	2.64	1.31		
	Private Service	31	2.77	1.20		
	Daily Wadges	7	3.07	1.30		
	Public Service	7	2.64	1.70		
	Foreign Employment	35	2.77	1.00		
	Others	4	3.37	1.84		
Access Cold Waves						
	Agriculture	199	3.21	0.97	0.98	0.43
	Business	53	3.00	1.00		
	Private Service	31	3.08	0.80		
	Daily Wadges	7	3.85	1.26		
	Public Service	7	3.15	.89		
	Foreign Employment	35	3.05	0.90		
	Others	4	3.55	1.15		

SSC=Schooling of School Children

The table 27 and 28 present the data of school children access and their parent's occupation. The provided table presents the results of ANOVA for the relationship between parents' occupations and school children's access during different climatic

disasters. Except for access during the inundation, the "Others" category consistently shows higher mean access scores compared to other occupation groups during climatic disasters. The table includes values on mean scores, SD, and F values for each occupation category about access during floods (F=0.92, p=0.47), inundation (F=1.13, p=0.33), heat waves (F=0.30, p=0.93), and cold waves (F=0.98, p=0.43). No significant variations were observed for access during flood, inundation, heat, and cold waves.

Table 29

Parent's Occupation and Learning During Flood and Inundation

SSC	**Occupation**	***n***	***M***	***SD***	***F***	***p***
Learning during Flood						
	Agriculture	199	2.58	0.71	0.97	0.44
	Business	53	2.65	0.88		
	Private Service	31	2.56	0.78		
	Daily Wadges	7	2.93	0.73		
	Public Service	7	2.09	0.44		
	Foreign Employment	35	2.48	0.85		
	Others	4	2.81	0.75		
Learning during Inundation						
	Agriculture	199	2.95	1.16	1.19	0.30
	Business	53	3.04	1.24		
	Private Service	31	3.29	1.50		
	Daily Wadges	7	3.18	1.36		
	Public Service	7	2.34	0.93		
	Foreign Employment	35	2.63	1.03		
	Others	4	2.92	1.91		

SSC= Schooling of School Children

Table 30

Parent's Occupation and Learning During Heat Waves and Cold Waves

SSC	Occupation	*n*	*M*	*SD*	*F*	*p*
Learning Heat Waves						
	Agriculture	199	3.13	0.84	1.05	0.38
	Business	53	2.99	0.78		
	Private Service	31	3.21	0.87		
	Daily Wadges	7	3.20	0.86		
	Public Service	7	2.55	0.78		
	Foreign Employment	35	3.16	0.70		
	Others	4	3.56	1.19		
Learning Cold Waves						
	Agriculture	199	3.21	1.01	0.98	0.43
	Business	53	3.00	1.04		
	Private Service	31	3.08	0.79		
	Daily Wadges	7	3.85	1.39		
	Public Service	7	3.15	1.49		
	Foreign Employment	35	3.05	1.20		
	Others	4	3.55	1.04		

SSC=Schooling of School Children

The table 29 and 30 present the data of school children's learning and occupation of their parents. The provided table displays the results of ANOVA examining the relationship between parents' occupations and the learning experiences of school children during different climatic disasters. The table includes information on mean scores, standard SD, F values, and significance levels for each occupation category i.e learning during floods (F=0.97, p=0.44), inundation (F=1.19, p=0.30), heat waves (F=1.05, p=0.38), and cold waves (F=0.98, p=0.43). The results suggest that there were no significant differences in the learning experiences of school

children during various climatic disasters across different parental occupation groups. The p-values also exceed common significance thresholds, further supporting the conclusion of non-significant differences.

Income of Family

To investigate the family income of school children's parents and the impact of climatic disasters on their schooling, an analysis was conducted on data about school children's access and learning experiences. The parents' incomes were categorized into less than 10000, 10000 to 20000, 20000 to 50000, 50000 to 100000 and above 100000 for the data collection. The ANOVA test was applied to know whether schooling of school varied based on the income of children's parents.

Table 31

Parent's Income and Access of School Children during Climatic Disasters

SSC	Income of parents	*n*	*M*	*SD*	*F*	Df	*p*
Access during flood							
	Less than 10000	61	2.96	0.91	1.51	4	0.196
	10000 to 20000	115	3.02	1.06			
	20000 to 50000	138	2.85	0.94			
	50000 to 100000	14	3.00	0.91			
	Above 100000	8	3.64	0.61			
Access during inundation							
	Less than 10000	61	3.21	1.01	1.13	4	0.33
	10000 to 20000	115	3.00	1.04			
	20000 to 50000	138	3.08	0.79			
	50000 to 100000	14	3.85	1.39			
	Above 100000	8	3.15	1.49			
Access during Heat waves							
	Less than 10000	61	2.67	1.28	1.30	4	0.26
	10000 to 20000	115	2.86	1.21			

	20000 to 50000	138	2.63	1.31			
	50000 to 100000	14	2.71	1.08			
	Above 100000	8	3.5	1.16			
Access during Heat waves							
	Less than 10000	61	2.77	1.09	0.30	4	0.876
	10000 to 20000	115	2.75	0.94			
	20000 to 50000	138	2.76	0.95			
	50000 to 100000	14	3.04	1.01			
	Above 100000	8	2.87	0.72			

The table 31 presents the data of school children's access and monthly income of their parents. The provided table displays the results of ANOVA examining the relationship between parents' income and the school children's access during different climatic disasters. The table includes information on mean scores, standard SD, F values, and significance levels for each occupation category i.e access during floods (F=1.45, df= 4, p=0.19), inundation (F=1.13, df=4, p=0.33), heat waves (F=1.30, df=4, p=0.26), and cold waves (F=0.30, df=4, p=0.87). The results suggest that there were no significant differences in the learning experiences of school children during various climatic disasters across different parental income groups. The p-values also exceed common significance thresholds, further supporting the conclusion of non-significant differences.

Table 32

Parent's Income and Learning of School Children During Climatic Disasters

SSC	Income of parents	*n*	*M*	*SD*	*F*	Df	*p*
Learning during flood							
	Less than 10000	61	2.49	0.76	1.85	4	0.11
	10000 to 20000	115	2.66	0.81			
	20000 to 50000	138	2.53	0.70			
	50000 to 100000	14	2.51	0.77			
	Above 100000	8	3.17	0.71			
Learning during inundation							
	Less than 10000	61	2.68	1.22	3.06	4	0.01*
	10000 to 20000	115	3.05	1.30			
	20000 to 50000	138	2.91	1.11			
	50000 to 100000	14	3.15	1.10			
	Above 100000	8	4.14	0.90			
Learning during Heat waves							
	Less than 10000	61	2.99	0.78	1.68	4	0.15
	10000 to 20000	115	3.15	0.86			
	20000 to 50000	138	3.10	0.82			
	50000 to 100000	14	3.14	0.75			
	Above 100000	8	3.77	0.57			

Learning during Heat waves						
	Less than 10000	61	3.11	1.02	1.19 4	0.31
	10000 to 20000	115	3.33	0.97		
	20000 to 50000	138	3.06	1.10		
	50000 to 100000	14	2.97	0.99		
	Above 100000	8	3.20	1.02		

The table number 32 presents the data of school children's learning and monthly income of children's parents. The provided table displays the results of ANOVA examining the relationship between parents' income and the school children's learning during different climatic disasters. The table includes information on mean scores, standard SD, F values, and significance levels for each occupation category i.e learning during floods (F=1.85, df= 4, p=0.11), inundation (F=3.06, df=4, p=0.01), heat waves (F=1.68, df=4, p=0.15), and cold waves (F=1.19, df=4, p=0.31). The results suggest that there were no significant differences in the learning experiences of school children during flood, heat waves and cold waves across different parental income groups but the difference is significant during the inundation. That means, there is difference in the schooling of school children during the inundation time but not during the flood, heat waves and cold waves.

Gender and Children's Absenteeism During Climatic Disasters

To elucidate the association between gender and the absenteeism of school children in the context of climatic disasters, an examination of data relating to children's non-attendance during flood events, inundation, heat waves, and cold waves was conducted. The outcomes for each type of climatic disaster (flood, inundation, heat waves, and cold waves) were separately segregated and subjected to a chi-square test for comparative analysis. The results detailing the association between gender and absenteeism are outlined in tables 33, 34, 35, and 36.

H0: There is a significant association between gender and absenteeism of school children during the climatic disasters.

H1: There is no significant association between gender and absenteeism of school children during the climatic disasters.

Table 33

Gender and Absenteeism During Flood

Gender		Absenteeism			*Df*	χ^2	*P*
		Present	Absent	Total			
Male	Count	119	22	141	1	2.622[a]	0.10
	Expected Count	123.8	17.2	141.0			
	% within Gender	84.4%	15.6%	100.0%			
	% of Total	35.4%	6.5%	42.0%			
Female	Count	176	19	195			
	Expected Count	171.2	23.8	195.0			
	% within Gender	90.3%	9.7%	100.0%			
	% of Total	52.4%	5.7%	58.0%			
Total	Count	295	41	336			
	Expected Count	295.0	41.0	336.0			
	% within Gender	87.8%	12.2%	100.0%			
	% of Total	87.8%	12.2%	100.0%			

The table number 33 presents chi-square test for the gender and school children's absenteeism during flood. School children's absenteeism pattern was analyzed based on the children's gender. The above table of children's absenteeism based on their gender shows that 22 (6.5%) male children and 19 (5.7%) female children remain absent during the flood time. The value in the above table shows that male children do not prefer to go to school during the flood time. The result ($\chi 2=2.62$, $df=1$, p=0.10), of the chi-square test shows the insignificant relationship between gender and absenteeism of school children during the flood time. Hence, there is no relationship between the gender of school children and absenteeism practice, particularly in the case of a flood. A study conducted by Habib et al. (2021) and Kubra (2024) also showed that more than 50% of school children remain absent during flood time.

Table 34

Gender and Absenteeism During Inundation

Gender		Absenteeism			*Df*	χ^2	*P*
		Present	Absent	Total			
Male	Count	81	60	141	1	0.079[a]	0.77
	Expected Count	82.3	58.8	141.0			
	% within Gender	57.4%	42.6%	100.0%			
	% of Total	24.1%	17.9%	42.0%			
Female	Count	115	80	195			
	Expected Count	113.8	81.3	195.0			
	% within Gender	59.0%	41.0%	100.0%			
	% of Total	34.2%	23.8%	58.0%			
Total	Count	196	140	336			
	Expected Count	196.0	140.0	336.0			
	% within Gender	58.3%	41.7%	100.0%			
	% of Total	58.3%	41.7%	100.%			

The table 34 presents the data of Chi-square test. The analysis focused on school children's absenteeism concerning their gender. The provided table illustrates that those 60 (17.9%) male children and 80 (23.8%) female children were absent during flood periods. This indicates that female school children do not prepare to go to school during the inundation time. The chi-square test result ($\chi 2=0.079$, $df=1$, p=0.77), indicates an insignificant relationship between gender and school children's absenteeism during inundation. Therefore, no notable association exists between the gender of school children and absenteeism, particularly in the context of inundation. Thus, the researcher accepts the null hypothesis and rejects the alternative hypothesis. From the result, it can be concluded that gender is independent on each other during the inundation time. In this context, a study conducted by Ouma & Koech (2023) has found that most students did not attend school right after the flood for many days because roads and school grounds were submerged in flood water.

Table 35

Gender and Absenteeism During Heat Waves

Gender		Absenteeism			*Df*	χ^2	*P*
		Present	Absent	Total			
Male	Count	120	21	141	1	19.59[a]	0.00
	Expected Count	130.5	10.5	141.0			
	% within Gender	85.1%	14.9%	100.0%			
	% of Total	35.7%	6.3%	42.0%			
Female	Count	191	4	195			
	Expected Count	180.5	4.5	195.0			
	% within Gender	97.9%	2.1%	100.0%			
	% of Total	56.8%	1.2%	58.0%			
Total	Count	311	25	336			
	Expected Count	311.0	25.0	336.0			
	% within Gender	92.6%	7.4%	100.0%			
	% of Total	92.6%	7.4%	100.0%			

The table 35 presents the relationship between the gender and children absenteeism during the heat waves. The examination focused on the relationship between school children's absenteeism and gender. The table reveals that 21 (6.3%) male and 4 (1.2%) female children were absent during heat waves. Despite the small number, it suggests that male children remain absent during heat waves. The chi-square test result ($\chi 2=19.59$, $df=1$, p=0.00), illustrates a significant relationship between gender and school children's absenteeism during heat waves. Consequently, there is a noteworthy association between the gender of school children and absenteeism, specifically in the context of heat waves. Based on the result of chi-square, the researcher rejects the null hypothesis but retains the alternative hypothesis. During the heat waves, children’s absenteeism is dependent on gender. Despite the growing heat, a smaller number of school children prefer to remain absent. However, several studies show that school children prefer not to go to school during the heat waves. A study conducted by Keivabu (2024) in England shows that school children prefer to remain at home during the heat waves time, but the study does not show whether male or female school children prefer to stay at school. A study by Lala &

Hagishima (2023) and Malmquist et al. (2021) shows that school children suffer from health-related diseases during the heat waves; that is, they do not like attending school during the heat waves time.

Table 36

Gender and Absenteeism D*uring Cold Waves*

Gender		Absenteeism			*Df*	χ^2	*P*
		Present	Absent	Total			
Male	Count	118	23	141	1	14.56[a]	0.00**
	Expected Count	128.0	13.0	141.0			
	% within Gender	83.7%	16.3%	100.0%			
	% of Total	35.1%	6.8%	42.0%			
Female	Count	187	8	195			
	Expected Count	177.0	18.0	195.0			
	% within Gender	95.9%	4.1%	100.0%			
	% of Total	55.7%	2.4%	58.0%			
Total	Count	305	31	336			
	Expected Count	305.0	31.0	336.0			
	% within Gender	90.8%	9.2%	100.0%			
	% within Absenteeism	100.0%	100.0%	100.0%			
	% of Total	90.8%	9.2%	100.0%			

*P<0.05, **P<0.01

The analysis in table 36 above focuses on the association between school children's absenteeism and their gender. The provided table indicates that 23 (6.8%) males and 8 (2.4%) female children were absent during cold waves. This implies that more male children are absent during cold waves. The chi-square test result ($\chi 2=19.59$, $df=1$, p=0.00) denotes a significant relationship between gender and school children's absenteeism during cold waves. Therefore, there is a notable association between the gender of school children and absenteeism, particularly in the context of cold waves. Based on the result of chi-square, the researcher rejects the null hypothesis while retains the alternative hypothesis.

Children's Dependency during Climatic Disasters

To investigate the relationship between family support and various climatic disasters, data weas gathered from school children regarding the assistance they received from their families during times of floods, inundation, heat waves, and cold waves. The data about family support during each specific climatic event (floods, inundation, heat waves, and cold waves) was examined separately. The resulting outcomes were then segregated and subjected to a chi-square test to conduct a comparative analysis. The findings, which delineate the relationship between family support and different climatic disasters, are presented in tables 37, 38, 39, and 40.

Table 37

Family Support During Flood

Gender		Family Support during Flood			*Df*	χ^2	*P*
		Yes	No	Total			
Male	Count	40	101	141	1	2.695[a]	0.10
	Expected Count	47.0	94.0	141.0			
	% within Gender	28.4%	71.6%	100.0%			
	% within Family Support during Flood	35.7%	45.1%	42.0%			
	% of Total	11.9%	30.1%	42.0%			
Female	Count	72	123	195			
	Expected Count	65.0	130.0	195.0			
	% within Gender	36.9%	63.1%	100.0%			
	% of Total	21.4%	36.6%	58.0%			
Total	Count	112	224	336			
	Expected Count	112.0	224.0	336.0			
	% within Gender	33.3%	66.7%	100.0%			
	% of Total	33.3%	66.7%	100.0%			

The table 37 present the association between family support and gender during the flood. The examination centered on the reliance of schoolchildren on family support during a flood to reach school. According to the above table, 72 (21.4%) of the female and 40 (11.9%) of the male children seek assistance from their families during flood periods. This suggests that many female schoolchildren seek support from their families during floods. However, the chi-square test result ($\chi 2=2.695$,

df=1, p=0.101) indicates an insignificant correlation between gender and family support during floods. Consequently, there is no substantial association between gender and the need for family support, especially in flood situations. Based on the chi-square test, researcher accept the null hypothesis and reject the alternative hypothesis.

Table 38

Family Support During Inundation

Gender		Family support during Inundation			*Df*	χ^2	*P*
		Yes	No	Total			
Male	Count	54	87	141	1	0.202[a]	0.653
	Expected Count	52.0	89.0	141.0			
	% within Gender	38.3%	61.7%	100.0%			
	% of Total	16.1%	25.9%	42.0%			
Female	Count	70	125	195			
	Expected Count	72.0	123.0	195.0			
	% within Gender	35.9%	64.1%	100.0%			
	% of Total	20.8%	37.2%	58.0%			
Total	Count	124	212	336			
	Expected Count	124.0	212.0	336.0			
	% within Gender	36.9%	63.1%	100.0%			
	Family support during Inundation	100.0%	100.0%	100.0%			
	% of Total	36.9%	63.1%	100.0%			

The table 38 presents the association between family support and gender during the inundation. The investigation focused on the dependency of school children on familial assistance during inundations to commute to school. As indicated by the provided table, 54 (16.1%) of the male students and 70 (20.8%) of the female students rely on their families for support during periods of inundation. This implies that more female schoolchildren turn to their families for help during floods than female schoolchildren. However, the outcome of the chi-square test ($\chi 2=0.202$, *df=1,* p=0.653) suggests an insignificant correlation between gender and the reliance on family support during inundations. Hence, there is no significant association between gender and the necessity for family assistance, particularly in the context of inundation situations. Thus, the researcher accepts the null hypothesis but rejects the alternative hypothesis.

Table 39

Family Support D*uring Heat Waves*

Gender		Family support during Heat Waves			*Df*	χ^2	*P*
		Yes	No	Total			
Male	Count	28	113	141	1	5.427[a]	0.02*
	Expected Count	20.6	120.4	141.0			
	% within Gender	19.9%	80.1%	100.0%			
	% of Total	8.3%	33.6%	42.0%			
Female	Count	21	174	195			
	Expected Count	28.4	166.6	195.0			
	% within Gender	10.8%	89.2%	100.0%			
	% of Total	6.3%	51.8%	58.0%			
Total	Count	49	287	336			
	Expected Count	49.0	287.0	336.0			
	% within Gender	14.6%	85.4%	100.0%			
	% within Family support during Heat Waves	100.0%	100.0%	100.0%			
	% of Total	14.6%	85.4%	100.0%			

*P<0.05, **P<0.01

The table 39 presents the association between the family support and gender during the heat waves. The investigation focused on the dependency of school children on familial assistance during heat waves to commute to school. As indicated by the provided table, 28 (8.3%) of the male students and 21 (6.3%) of the female students rely on their families for support during periods of inundation. This implies that a greater percentage of male school children turn to their families for help during heat waves than female school children. The outcome of the chi-square test ($\chi 2=5.427$, $df=1$, p=0.02) suggests a significant correlation between gender and the reliance on family support during heat waves. Hence, there is significant association between gender and the necessity for family assistance, particularly in the context of heat waves situations. Thus, the researcher rejects the null hypothesis while retains the alternative hypothesis.

Table 40

Family Support During Cold Waves

Gender		Family Support During Cold Waves			*Df*	χ^2	*P*
		Yes	No	Total			
Male	Count	24	117	141	1	0.285[a]	0.594
	Expected Count	22.2	118.8	141.0			
	% within Gender	17.0%	83.0%	100.0%			
	% of Total	7.1%	34.8%	42.0%			
Female	Count	29	166	195			
	Expected Count	30.8	164.2	195.0			
	% within Gender	14.9%	85.1%	100.0%			
	% of Total	8.6%	49.4%	58.0%			
Total	Count	53	283	336			
	Expected Count	53.0	283.0	336.0			
	% within Gender	15.8%	84.2%	100.0%			
	% within Family Support During Cold Waves	100.0%	100.0%	100.0%			
	% of Total	15.8%	84.2%	100.0%			

The table 40 presents the Chi-square test for family support during the cold waves and gender. The above table shows the relationship between gender and family support during cold-wave times. As indicated in the above table, a more significant number of 24 (7.1%) male school children comparatively sought family'sassistance less in comparison to 29 (14.9%) females during the cold waves. However, the result ($\chi 2=0.285$, *df=1,* p=0.594) shows an insignificant relationship between gender and family support. Thus, researchers can claim that gender is not a significant factor about family support during cold waves. Thus, the researcher accepts the null hypothesis while rejects the alternative hypothesis.

Table 41

Family Support During Climatic Disasters

Climatic Disasters	Gender	Family Support	
		Yes	No
Flood	Male	40 (28.4%)	101 (71.6%)
	Female	72 (36.9%)	123 (63.1%)
Inundation	Male	54 (38.3%)	87 (61.6%)
	Female	70 (35.9%)	125 (64.1%)
Heat Waves	Male	28 (19.9%)	113 (80.1%)
	Female	21 (10.8%)	174 (83.2%)
Cold Waves	Male	24 (17.0%)	117 (83.0%)
	Female	29 (14.9%)	166 (85.1%)

Table 41 shows the result of children's dependency on their families during the climatic disaster conditions. With growing climatic disasters, dependency on family is lowest (10.8%) during the heat waves for the female and highest during the flood (36.9%). Whereas, the value is lowest (17%) during the cold waves and highest during the inundation.

Schooling and Climate Change Vulnerability of District

Various factors influence the educational experiences of school children, with climate change standing out as a significant contributor. The impact of climate change exhibits regional variations, particularly affecting vulnerable communities disproportionately. In the specific context of Nepal, the vulnerability levels differ across regions. Certain areas within the country are highly susceptible to the effects of climate change, and this vulnerability is particularly evident in the Madhesh province. Within the Madhesh province, districts are categorized into high and low vulnerability based on the impact of climate change. To discern whether there are significant disparities in the schooling experiences of school children contingent upon the level of vulnerability, data about the access and learning of school children was systematically collected. The comprehensive outcomes of this investigation are precisely presented in tables 42 and 43, shedding light on the nuances of the relationship between vulnerability levels and the schooling experiences of school children.

Table 42

Climate Change Vulnerability Level and Access

SSC	CCVL	*n*	*M*	*SD*	*t*	*p*
Access During Flood						
	Low	187	2.85	1.00	-2.26	0.002*
	High	149	3.89	0.92		
Access During Inundation						
	Low	187	2.78	1.25	-0.149	0.88
	High	149	2.80	1.06		
Access During Heat Waves		187				
	Low	149	2.50	1.22	-4.01	0.000**
	High	187	3.05	1.26		
Access During Cold Waves		149				
	Low	187	2.62	1.00	-3.30	.001**
	High	149	2.96	0.88		

*SSC=Schooling of School Children, CCVL=Climate Change Vulnerability Level, SD= Standard Deviation, *P<0.05, **P<0.01*

Table 42 presents the results of independent sample t-tests conducted to assess the significance of differences in access to schooling during various climatic conditions in the climate change vulnerability condition (Low and High). The mean value of access for the high vulnerable districts (3.89) is higher than of the low vulnerable districts (2.85) during the flood time. The result shows that children belonging from the high vulnerable district get more affected in comparison to low vulnerable district. The result (*t=-2.26, p=0.002*) of independent sample t-test of access during floods indicates a statistically significant difference between low and high-vulnerability districts. The result of independent sample t-test shows that vulnerability level of district is significant factor in the access of school children during the flood and there are differences in the access of school children based on the vulnerability level of district. Therefore, we reject the null hypothesis and retain the alternative hypothesis.

In the case of inundation, the mean value for access of the highly vulnerable district (2.80) and the low vulnerable district (2.78) is almost similar. This indicates that school children have to face similar types of difficulties to access school during

the inundation time. The t-test result (*t=-0.149, p=0.88*) of independent sample t-test of access during inundation shows no statistically significant difference between low and high-vulnerability districts. The result of independent sample t-test also shows that the school children have similar types of difficulties while accessing the school during the inundation. Thus, we accept the null hypothesis and reject the alternative hypothesis.

The mean value for access during heat waves is higher in high-vulnerability (3.05) districts than high-vulnerability districts (2.50). This shows that children from the highly vulnerable districts have to struggle to reach to school during the heat waves. The test result (*t=-4.01, p=0.000*) of independent sample t-test shows a significant difference between low and high-vulnerable districts. The result of independent sample t-test also shows that, the school children from the highly vulnerable district are more vulnerable during heat waves while going to school. The result also shows that vulnerability level of district is significant factor during the heat waves for school children. Based on the result of independent sample t-test, we reject the null hypothesis and retain the alternative hypothesis.

Similarly, in the case of cold waves, the mean value for access in the high-vulnerability districts (2.96) is slightly higher compared to low-vulnerability districts (2.62). The t-test result (*t=-3.30, p=0.001*) of independent sample t-test for access during cold waves indicates climate change vulnerability is a significant factor in the access of school children and the p values shows that the result is statistically significant and different between low and high-vulnerability districts. Based on the result of independent sample t-test, the researcher rejects the null hypothesis but retains the alternative hypothesis.

Table 43

Climate Change Vulnerability Level and Learning

SSC	CCVL	*n*	*M*	*SD*	*t*	*p*
Flood Learning						
	Low	187	2.63	0.76	1.39	0.16
	High	149	2.52	0.77		
Inundation Learning						
	Low	187	2.92	1.27	-0.60	0.54
	High	149	3.00	1.13		
Heat Waves Learning		187				
	Low	149	2.95	0.83	-4.28	.000**
	High	187	3.33	0.77		
Cold Waves Learning		149				
	Low	187	2.99	1.09	-3.35	.000**
	High	149	3.38	0.93		

*SSC=Schooling of School Children, CCVL=Climate Change Vulnerability Level, SD= Standard Deviation, *P<0.05, **P<0.01*

The table 43 shows the mean value for learning in different climatic disaster situations based on their vulnerability level. During the flood, the mean value of learning in the highly vulnerable district (2.52) and low vulnerable district (2.63) is almost similar. The result (*t=1.39, p=0.16*) of independent sample t-test shows climate change vulnerability level of district is not significant factor in the learning of school children during the flood and the result is also not significant difference in the learning of school children in the context of the high and low vulnerable levels of the district. Thus, researcher accepts the null hypothesis and rejects the alternative hypothesis.

During the inundation situation, the mean value of learning of highly vulnerable districts (3.00) and low vulnerable districts (2.92) is also almost similar. This shows that in the situation of inundation, the learning activities do not vary based on the vulnerability level. The result (*t=-0.60, p=0.54*) of independent sample t-test indicates no significant difference in learning during inundation time. Thus, the researcher accepts the null hypothesis and rejects the alternative hypothesis. That

means, there is no differences in the learning of school children during the inundation time based on the vulnerability level of district.

In the case of heat waves, the mean (3.33) value of learning for the high-vulnerable district is higher than the mean (2.95) for the low-vulnerable district. This value shows that learning of school children from the highly vulnerable is comparatively more affected. The result (*t=-4.28, p=0.000*) of the independent sample t-test is statistically significant. That means climate change vulnerability is significant factor in the learning of school children during the heat waves. Thus, researcher rejects the null hypothesis while retains the alternative hypothesis.

During the cold waves also, the learning of school children belonging to the highly vulnerable district (3.38) is comparatively more affected by the school children belonging to the low vulnerable district (2.99). The result (*t=-3.35, p=0.000*) of the independent sample t-test also shows a significant relationship between the learning of school children belonging to the low-vulnerable districts and high-vulnerable districts. Based on the result of independent sample t-test, we reject the null hypothesis and retain the alternative hypothesis.

From the above table, it can be observed that school children from the highly vulnerable districts show comparatively less resilience capacity in learning during the climatic disasters. Except during flood time, the impact of climatic disasters is more on the schooling of school children belonging to the highly vulnerable districts. This shows that school children belonging to the highly vulnerable districts have less resilience capacity in comparison to the schooling of school children belonging to the low vulnerable. Because of high exposure to climatic disasters, schooling of school children in highly vulnerable districts is comparatively more affected.

Table 44

Climate Change Vulnerability Level and Schooling

SSC	CCVL	*n*	*M*	*SD*	*t*	*p*
Access	Low	187	2.69	0.83	-3.34	.001*
	High	149	2.97	0.73		
Learning	Low	187	2.88	0.77	-2.25	.025*
	High	149	3.06	0.69		

*SSC=Schooling of School Children, CCVL=Climate Change Vulnerability Level, SD= Standard Deviation, *P<0.05, **P<0.01*

Tables 42, 43, and 44 show that access and learning of school children from the high-vulnerable districts were comparatively more affected during all four climatic disasters. During the flood, heat waves, and cold waves, the relationship between the climate change vulnerability of the district and school children's access was significant. Thus, the researcher can generalize that school children in high vulnerable districts face problems while going to school during floods, heat waves, and cold waves. With climatic disaster's growing intensity and frequency, the impacts have been seen in vulnerable districts but school children belonging to highly vulnerable district get more affected. School children have to face more exposure, particularly in the highly vulnerable district and low exposure in the low vulnerable district. According to Chang et al. (2013) and Ahmed et al. (2022), school children are deprived of quality education during the flood. They further said that during the flood, schools are used as shelters, which disturbs the schooling of school children. School children face with drinking water problems, and sometimes they suffer from a few chronic diseases; because of diseases, few school children remain absent during the flood, and sometimes school dropout (Khan & Hussan, 2023) because of the flood.

Similarly, the finding of a study conducted by Lass et al. (2023) in Indonesia supports the finding that in flood-affected areas, school children have to face the problem of access to school. They further said schools remain closed during the flood time. Another study conducted by Yosefi et al. (2020) in Iran shows that 54 % of the schools are in flood-affected areas. This number shows that most schools fall under the affected areas in the era of climatic disaster. Few studies (Bartlett, 2008) show that children from lower-income countries (socio-economic vulnerability) are affected in several ways. Similarly, a study conducted by Zamad & Hyder (2016) shows that children performed poorly during flood time in vulnerable areas of climate change.

Effect of Climate Change Vulnerability Level of District on Schooling

The impact of climate disasters was seen in the access and learning of school children in the vulnerable district of Madhesh province. The impact was greater in the highly vulnerable districts and lower in the low vulnerable district. Between the high and low-vulnerable districts, there were very few differences in the impact of climatic disasters. Keeping this result in mind, the researcher was interested in knowing the prediction of children's access and learning in the climate change vulnerable district. For that, researcher chose to use logistic regression test. Before conducting linear

regression, pre-required assumptions were tested as mentioned in the methodology section. Researcher tested multicollinearity using tolerance and variance inflation factors (VIF). The predictor variable has a tolerance value of one, indicating no issues with multicollinearity. Tolerance for the predictor variable and the VIF value is also one. Thus, the researcher concluded that multicollinearity is not an issue for fitting the regression model. The other assumptions, like the normality test and test of homoscedasticity, were tested, and the test was passed to run the logistic regression analysis. The value of skewness and kurtosis was between -1 and +1 for the schooling of school children during each climatic disaster.

To test the above-mentioned hypothesis, the researcher has conducted logit regression analysis to find the relationship between schooling (dependent variable) during climatic disaster conditions and climate change vulnerability level (independent variable). The effect of climate change vulnerability was analyzed with school children's access and learning during all the climatic disaster situations. For the logit regression, researcher categories the learning and access into low affected (0 to 3.50) and high affected (3.51 to 6). The similar categorization with done with both children's access and learning during all four climatic disasters.

Data was collected from the school children to know their perception on their schooling during the climatic disasters. The schooling of was analyzed through two different perspectives that is children's access and their learning during the climatic disasters. The schooling of school children was categorized into two groups (low affected and high affected) based on their perception. As mentioned in the research methodology section, school children as a sample were from two different climate change vulnerability zone. One group was from low climate change vulnerability level and other group was from high climate change vulnerability level group to see the probability of school children being affected by climate change vulnerability level from high vulnerability in comparison of low climate change vulnerability level. The logistic regression test was applied to know the probability of being affect by climate change vulnerability level.

Table 45

Logit Model of Climate Change Vulnerability and Schooling

Model	DV	IV	B	S.E.	Wald	df	Sig.	Exp (B)	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square	χ^2
1	CCVL	AF	0.015	0.246	0.004	1	0.953	1.015	396.404[a]	0.0001	0.000015	*X*2(1)=0.004, p=0.95>0.05
2	CCVL	LF	0.338	0.336	1.010	1	0.314	1.402	256.024	0.0031	0.005726	*X*2(1)=1.03, p=0.310>0.05
3	CCVL	AI	0.200	0.253	0.622	1	0.430	1.221	381.594	0.0011	0.002739	*X*2(1)=0.626, p=0.429>0.05
4	CCVL	LI	-0.136	0.230	0.349	1	0.554	0.872	432.720	0.0018	0.001433	*X*2(1)=0.349, p=0.555>0.05
5	CCVL	AHW	-0.927	0.290	10.202	1	0.001	0.395	310.758	0.0312	0.050352	*X*2(1)=10.528, p=0.001<0.05
6	CCVL	LHW	-0.863	0.236	13.292	1	0.000	0.421	412.777	0.0394	0.055024	*X*2(1)=13.560, p=0.000<0.05
7	CCVL	ACW	-0.258	0.262	0.970	1	0.324	0.771	355.826	0.002881	0.004404	*X*2(1)=0.969, p=0.325>0.05
8	CCVL	LCW	-0.2208	0.225	0.961	1	0.326	0.801	447.493	0.002857	0.003878	*X*2(1)=0.961, p=0.327>0.05

*CCV=Climate Change Vulnerability Level, *AF=Access during Flood, *LF=Learning during Flood, *AI=Access during Inundation, *LI=Learning during Inundation, *AHW=Access during heat waves, *LHW=Learning during heat waves, *ACW=Access during cold waves, *LCW=Learning during cold waves, *DV=Dependent Variable, *IV=Independent Variable.

The table 45 shows the result of logit regression shows that the model fits during the heat waves. The chi-square value ($X2(1) = 10.528$, $p=0.001<0.05$) is significant and shows that access and learning during the heat waves in the high climate change vulnerable level district is affected. The Exp (B)=0.396 shows that access of school children from the low climate change vulnerable district is 0.396 times low affected in than to access of school children from high climate change vulnerable district. Similarly, the exp (B)=0.493 shows that learning of school children from the low climate change vulnerable district is 0.493 times less affected than of high climate change vulnerable district.

Despite the model is not fit during the flood, inundation, and cold waves but the exp (B) value of access during flood=1.015, and shows that 1.015 access of school children in the low climate change vulnerable district is 1.015 times less affected. The exp (B) value of learning during flood= 1.403, shows that learning of school children

in the low vulnerable district is 1.403 times less affected than of high climate change vulnerable district. The exp (B) value of access during inundation=1.221, shows that access of school children from the low climate change vulnerable district is 1.221 times less affected in the low vulnerable district than of high climate change vulnerable district. The exp (B) value of learning during inundation=0.873, shows that learning of school children in the low climate change vulnerable district is 0.873 times less affected that the high climate change vulnerable district. The exp (B) access during cold waves=0.772 show that access of school children in the low vulnerable district is 0.772 times less affected by cold waves than of schooling of school children who belong to high climate change vulnerable district and the exp (B) value of learning during cold waves= 0.802 show that learning of school children from the low vulnerable district is 0.802 times less affected by cold waves than the learning of school children who belong to high climate change vulnerable district.

With the increasing climate change, intensity and frequency of climatic disasters has also increased but the result of logit regression shows that school children in the Madhesh province experience heat waves than flood, inundation, and cold waves. In the low land of Terai, school children might have get adapted to the flood, inundation and cold waves over the time but the result show that school children might not have developed strategies to overcome scorching heat. Also, the infrastructure has developed over the time to cope with flood and inundation which might have helped school children to get easy access and good learning environment during the flood, inundation and cold waves.

Chapter Summary

In this chapter, statistical procedures like descriptive statistics, t-test, Chi-square test, ANOVA, and logit regression analysis were conducted. The statistical procedure's finding explains that school schooling has a moderate level of impact from the climatic disasters. The learning of school children during the cold waves was highly affected. Similarly, gender was statistically significant in the students' access to school during the flood, inundation, and heat waves. Gender was also statistically significant in school children's learning during floods and inundation. The Chi-square test shows the significant relationship between children's absenteeism during heat waves and cold waves. The climate change vulnerability level of the district was also significant in the access and learning of school children.

CHAPTER V
FINDING AND DISCUSSION

In chapter 4, the researcher analyzes the data to determine the level of climate change impact on the schooling of school children during climatic disaster conditions. Floods, inundation, heat waves, and cold waves are the major climatic disasters considered for the study. During these climatic disasters, school children's access and learning were analyzed. To differentiate the level of climate change impact on the schooling of school children, samples were taken from 4 vulnerable palikas of two districts. Two palikas were low vulnerable, and two were highly vulnerable to climate change. Further, the study aimed to identify the level of climate change impact on school children belonging to the different socio-demographic conditions. Based on the analysis, major findings are presented in this chapter.

Socio-Demographic

School children who were participants of this study were from different socio-demographic. Based on their age, gender, ethnicity and religion, their details is presented in the below table.

Table 46
Socio-Demographic Status of School Children

Variables	Categories	*N*	*%*
Age			
	14 and below	84	25
	15 and above	252	75
	Total	336	100.0
Gender			
	Male	141	42
	Female	195	58
	Total	336	100.0
Ethnicity			
	Major Ethnicity of Terai	236	70.2
	Terai Dalits	85	25.3
	Terai Bhramin	13	3.9

	Terai Janjatis	2	.6
Religion			
	Hindu	320	95.2
	Islam	16	4.8
	Total	336	100.0

The table 46 shows the socio-demographic status of school children. The study was conducted in the 12 schools of Dhanusa and Mahottari districts of Madhesh province. From the 12 schools, 336 children from different socio-demographic conditions were selected for the study. 42% were male, and 58% were female participants in the study. Among the participants, 25% of the school children were below 14 years, and the rest, 75%, were 15 years and above. Similarly, 0.6% were Terai Janajatis, 3.9% were from Terai Brahmin, 25% were from Terai Dalits, and 70.5% were from the major ethnicity of Terai Others. Only children from the Hindu and Islam communities participated in the study.

Schooling of School Children

The impact of climatic disasters was calculated on the schooling of school children during the floods, inundation, heat waves, and cold waves. The impact was also observed based on their socio-economic status and vulnerability level of the district.

The Situation of School Children Schooling during the Climatic Disaster Condition

The impact of climatic disasters was grouped into three categories, i.e., low, moderate and high for school children's schooling (access and learning). The study found that climatic disasters (flood, inundation, heat waves, and cold waves) have a moderate level of impact in accessing the school. Similarly, climatic disasters (inundation, heat waves, and cold waves) also have a moderate impact in the learning part of school children's but have low impact in the learning part of school children during a flood.

Relationship between School Children Schooling and Socio-Demographic

The mean value of schooling (access) of School children of age group 14 and below and age group 15 and above have a moderate level of impact in accessing school during a flood, inundation, heat waves, and cold waves, but the inferential

statistics value is not significant. Similarly, these two groups also have a moderate impact on their schooling (learning) during a flood, inundation, heat waves, and cold waves, and the value of inferential statistics is also not significant. The impact slightly varies across age groups of children. Higher age group children are generally more vulnerable during heat wave while going to school and younger children were slightly vulnerable to cold waves while going to school. It might be because, the different age groups have different forms of exposure, and they might lack coping strategies against that exposure. Because of climatic disasters, sometimes school children have the highest risk of permanent dropout, a higher probability of early marriage, and engaging in economic hardship. Similarly, during the learning, mostly younger children struggle with slightly differences in the mean value of school children learning. During the inundation, heat waves and cold waves, younger school children find difficulties in the learning part in compare to higher age group of children.

Schooling (access) of male school children was more affected by the climatic disasters than female school children. Male school children face more difficulties accessing school during the flood, inundation, heat waves cold waves. The inferential statistic value of access was significant during floods, inundations, and heat waves. However, the value of student access during the cold was not statistically significant. Similarly, male school children also face more challenges in schooling (learning) during flood, inundation and heat waves time than female school children. The inferential statistic value of learning is significant during flood and inundation time, whereas the value of inferential statics was not significant during heat time. During the cold wave period, both male and female have equal impact in the learning part of schooling. Generally, it found that mostly females are more vulnerable to climate change (Rahaman, 2013), but the findings of this study contradict the previous study. The study found that males are also being affected by the impact of climatic disasters particularly in the schooling part.

Schooling (access) of school children to the Islam community during the inundation and heat waves time was more affected and the difference was found to be statistically significant heat waves only. However, schooling (access) was insignificant during floods, inundation, and cold waves. Schooling (access and learning) of school children was not found to be significant with the occupation of their parents. Similarly, learning of school children from Islam communities was

slightly more affected during the inundation, heat waves and cold waves but the difference was not significant.

Parent's occupation was not significant factors in the schooling of school children. Similarly, parent's income of school children is not significant factors in the access part of schooling of school children. The same was for learning except inundation. In the learning part of school children, parent's income was significant.

Flood, heat waves, and cold waves were significant factors in male children's absenteeism. Whereas at the time of inundation, it was not a significant factor in children's absenteeism. During heat waves, family support was a significant factor for male school children to reach school. At the same time, school children do seek family support to go to school during floods, inundation, and cold waves. Time to reach school and access was weak and positive relationship and found statistically significant. Similarly, the relationship between time to reach school was also weak and not statistically significant. At the same time, the relationship between access and learning was found to be strong and statistically significant.

Relationship between Schooling of School Children and Climate Change Vulnerability Level of District

The vulnerability level of the district was a significant factor in school children's schooling. The highly vulnerable district was a significant factor in school children's access during floods, heat waves, and cold waves. This implies that access of school children belonging to high-vulnerable districts was comparatively more affected in the access part of schooling belonging to low vulnerable districts. Access of children from high-vulnerable districts was more affected during floods, heat waves, and cold waves, and the value was statistically significant. At the same time, the schooling (access) was not statistically significant. Similarly, the learning of school children from the highly vulnerable districts was more affected by heat and cold waves and was found to be statistically significant. At the same time, the schooling (learning) was not statistically significant during flood and inundation.

Prediction of Schooling in the Climate Change Vulnerable District

The researcher conducted a logit regression analysis to predict the effect of the climate change vulnerability level of the district on the schooling (access and learning) of school children during a flood, inundation, heat waves, and cold waves. From the logit regression analysis, the researcher got 8 different models for access

and learning during the climatic disasters. Among the eight models (Table 40), model was only significant for the access and learning during the heat waves.

As per the definition of climate change vulnerability, the highly vulnerable districts have greater sensitivity, more degree of exposure to climatic disasters and less adaptive capacity against climatic disasters. It is believed that more vulnerable districts have poor physical, environmental, social and economic factors that help people to cope with climatic disasters. People do not have abilities (adaptative capacity) to utilize resources to cope with climatic disasters, which makes them vulnerable. That is why it is said that climate change affects people from vulnerable communities that lack the resources and infrastructure to cope with climatic disasters (Hutton et al., 2011).

Discussion of the Finding

In the discussion of the findings section, the researcher has discussed the impact of climatic disasters on the schooling of school children, the impact of climatic disasters based on the socio-demographic status of school children, family support, time to reach school, schooling of school children belonging form the low and highly vulnerable district, and effects of climate change vulnerability level on the schooling of school children.

Impact of Climatic Disasters on the Schooling of School Children

The study explores the impact of climatic disasters on school children's learning and access to education, categorizing the severity of these impacts into low, moderate, and high. The findings indicate that climatic disasters such as floods, inundations, heat waves, and cold waves moderately impact school children's access to schooling. These disasters also moderately affect learning, particularly during inundations, heat waves, and cold waves. However, floods tend to have a relatively lower impact on learning than other climatic events.

The research highlights those climatic disasters, particularly floods, heat waves, and cold waves, disrupt children's ability to attend school regularly. This finding aligns with previous studies conducted by Lala and Hagishima (2023), which discovers that heat waves negatively affect children's well-being and learning outcomes in India. Similarly, Keivabu (2024) notes that temperatures above 18°C significantly increase absenteeism, with temperatures exceeding 35°C deterring children from attending school due to the unbearable heat. In the study areas,

temperatures often rise above 40°C, significantly impacting children's attendance and participation in school.

The moderate effect of climatic disasters on learning is supported by Sheffield et al. (2017), who argue that climate change directly deteriorates children's learning abilities. When students miss school due to climatic events, they often struggle to catch up and may forget previously taught lessons. Filho et al. (2023) see that climatic disasters negatively affect educational attainment, as children remain absent during events like floods, heat waves, and cold waves. The study by Filho et al. (2023) further emphasizes that children's learning time was reduced from 7.4 to 4.1 hours during these disasters.

Challenges in Accessing School and Learning of School Children

In this study, climatic disasters, particularly floods and inundations pose significant challenges to children's access to schooling. Disrupted transportation infrastructure, such as damaged roads and broken bridges, creates unsafe conditions for children traveling to school. This echoes the findings of Habiba et al. (2021) in Bangladesh, where floods hinder access to education by destroying roads and bridges. Akello (2014) also state that floods are a key factor limiting students' access to education in affected areas. Furthermore, during these disasters, students' parents often fear sending their children to school, contributing to higher absenteeism rates. Additionally, the prolonged time required to navigate flooded areas and wet school uniforms, bags, and educational materials cause discomfort and lower children's motivation to attend school. The fear of crossing inundated roads or rivers and the lack of transportation options exacerbates absenteeism, further disrupting their educational access.

Climatic disasters affect school attendance and have profound implications for children's mental and physical well-being. Extreme weather events, particularly heat and cold waves, cause various health problems among school children, including headaches, fatigue, dizziness, and fainting, especially among girls. These findings are consistent with studies by Sheffield et al. (2017) and Sharpe & Davison (2022), which highlight the mental health impacts of climatic disasters, such as post-traumatic stress, depression, and cognitive impairments. Hussaini (2023) highlights that heat waves negatively affect concentration and academic performance, leading to increased

anxiety and stress. The lack of adequate infrastructure, such as fans in classrooms, exacerbates these challenges, making it difficult for students to focus on their studies.

Similarly, during the cold waves, children experience low visibility due to excessive fog, making walking to school unsafe. The insufficient warmth provided by school uniforms during cold waves further decreases their ability to concentrate in class. This aligns with the study by Filho et al. (2023), which concludes that climatic disasters reduce the quality of education and increase absenteeism due to health-related issues.

The study also underscores the inadequate school infrastructure, which further amplifies the adverse effects of climatic disasters. For instance, the lack of fans or cooling systems during heat waves makes classrooms unbearable, causing children to lose focus and perform poorly in their studies. Similarly, inadequate winter clothing during cold waves forces children to spend more time outdoors in physical activities to keep warm, reducing time spent on academic learning.

The findings from this study demonstrate that climatic disasters, particularly inundations, heat waves, and cold waves, significantly disrupt both access to education and learning outcomes for school children. The impact is not limited to physical access; it extends to mental health, concentration, and overall well-being. These challenges call for urgent improvements in school infrastructure, safer transportation options, and student support systems during extreme weather events. Addressing these issues will be critical in ensuring that children's education is resilient in the face of increasing climatic disasters.

Access and Learning During Flood and Inundation

Climatic disasters, particularly floods, significantly disrupt school children's access to education and learning. This study discovers that floods moderately impact school children's access to schooling but a lower impact is on their learning. These findings are consistent with prior research, such as Alam (2021), who notes that floods create considerable challenges for students attempting to reach school due to inundated roads. Floodwaters often enter school grounds and even classrooms, making it difficult for children to participate in extracurricular activities or concentrate in studies. Habiba et al. (2020) also report similar findings, highlighting that 93.8% of school children experience difficulties during floods, 82% facing challenges due to impassable roads and 28.8% due to broken bridges. This leads to

17.5% of children remaining absent after floods hit their communities. In the present study, children similarly struggled to attend school due to impassable roads and damaged bridges, reinforcing that flood are a substantial barrier to educational access.

While the impact of floods on access to schooling is evident, their effect on learning is more nuanced. Mudavanhu (2014) claims that floods not only interrupt children's attendance but also affect their academic performance. This study noted that children involved in post-flood household activities had less time to focus on their studies, leading to poor classroom performance and suboptimal results in terminal exams. This aligns with Nguyen and Pham (2018), who discovered that exposure to flooding negatively affects test scores and other educational outcomes. Floods also damage school materials, such as textbooks, uniforms, and bags, further hindering children's learning ability. School children sometimes have to attend classes in wet clothing, which causes discomfort and diminishes their concentration. Beyond the impact on students, floods also prevent teachers from attending school, further disrupting the learning process. This was a notable finding in the current study, as well as in prior research. Das (2010) highlights that flood is a major factor in disrupting teaching and learning, with schools often closing, preventing both students and teachers from attending.

The post-flood recovery period is particularly challenging for children as it takes time to return to their regular learning pace. In some cases, teachers cannot complete the syllabus on time due to the delays caused by flooding, which leaves students feeling unprepared and frustrated. Hassan et al. (2018) noted that children often struggle to concentrate in the aftermath of a disaster, a finding supporting this study's observations. Children in flood-affected communities face the physical challenges of reaching school but also have trouble focusing once they return, exacerbating the impact on their learning.

While floods pose a moderate challenge to school access, their impact on learning is more complex, affecting students and teachers. The findings underscore the need for improved disaster preparedness in schools, particularly in flood-prone areas, to mitigate the disruption to education. Addressing these challenges—infrastructural improvements, timely syllabus completion, and mental health support for students—can help ensure that school children in disaster-affected areas continue receiving quality education.

Access and Learning During Heat Waves

The findings of this study indicate that the growing intensity and frequency of climatic disasters, particularly heat waves, are significantly affecting the schooling of children in the study areas. The impact is most pronounced on the learning aspect, with a moderate level of difficulty observed (3.12), indicating that heat waves are making it increasingly challenging for children to focus and learn effectively. Additionally, children reported difficulties attending school during heat waves, disproportionately affecting those from climate change-vulnerable communities. These findings are supported by Cho (2017), who states that student learning is adversely affected when daily maximum temperatures reach or exceed 34 degrees Celsius. Cho's research highlights that test scores were lower when temperatures hit this threshold, largely because students became sick, reducing the time they could spend on their studies. Lala and Hagishima (2023) also find that as temperatures increase, so do the number of heat-related illnesses among students, particularly in school settings. The health consequences of heat waves exacerbate children's challenges in maintaining academic performance.

Malmquist et al. (2021) further emphasizes rising temperatures' impact on students and teachers. Their study finds that 79% of children felt that classroom temperature was too hot to sit comfortably during summer, contributing to various health problems, including fatigue, headaches, anxiety, and stress. These physical and mental symptoms severely affect children's learning ability, adding to the difficulties caused by high temperatures. Keivabu (2024) identifies a direct link between increased temperatures and student absenteeism, finding that absenteeism rises when temperatures exceed 18 degrees Celsius. This is consistent with the findings of Wargocki et al. (2019), who demonstrate that student performance improves significantly as classroom temperatures decrease. Specifically, lowering the temperature from 30 to 20 degrees Celsius led to a 20% improvement in student performance. High temperatures, in contrast, lead to fatigue, difficulty concentrating, headaches, and sleepiness, all of which undermine students' ability to perform well in class.

While the negative effects of high temperatures on learning are well-documented, cold waves can also disrupt education. Johnston et al. (2021) found that when temperatures fall below 70 degrees Fahrenheit (around 21 degrees Celsius),

student learning suffers, with lower test scores and poorer performance in subjects such as literature. Cold waves, particularly accompanied by dense fog, also hinder students from reaching school, as low visibility makes traveling unsafe. Children often miss school during these periods, as they cannot see roads clearly, further disrupting their educational access. Studies have also found that extreme weather conditions, hot or cold, impact children's mental health. Midassey-Manilal et al. (2016) observes that high temperature leads to poor concentration in class, while Dhimal et al. (2017) highlights that the psychological stress, health problems, and injuries associated with extreme weather. Dyregrov et al. (2018) notes that children, particularly in countries at the forefront of climate change, are facing significant mental health challenges. This aligns with the findings of this study, which observed that both physical and psychological challenges caused by climatic disasters substantially impact children's ability to attend school and learn effectively.

This study reinforces the growing body of evidence that climatic disasters, particularly heat, and cold waves, severely disrupt school children's access to education and their learning ability. These disruptions are exacerbated by the health and mental health challenges accompanying extreme weather events, especially in vulnerable communities. Addressing these challenges requires greater attention to the impacts of climate change on education, with targeted interventions to ensure that children can continue learning in safe and supportive environments despite the increasing severity of climatic disasters.

Access and Learning during Cold Waves

The study reveals that cold wave moderately impact both access to schooling and learning for school children, particularly in the Terai region. Low visibility during cold waves, especially in the early morning, poses significant challenges for children traveling to school. Girl students unsafe in foggy conditions, often leading to higher absenteeism. This lack of visibility and security is a key factor for why many students, especially girls, stay home during dense fog. In addition to difficulties reaching school, cold waves affect students' ability to concentrate and engage in learning. The extreme cold makes it hard for students to focus on the classroom, with many children struggling to write due to numb hands. The school uniforms worn by students during this time are often inadequate for the cold, forcing children to spend much of their time engaging in extra-curricular activities to stay warm rather than focusing on

academic work. Completing assignments also becomes a lower priority as students struggle to maintain comfort in cold conditions.

Schools often close when cold waves persist for several days, further disrupting education. For example, Save the Children, in collaboration with Narainapur and Raptisonri Rural Municipalities, developed an action plan that included school closures during cold waves to protect children (Save the Children Nepal, 2022). This practice is common across many districts in the Terai, where schools are shut down until the cold waves subside, delaying learning and preventing the timely completion of the syllabus. Pradhan et al. (2019) also draw our attention towards the severe disruption of cold waves in the Terai, both in schooling and in children's daily lives. In 2022, for instance, the local government in Rautahat district closed schools for a week due to cold waves, as conditions were deemed too harsh for students to attend classes (The Himalayan Times, 2022) safely. This underscores the challenges educational institutions face in adapting to extreme weather conditions, which are becoming more frequent due to climate change. The school disruption during cold waves affects children's immediate learning and contributes to delays in syllabus completion and overall academic progress. Cold waves in the Terai region present a multifaceted challenge to the education system, impacting school attendance, learning outcomes, and the safety of students. These findings call out the need for better infrastructure, such as warm uniforms and heated classrooms, and policies that minimize the educational disruption caused by extreme weather events.

Socio-Demographic Status and Schooling of School Children

Climatic Disasters like floods, inundations, and extreme temperatures moderately disrupt school children's ability to access education. Similarly, during inundations, heat waves, and cold waves, there's a moderate hindrance to students' learning journey. However, the impact on the educational process appears to be comparatively less when it comes to floods specifically.

The mean value of schooling (access) of School children of age group 14 and below and age group 15 and above have a moderate level of impact in accessing school during a flood, inundation, heat waves, and cold waves, but the inferential statistics value is not significant. Similarly, these two groups have a moderate impact on their schooling (learning) during a flood, inundation, heat waves, and cold waves, and the value of inferential statistics is also not significant.

Schooling (access) of male school children was more affected by the climatic disasters than female school children. Male school children face more difficulties accessing school during the flood, inundation, and heat waves. The inferential statistic value of access was significant during floods, inundations, and heat waves. However, the value of student access during the cold was not statistically significant. Hussain et al. (2023) stress that both males and females are equally affected by the impact of floods; but females are at the forefront of the impact. In their study, they find that a greater number of female children left school due to the impact of the flood, but the value was also not significant for the gender in their study.

Similarly, male school children face more challenges in schooling (learning) during flood and inundation time than female school children. The inferential statistic value of learning is significant during flood and inundation time, whereas the value of inferential statics was not significant during heat. According to Hassan et al. (2018), both boys and girls experience Posttraumatic Stress Symptoms (PTSS) equally. They say that after the post-disaster, boys and girls experience stress symptoms like fear of flood and difficulties in concentration. Schooling (access) of school children belonging to the Islamic community during the heat waves were more affected by climatic disasters and was found to be statistically significant. At the same time, schooling (access) was not significant during floods, inundation, and cold waves.

Schooling (access and learning) of school children was not found to be significant with the occupation of their parents. Flood, heat waves, and cold waves were significant factors in male children's absenteeism. At the same time, inundation was not a significant factor in children's absenteeism. According to Alam (2021), due to the longer closure of schools due to floods, students lost their willingness to go to school. As a result, most of the school children remain absent after climatic disasters like floods. Family support was a significant factor in male school children reaching school during heat waves. At the same time, school children do seek family support to go to school during floods, inundation, and cold waves.

For the school children, time to reach school was longer during the disasters time and thus access to school has weak and positive relationship and the relationship was found statistically significant. Similarly, the relationship between time to reach school was also weak and not statistically significant. At the same time, the

relationship between access and learning was found to be strong and statistically significant.

Schooling and Climate Change Vulnerability of District

Nepal is one of the most vulnerable countries to climate change. Because of its geographical structure, vulnerability to climate change varies from district to district (Table 2). The government of Nepal identifies more than 15 types of climatic disasters in Nepal, and the types of disasters vary from district to district (CBS, 2022). In the Madhesh province, districts are mostly vulnerable to floods, heat, and cold waves. The study found that the vulnerability level of the district was a significant factor in the schooling of school children during the flood, heat waves and cold waves. During floods, heat, and cold waves, school children from the highly vulnerable district face challenges to reach school.

Similarly, schooling (learning) of children from highly vulnerable districts was more affected during heat and cold waves and was found to be statistically significant. However, schooling (learning) was not statistically significant during floods and inundations.

The previously conducted study also shows that mostly, communities from highly vulnerable districts are more affected, this study also found that children from high-vulnerable districts were more affected. As discussed earlier, vulnerability is a function of adaptive capacity, sensitivity, and exposure. From the study, we can assume that children belonging to the highly vulnerable districts might have less adaptive capacity compared to children belonging to the low vulnerable districts. They might have more resilience against climatic disasters. Adaptive capacity/resilience helps to reduce the vulnerability level. Besides that, there might be several reasons for better learning achievement despite the high vulnerability of the district. One of the reasons for this is the need for better infrastructural development. The government has invested a lot in infrastructural development in the past few years. There has been a huge improvement in the roads highly vulnerable districts. Especially, roads which lead to schools are well constructed. Besides that, there is also a huge investment in the school building. A few decades ago, most school roofs were covered with steel foils. Now, those classes that have steel foils are replaced with concrete buildings. Because of this, school children have better learning and access to facilities. However, the researcher believe the schools in the vulnerable

districts have not upgraded to be low-vulnerable. Also, the data show that more schoolchildren get support from their parents, which could have increased the accessibility of school children during climatic disaster times.

Effect of Climate Change Vulnerability of District on children's schooling

Several factors affect the schooling (access and learning) of school children. Particularly in the Madhesh province, poverty, marginalization, social construct, less priority for education, especially in marginalized communities, and foreign employment are the factors that affect the schooling of children. According to Bhattarai et al. (2020), the time to reach school, the mother's education, and mensuration for the girls, along with several other social, economic, personal, and institutional factors affect the schooling of school children. The researcher conducted a logit regression analysis to predict the effect of the climate change vulnerability level of the district on the schooling (access and learning) of school children during flood, inundation, heat waves, and cold waves. This study found that the climate change vulnerability of the districts predicts the schooling of school children. Particularly during the heat waves, schooling of school from the low vulnerable district predicts less affected than the high climate change vulnerable district.

In this study, districts represent two different places, i.e., Mahottari and Dhanusa, with different vulnerability levels. Mahottari district is more vulnerable than the Dhanusa district. This implies that children living in the Mahottari district are more affected by the climatic disaster than those in the Dhanusa district. It is widely accepted that children from more vulnerable places are comparatively more affected by climate disasters. As discussed early in the literature review section, vulnerability is a function of exposure, sensitivity, and adaptive capacity. Mostly, children from vulnerable places have more exposure and sensitivity to climatic disasters, and they possess less adaptive capacity. Children belonging to developing countries are more affected by the impact of climatic disasters because they are more exposed to disasters. At the same time, they possess less adaptive capacity.

Empirical Discussion

With the growing number of studies, particularly in the field of climatic disasters and their impact on school children's access and learning, it was found that climatic disasters have a greater number of impacts on the schooling of children. While reviewing the literature, the researcher found that climatic disasters are causing

direct and as well as indirect impacts on the schooling of school children. However, because of limited studies conducted on these areas, only a handful of direct and indirect impacts have been studied. Some of the studies aligned with the direct impact of climatic disasters have been discussed in this section. This study found that school children living in the vulnerable communities of Madhesh Province face a moderate level of impact from climatic disasters. They face a moderate impact in their learning. Climate disasters have created several challenges in the schooling of school children and their learning activities. This finding aligns with the study conducted by Newnham et al. (2019). The authors mention in their study that climatic disasters create distress among adolescents during disasters. The fear of floods, inundation, heat waves, and cold waves have resulted in this situation for school children

Similarly, the finding of a study conducted by Joseph & Thadatil (2019) also states that school children fear the loss of their family members and the loss of their homes. Similarly, a study by Chaudhary and Timsina (2017) states that school children are vulnerable to floods. In their study, they discuss that flood affect the quality of education, which results in the poor performance of school children. Further, Joseph and Thadathil (2019) add climatic disasters have a few impacts on the schooling of school children. In their study, they mention that school children lost their family members, their r houses were damaged, schools remained closed during the disaster, school children remained absent, and there was low participation of school children in schooling.

Lassa et al. (2022) highlight that school closure was one of the major problems caused by the floods. The schools remain closed as floods hit them. Their study found that the school was closed for up to 20 days during the flood time. The author's findings align with the findings of this study. This study also discovers that schools remain closed during flood time and during other climatic diester times. The study also notes that flood not only affects access to school, but also affects school children's learning. The author further add that because the learning of school children is affected, they score less or do not pass the national examination. In this study, school children also noticed that they were scoreless or had difficulties scoring good scores on the national exam. Sometimes, the final national examination of school children is also affected by the flood, which leads to the cancelation of the final exam. The flood also damaged the school building. A study conducted by Malmquist et al.

(2021) states that 93% of students feel the classroom temperature is not comfortable to sit in. Heat waves affect both teachers and students. Mostly, school children suffer from eating habits, problems of dehydration, and sleepiness. The author analyzes that the ability of the teacher to teach in the class was also affected during the heat waves. According to Martin (2010), school children suffer from psychological, physical, and educational problems during the flood. In contrast, during the flood, school children lost educational materials, did not receive emotional support, and lost opportunities to participate in the ECA. This study's findings align with Martin's (2010) findings. This study concludes that school children suffered from such problems at a moderate level.

Theoretical Discussion

As suggested by Carlson et al. (2012), four stages explain the resilience of any entity. Preparedness and mitigation are pre-stage activities to get less or less affected by the climatic disaster. The response is an immediate and ongoing stage of activities during the climatic disaster. Recovery is post-stage activities that effectively and efficiently return to the previous level. Based on these four stages, authors define resilience as the ability of any entity to anticipate, resist, absorb, respond, adapt, and recover from a climatic disaster. This definition of resilience contains pre-, immediate, and post-abilities, which help explain children's schooling during climatic disasters. This study explains the response stage resilience in the schooling of school children. Since this study was limited only to the access and learning part of school, the questionnaire used for this study only captured the resilience aspect of school children while learning and access and only saw how school children respond and adapt while going to school and how they respond and adapt in the climatic disaster condition, how school children respond and adapt (capabilities of school children) while going to school and during the learning time. This study does not show how well school children are prepared and are in a situation where they can mitigate the challenges in their learning and access to school. This study also did not emphasize the recovery part of schooling for school children.

As discussed in the literature review section, vulnerability is the ability to be affected by climatic disasters. When school children have better response or adaptive capabilities, the chances of getting affected are reduced. The definition of vulnerability given by Katesl et. al. (1985) better explains the vulnerability. They define vulnerability as the ability to be wounded (as cited in Smit et al. (n.d.). As per

the study's findings, it can be assumed that school children have a moderate level of adaptive capacity because their schooling is affected moderately and has very low deviation across the gender, economic status of parents, religion, and ethnicity. However, school children from highly vulnerable districts possess less adaptive capacity than those from low-vulnerable districts. The finding of the study aligns with the definition of vulnerability. Based on the definition of vulnerability given by Katesl et. al. (1985), entities belonging to highly vulnerable places would have been affected more, and this was true in the case of Madhesh province. According to Smit et al., (2001), as cited in Grewal (2012), several factors contribute to the low and high adaptive capacity of any entity. The author states that the adaptive capacity of any community depends on economic conditions, technology use, information, and infrastructure. The schooling of school children might be less affected in the less vulnerable district because of better infrastructure. In the less vulnerable district, better infrastructure, like the good condition of roads and school buildings, contributed to the better schooling of school children.

Before the data collection and analysis, it was assumed female school children would have less resilient capacity, but this study shows that female school children are more resilient compared to male school children. During each climatic disaster situation, schooling of male school children found more affected. This shows that male school children pose less responsive and adaptive capacity during their learning and access to school.

Chapter Summary

In summary, this chapter presents the key findings of this study along with a discussion of the findings. It was found that climatic disaster has a moderate level of impact on the schooling (access and learning) of school children. Because of climatic disasters, the schooling of male school children was more affected than that of female schoolchildren. Also, it was found that school children belonging to the low-vulnerable districts were more affected by climatic disasters than school children belonging to the high-vulnerable districts. The finding of regression analysis found that the climate change vulnerability level of the district explains a 2.4% variation in the access of school children during a flood, a 4.5% variation in the access of school children during heat waves, and a 3% variation in the access to school children during

cold waves. Similarly, there was a 6% variation in learning during heat waves and a 4% variation in school children's learning during the cold waves.

CHAPTER VI
SUMMARY, CONCLUSION AND IMPLICATION

Chapter I establishes climate change as one of the major problems for the school communities. Chapter II follows with research methodology, using statistical tests for data analysis, and presenting findings and discussion in chapters III, IV, and V, respectively. This chapter contains a summary and conclusion of the study along with its implications.

Summary of the Study

At the beginning of the study, heat waves, floods, inundations, and cold waves were major concerns. Because of climate change, the frequency and intensity of heat waves and other climatic disasters have increased, particularly in the Madhesh province. With increasing climate change, floods, inundation, and cold waves have also become common in the Madhesh province. The researcher believes that quality learning requires a proper learning environment, and children must feel comfortable at school. Their learning will be affected if they are not given the best learning environment. Looking at the current climatic disasters trend, researcher was trying to see the relationship between climatic disasters and the schooling of school children. This study helps to know the status of children's schooling in the climate change vulnerable communities. Children belonging to the most vulnerable places are more affected by climatic disasters; but there is lack of studies that shows the relationship between the vulnerability and schooling of school children explicitly in Madhesh province. With the help of three research questions: a). to what extent schooling of school children is affected by climatic disasters?; what is the relationship between schooling of school children with children's age, gender, ethnicity, and socio-economic variable?; and what is the relationship between level of climate change vulnerability of district and schooling of school children? This study used quantitative research methods under the post-positive research paradigm. Quantitative data was collected with the help of a survey tool from 336 school children under the themes of flood, inundation, heat waves, and cold waves. For the data analysis, descriptive and inferential statistics were used. It was found that schooling of school children has a moderate level of impact by the climatic diesters. To relate the impact of the climatic disaster, it was divided into three categories viz: low, moderate, and high. In the study

area, school children suffered moderately from floods, inundation, heat waves, and cold waves. Further, the study found that male school children suffer more than female school children, and the result can be generalized to the population of the study because the value of inferential statistics was statistically significant. But the result was not the same for all the climatic disasters. Also, school children remain absent during the flood, heat, and cold waves but not during the inundation. Similarly, the study found that the schooling of school children in high-vulnerable districts was comparatively more affected than those in low-vulnerable districts. Lastly, the climate change vulnerability level of the district also predicts the schooling of school children, but only during the heat waves.

Conclusion of the Study

The effect of climate change has started in the school community. School children have suffered from the effects of climate change in their day-to-day lives, from floods, inundations, heat waves, and cold waves. They face problems while going to school as well as in their learning. The study shows that the educational practices, particularly in the Madhesh province, are in an emergency because the schooling of school children is disturbed by climatic disasters. School children face problems in continuing their education activities during the disaster. Most school children seek support from their families to continue their educational activities during disasters. Because of climatic disasters, it is difficult to promote inclusive education because school children with disability cannot continue their educational journey and cannot ensure the regularity of girls and children from marginalized communities. Children are suffering more because they have less resilience against the climatic disaster. Looking at the result of this study, school children from the highly vulnerable districts were more affected than those from the low vulnerable communities.

Implication and Future Research

In this section, the researcher has presented the limitations of this study. Further, the researcher has also suggested some future research to improve the schooling of school children. Based on the finding of the study, researcher has presented few research implications. The implication of study was categorized in research implication, policy implication, implication for the school communities, promote schooling in the emergency situation and for the future research.

Research Implication

After looking at the findings of the study, it is clear that school children are suffering from the impact of climate change, and the findings align with the study conducted by UNICEF. In 2021, UNICEF conducted a study that concluded that 99 of all children have to face one form of climatic disaster (UNICEF, 2021). In this research, the collective problems of school children were included. The questionnaire includes problems common to the student during the climatic disaster, particularly access and learning. Also, several studies show that climate change indirectly impacts school children, but this study has only included problems that children face while going to school and during learning hours. So, the researcher would like to recommend that future researchers conduct a Delphi. This will help to understand the impact of each specific climatic disaster in depth. This will also make research context-specific, climatic disaster-specific, and more detailed. Researchers have taken four major climatic disasters in Madhesh province, but the government of Nepal has identified more than 15 climatic disasters in Nepal. If we calculate the percentage of climatic disasters used in this study, it is only around 25%. It would be much better if the researcher included all the climatic disasters, particularly those of Madhesh province, as it will help to know which climatic disaster affects the school children. The study is cross-sectional. As a result, we only know the impact of climatic disasters of a particular year/time, but the researcher recommends conducting a longitudinal study to know the pattern of climatic disaster impact.

Policy Implication

Most of the studies show that females are more affected by climatic disasters, but the findings of this study contradicted them. The study shows that male children were more affected by the impact of climatic disasters. So, it is recommended that males and females be prioritized while formulating the policy related to climatic disasters. Also, local governments must not overlook male children. It is also recommended that the local government assesses the vulnerability level every five years to determine the level of vulnerability of school children at regular intervals. Local governments keep climate change adaptation activities in their respective policies emphasizing the children as recommended by NAPA, LAPA, and Climate Change Policy-2019; but it should not be limited to all of those only. They must implement new adaptation strategies to build resilience among the school children.

Implication for the School Community

Schools should be constructed with the perspective of climate change disasters. It is assumed that the intensity will be even worse in the coming days. The climate-resilient infrastructure will provide a better learning environment. School communities must increase the number of Disaster Risk Reduction events at the local level. The school community must encourage school children to participate in the DRR event. Since the only best possible option is to increase children's adaptive capacity, it is recommended that the school community prioritize adaptation activities. Also, school communities must acknowledge the importance of a comprehensive school safety framework. School communities also must not miss out on school children's socio-economic vulnerability and geographical vulnerability.

Promote Education in Emergency

Climate change will lead to more frequent and severe natural disasters such as floods, inundation, heat, and cold waves. As of now, school children's schooling will be disturbed, and displaced, and educational infrastructure will be damaged. In such a scenario, EiE ensures that the schooling of school children continues to receive education despite these disruptions, providing stability and continuity in access and learning. For that, the adaptation resilience of school children needs to be enhanced. The EiE equips school children with the knowledge and skills to adapt to and mitigate the impact of climate change. Educated school children are better prepared to respond to and recover from climatic disasters. In doing so, EiE will ensure the schooling of school children during climatic disasters by protecting their right to education.

Future Research

Despite providing valuable insights into the impact of climatic disasters on children's schooling in Madhesh Province, this study has several limitations. First, the study focuses primarily on specific climatic disasters such as floods, heat waves, and cold waves but does not account for other disasters like droughts, heavy and unpredicted rainfall, and storms, which may also affect education. Future research should include a broader range of climatic disasters to gain a more comprehensive understanding of how different types of disasters impact schooling across various regions of Madhesh Province and Nepal.

Second, the data was collected from specific districts within the Madhesh province, limiting the generalizability of the findings to other regions with different

geographical and socio-economic contexts. Future studies should expand the geographic scope to include more diverse districts from the Terai, Hills, and Mountain regions to assess the extent of vulnerability and its impact on schooling across the country. Additionally, this study primarily relied on quantitative data to assess access and learning, which may not capture the full complexity of children's experiences during climatic disasters. Future research could incorporate qualitative methods, such as interviews and focus group discussions, to gain deeper insights into the personal experiences of students, teachers, and parents during such events. This would provide a more nuanced understanding of how climatic disasters affect access and learning of students along with their emotional and psychological well-being.

Lastly, while this study hypothesizes that better adaptation capacity of school children, including infrastructural development and family support, contribute to the resilience observed in high-vulnerability districts, it does not directly measure these factors (Vulnerability Level of Districts and Adaptation Capacity of School Children). Future research should also explore these potential mediating variables by conducting detailed investigations into the role of infrastructural quality, family income, and social support systems in helping students cope with climatic disasters. This would provide clearer pathways for policymakers to target interventions to minimize the educational disruption caused by climate change.

In summary, future research should focus on topics that includes socio-economic vulnerability and resilience of school children, the geographical and methodological limitations of this study, incorporate a wider variety of climatic events, and explore the role of infrastructural and socio-economic factors in shaping resilience to offer a more comprehensive understanding of the relationship between climate change and education in Nepal.

Limitations of Study Finding

The study was conducted in the two districts of Madhesh province. From these two districts, data was collected from six school of four palikas (municipalities). While selecting the sample (district, palikas, school and sample population), it was assured that the sample represented the whole Madhesh province but the finding may not represent whole province in every circumstances. Despite the fact that this study covers all four major climatic disasters of Madhesh province in the most representative ways, the result may not be generalized for whole Madhesh province

because there are several factors which reduces the level of climate change vulnerability level. Because of good process in the development at the local level, the climate change vulnerability of some places might have improved despite those places fall under the highly vulnerable categories.

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Questionnaire

परिचय र अध्ययनको उदेश्य

म, चन्द्र भुषण यादव काठमाडौं विश्वविद्यालय स्कूल अफ एजुकेशनको विकास शिक्षा विभाग अन्तर्गत एम.फिल तहमा अध्ययनरत छु । एम फिल डिग्रीको उपाधी प्राप्त गर्नको लागि मैले काठमाडौं विश्वविद्यालयलाई शोधपत्र बुझाउनु पर्ने हुन्छ । त्यसको निमित्त मैले मधेस प्रदेशका जिल्लाहरुमा जलवायु विपदबाट विद्यार्थीहरुमा पर्न गएको असर बारे अध्ययन गर्न लागेको हो । मेरो शोधपत्रको शिर्षक "मधेस प्रदेशमा जलवायु विपद र विद्यालय शिक्षा बीचको सम्बन्ध" हो । तलका सबै प्रश्नहरु यसै अध्ययनसँग सम्बन्धित छन् । तपाईले दिनुभएको उत्तरको आधारमा मधेस प्रदेशमा जलवायु परिवर्तनबाट हुन गएको असर बारे निष्कर्ष निकाल्न सकिन्छ । तसर्थ म यहाँहरुलाई आफुलाई लागेको उत्तरमा चिन्ह (✓) लगाई दिन अनुरोध गर्दछु । तपाईले दिनुभएको उत्तर यस अध्ययन बाहेक अरु कुनै प्रयोजनको लागि प्रयोग गरिने छैन । यस अध्ययनमा यहाँको स्वैच्छिक सहभागिताप्रति म हार्दिक आभार व्यक्त गर्दछु ।

मैले माथि उल्लेखित कुराहरु राम्रोसँग पढे । सबै कुरा पढि सके पछि यस अध्ययनमा म आफ्नो स्वैच्छाले भाग लिएको छु ।

विद्यार्थीको सही

.....

खण्ड 'क'

व्यक्तिगत विवरण

१) नाम (ऐच्छिक).....

२) उमेर ..... वर्ष

३) लिङ्ग क) पुरुष ख) महिला ग) अन्य

४) जातजाति : क) ब्राहमण/क्षेत्री ख) दलित ग) जनजाती घ) अन्य

५) समुदाय : क) मधेशी ख) पहाडी

६) धर्म : क) हिन्दू ख) बौद्ध ग) इस्लाम घ) क्रिस्चियन
ङ) किराँत च) अन्य भए खुलाउनुहोस्.....

७) अभिभावकको पेशाः क) कृषि ख) व्यापार ग) नोकरी घ) ज्यालादारी
ङ) राजनिति वा जनप्रतिनिधि च) सरकारी सेवा छ) अन्य भए खुलाउनुहोस् .....

९) परिवारको सदस्यहरुको कूल संख्या : ..... दाजुभाइको संख्या ..... दिदीबहिनीको संख्या .....

९) अभिभावकको मासिक आम्दानी रुपैयामा : क) दश हजार भन्दा कम ख) दश देखि बीस हजार सम्म
ग) बीस देखि पचास हजार सम्म घ) पचास हजारदेखि एक लाख सम्म
ङ) एक लाख भन्दा माथि

१०) विद्यालय जानको लागि प्रयोग गरिने यातायातको साधन (मिल्ने कोठाहरुमा √ चिन्ह लगाउनुहोस्)

जलवायु प्रकोपको प्रकार	यातायातको साधन				
	स्कूल बस	पैदल	आफ्नै साइकल	अनुपस्थित	अन्य भए खुलाउनुहोस्
बाढी भएको अवस्था					.....
बाढी नभएको अवस्था					.....
डुवान भएको अवस्था					.....
डुवान नभएको अवस्था					.....
लु भएको अवस्था					.....
लु नभएको अवस्था					.....
शीतलहर भएको अवस्था					.....
शीतलहर नभएको अवस्था					.....

११)

विवरण	लिन्छु	लिदीन
बाढीको समयमा म विद्यालय जानको लागि परिवारको सदस्यसँग सहयोग लिन्छु		
डुमानको समयमा म विद्यालय जानको लागि परिवारको सदस्यसँग सहयोग लिन्छु		
लुको समयमा म विद्यालय जानको लागि परिवारको सदस्यसँग सहयोग लिन्छु		
शीत लहरको समयमा म विद्यालय जानको लागि परिवारको सदस्यसँग सहयोग लिन्छु		

१२) मलाई घरबाट विद्यालय पुग्न..... मिनेट/घण्टा लाग्छ ।

खण्ड 'ख'

बाढी

कृपया तपाईले आफु विद्यालयमा पढ्दा जलवायु प्रकोप सम्बन्धी महशुस गर्नुभएका अनुभवहरु मिल्ने कुनै एक कोठामा √ चिन्ह लगाउनुहोस् ।

प्रं.नं	विवरण	धेरै सम्भावित	केही हदसम्म सम्भावित	सम्भावित	कम सम्भावित	निक्कै कम सम्भावित	धेरै नै कम सम्भावित
१	बाढीको समयमा म प्राय विद्यालयमा अनुपस्थित (Absent) हुन्छु ।						
२	बाढी आएको बेला म विद्यालय जाँदा धेरै पटक आँधी बाटोबाट विद्यालय नगई घर फर्किएको छु ।						
३	बाढीले गर्दा बिग्रेको बाटो भएर विद्यालय जान मलाई गाह्रो हुन्छ ।						
४	बाढीले गर्दा भत्किएको पूल भएर विद्यालय जाँदा मलाई गाह्रो हुन्छ ।						
५	बाढीको समयमा म प्राय बिरामी हुने गरेकोले म विद्यालय जान सक्दिन ।						
६	बाढी आएको बेला मेरो धेरै साथीहरु विद्यालयमा अनुपस्थित हुन्छन् ।						
७	बाढी आएको बेला मलाई विद्यालय जान असुरक्षित लाग्छ ।						
८	बाढीको समयमा विद्यालय जानु पर्दा म कक्षाकोठामा ध्यान केन्द्रित गर्न सक्दिन ।						
९	बाढी लगत्तै भएको त्रैमासिक परिक्षाहरुमा म राम्रो अंक ल्याउन सक्दिन ।						
१०	प्राय पत्येक वर्ष बाढीले गर्दा मेरो किताब, कापी, कलम, झोला ईत्यादि हराएको हुन्छ ।						
११	बाढीले गर्दा मेरो विद्यालय पोशाक हराएपछि म केही समयसम्म विद्यालय जान सक्दिन ।						
१२	बाढीले गर्दा म प्राय विद्यालयले लिने त्रैमासिक परिक्षाहरुमा अनुपस्थित/छुटिएको हुन्छु ।						
१३	बाढी पछि मलाई पढाईमा पहिलेजस्तै अवस्थामा फर्किन धेरै समय लाग्छ ।						
१४	बाढीको समयमा प्राय बाढीले गर्दा मेरो विद्यालय बन्द हुन्छ ।						
१५	बाढीले गर्दा मेरो कक्षा सञ्चालनमा प्राय अवरोध (Disturb) हुने गर्छ ।						
१६	बाढीले पढाई बिग्रदा परिक्षाको तयारी गर्न चाहिएको भन्दा धेरै समय लाग्छ ।						
१८	प्राय बाढीको समयमा म विद्यालय जानबाट वञ्चित (Deprived of) हुन्छु ।						

प्रं.नं	विवरण	धेरै सम्भावित	केही हदसम्म सम्भावित	सम्भावित	कम सम्भावित	निक्कै कम सम्भावित	धेरै नै कम सम्भावित
१९	बाढीले गर्दा हरेक वर्ष Course Complete गर्न गाह्रो हुन्छ ।						
२०	बाढीको पानीले कक्षाकोठा भरिएको बेला मलाई धेरै पटक घर पठाइएको छ ।						
२१	बाढीले गर्दा मेरो पढाई बिग्रेर मेरो बार्षिक परिक्षामा श्रेणी घटेको हुन्छ ।						
२२	बाढीको समयमा विद्यालय जाँदा म धेरै पटक कक्षाकोठामा भएको बाढीको पानी सफा गरेको छु ।						
२३	बाढीले मेरो घरमा क्षति पुऱ्याउँदा मेरो पढाईमा असर परेको छ ।						
२४	बाढीको समयमा म अस्थाई (Temporary) रुपमा सञ्चालन गरिएको विद्यालयमा पढेको छु ।						
२५	बाढीको समयमा मेरो आमाबुबाले मलाई विद्यालय जान दिनु हुन्न ।						

खण्ड 'ग'

डुवान

कृपया तपाईले आफु विद्यालयमा पढ्दा जलवायु प्रकोप सम्बन्धी महशुस गर्नुभएका अनुभवहरु मिल्ने कुनै एक कोठामा √ चिन्ह लगाउनुहोस् ।

प्रश्न नं	विवरण	धेरै सम्भावित	केही हदसम्म सम्भावित	सम्भावित	कम सम्भावित	निक्कै कम सम्भावित	धेरै नै कम सम्भावित
१	डुवान भएको अवस्थामा मलाई विद्यालय जान असुरक्षित लाग्छ ।						
२	डुवान भएको अवस्थामा म विद्यालय ढिलो पुग्छ ।						
३	पुलहरु डुवेको अवस्थामा म विद्यालय जान सक्दिन ।						
४	डुवान भएको अवस्थामा मलाई विद्यालय जान धेरै समय लाग्छ ।						
५	डुवान भएको समयमा डुवेको पुल तरेर जानुपर्दा मलाई अत्यन्त कठीन हुन्छ ।						
६	डुवेको बाटो भएर विद्यालय जाँदा विद्यालय जान कठिन हुन्छ ।						
७	म डुवानले गर्दा प्राय आदि बाटोबाट घर फर्किन्छु ।						
८	डुवान भएको बेला विद्यालय जाँदा म घाइते भएको छु ।						
९	डुवानले गर्दा मेरो विद्यालय पोशाक प्राय भिजेको छ ।						
१०	विद्यालय जाने बाटो डुवानमा पर्दा प्राय मेरो विद्यालयमा पठनपाठन बन्द हुन्छ ।						
११	डुवानले गर्दा कक्षाकोठामा पानी पस्दा मेरो पढाइमा असर पुग्छ ।						
१२	डुवानले गर्दा विद्यालयको मैदान लामो समयसम्म जलमग्न हुन्छ ।						
१३	डुवानको कारण विद्यालय जाँदा मेरो झोला भिज्ने गर्छ ।						
१४	डुवानले गर्दा विद्यालय जाादा मेरो किताबहरु भिज्ने गर्छ ।						
१५	डुवानको समयमा मलाई मेरो आमा बुबाले विद्यालय जान दिनु हुन् ।						

खण्ड 'घ'

लु

कृपया तपाईले आफु विद्यालयमा पढ्दा जलवायु प्रकोप सम्बन्धी महशुस गर्नुभएका अनुभवहरु मिल्ने कुनै एक कोठामा √ चिन्ह लगाउनुहोस् ।

प्रश्न नं	विवरण	धेरै सम्भावित	केही हदसम्म सम्भावित	सम्भावित	कम सम्भावित	निक्कै कम सम्भावित	धेरै नै कम सम्भावित
१	लु को समयमा विद्यालय जान गाऱ्हो हुन्छ ।						
२	म लु को समयमा विद्यालयमा अनुपस्थित हुन्छु ।						
३	लु को समयमा परिक्षा हुदाँ मैले राम्रो अंक ल्याउन सक्दिन ।						
४	लु को समयमा अत्याधिक गर्मीले गर्दा मलाई टाउको दुखेको हुन्छ ।						
५	लु को समयमा मेरो मन/मुड अस्थिर हुन्छ ।						
६	लु को समयमा कक्षाकोठामा बस्दा म तिर्खाएको हुन्छु ।						
७	लु को समयमा शिक्षकले कक्षाकोठामा पढाईरहँदा मलाई निन्द्रा लाग्छ ।						
८	लु को समयमा मलाई रिङ्गटा लाग्छ ।						
९	लु को समयमा म कक्षाकोठामा बेहोस भएको छु ।						
१०	लु चलेको बेला कक्षा कोठामा शिक्षकले पढाएको बुझ्न सक्दिन ।						
११	लु को समयमा म गृहकार्य पनि पूरा गर्न सक्दिन ।						
१२	लु को समयमा म कक्षाकार्य पनि पूरा गर्न सक्दिन ।						
१३	लु को समयमा मलाई विद्यालय पोसाक दिनभरि लगाउन असहज हुन्छ ।						
१४	लु को समयमा मलाई शारिरिक थकान महसुस हुन्छ ।						
१५	लु को समयमा मलाई मानसिक थकान महसुस हुन्छ ।						
१६	लु को समयमा अत्याधिक गर्मीले गर्दा हातमा पसिना बगेर मलाई लेख्न कठिनाइ हुन्छ ।						
१७	लु को समयमा अत्याधिक गर्मीले गर्दा म विद्यालयको समयमा घर फर्केको छु ।						
१८	लु को समयमा कक्षाकोठालाई वातावरण अनुकल बनाउन (तापक्रम घटाउन) विद्यालयमा Fan & Generator प्रयाप्त छैन ।						

खण्ड 'ङ'

शीतलहर

कृपया तपाईले आफु विद्यालयमा पढ्दा जलवायु प्रकोप सम्बन्धी महशुस गर्नुभएका अनुभवहरु मिल्ने कुनै एक कोठामा √ चिन्ह लगाउनुहोस् ।

प्रश्न नं	विवरण	धेरै सम्भावित	केही हदसम्म सम्भावित	सम्भावित	कम सम्भावित	निक्कै कम सम्भावित	धेरै नै कम सम्भावित
१	शितलहरको कारणले विद्यालय जाँदा बाटो प्रष्टसँग देखिन्न ।						
२	शितलहरको बेला कुहिरो लागेको कारणले विद्यालय जाँदा म असुरक्षित महशुस गर्छु ।						
३	शितलहरको समयमा विद्यालय जाने बेला म सुरक्षित हुन परिवारको सदस्यको सहयोग लिने गरेको छु ।						
४	शितलहरको कारणले गर्दा म विद्यालयमा प्राय अनुपस्थित हुने गर्छु ।						
५	शितलहरको कारणले विद्यालयमा म ढिलो पुग्ने गर्छु ।						
६	शितलहरको कारणले कक्षाकोठामा पढाइ भइरहेको बेला म ध्यान केन्द्रित गर्न सक्दिन ।						
७	शितलहरको बेला अत्याधिक चिसोले गर्दा म लेख्न पनि सक्दिन ।						
८	शितलहरको समयमा कक्षा कोठामा हिटर नभएकोले गर्दा मलाई कक्षा कोठामा बस्न असहज हुन्छ ।						
९	शितलहरको समयमा जाडोबाट बच्न मेरो पोशाक (युनिफर्म) त्यती न्यायो छैन ।						
१०	शितलहरको बेलामा म पढाइमा धेरै समय दिन सक्दिन ।						
११	शितलहरको समयमा भएको परिक्षामा राम्रो अंक ल्याउन सक्दिन ।						
१२	शितलहरको समयमा म आफूलाई न्यानो राख्न अन्य क्रियाकलापमा धेरै समय दिन्छु ।						
१३	म शितलहरको कारणले गर्दा विद्यालयको सबै घण्टीहरुमा पढ्न सकेको हुदिन ।						
१४	म शितलहरको बेलामा दैनिक गृहकार्य पनि पूरा गर्न सक्दिन ।						